

2010

MAZDA3 *MAZDASPEED3* **Workshop Manual**

FOREWORD

This manual contains on-vehicle service and/or diagnosis procedures for the Mazda3/Mazdaspeed3.

For proper repair and maintenance, a thorough familiarization with this manual is important, and it should always be kept in a handy place for quick and easy reference.

All the contents of this manual, including drawings and specifications, are the latest available at the time of printing.

As modifications affecting repair or maintenance occur, relevant information supplementary to this volume will be made available at Mazda dealers. This manual should be kept up-to-date.

Mazda Motor Corporation reserves the right to alter the specifications and contents of this manual without obligation or advance notice.

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**Mazda Motor Corporation
HIROSHIMA, JAPAN**

APPLICATION:

This manual is applicable to vehicles beginning with the Vehicle Identification Numbers (VIN), and related materials shown on the following page.

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VEHICLE IDENTIFICATION NUMBERS (VIN)

JM1 BL1H3*A# 100001—
JM1 BL1H4*A# 100001—
JM1 BL1H5*A# 100001—
JM1 BL1H6*A# 100001—
JM1 BL1HF*A# 100001—
JM1 BL1S5*A# 100001—
JM1 BL1S6*A# 100001—
JM1 BL1SF*A# 100001—
JM1 BL1SG*A# 100001—

RELATED MATERIALS

Material Name	MNAO Part No.	Mazda Material No.
2010 Mazda3/Mazdaspeed3 Service Highlights	9999-95-064F-10	3455-1U-09D
Engine Workshop Manual L3 WITH TC	9999-95-0L3T-06	1833-1U-05H
Engine Workshop Manual L5	9999-95-00L5-09	1924-1U-08F
Engine Workshop Manual LF L3	9999-95-LFL3-08	1972-1U-08K
Manual Transmission Workshop Manual G35M-R	9999-95-0G35-03	1756-1U-02I
Manual Transaxle and Transfer Workshop Manual A26M-R A26MX-R	9999-95-A26M-07	1898-1U-06G
Manual Transmission Workshop Manual G66M-R	9999-95-G66M-09	1929-1U-08F
Automatic Transaxle Workshop Manual FS5A-EL	9999-95-FS5A-06	1859-1U-05F
2010 Mazda3/Mazdaspeed3 Bodyshop Manual	9999-95-036F-10	3454-1U-09D
2010 Mazda3/Mazdaspeed3 Wiring Diagram	9999-95-019G-10	5766-1U-09D

WARNING

Servicing a vehicle can be dangerous. If you have not received service-related training, the risks of injury, property damage, and failure of servicing increase. The recommended servicing procedures for the vehicle in this workshop manual were developed with Mazda-trained technicians in mind. This manual may be useful to non-Mazda trained technicians, but a technician with our service-related training and experience will be at less risk when performing service operations. However, all users of this manual are expected to at least know general safety procedures.

This manual contains "Warnings" and "Cautions" applicable to risks not normally encountered in a general technician's experience. They should be followed to reduce the risk of injury and the risk that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that the "Warnings" and "Cautions" are not exhaustive. It is impossible to warn of all the hazardous consequences that might result from failure to follow the procedures.

The procedures recommended and described in this manual are effective methods of performing service and repair. Some require tools specifically designed for a specific purpose. Persons using procedures and tools which are not recommended by Mazda Motor Corporation must satisfy themselves thoroughly that neither personal safety nor safety of the vehicle will be jeopardized.

The contents of this manual, including drawings and specifications, are the latest available at the time of printing, and Mazda Motor Corporation reserves the right to change the vehicle designs and alter the contents of this manual without notice and without incurring obligation.

Parts should be replaced with genuine Mazda replacement parts or with parts which match the quality of genuine Mazda replacement parts. Persons using replacement parts of lesser quality than that of genuine Mazda replacement parts must satisfy themselves thoroughly that neither personal safety nor safety of the vehicle will be jeopardized.

Mazda Motor Corporation is not responsible for any problems which may arise from the use of this manual. The cause of such problems includes but is not limited to insufficient service-related training, use of improper tools, use of replacement parts of lesser quality than that of genuine Mazda replacement parts, or not being aware of any revision of this manual.

GENERAL INFORMATION

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SECTION

00-00

GENERAL INFORMATION 00-00

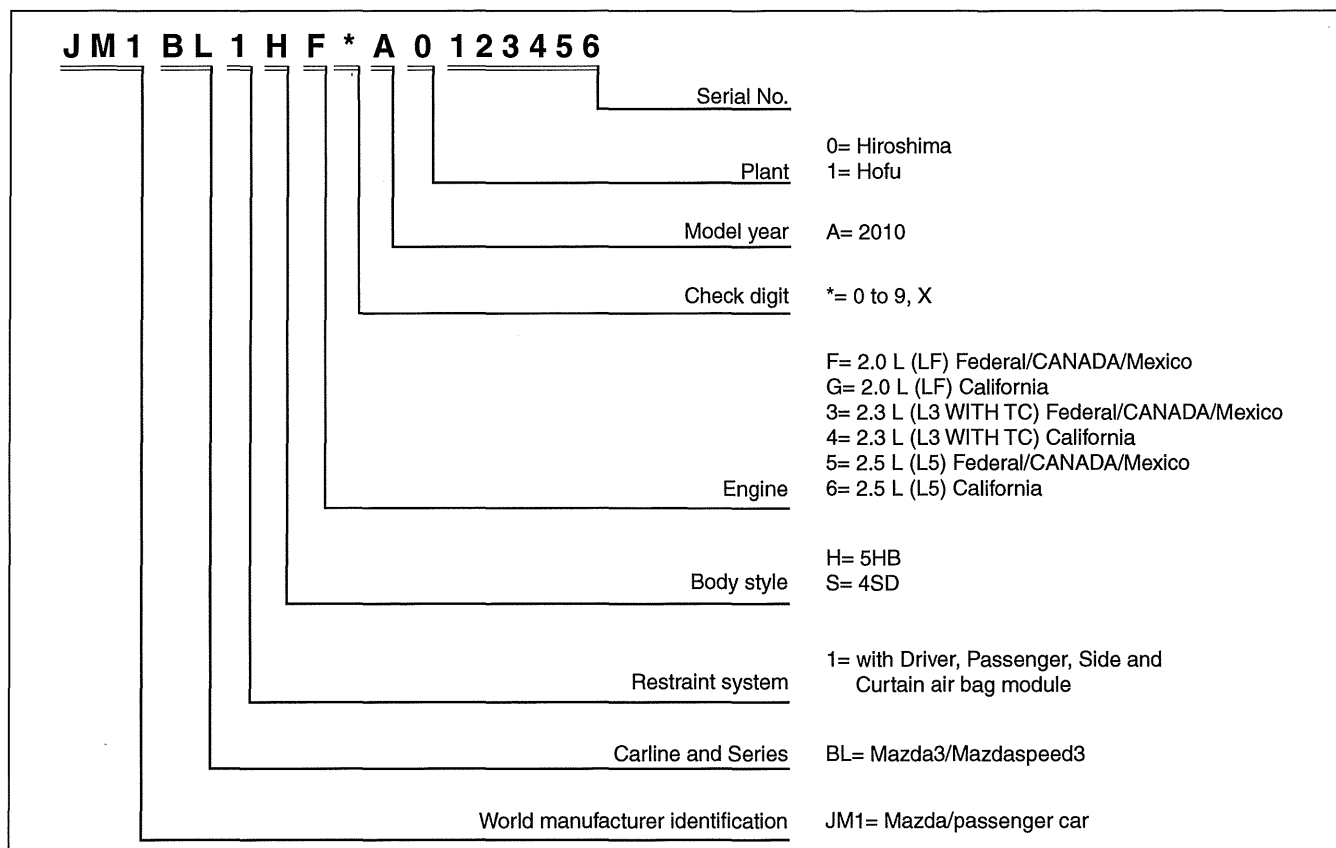
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GENERAL INFORMATION

VEHICLE IDENTIFICATION NUMBER (VIN) CODE

id000000100200



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VEHICLE IDENTIFICATION NUMBER (VIN)

id000000100300

JM1 BL1H3*A# 100001—
 JM1 BL1H4*A# 100001—
 JM1 BL1H5*A# 100001—
 JM1 BL1H6*A# 100001—
 JM1 BL1HF*A# 100001—
 JM1 BL1S5*A# 100001—
 JM1 BL1S6*A# 100001—
 JM1 BL1SF*A# 100001—
 JM1 BL1SG*A# 100001—

GENERAL INFORMATION

HOW TO USE THIS MANUAL

id000000800100

Range of Topics

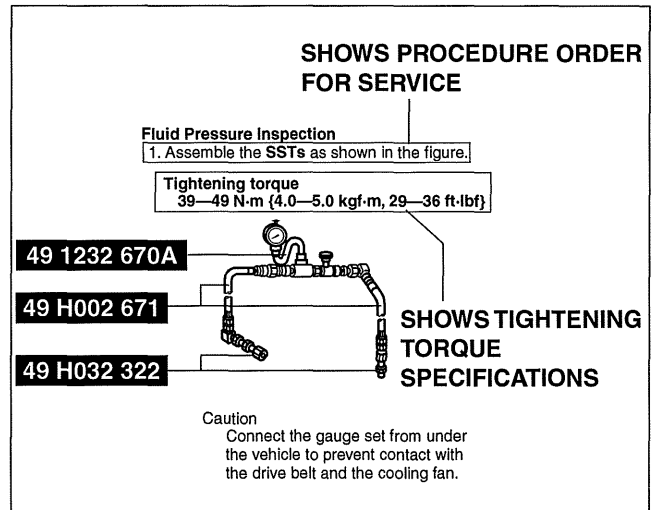
- This manual contains procedures for performing all required service operations. The procedures are divided into the following five basic operations:
 - Removal/Installation
 - Disassembly/Assembly
 - Replacement
 - Inspection
 - Adjustment
- Simple operations which can be performed easily just by looking at the vehicle (i.e., removal/installation of parts, jacking, vehicle lifting, cleaning of parts, and visual inspection) have been omitted.

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Service Procedure

Inspection, adjustment

- Inspection and adjustment procedures are divided into steps. Important points regarding the location and contents of the procedures are explained in detail and shown in the illustrations.



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GENERAL INFORMATION

Repair procedure

1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and describes visual part inspection. However, only removal/installation procedures that need to be performed methodically have written instructions.
2. Expendable parts, tightening torques, and symbols for oil, grease, and sealant are shown in the overview illustration. In addition, symbols indicating parts requiring the use of special service tools or equivalent are also shown.
3. Procedure steps are numbered and the part that is the main point of that procedure is shown in the illustration with the corresponding number. Occasionally, there are important points or additional information concerning a procedure. Refer to this information when servicing the related part.

Procedure

"Removal/Installation" Portion

"Inspection After Installation" Portion

INSTALL THE PARTS BY PERFORMING STEPS 1—3 IN REVERSE ORDER

SHOWS SERVICE ITEM (S)

LOWER TRAILING LINK, UPPER TRAILING LINK REMOVAL/INSTALLATION

1. Jack up the rear of the vehicle and support it with safety stands.
2. Remove the undercover. (See 01-10-4 Undercover Removal)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Inspect the rear wheel alignment and adjust it if necessary.

INDICATES RELEVANT REFERENCES THAT NEED TO BE FOLLOWED DURING INSTALLATION

SHOWS SPECIAL SERVICE TOOL (SST) FOR SERVICE OPERATION

SHOWS APPLICATION POINTS OF GREASE, ETC.

SHOWS EXPENDABLE PARTS

SHOWS TIGHTENING TORQUE SPECIFICATIONS

SHOWS DETAILS

SHOWS TIGHTENING TORQUE UNITS

SHOWS REFERRAL NOTES FOR SERVICE

SHOWS REFERRAL NOTES FOR SERVICE

1	Split pin	7	Split pin
2	Nut	8	Nut
3	Lower trailing link ball joint (See 02-14-5 Lower Trailing Link Ball Joint Removal Note)	9	Upper trailing link ball joint (See 02-14-5 Upper Trailing Link Ball Joint Removal Note)
4	Bolt	10	Nut
5	Lower trailing link	11	Upper trailing link
6	Dust boot (lower trailing link)	12	Dust boot (upper trailing link)

Lower Trailing Link Ball Joint, Upper Trailing Link Ball Joint Removal Note

- Remove the ball joint using the SSTs.









SHOWS SPECIAL SERVICE TOOL (SST) NO.

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GENERAL INFORMATION

Symbols

- There are eight symbols indicating oil, grease, fluids, sealant, and the use of **SST** or equivalent. These symbols show application points or use of these materials during service.

Symbol	Meaning	Kind
	Apply oil	New appropriate engine oil or gear oil
	Apply brake fluid	New appropriate brake fluid
	Apply automatic transaxle/ transmission fluid	New appropriate automatic transaxle/ transmission fluid
	Apply grease	Appropriate grease
	Apply sealant	Appropriate sealant
	Apply petroleum jelly	Appropriate petroleum jelly
	Replace part	O-ring, gasket, etc.
	Use SST or equivalent	Appropriate tools

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Advisory Messages

- You will find several **Warnings, Cautions, Notes, Specifications** and **Upper and Lower Limits** in this manual.

Warning

- A Warning indicates a situation in which serious injury or death could result if the warning is ignored.

Caution

- A Caution indicates a situation in which damage to the vehicle or parts could result if the caution is ignored.

Note

- A Note provides added information that will help you to complete a particular procedure.

Specification

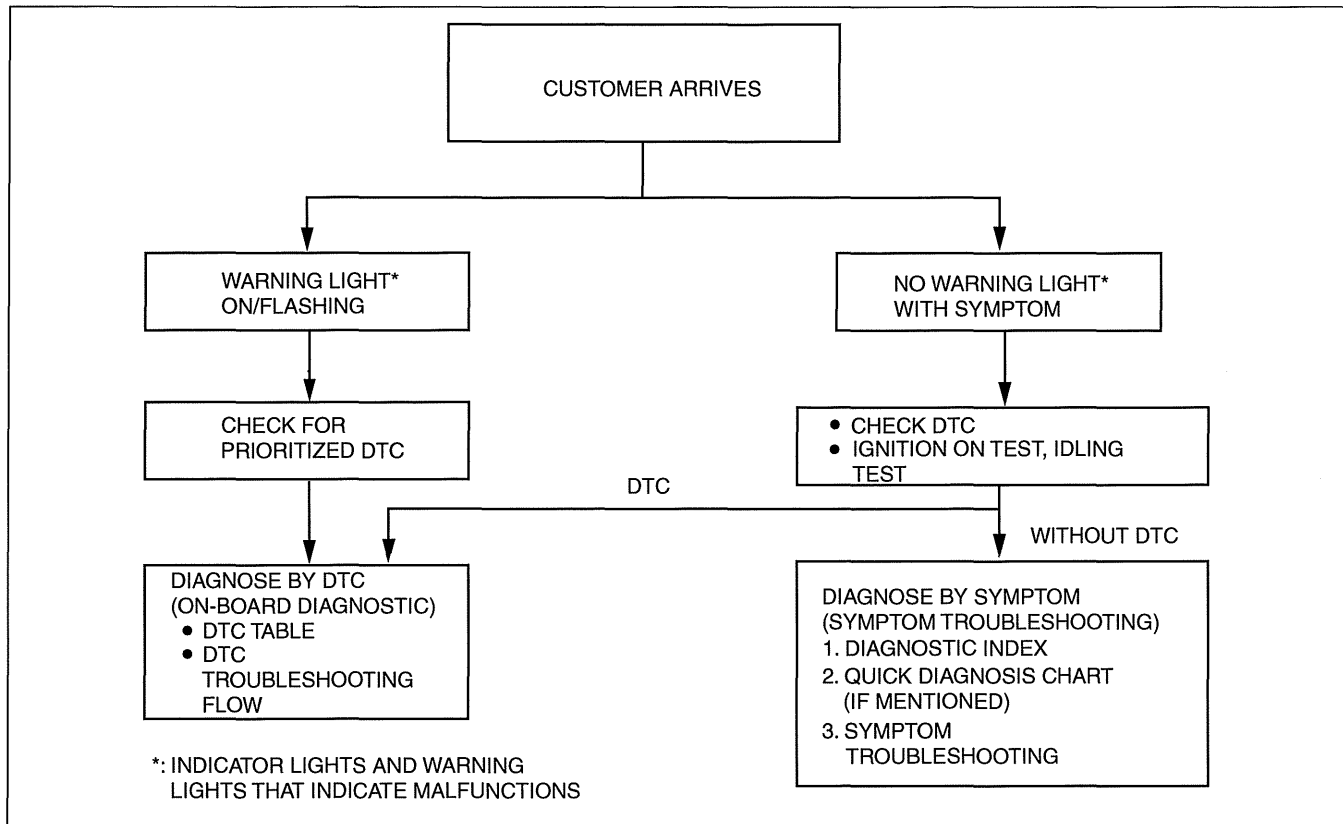
- The values indicate the allowable range when performing inspections or adjustments.

Upper and lower limits

- The values indicate the upper and lower limits that must not be exceeded when performing inspections or adjustments.

GENERAL INFORMATION

Troubleshooting Procedure Basic flow of troubleshooting



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DTC troubleshooting flow (on-board diagnostic)

- Diagnostic trouble codes (DTCs) are important hints for repairing malfunctions that are difficult to simulate. Perform the specific DTC diagnostic inspection to quickly and accurately diagnose the malfunction.
- The on-board diagnostic function is used during inspection. When a DTC is shown specifying the cause of a malfunction, continue the diagnostic inspection according to the items indicated by the on-board diagnostic function.

Diagnostic index

- The diagnostic index lists the symptoms of specific malfunctions. Select the symptoms related or most closely relating to the malfunction.

Quick diagnosis chart (If mentioned)

- The quick diagnosis chart lists diagnosis and inspection procedures to be performed specifically relating to the cause of the malfunction.

Symptom troubleshooting

- Symptom troubleshooting quickly determines the location of the malfunction according to symptom type.

GENERAL INFORMATION

Procedures for Use

Using the basic inspection (section 05)

- Perform the basic inspection procedure before symptom troubleshooting.
- Perform each step in the order shown.
- The reference column lists the location of the detailed procedure for each basic inspection.
- Although inspections and adjustments are performed according to the reference column procedures, if the cause of the malfunction is discovered during basic inspection, continue the procedures as indicated in the action column.

00-00

	SHOWS INSPECTION ORDER	SHOWS ITEM NAMES FOR DETAILED PROCEDURES	SHOW POINTS REQUIRING ATTENTION BASED ON INSPECTION RESULTS				
	BASIC INSPECTION						
	STEP	INSPECTION	ACTION				
	1	Perform the mechanical system test. (See 05-13-3 MECHANICAL SYSTEM TEST.) Is mechanical system normal?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any malfunctioning parts according to the inspection result.</td> </tr> </table>	Yes	Go to the next step.	No	Repair or replace any malfunctioning parts according to the inspection result.
Yes	Go to the next step.						
No	Repair or replace any malfunctioning parts according to the inspection result.						
	2	Turn the ignition switch to the ON position. When the selector lever is moved, does the selector illumination indicate synchronized position to the lever location? Also, when other ranges are selected from N or P during idling, does the vehicle move within 1—2 s?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Inspect the selector lever and TR switch. Repair or replace malfunctioning parts. (See 05-14-5 SELECTOR LEVER INSPECTION.) (See 05-13-10 TRANSMISSION RANGE (TR) SWITCH INSPECTION.) If the selector lever and TR switch are normal, go to the next step.</td> </tr> </table>	Yes	Go to the next step.	No	Inspect the selector lever and TR switch. Repair or replace malfunctioning parts. (See 05-14-5 SELECTOR LEVER INSPECTION.) (See 05-13-10 TRANSMISSION RANGE (TR) SWITCH INSPECTION.) If the selector lever and TR switch are normal, go to the next step.
Yes	Go to the next step.						
No	Inspect the selector lever and TR switch. Repair or replace malfunctioning parts. (See 05-14-5 SELECTOR LEVER INSPECTION.) (See 05-13-10 TRANSMISSION RANGE (TR) SWITCH INSPECTION.) If the selector lever and TR switch are normal, go to the next step.						
	3	Inspect the ATF color condition. (See 05-13-8 AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION.) Are ATF color and odor normal?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any malfunctioning parts according to the inspection result. Flush ATX and cooler line as necessary.</td> </tr> </table>	Yes	Go to the next step.	No	Repair or replace any malfunctioning parts according to the inspection result. Flush ATX and cooler line as necessary.
Yes	Go to the next step.						
No	Repair or replace any malfunctioning parts according to the inspection result. Flush ATX and cooler line as necessary.						
	4	Perform the line pressure test. (See 05-13-3 Line Pressure Test.) Is the line pressure normal?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any malfunctioning parts according to the inspection result.</td> </tr> </table>	Yes	Go to the next step.	No	Repair or replace any malfunctioning parts according to the inspection result.
Yes	Go to the next step.						
No	Repair or replace any malfunctioning parts according to the inspection result.						
	5	Perform the stall test. (See 05-13-4 Stall Speed Test.) Is the stall speed normal?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any malfunctioning parts according to the inspection result.</td> </tr> </table>	Yes	Go to the next step.	No	Repair or replace any malfunctioning parts according to the inspection result.
Yes	Go to the next step.						
No	Repair or replace any malfunctioning parts according to the inspection result.						
REFERENCE COLUMN		Inspect the voltage at the following TCM terminals. (See 05-13-29 TCM INSPECTION.) <ul style="list-style-type: none"> • Terminal 2J (TFT sensor) • Terminals 1D, 2B, 2C, 2E (TR switch) • Terminal 2G (turbine sensor) • Terminal 2D (down switch) • Terminal 2I (up switch) • Terminal 1E (M range switch) • Terminal 1W (steering shift switch) Is the voltage normal?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any malfunctioning parts according to the inspection result.</td> </tr> </table>	Yes	Go to the next step.	No	Repair or replace any malfunctioning parts according to the inspection result.
Yes	Go to the next step.						
No	Repair or replace any malfunctioning parts according to the inspection result.						

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GENERAL INFORMATION

Using the DTC troubleshooting flow

- DTC troubleshooting flow shows diagnostic procedures, inspection methods, and proper action to take for each DTC.

· TROUBLE CONDITION

DTC P0103

DETECTION CONDITION
describes the condition under which the DTC is detected.

DTC P0103	<p>MAF circuit high input</p> <p>PCM monitors input voltage from TP sensor after ignition key is turned on. If input voltage at PCM terminal 68 is above 8.25 V, PCM determines that TP circuit has malfunction.</p>	
DETECTION CONDITION	<p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). MIL illuminates if PCM detects the above malfunction during first drive cycle. Therefore, PENDING CODE is not available. FREEZE FRAME DATE is available. DTC is stored in the PCM memory. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF sensor malfunction Connector or terminal malfunction Open circuit in wiring between MAF sensor terminal D and PCM terminal 36 Open circuit in MAF sensor ground circuit 	

POSSIBLE CAUSE
describes possible point(s) of malfunction

Indicates the inspection step No. to be performed (01 and 05 section)

Indicates the circuit to be inspected (01 and 05 section)

STEP shows the order of troubleshooting

Indicates the connector related to the inspection

Diagnostic procedure			
STEP	INSPECTION		ACTION
1	<p>VERIFY FREEZE FRAME DATA HAS BEEN RECORDED</p> <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to next step.
		No	Record FREEZE FRAME DATA on repair order, then go to next step.
2	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> Are related Service Bulletins and/or on-line repair information available? 	Yes	Perform repair or diagnosis according to available repair information. If vehicle is not repaired, then go to next step.
		No	Go to next step.
3	<p>VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT</p> <ul style="list-style-type: none"> Connect diagnostic tool to DLC-2. Start engine. Access MAF V PID using diagnostic tool. Is MAF V PID within 0.2 - 8.3 V? 	Yes	Intermittent concern is existing. Go to INTERMITTENT CONCERNS TROUBLESHOOTING procedure. (See 01-03-33 INTERMITTENT CONCERN TROUBLESHOOTING)
		No	Go to next step.
4	<p>INSPECT POOR CONNECTION OF MAF SENSOR CONNECTOR</p> <ul style="list-style-type: none"> Turn ignition key to OFF. Disconnect MAF sensor connector. Check for poor connection (damaged, pulled-out terminals, corrosion etc.). Are there any malfunctions? 	Yes	Repair or replace terminals, then go to Step 8.

INSPECTION describes the method to quickly determine the malfunctioning part(s).

ACTION describes the appropriate action to be taken according to the result (Yes/No) of the INSPECTION.

Reference item(s) to perform ACTION.

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GENERAL INFORMATION

Using the diagnostic index

- Malfunction symptoms are listed in the diagnostic index under symptom troubleshooting.
- The exact malfunction symptoms can be selected by following the index.

No.	TROUBLESHOOTING ITEM	DESCRIPTION	Page
1	Melting of main or other fuses	—	(See 01-03-6 MELT NO.1 MAIN OR OTHER FUSE)
2	MIL comes on	MIL is illuminated incorrectly.	(See 01-03-7 NO.2 MIL COMES ON)
3	Will not crank	Starter does not work.	(See 01-03-8 NO. 3 WILL NOT CRANK)
4	Hard start/long crank/erratic start/erratic crank	Starter cranks engine at normal speed but engine requires excessive cranking time before starting.	(See 01-03-9 NO. 4 HARD START/ LONG CRANK/ERRATIC CRANK)
5	Engine stalls. After start/at idle	Engine stops unexpectedly at idle and/or after start.	(See 01-03-11 NO. 5 ENGINE-STALLS AFTER START/AT IDLE)
6	Cranks normally but will not start	Starter cranks engine at normal speed but engine will not run.	(See 01-03-15 NO.6 CRANKS NORMALLY BUT WILL NOT START)
7	Slow return to idle	Engine takes more time than normal to return to idle speed.	(See 01-03-19 NO. 7 SLOW RERUN TO IDLE)
8	Engine runs rough/rotling	Engine speed fluctuates between specified idle speed and lower speed and engine shakes excessively.	(See 01-03-20 NO. 8 ENGINE RUNS ROUGH/ROLLING IDLE)
9	Fast idle/runs on	Engine speed continues at fast idle after warm-up. Engine runs after ignition key is turned to OFF.	(See 01-03-23 NO. 9 FAST IDLE/RUNS ON)
10	Low idle/stalls during deceleration	Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.	(See 01-03-24 NO. 10 LOW IDLE/ STALLS DURING DECELERATION)

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GENERAL INFORMATION

Using the quick diagnosis chart

- The chart lists the relation between the symptom and the cause of the malfunction.
- The chart is effective in quickly narrowing down the relation between symptom and cause of the malfunction. It also specifies a range of common causes when multiple malfunction symptoms occur.
- The appropriate diagnostic inspection relating to a malfunction cause as specified by the symptoms can be selected by looking down the diagnostic inspection column of the chart.

SYMPTOM QUICK DIAGNOSTIC CHART		② PARTS WHICH MAY BE THE CAUSE OF PROBLEMS																				
		Starter motor malfunction (Mechanical or electrical)	Starter circuit, including ignition switch open	Improper engine oil level	Low or dead battery	Charging system malfunction	Improper engine compression	Improper valve timing	Hydrolocked engine	Improper engine oil viscosity	Improper dipstick	Base engine malfunction	Drive plate or flywheel seized	Improper tension or damaged drive belts	Improper engine coolant level	Water and anti-freeze mixture improperly	Cooling system malfunction (Radiator, hoses, overflow system, thermostat, etc.)	Cooling fan system malfunction	Engine or transaxle mounts improperly installed	Cooling fan or condenser fan seat improperly	Accelerator cable free play mis-adjustment	Fuel quality
Troubleshooting item																						
1	Melts of main or other fuse																					
2	MIL comes on																					
3	Will not crank	x	x		x	x			x				x									
4	Hard to start/long crank/erratic start/erratic crank																					x
5	Engine stalls After start/at idle										x	x	x									x
6	Cranks normally but will not start									x	x	x										x
7	Slow return to idle																	x				
8	Engine runs rough/rolling idle									x	x											x
9	Fast idle/runs on																					x
10	Low idle/stalls during deceleration																					
11	Engine stalls/quits Acceleration/cruise										x	x										x
	Engine runs rough Acceleration/cruise										x	x										x
	Misses Acceleration/cruise										x	x										x
	Buck/jerk Acceleration/cruise/ deceleration										x	x										x
	Hesitation/stumble Acceleration										x	x										x
Surges Acceleration/cruise											x	x										x
12	Lack/loss of power Acceleration/cruise										x	x										x
13	Knocking/pinging Acceleration/cruise										x											x
14	Poor fuel economy									x	x											x
15	Emissions compliance									x	x											
16	High oil consumption/leakage											x	x	x								
17	Cooling system concerns Overheating													x	x	x						
18	Cooling system concerns Runs cold																					
19	Exhaust smoke																					
20	Fuel odor (in engine compartment)																					
21	Engine noise												x									
22	Vibration concerns (engine)													x								
23	A/C does not work sufficiently																					
24	A/C always on/ A/C compressor runs continuously																					
25	A/C does not cut off under wide open throttle conditions																					
26	Exhaust sulphur smell																					x
27	Fuel refill concerns																					
28	Fuel filling shut off issues																					
29	Intermittent concerns																					
30	Constant voltage																					
31	Spark plug condition																					x
32	Automatic transaxle concerns Upshift/downshift/ engagement																					
		(See 05-01 AUTOMATIC TRANSAXLE SYMPTOM TROUBLESHOOTING)																				

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GENERAL INFORMATION

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Using the symptom troubleshooting

- Symptom troubleshooting shows diagnostic procedures, inspection methods, and proper action to be taken for each trouble symptom.

	DESCRIPTION describes what kind of TROUBLE SYMPTOM	TROUBLE SYMPTOM																										
<p>POSSIBLE CAUSE describes possible point of malfunction</p> <p>STEP shows the order of troubleshooting.</p>	<p>14</p> <p>DESCRIPTION</p> <p>POSSIBLE CAUSE</p>	<p>Engine flares up or slips when upshifting or down shifting</p> <ul style="list-style-type: none"> • When accelerator pedal is depressed for driveway, engine speed increase but vehicle speed increase slowly. • When accelerator is depressed while driving, engine speed increases but vehicle not. <ul style="list-style-type: none"> • There is clutch slip because clutch is stuck or line pressure is low. <ul style="list-style-type: none"> — Clutch stuck, slippage (forward clutch, 3-4 clutch, 2-4 brake band, one-way clutch 1, one-way clutch 2) <ul style="list-style-type: none"> • Line pressure low • Malfunction or mis-adjustment of TP sensor • Malfunction of VSS • Malfunction of input/turbine speed sensor • Malfunction of sensor ground • Malfunction of shift solenoid A, B or C • Malfunction of TCC solenoid valve • Malfunction of body ground • Malfunction of throttle cable • Malfunction of throttle valve body — Poor operating of mechanical pressure <ul style="list-style-type: none"> • Selector lever position disparity • TR switch position disparity <p>Note</p> <ul style="list-style-type: none"> • Before following troubleshooting steps, make sure that Automatic Transaxle On-board Diagnostic and Automatic Transaxle Basic Inspection are conducted. 																										
<p>Reference item(s) for additional information to perform INSPECTION.</p> <p>INSPECTION describes the method to quickly determine the malfunctioning part(s).</p>	<p>Diagnostic procedure</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">STEP</th> <th style="width: 40%;">INSPECTION</th> <th style="width: 10%;"></th> <th style="width: 40%;">ACTION</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">1</td> <td rowspan="2"> <ul style="list-style-type: none"> • Is line pressure okay? </td> <td style="text-align: center;">Yes</td> <td>Go to next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any defective parts according to inspection results.</td> </tr> <tr> <td rowspan="2" style="text-align: center;">2</td> <td rowspan="2"> <ul style="list-style-type: none"> • Is shift point okay? (See 05-17-5 ROAD TEST) </td> <td style="text-align: center;">Yes</td> <td>Go to next step</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to symptom troubleshooting No.9 "Abnormal shift".</td> </tr> <tr> <td rowspan="2" style="text-align: center;">3</td> <td rowspan="2"> <ul style="list-style-type: none"> • Stop engine and turn ignition switch on. • Connect diagnostic tool to DLC-2. • Simulate SHIFT A, SHIFT B and SHIFT C PIDs for ON. • Is operating sound of shift solenoids heard? </td> <td style="text-align: center;">Yes</td> <td> <ul style="list-style-type: none"> • Overhaul control valve body and repair or replace any defective parts. (See ATX Workshop Manual GF4A-EL (1666-1A-99F)) • If problem remains, replace or overhaul transaxle and repair or replace defective parts. (See 05-17-15 AUTOMATIC TRANSAXLE REMOVEVAL/INSTALLATION) </td> </tr> <tr> <td style="text-align: center;">No</td> <td> <ul style="list-style-type: none"> • Inspect for bend, damage, corrosion or loose connection if shift solenoid A, B, or C terminal on ATX. • Inspect for shift solenoid mechanical stuck. (See 05-17-14 Inspection of Operation) • If shift solenoids are okay, inspect for open or short circuit between PCM connector terminal A, B or C. </td> </tr> <tr> <td style="text-align: center;">4</td> <td> <ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If okay, return to diagnostic index to service any additional symptoms. — If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. — If vehicle is repaired, troubleshooting completed. — If vehicle is not repaired or additional diagnostic information is not available, replace or reprogram PCM. </td> <td></td> <td></td> </tr> </tbody> </table>		STEP	INSPECTION		ACTION	1	<ul style="list-style-type: none"> • Is line pressure okay? 	Yes	Go to next step.	No	Repair or replace any defective parts according to inspection results.	2	<ul style="list-style-type: none"> • Is shift point okay? (See 05-17-5 ROAD TEST) 	Yes	Go to next step	No	Go to symptom troubleshooting No.9 "Abnormal shift".	3	<ul style="list-style-type: none"> • Stop engine and turn ignition switch on. • Connect diagnostic tool to DLC-2. • Simulate SHIFT A, SHIFT B and SHIFT C PIDs for ON. • Is operating sound of shift solenoids heard? 	Yes	<ul style="list-style-type: none"> • Overhaul control valve body and repair or replace any defective parts. (See ATX Workshop Manual GF4A-EL (1666-1A-99F)) • If problem remains, replace or overhaul transaxle and repair or replace defective parts. (See 05-17-15 AUTOMATIC TRANSAXLE REMOVEVAL/INSTALLATION) 	No	<ul style="list-style-type: none"> • Inspect for bend, damage, corrosion or loose connection if shift solenoid A, B, or C terminal on ATX. • Inspect for shift solenoid mechanical stuck. (See 05-17-14 Inspection of Operation) • If shift solenoids are okay, inspect for open or short circuit between PCM connector terminal A, B or C. 	4	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If okay, return to diagnostic index to service any additional symptoms. — If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. — If vehicle is repaired, troubleshooting completed. — If vehicle is not repaired or additional diagnostic information is not available, replace or reprogram PCM. 		
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		<p>ACTION describes the appropriate action to be taken according to the result (Yes/No) of the INSPECTION.</p> <p>How to perform ACTION is described in the relative material shown.</p> <p>Reference item(s) to perform ACTION.</p>																										

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GENERAL INFORMATION

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UNITS

Electric current	A (ampere)
Electric power	W (watt)
Electric resistance	ohm
Electric voltage	V (volt)
Length	mm (millimeter)
	in (inch)
Negative pressure	kPa (kilo pascal)
	mmHg (millimeters of mercury)
	inHg (inches of mercury)
Positive pressure	kPa (kilo pascal)
	kgf/cm ² (kilogram force per square centimeter)
	psi (pounds per square inch)
Number of revolutions	rpm (revolutions per minute)
Torque	N·m (Newton meter)
	kgf·m (kilogram force meter)
	kgf·cm (kilogram force centimeter)
	ft·lbf (foot pound force)
	in·lbf (inch pound force)
Volume	L (liter)
	US qt (U.S. quart)
	Imp qt (Imperial quart)
	ml (milliliter)
	cc (cubic centimeter)
	cu in (cubic inch)
	fl oz (fluid ounce)
Weight	g (gram)
	oz (ounce)

Conversion to SI Units (Système International d'Unités)

- All numerical values in this manual are based on SI units. Numbers shown in conventional units are converted from these values.

Rounding Off

- Converted values are rounded off to the same number of places as the SI unit value. For example, if the SI unit value is 17.2 and the value after conversion is 37.84, the converted value will be rounded off to 37.8.

Upper and Lower Limits

- When the data indicates upper and lower limits, the converted values are rounded down if the SI unit value is an upper limit and rounded up if the SI unit value is a lower limit. Therefore, converted values for the same SI unit value may differ after conversion. For example, consider 2.7 kgf/cm² in the following specifications:

210—260 kPa {2.1—2.7 kgf/cm², 30—38 psi}

270—310 kPa {2.7—3.2 kgf/cm², 39—45 psi}

- The actual converted values for 2.7 kgf/cm² are 264 kPa and 38.4 psi. In the first specification, 2.7 is used as an upper limit, so the converted values are rounded down to 260 and 38. In the second specification, 2.7 is used as a lower limit, so the converted values are rounded up to 270 and 39.

GENERAL INFORMATION

SERVICE CAUTIONS

id000000800200

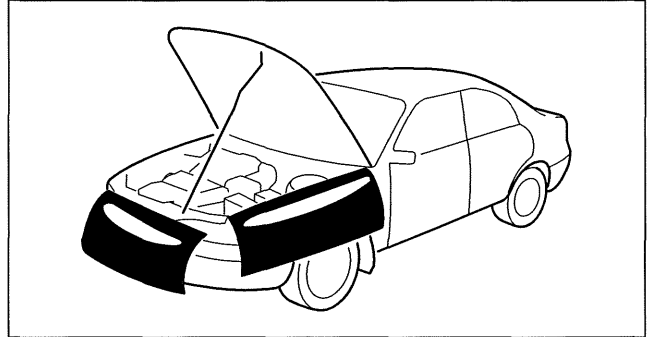
Injury/damage Prevention Precautions

- Depending on the vehicle, the cooling fan may operate suddenly even when the ignition is switched to off. Therefore, keep hands and tools away from the cooling fan even if the cooling fan is not operating to prevent injury to personnel or damage to the cooling fan. Always disconnect the negative battery cable when servicing the cooling fan or parts near the cooling fan.

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Protection of the Vehicle

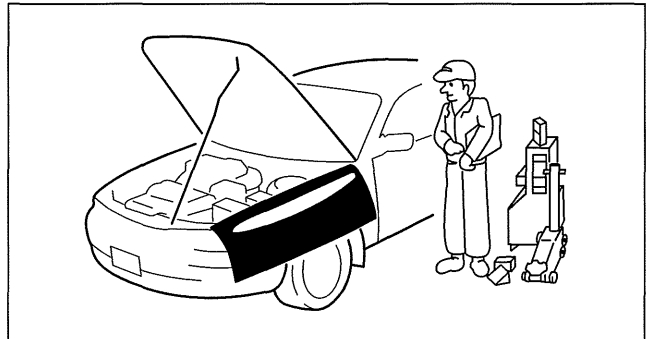
- Always be sure to cover fenders, seats and floor areas before starting work.



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Preparation of Tools and Measuring Equipment

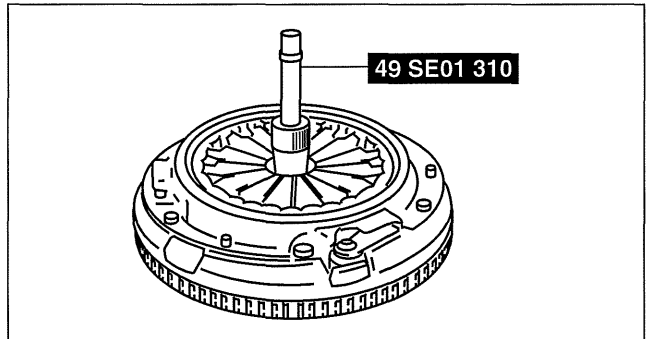
- Be sure that all necessary tools and measuring equipment are available before starting any work.



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Special Service Tools

- Use special service tools or equivalent when they are required.



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Malfunction Diagnosis System

- Use the Mazda modular diagnostic system (M-MDS) or equivalent for malfunction diagnosis.

GENERAL INFORMATION

Negative Battery Cable Disconnection/Connection

- Perform the following system initialization after disconnecting the negative battery cable.

SYSTEM	PAGE
Steering angle sensor	(See 09-18-20 STEERING ANGLE SENSOR INITIALIZATION PROCEDURE.)
Power window system	(See 09-12-17 POWER WINDOW INITIALIZATION PROCEDURE.)

Required procedure following negative battery cable disconnection

SAS control module Disconnect the negative battery cable and wait for 1 min. or more to allow the back-up power supply to deplete its stored power.
Clock and audio The clock and audio memory settings will be erased, therefore record the clock and audio settings prior to disconnecting, and reset them after reconnecting.
Audio The DTC memory will be erased, therefore record the DTC content prior to disconnecting.

Oil Leakage Inspection

- Use either of the following procedures to identify the type of oil that is leaking:

Using UV light (black light)

1. Remove any oil on the engine or transaxle/transmission.

Note

- Referring to the fluorescent dye instruction manual, mix the specified amount of dye into the engine oil or ATF (or transaxle/transmission oil).

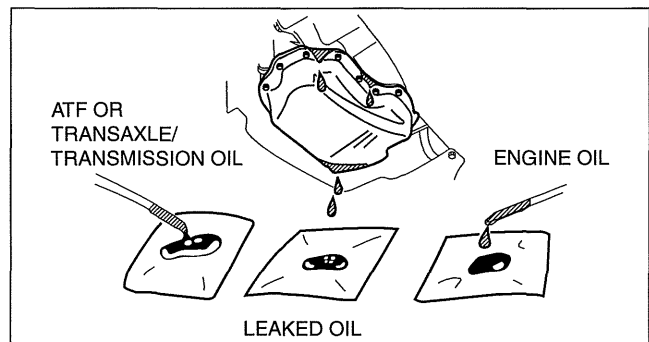
2. Pour the fluorescent dye into the engine oil or ATF (or transaxle/transmission oil).
3. Allow the engine to run for 30 min.
4. Inspect for dye leakage by irradiating with UV light (black light), and identify the type of oil that is leaking.
5. If no dye leakage is found, allow the engine to run for another 30 min. or drive the vehicle then reinspect.
6. Find where the oil is leaking from, then make necessary repairs.

Note

- To determine whether it is necessary to replace the oil after adding the fluorescent dye, refer to the fluorescent dye instruction manual.

Not using UV light (black light)

1. Gather some of the leaking oil using an absorbent white tissue.
2. Take samples of engine oil and ATF (or transaxle/transmission oil), both from the dipstick, and place them next to the leaked oil already gathered on the tissue.
3. Compare the appearance and smell, and identify the type of oil that is leaking.
4. Remove any oil on the engine or transaxle/transmission.
5. Allow the engine to run for 30 min.
6. Check the area where the oil is leaking, then make necessary repairs.

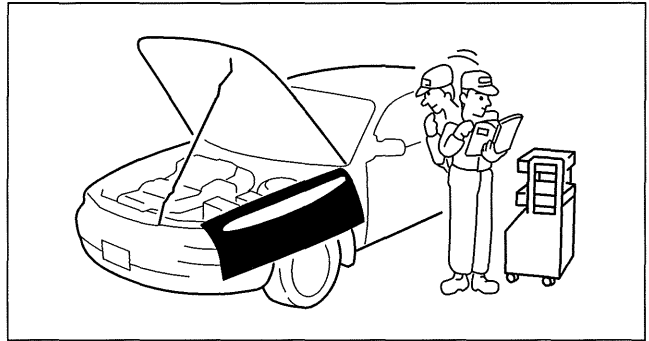


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GENERAL INFORMATION

Removal of Parts

- While correcting a problem, also try to determine its cause. Begin work only after first learning which parts and subassemblies must be removed and disassembled for replacement or repair. After removing the part, plug all holes and ports to prevent foreign material from entering.

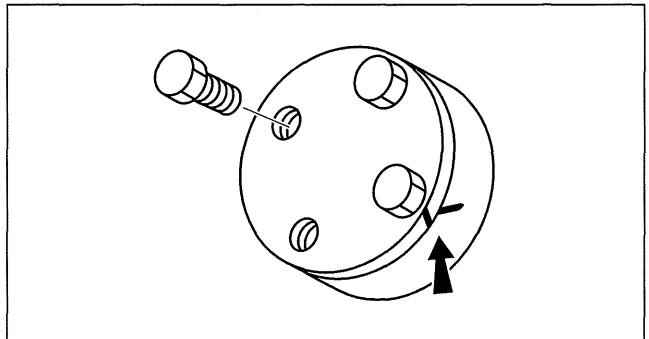


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Disassembly

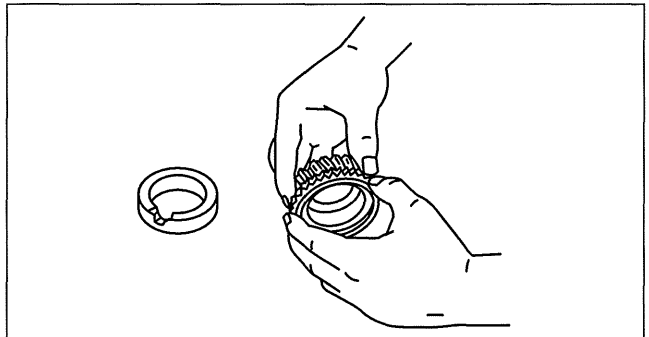
- If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be marked in a place that will not affect their performance or external appearance and identified so that reassembly can be performed easily and efficiently.



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Inspection During Removal, Disassembly

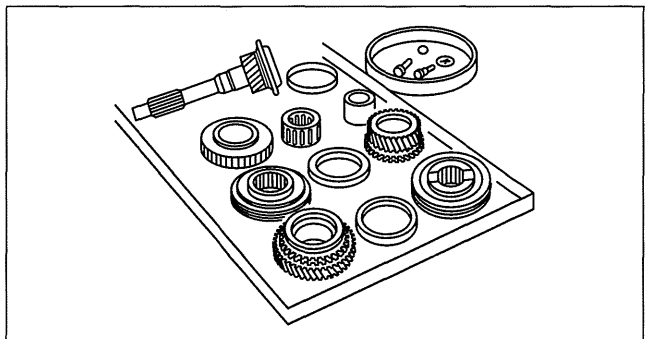
- When removed, each part should be carefully inspected for malfunction, deformation, damage and other problems.



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Arrangement of Parts

- All disassembled parts should be carefully arranged for reassembly.
- Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.



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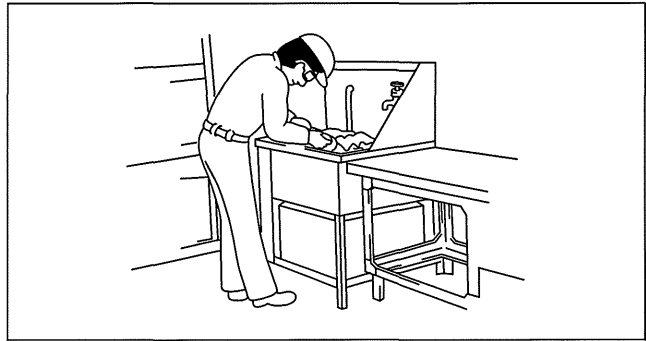
GENERAL INFORMATION

Cleaning of Parts

- All parts to be reused should be carefully and thoroughly cleaned in the appropriate method.

Warning

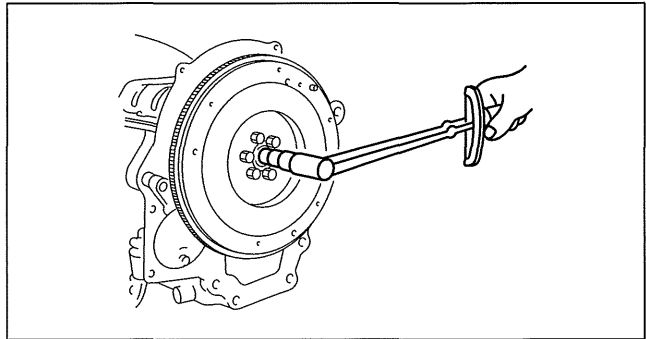
- **Using compressed air can cause dirt and other particles to fly out causing injury to the eyes. Wear protective eye wear whenever using compressed air.**



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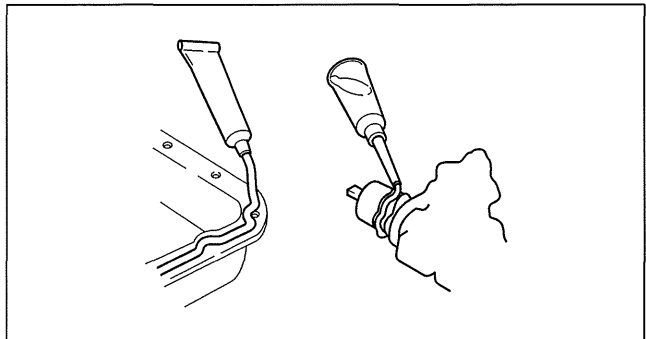
Reassembly

- Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.
- If removed, the following parts should be replaced with new ones:
 - Oil seals
 - Gaskets
 - O-rings
 - Lock washers
 - Cotter pins
 - Nylon nuts



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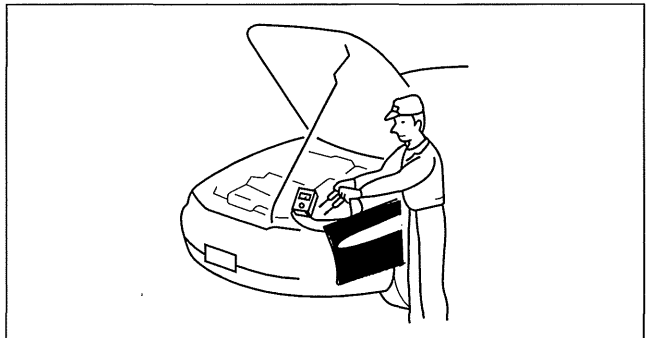
- Depending on location:
 - Sealant and gaskets, or both, should be applied to specified locations. When sealant is applied, parts should be installed before sealant hardens to prevent leakage.
 - Oil should be applied to the moving components of parts.
 - Specified oil or grease should be applied at the prescribed locations (such as oil seals) before reassembly.



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Adjustment

- Use suitable gauges and testers when making adjustments.

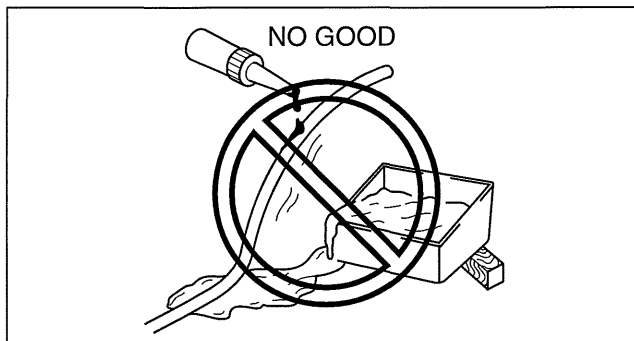


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GENERAL INFORMATION

Rubber Parts and Tubing

- Prevent gasoline or oil from getting on rubber parts or tubing.

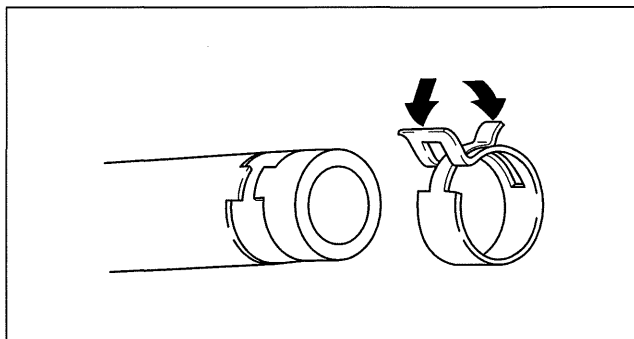


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Hose Clamps

- When reinstalling, position the hose clamp in the original location on the hose and squeeze the clamp lightly with large pliers to ensure a good fit.

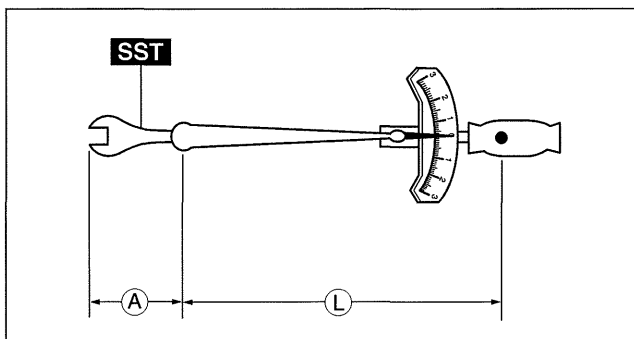


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Torque Formulas

- When using a torque wrench **SST** or equivalent combination, the written torque must be recalculated due to the extra length that the **SST** or equivalent adds to the torque wrench. Recalculate the torque by using the following formulas. Choose the formula that applies to you.

Torque Unit	Formula
N·m	$N \cdot m \times [L / (L + A)]$
kgf·m	$kgf \cdot m \times [L / (L + A)]$
kgf·cm	$kgf \cdot cm \times [L / (L + A)]$
ft·lbf	$ft \cdot lbf \times [L / (L + A)]$
in·lbf	$in \cdot lbf \times [L / (L + A)]$

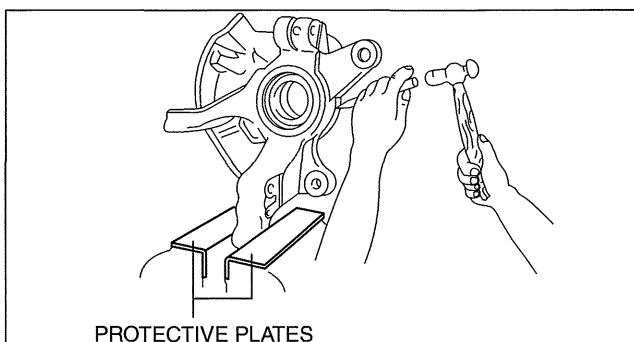


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A : The length of the **SST** past the torque wrench drive.
 L : The length of the torque wrench.

Vise

- When using a vise, put protective plates in the jaws of the vise to prevent damage to parts.



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GENERAL INFORMATION

Dynamometer

- When inspecting and servicing the power train on the dynamometer or speed meter tester, pay attention to the following:
 - Place a fan, preferably a vehicle-speed proportional type, in front of the vehicle.
 - Make sure the vehicle is in a facility with an exhaust gas ventilation system.
 - Since the rear bumper might deform from the heat, cool the rear with a fan. (Surface of the bumper must be below **70°C {158°F}**.)
 - Keep the area around the vehicle uncluttered so that heat does not build up.
 - Watch the water temperature gauge and don't overheat the engine.
 - Avoid added load to the engine and maintain normal driving conditions as much as possible.

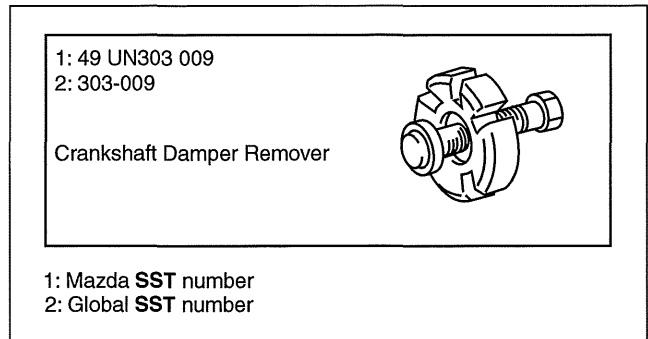
Note

- When only the front or rear wheels are rotated on a chassis dynamometer or equivalent, the ABS/DSC HU/CM determines that there is a malfunction in the ABS and illuminates the following lights:
 - Vehicles with ABS
 - ABS warning light
 - Brake system warning light
 - Vehicles with DSC
 - ABS warning light
 - Brake system warning light
 - DSC indicator light
- If the above lights are illuminated, dismount the vehicle from the chassis dynamometer and switch the ignition to LOCK. Then, switch the ignition to ON position, run the vehicle at 10 km/h or more and verify that the warning lights go out. In this case, a DTC will be stored in the memory. Clear the DTC from the memory by following the memory clearing procedure [ABS]/[DSC] in the on-board diagnostic system. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)(See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)

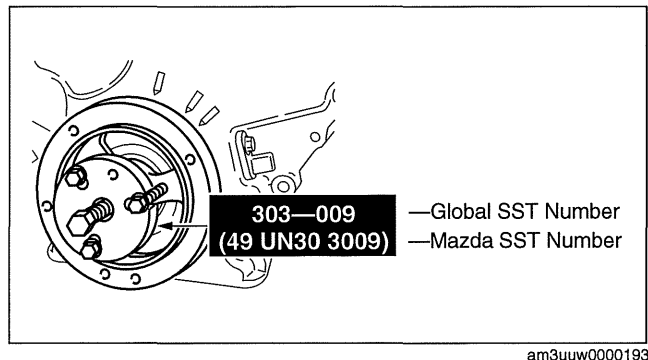
SST

- Some global **SST** or equivalent are used as **SSTs** necessary for engine repair. Note that these **SSTs** are marked with global **SST** numbers.
- Note that a global **SST** number is written together with a corresponding Mazda **SST** number as shown below.

Example (section **-60)



Example (except section **-60)



GENERAL INFORMATION

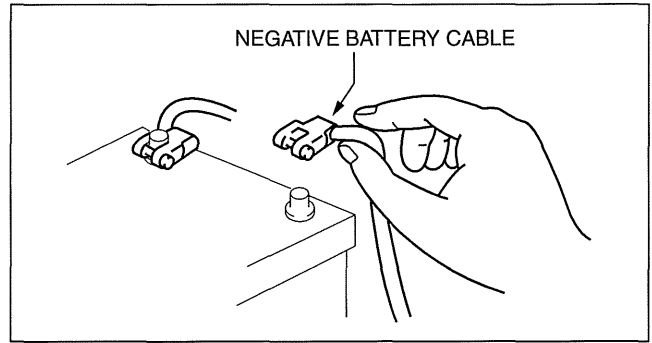
ELECTRICAL SYSTEM

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Electrical Parts

Battery cable

- Before disconnecting connectors or removing electrical parts, disconnect the negative battery cable.

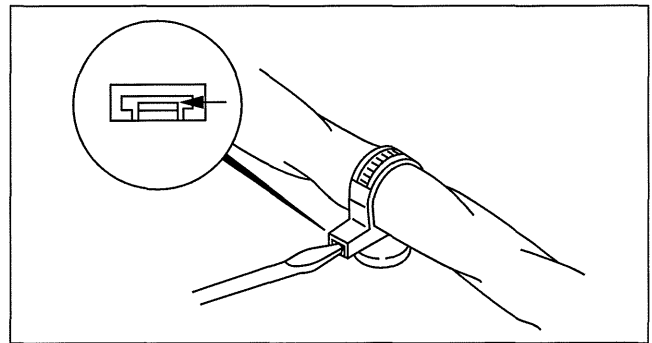


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Wiring Harness

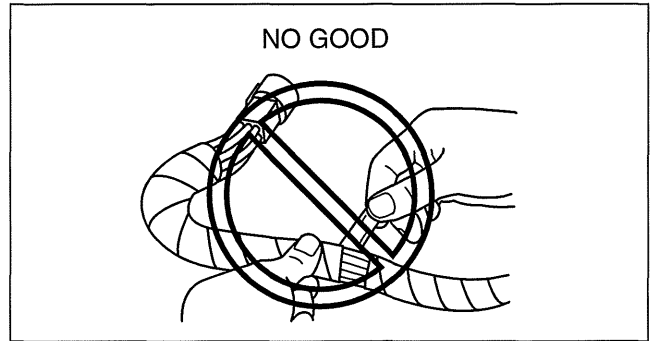
- To remove the wiring harness from the clip in the engine room, pry up the hook of the clip using a flathead screwdriver.



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Caution

- Do not remove the harness protective tape. Otherwise, the wires could rub against the body, which could result in water penetration and electrical shorting.

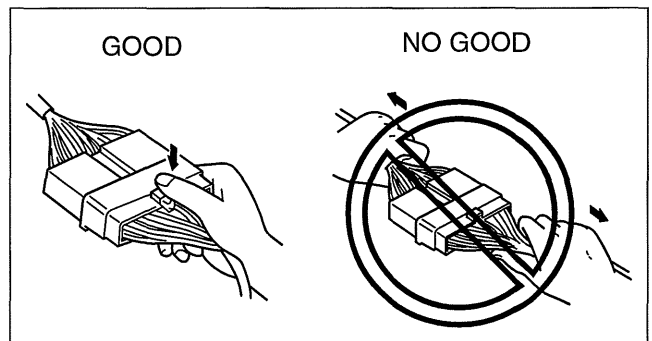


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Connectors

Disconnecting connectors

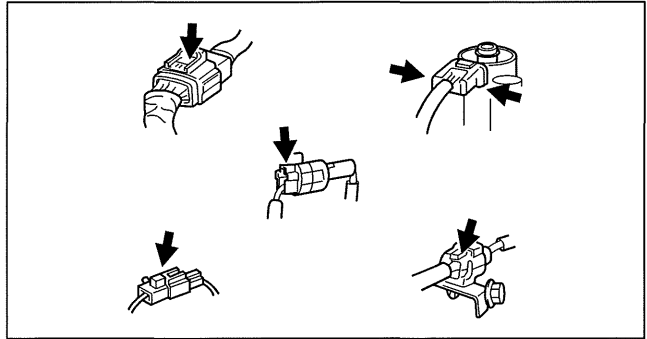
- When disconnecting connector, grasp the connectors, not the wires.



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GENERAL INFORMATION

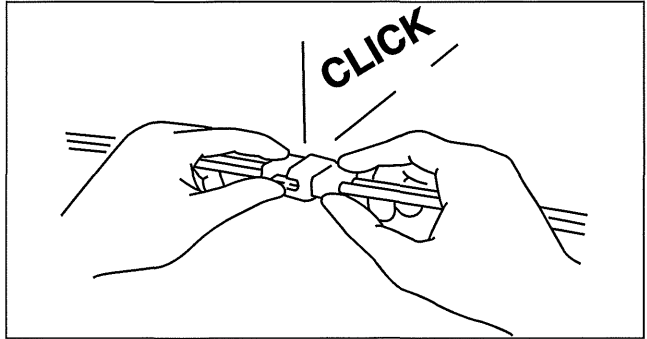
- Connectors can be disconnected by pressing or pulling the lock lever as shown.



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Locking connector

- When locking connectors, listen for a click indicating they are securely locked.

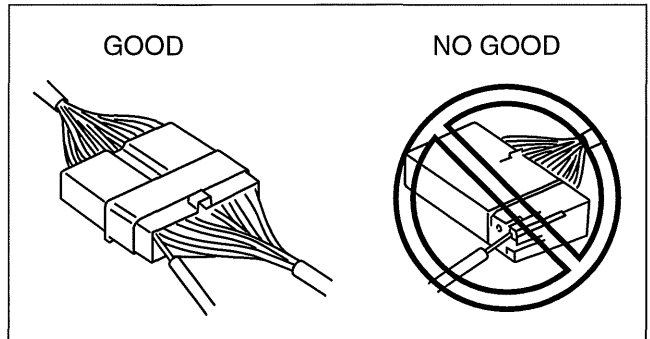


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Inspection

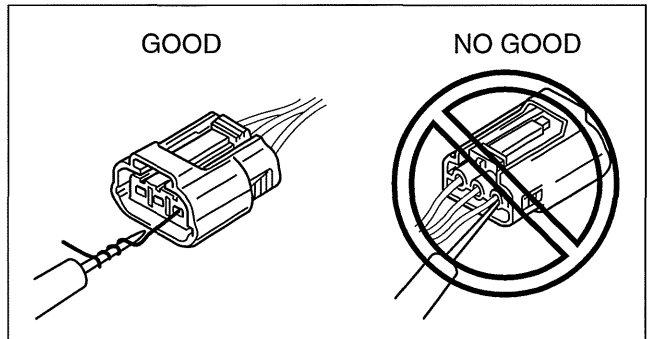
Caution

- To prevent damage to the terminal, wrap a thin wire around the tester probe before inserting into terminal.
- When a tester is used to inspect for continuity or measuring voltage, insert the tester probe from the wiring harness side.



am6xuw0000004

- Inspect the terminals of waterproof connectors from the connector side since they cannot be accessed from the wiring harness side.



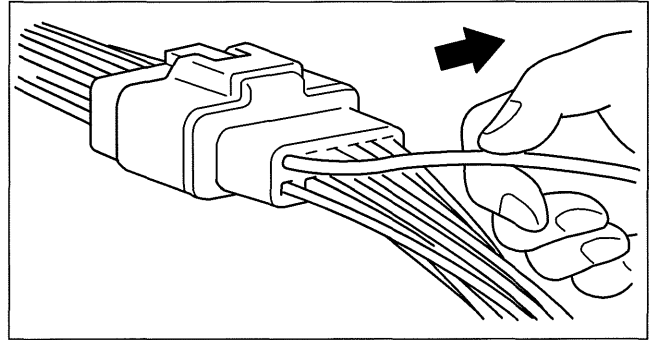
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GENERAL INFORMATION

Terminals

Inspection

- Pull lightly on individual wires to verify that they are secured in the terminal.

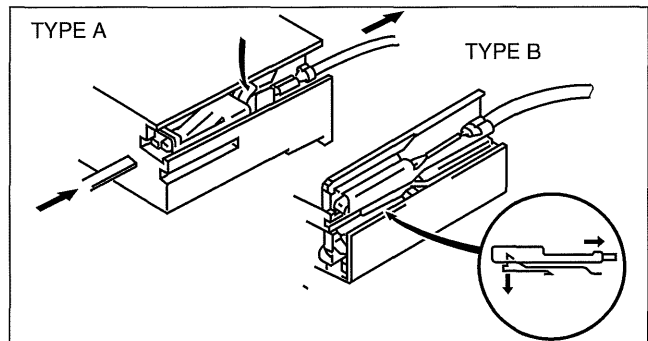


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Replacement

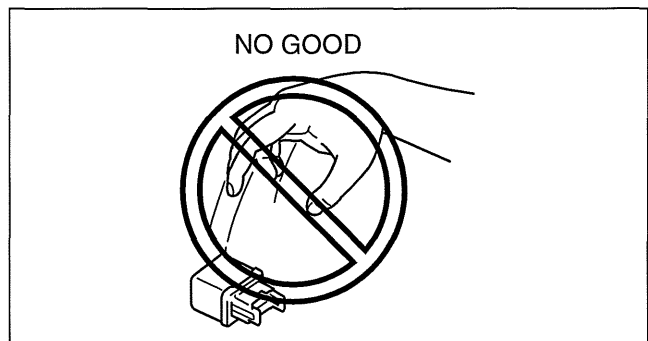
- Use the appropriate tools to remove a terminal as shown. When installing a terminal, be sure to insert it until it locks securely.
- Insert a thin piece of metal from the terminal side of the connector and with the terminal locking tab pressed down, pull the terminal out from the connector.



am3uuw0000531

Sensors, Switches, and Relays

- Handle sensors, switches, and relays carefully. Do not drop them or strike them against other objects.



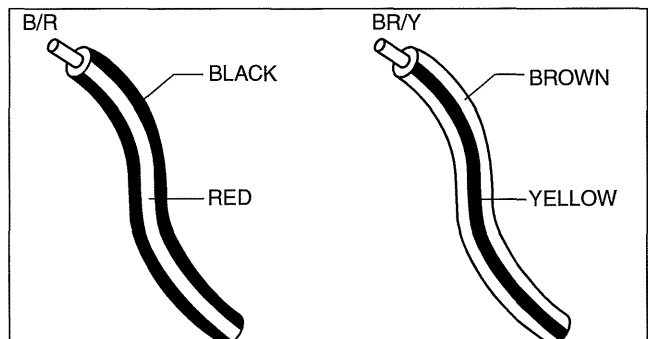
am6xuw0000004

Wiring Harness

Wiring color codes

- Two-color wires are indicated by a two-color code symbol.
- The first letter indicates the base color of the wire and the second the color of the stripe.

CODE	COLOR	CODE	COLOR
B	Black	O	Orange
BR	Brown	P	Pink
G	Green	R	Red
GY	Gray	V	Violet
L	Blue	W	White
LB	Light Blue	Y	Yellow
LG	Light Green	-	-



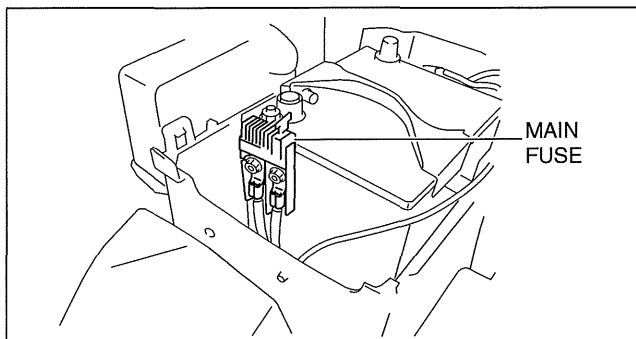
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GENERAL INFORMATION

Fuse

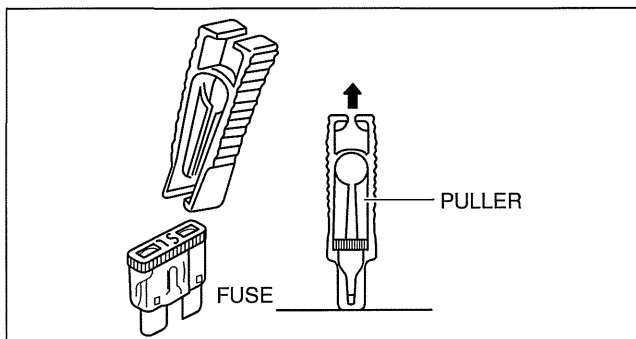
Replacement

- When replacing a fuse, be sure to replace it with one of the same capacity. If a fuse fails again, the circuit probably has a short and the wiring should be inspected.
- Be sure the negative battery terminal is disconnected before replacing a main fuse.



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- When replacing a pullout fuse, use the fuse puller.



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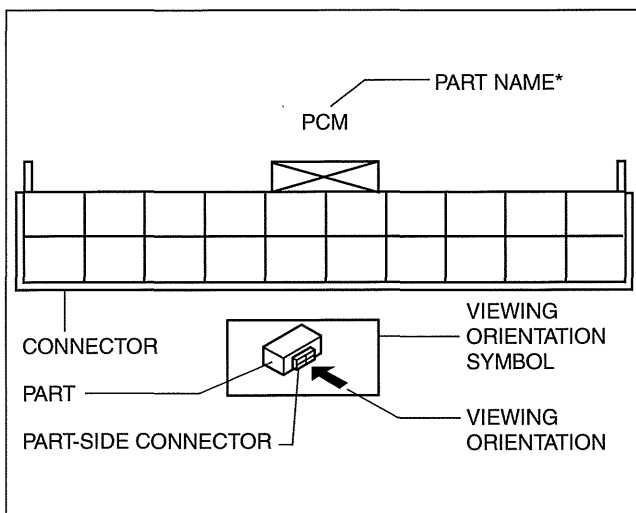
Direction of View for Connector

- The viewing direction of connectors is indicated with a symbol.
- The figures showing the viewing direction are the same as those used in Wiring Diagrams.
- The viewing directions are shown in the following three ways:

Part-side connector

The viewing direction of part-side connectors is from the terminal side.

* : Part names are shown only when there are multiple connector drawings.



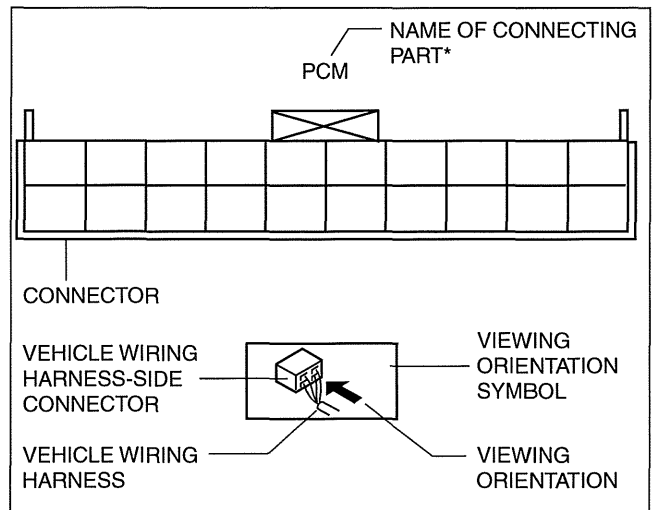
am6xuw0000160

GENERAL INFORMATION

Vehicle harness-side connector

The viewing direction of vehicle harness-side connectors is from the harness side.

* : Part names are shown only when there are multiple connector drawings.



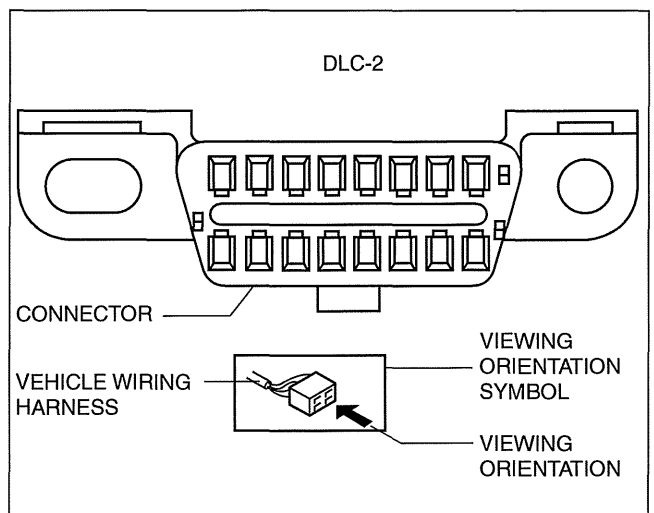
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Other

When it is necessary to show the terminal side of vehicle harness-side connectors, such as the following connectors, the viewing direction is from the terminal side.

- Main fuse block and the main fuse block relays
- Data link connector
- Check connector
- Relay box



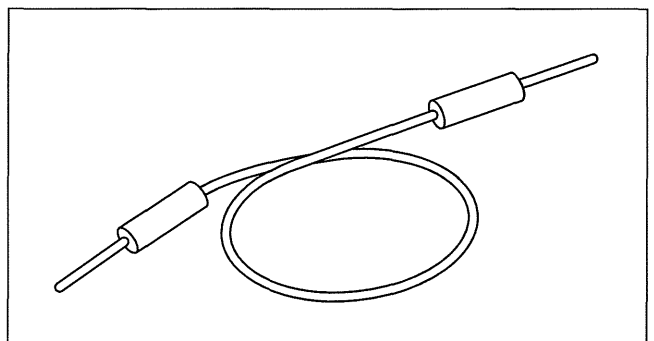
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Electrical Troubleshooting Tools

Jumper wire

Caution

- **Do not connect a jumper wire from the power source line to a body ground. This may cause burning or other damage to wiring harnesses or electronic components.**
- A jumper wire is used to create a temporary circuit. Connect the jumper wire between the terminals of a circuit to bypass a switch.

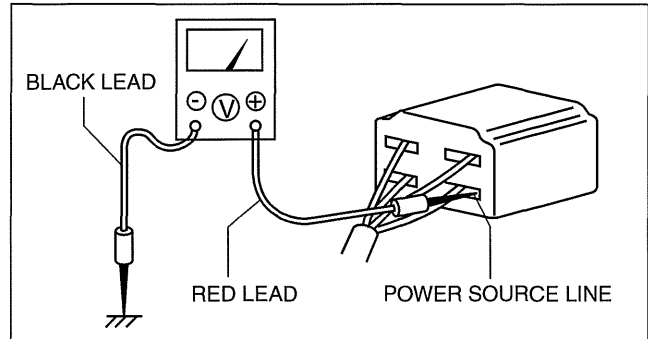


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GENERAL INFORMATION

Voltmeter

- The DC voltmeter is used to measure circuit voltage. A voltmeter with a range of **15 V or more** is used by connecting the positive (+) probe (red lead wire) to the point where voltage will be measured and the negative (-) probe (black lead wire) to a body ground.

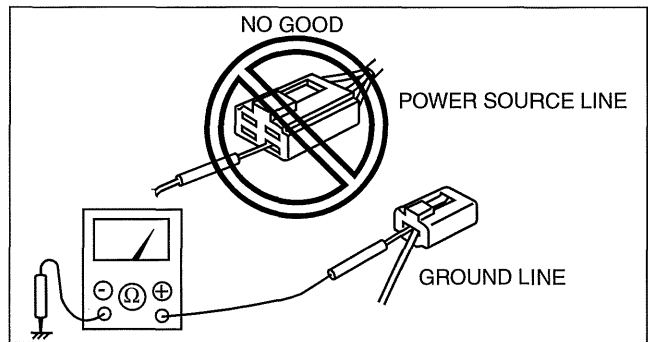


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Ohmmeter

Caution

- Do not connect the ohmmeter to any circuit where voltage is applied. This will damage the ohmmeter.**
- The ohmmeter is used to measure the resistance between two points in a circuit and to inspect for continuity and short circuits.

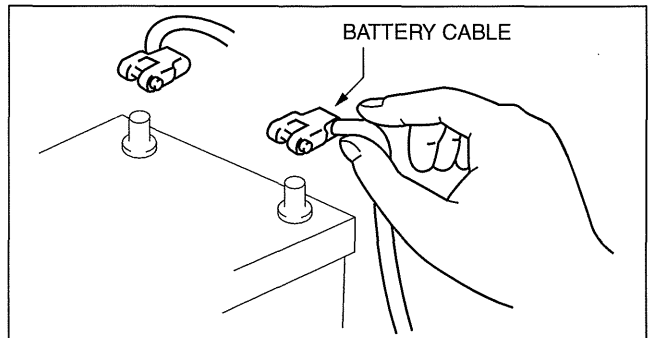


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Precautions Before Welding

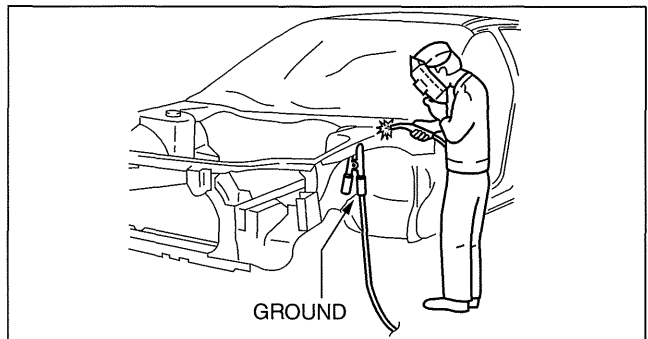
A vehicle has various electrical parts. To protect the parts from excessive current generated when welding, be sure to perform the following procedure.

- Switch the ignition to LOCK.
- Disconnect the battery cables.



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- Securely connect the welding machine ground near the welding area.
- Cover the peripheral parts of the welding area to protect them from weld spatter.



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GENERAL INFORMATION

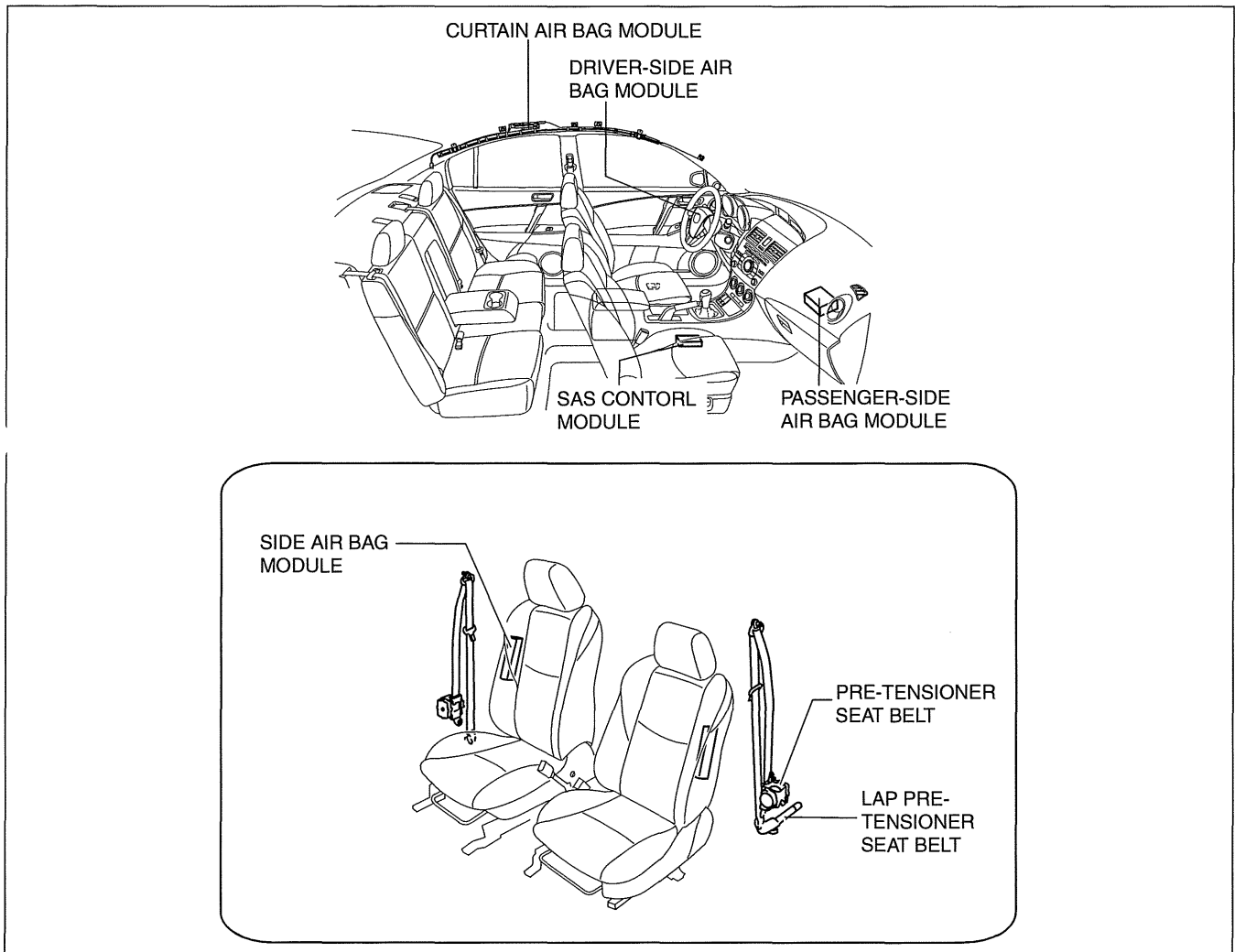
INSTALLATION OF RADIO SYSTEM

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The control module and control unit have been designed with sufficient attention to radio wave disturbances from the outside. However, observe the following precautions when installing the radio set to the vehicle to prevent adverse effects on the control module and control unit.

- Install the radio set and its antenna as far away as possible from the control module and control unit.
- The antenna feeder and power cable generate radio waves, therefore, keep them **100 mm {3.94 in} or more** from the control module, control unit, and wiring harness. If the antenna feeder and power cable cross over the wiring harness, place them perpendicular to the wiring harness.
- Do not install a high output radio set.
- Do not use the control module and control unit power source for the radio set. In addition, do not use the cigar lighter and accessory socket power source.
- Do not attach the antenna feeder or wiring harness of the radio set to the wiring harness, fuel pipe, or brake tube of the vehicle.
- Do not install any radio set-related devices in the area where the air bag module deploys to prevent a secondary accident if the air bag were to deploy.

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- After installing the radio set, perform a test transmission with the engine idling to verify that it does not affect engine control.

GENERAL INFORMATION

JACKING POSITIONS, VEHICLE LIFT (2 SUPPORTS) AND SAFETY STAND (RIGID RACK) POSITIONS

id000000800500

Jacking Positions

Warning

- Improperly jacking a vehicle is dangerous. The vehicle can slip off the jack and cause serious injury. Use only the correct front and rear jacking points and block the wheels.

- Use safety stands to support the vehicle after it has been lifted.

Front

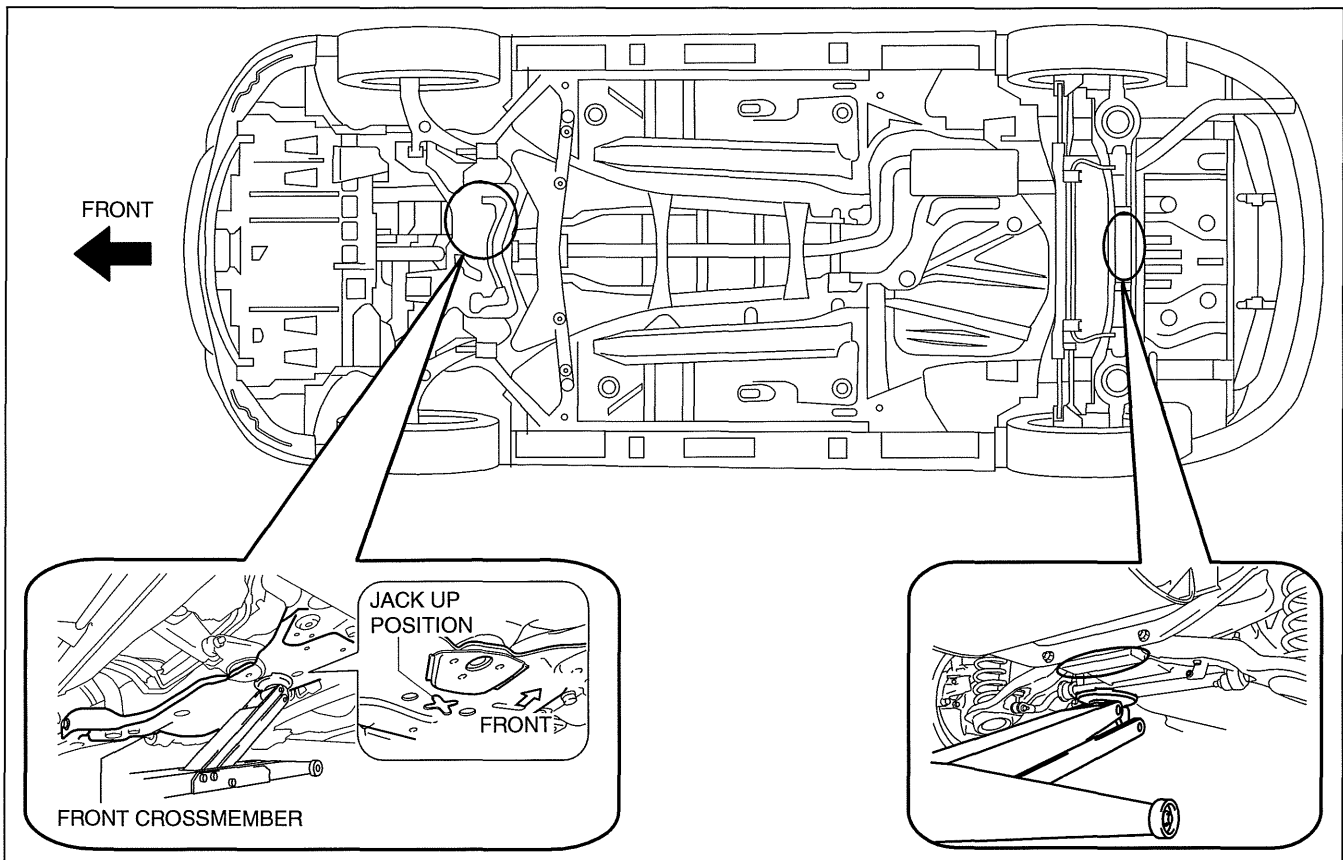
Note

- To prevent obstruction between the jack body and front bumper when the jack body is inserted, use a low-floor type jack.

- Near the center of the front crossmember.

Rear

- At the center of the rear crossmember.



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GENERAL INFORMATION

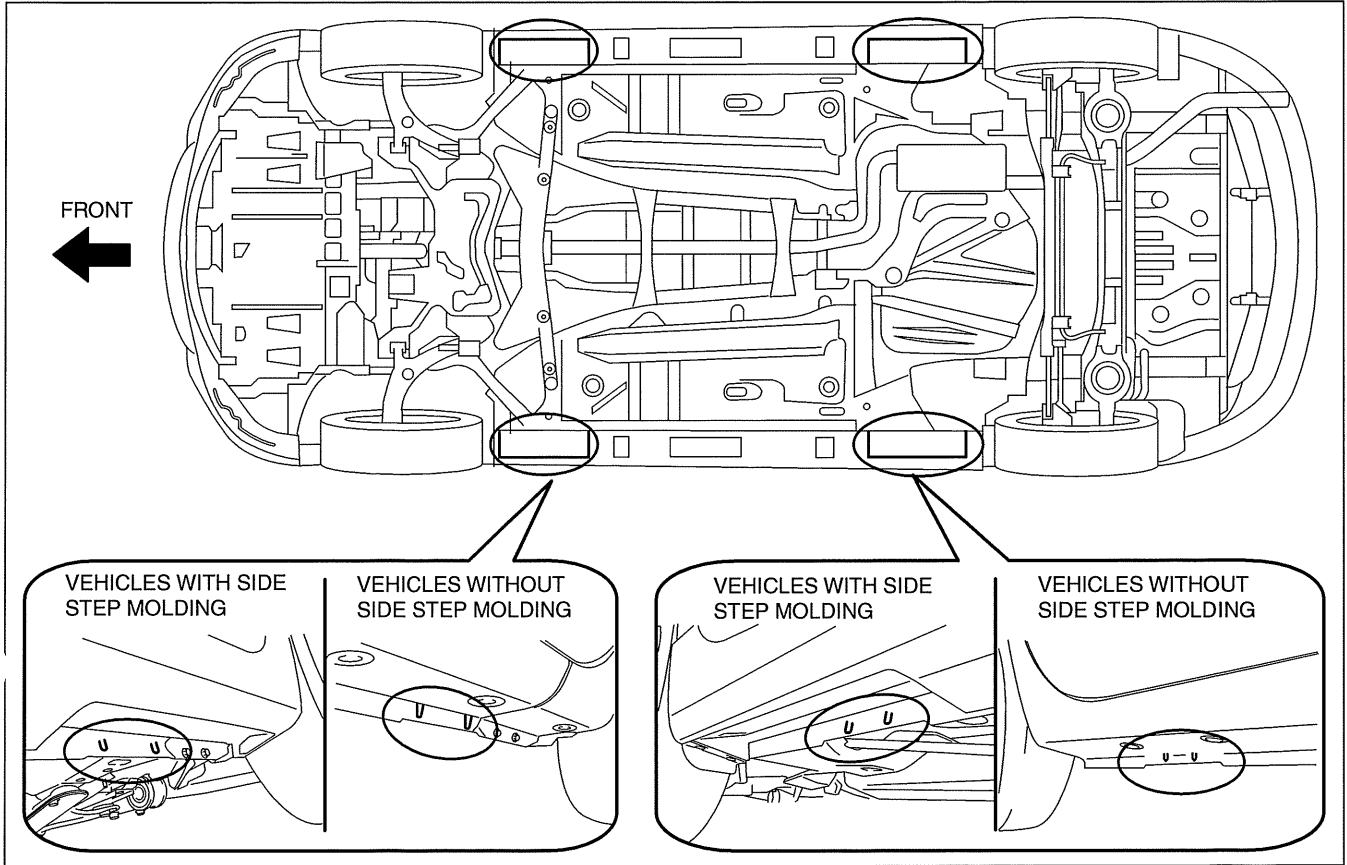
Vehicle Lift Positions, Safety Stand Positions Front and rear

Warning

- Lifting a vehicle is dangerous. The vehicle can slip off the lift and cause serious injury and/or vehicle damage. Make sure that the vehicle is on the lift horizontally by adjusting the height of support at the end of the arm of the lift.

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- Both sides of the vehicle, on side sills.



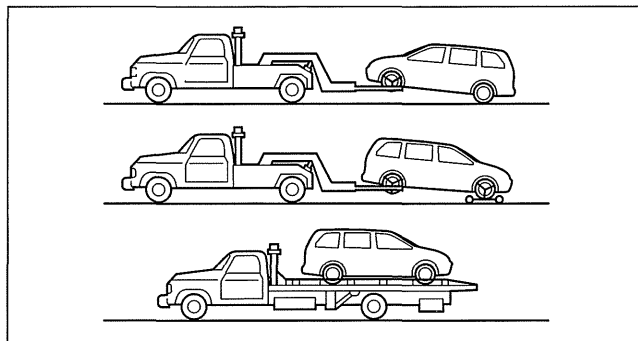
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GENERAL INFORMATION

TOWING

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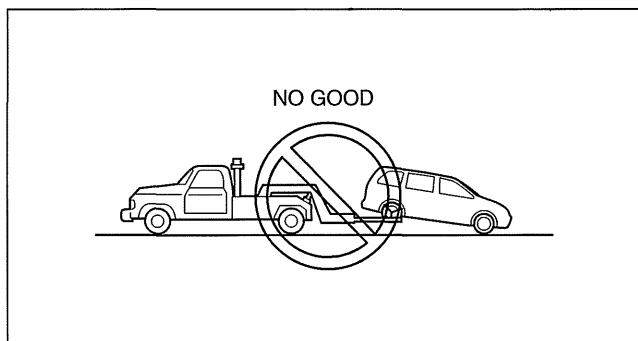
- Proper lifting and towing are necessary to prevent damage to the vehicle. Government and local laws must be followed.
- A towed vehicle usually should have its drive wheel (front wheels) off the ground. If excessive damage or other conditions prevent this, use wheel dollies.
- When towing with the rear wheels on the ground, release the parking brake.



b3e0000w007

Caution

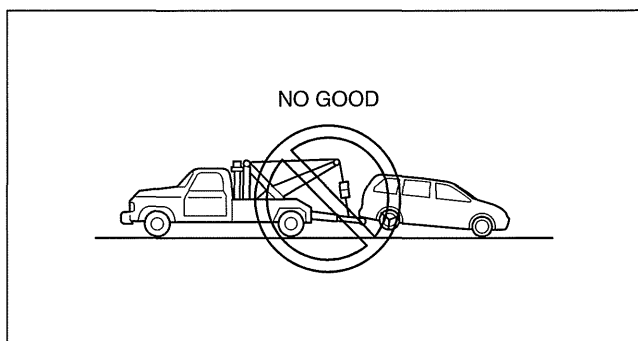
- **Do not tow the vehicle pointed backward with driving wheels on the ground. This may cause internal damage to the transaxle.**



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Caution

- **Do not tow with sling-type equipment. This could damage your vehicle. Use wheel-lift or flatbed equipment.**

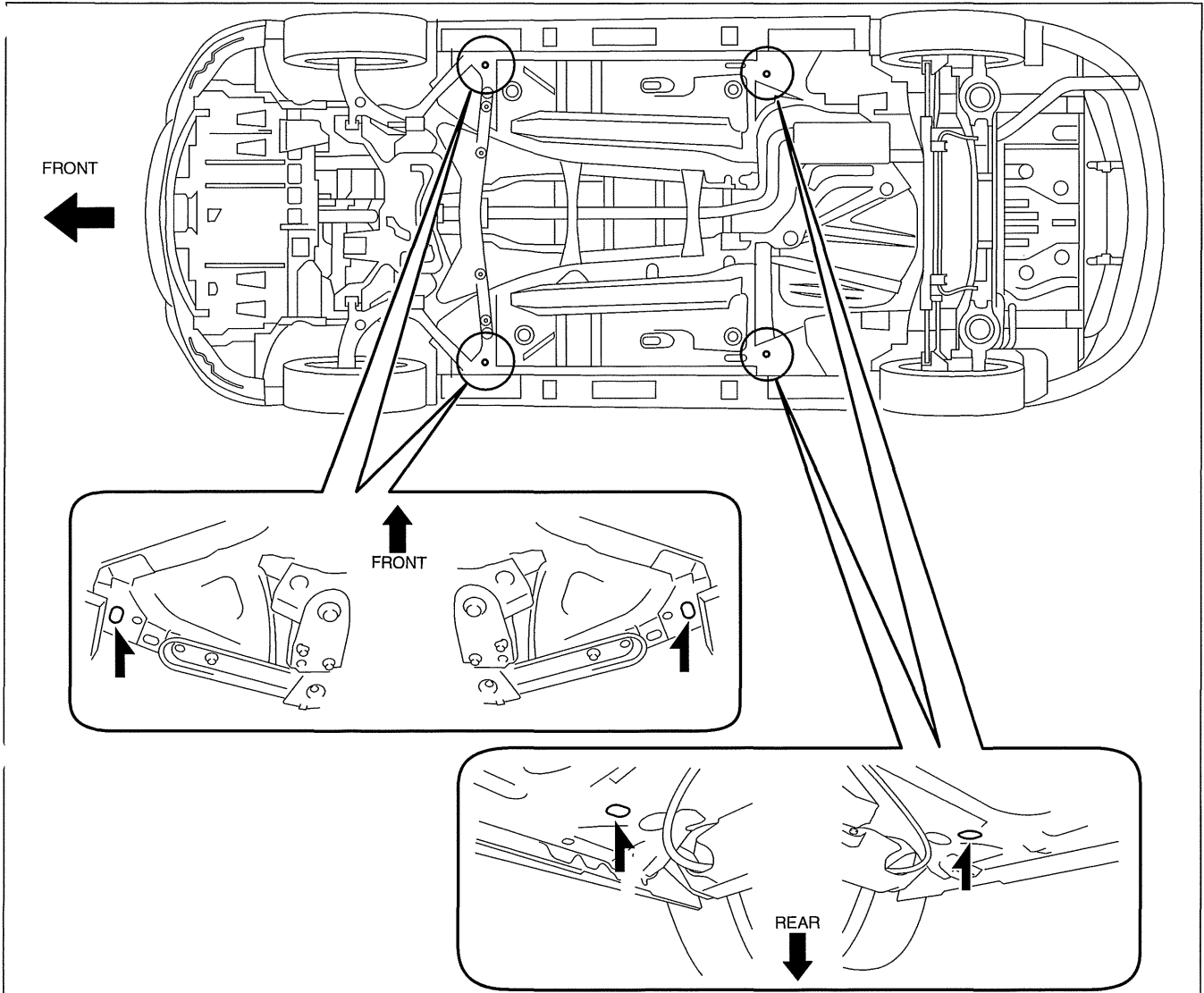


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GENERAL INFORMATION

Vehicle Securing Position

- When transporting the vehicle by flat bed tow truck or trailer, secure the vehicle to the trailer using the holes and left tiedown loop shown in the figure.

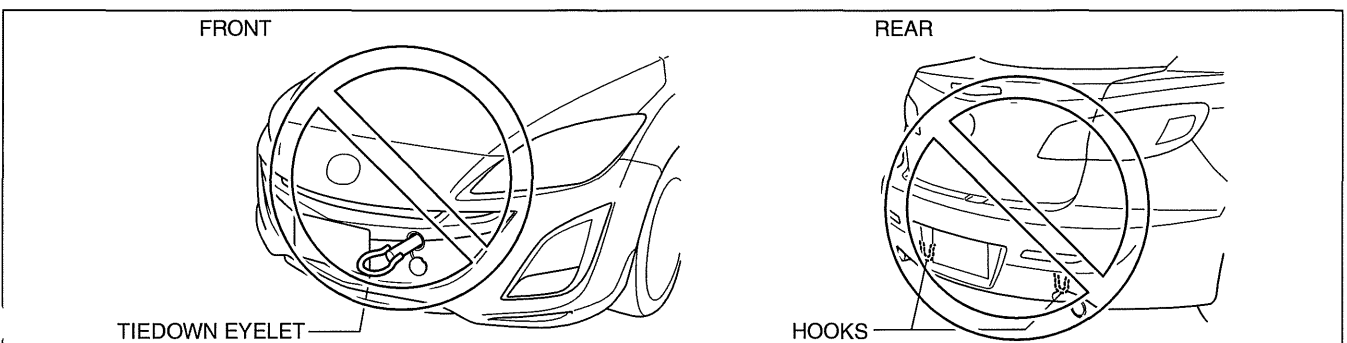


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Caution

- To prevent damage to the vehicle, do not use the tiedown eyelet (front) and the left/right tiedown loops (rear) for towing the vehicle using another vehicle.
- Do not use the tie-down eyelet and rear hook for tying down the vehicle onto a trailer and flatbed tow truck. It may cause damage to the vehicle.



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Note

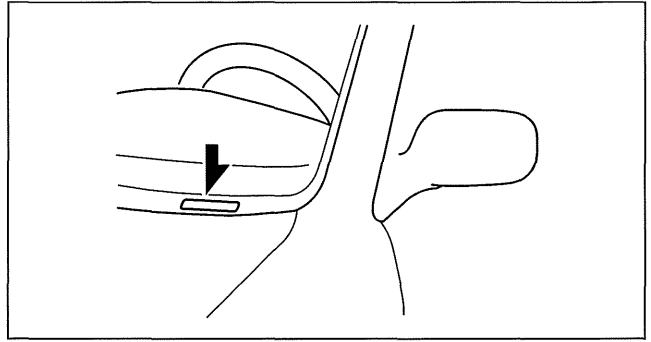
- The tiedown eyelet (front) and the tiedown loops (rear) are used only when the vehicle is transported by ship.

GENERAL INFORMATION

IDENTIFICATION NUMBER LOCATIONS

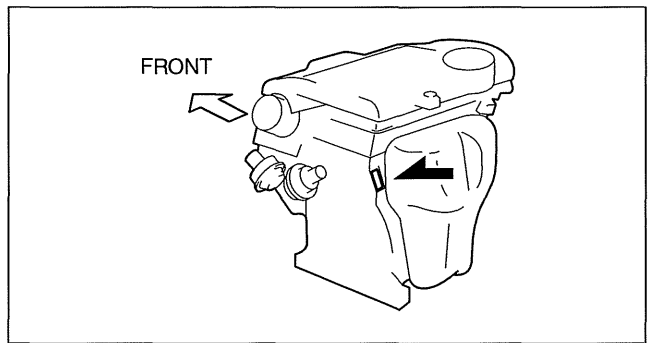
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Vehicle Identification Number (VIN)



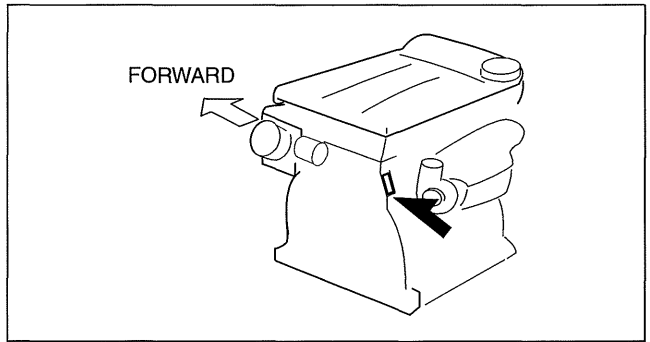
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Engine Identification Number LF, L5



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L3 WITH TC



acxuuw00003999

GENERAL INFORMATION

SAE STANDARDS

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- In accordance with new regulations, SAE (Society of Automotive Engineers) standard names and abbreviations are now used in this manual. The table below lists the names and abbreviations that have been used in Mazda manuals up to now and their SAE equivalents.

SAE Standard			SAE Standard		
Abbreviation	Name	Remark	Abbreviation	Name	Remark
AP	Accelerator Pedal		MIL	Malfunction Indicator Lamp	
APP	Accelerator Pedal Position		MAP	Manifold Absolute Pressure	
ACL	Air Cleaner		MAF sensor	Mass Air Flow Sensor	
A/C	Air Conditioning		MFL	Multiport Fuel Injection	
A/F sensor	Air Fuel Ratio Sensor		OBD	On-board Diagnostic System	
BARO	Barometric Pressure		OL	Open Loop	
B+	Battery Positive Voltage		OC	Oxidation Catalytic Converter	
CMP sensor	Camshaft Position Sensor		O2S	Oxygen sensor	
CAC	Charge Air Cooler		PNP	Park/Neutral Position	
CLS	Closed Loop System		PSP	Power Steering Pressure	
CTP	Closed Throttle Position		PCM	Powertrain Control Module	#3
CPP	Clutch Pedal Position		PAIR	Pulsed Secondary Air Injection	Pulsed injection
CIS	Continuous Fuel Injection System		AIR	Secondary Air Injection	Injection with air pump
CKP sensor	Crankshaft Position Sensor		SAPV	Secondary Air Pulse Valve	
DLC	Data Link Connector		SFI	Sequential Multiport Fuel Injection	
DTM	Diagnostic Test Mode	#1	3GR	Third Gear	
DTC	Diagnostic Test Code (s)		TWC	Three Way Catalytic Converter	
DI	Distributor Ignition		TB	Throttle Body	
DLI	Distributorless Ignition		TP sensor	Throttle Position Sensor	
EI	Electronic Ignition	#2	TCC	Torque Converter Clutch	
ECT	Engine Coolant Temperature		TCM	Transmission (Transaxle) Control Module	
EM	Engine Modification		TR	Transmission (Transaxle) Range	
EVAP	Evaporative Emission		TC	Turbocharger	
EGR	Exhaust Gas Recirculation		VSS	Vehicle Speed Sensor	
FC	Fan Control		VR	Voltage Regulator	
FF	Flexible Fuel		VAF sensor	Volume Air Flow Sensor	
4GR	Fourth Gear		WU-TWC	Warm Up Three Way Catalytic Converter	#4
GEN	Generator		WOT	Wide Open Throttle	
GND	Ground				
HO2S	Heated Oxygen Sensor	With heater			
IAC	Idle Air Control				
IAT	Intake Air Temperature				
KS	Knock Sensor				

#1: Diagnostic trouble codes depend on the diagnostic test mode.

#2: Controlled by the PCM

#3: Device that controls engine and powertrain

#4: Directly connected to exhaust manifold

GENERAL INFORMATION

id00000801000

ABBREVIATIONS

ABS	Antilock Brake System
ACC	Accessories
AFS	Adaptive Front Lighting System
ALC	Auto Level Control
ALR	Automatic Locking Retractor
ATF	Automatic Transaxle Fluid
ATX	Automatic Transaxle
BDC	Bottom Dead Center
CAN	Controller Area Network
CCM	Comprehensive Component Monitor
CM	Control Module
CV	Canister Vent
DIS	Drive Information System
DC	Drive Cycle
DRL	Day Time Running Light
DSC	Dynamic Stability Control
EBD	Electronic Brakeforce Distribution
EHPAS	Electro Hydraulic Power Assist Steering
ELR	Emergency Locking Retractor
EX	Exhaust
GPS	Global Positioning System
HI	High
HU	Hydraulic Unit
IDS	Integrated Diagnostic Software
IG	Ignition
IN	Intake
INT	Intermittent
KOEO	Key On Engine Off
KOER	Key On Engine Running
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LF	Left Front
LH	Left Hand
LO	Low
LR	Left Rear
M	Motor
MAX	Maximum
MIN	Minimum
MTX	Manual Transaxle
NVRAM	Non-Volatile Random Access Memory
OCV	Oil Control Valve
PAD	Passenger Air Bag Deactivation
PDS	Portable Diagnostic Software
PID	Parameter Identification
POWER MOS FET	Power Metal Oxide Semiconductor Field Effect Transistor
P/W CM	Power Window Control Module
RF	Right Front
RH	Right Hand
RR	Right Rear
SAS	Sophisticated Air Bag Sensor
SST	Special Service Tool
SW	Switch
TCS	Traction Control System

GENERAL INFORMATION

TDC	Top Dead Center
TFT	Transaxle Fluid Temperature
TNS	Tail Number Side Lights
TPMS	Tire Pressure Monitoring System
1GR	First Gear
2GR	Second Gear
3GR	Third Gear
4GR	Fourth Gear
5GR	Fifth Gear

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PRE-DELIVERY INSPECTION

id000000801100

Pre-Delivery Inspection Table

Exterior

INSPECT and **ADJUST**, if necessary, the following items to specification:

- Glass, exterior bright metal and paint for damage
- Wheel lug nuts
- All weatherstrips for damage or detachment
- Tire pressures
- Headlight cleaner and fluid level (if equipped)
- Operation of hood release and lock
- Operation of trunk lid and fuel-filler lid opener
- Door operation and alignment including side door and back door
- Headlight aiming

INSTALL the following parts:

- Flap (if equipped)

Under hood—engine off

INSPECT and **ADJUST**, if necessary, the following items to specification:

- Fuel, engine coolant, and hydraulic lines, fittings, connections, and components for leaks
- Engine oil level
- Power steering fluid level
- Brake and clutch fluid level
- Windshield washer reservoir fluid level
- Coolant level and specific gravity
- Tightness of water hose clamps
- Tightness of battery terminals, electrolyte level and specific gravity
- Tension of drive belt

Interior

INSTALL the following items:

- Fuse for accessories

INSPECT the operations of the following items:

- Seat controls (slide and recline) and headrests
- Folding rear seat
- Door locks, including childproof door locks
- Seat belts and warning system
- Ignition switch and steering lock
- Transaxle range switch
- Warning buzzers
- Ignition key reminder alarm
- Air bag system using warning light
- Cruise control system (if equipped)
- Power door lock
- Shift-lock system (if equipped)
- Starter interlock
- All lights including warning, and indicator lights
- Horn, wipers, and washers
- Wiper blades performance
- Clean wiper blades and windshield, if necessary
- Audio system
- Cigarette lighter and clock
- Power windows (if equipped)
- Heater, defroster, and air conditioner at various mode selections (if equipped)

GENERAL INFORMATION

INSPECT the following items:

- Presence of spare fuse
- Upholstery and interior finish

INSPECT and **ADJUST**, if necessary, the following items:

- Operation and fit of windows
- Pedal height and free play of clutch and brake pedal
- Parking brake

Under hood—engine running at operating temperature

INSPECT the following items:

- Automatic transaxle fluid level
- Operation of idle-up system for electrical load, air conditioner or power steering (if equipped)
- Ignition timing
- Idle speed
- Operation of throttle position sensor

On hoist

INSPECT the following items:

- Manual transaxle oil level
- Underside fuel, coolant and hydraulic lines, fittings, connections, and components for leaks
- Tires for cuts or bruises
- Steering linkage, suspension, exhaust system, and all underside hardware for looseness or damage

Road test

INSPECT the following items:

- Brake operation
- Operation of gauges
- Engine general performance
- Emergency locking retractors and automatic locking retractors
- Cruise control system (if equipped)
- Operation of meters and gauges, squeaks, rattles, and abnormal noises

After road test

INSPECT for necessary owner information materials, tools, and spare tire in vehicle
The following items must be completed just before delivery to your customer.

- Load test battery and charge if necessary (Load test result: Volts)
- Adjust tire pressure to specification
- Install fuses for accessories

Initial setting of Maintenance Monitor

ADJUST maintenance interval

- Set distance of Tire rotation
- Set days and distance of Service due

SCHEDULED MAINTENANCE

id000000801200

Scheduled Maintenance Table for U.S.A., CANADA and Puerto Rico

Schedule 1: (Normal Driving Conditions) for U.S.A.

- The vehicle is mainly operated where none of the “unique driving conditions” apply.

Maintenance Interval	Number of months or kilometers (miles), whichever comes first								
	Months	6	12	18	24	30	36	42	48
	×1000 km	12	24	36	48	60	72	84	96
	×1000 miles	7.5	15	22.5	30	37.5	45	52.5	60
ENGINE									
Engine valve clearance	Audibly inspect every 120,000 km (75,000 miles), if noisy, adjust								
Drive belts					I				
Engine oil	R	R	R	R	R	R	R	R	R
Engine oil filter	R	R	R	R	R	R	R	R	R
COOLING SYSTEM									
Engine coolant	FL22 type ^{*1}	Replace at first 192,000 km (120,000 miles) or 10 years; after that, every 96,000 km (60,000 miles) or 5 years							
	Others	Replace at first 96,000 km (60,000 miles) or 4 years; after that, every 2 years							

GENERAL INFORMATION

Maintenance Interval	Number of months or kilometers (miles), whichever comes first												
	Months	6	12	18	24	30	36	42	48				
	×1000 km	12	24	36	48	60	72	84	96				
	×1000 miles	7.5	15	22.5	30	37.5	45	52.5	60				
FUEL SYSTEM													
Air cleaner element						R							
Fuel lines and hoses *2					I								I
Hoses and tubes for emission *2													I
IGNITION SYSTEM													
Spark plugs	Replace every 120,000 km (75,000 miles)												
CHASSIS and BODY													
Brake lines, hoses and connections					I								I
Disc brakes			I			I			I				I
Tire (Rotation)	Rotate every 12,000 km (7,500 miles)												
Steering operation and linkages					I								I
Front and rear suspension, ball joints and wheel bearing axial play					I								I
Driveshaft dust boots					I								I
Bolts and nuts on chassis and body					T								T
Exhaust system and heat shields	Inspect every 72,000 km (45,000 miles) or 5 years												
All locks and hinges	L	L	L	L	L	L	L	L	L	L	L	L	L
AIR CONDITIONER SYSTEM													
Cabin air filter						R							R

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Chart symbols

I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.

R: Replace

L: Lubricate

T: Tighten

Remarks

- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.
- *1: Use FL22 type coolant in vehicles with the inscription "FL22" on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.
- *2: According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage/kilometer period to ensure long-term reliability.

Schedule 2: CANADA, Puerto Rico, and (Unique Driving Conditions) for U.S.A.

- Repeated short-distance driving
- Driving in dusty conditions
- Driving with extended use of brakes
- Driving in areas where salt or other corrosive materials are used
- Driving on rough or muddy roads
- Extended periods of idling or low-speed operation
- Driving for long periods in cold temperatures or extremely humid climates
- Driving in extremely hot conditions
- Driving in mountainous conditions continually

Maintenance Interval	Number of months or kilometers (miles), whichever comes first												
	Months	4	8	12	16	20	24	28	32	36	40	44	48
	×1000 km	8	16	24	32	40	48	56	64	72	80	88	96
	×1000 miles	5	10	15	20	25	30	35	40	45	50	55	60
ENGINE													
Engine valve clearance	Audibly inspect every 120,000 km (75,000 miles), if noisy, adjust												
Drive belts								I					
Engine oil	Puerto Rico	Replace every 5,000 km (3,000 miles) or 3 months											
	Others	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter	R	R	R	R	R	R	R	R	R	R	R	R	R

GENERAL INFORMATION

Maintenance Interval	Number of months or kilometers (miles), whichever comes first												
	Months	4	8	12	16	20	24	28	32	36	40	44	48
	×1000 km	8	16	24	32	40	48	56	64	72	80	88	96
	×1000 miles	5	10	15	20	25	30	35	40	45	50	55	60
COOLING SYSTEM													
Engine coolant	FL22 type *1	Replace at first 192,000 km (120,000 miles) or 10 years; after that, every 96,000 km (60,000 miles) or 5 years											
	Others	Replace at first 96,000 km (60,000 miles) or 4 years; after that, every 2 years											
Engine coolant level													
FUEL SYSTEM													
Air cleaner element	Puerto Rico						R						R
	Others							R					
Fuel lines and hoses *2													
Hoses and tubes for emission *2													
IGNITION SYSTEM													
Spark plugs (for LF/L5 engine)		Replace every 120,000 km (75,000 miles)											
Spark plugs (for L3 WITH TC engine)	USA	Replace every 96,000 km (60,000 miles)											
	Others *3	Replace every 120,000 km (75,000 miles)											
ELECTRICAL SYSTEM													
Function of all lights													
CHASSIS and BODY													
Brake lines, hoses and connections													
Brake fluid level													
Disc brakes													
Tire (Rotation)		Rotate every 8,000 km (5,000 miles)											
Tire inflation pressure and tire wear													
Steering operation and linkages													
Power steering fluid level													
Front and rear suspension, ball joints and wheel bearing axial play													
Driveshaft dust boots													
Bolts and nuts on chassis and body							T						T
Exhaust system and heat shields		Inspect every 72,000 km (45,000 miles) or 5 years											
All locks and hinges		L	L	L	L	L	L	L	L	L	L	L	L
Washer fluid level													
AIR CONDITIONER SYSTEM													
Cabin air filter		Replace every 40,000 km (25,000 miles) or 2 years											

Chart symbols

I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.

R: Replace

L: Lubricate

T: Tighten

Remarks

- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.

*1: Use FL22 type coolant in vehicles with the inscription "FL22" on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.

*2: According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage/kilometer period to ensure long-term reliability.

*3: If the vehicle is operated primarily under any of the following conditions, replace the spark plugs at every 96,000 km (60,000 miles) or shorter.

- a. Repeated short-distance driving
- b. Extended periods of idling or low-speed operation
- c. Driving for long periods in cold temperatures or extremely humid climates

GENERAL INFORMATION

Scheduled Maintenance Table for Mexico

Schedule 1: (Normal Driving Conditions) for Mexico

- The vehicle is mainly operated where none of the “unique driving conditions” apply.

Maintenance Interval	Number of months or kilometers, whichever comes first												
	Months	6	12	18	24	30	36	42	48	54	60	66	72
	×1000 km	10	20	30	40	50	60	70	80	90	100	110	120
ENGINE													
Engine valve clearance	Audibly inspect every 120,000 km, if noisy, adjust												
Drive belts				I					I				I
Engine oil	R	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter	R	R	R	R	R	R	R	R	R	R	R	R	R
COOLING SYSTEM													
Cooling system				I					I				I
Engine coolant	FL22 type *1	Replace at first 190,000 km or 10 years; after that, every 60,000 km or 3 years											
	Others				R				R				R
FUEL SYSTEM													
Air cleaner element		R			R		R		R		R		R
Fuel lines and hoses				I*2					I*2				I
Hoses and tubes for emission				I*2					I*2				I
Fuel filter				R					R				R
IGNITION SYSTEM													
Spark plugs	Replace every 60,000 km												
CHASSIS and BODY													
Brake lines, hoses and connections		I		I		I		I		I		I	I
Brake fluid level	I	I	I			I	I	I		I	I	I	
Brake fluid				R					R				R
Disc brakes	I	I	I	I	I	I	I	I	I	I	I	I	I
Tire (Rotation)	Rotate every 10,000 km												
Tire inflation pressure and tire wear	I	I	I	I	I	I	I	I	I	I	I	I	I
Steering operation and linkages	I	I	I	I	I	I	I	I	I	I	I	I	I
Power steering fluid level	I	I	I	I	I	I	I	I	I	I	I	I	I
Front and rear suspension, ball joints and wheel bearing axial play		I		I		I		I		I		I	I
Driveshaft dust boots		I		I		I		I		I		I	I
Bolts and nuts on chassis and body		T		T		T		T		T		T	T
Exhaust system and heat shields		I		I		I		I		I		I	I
All locks and hinges	L	L	L	L	L	L	L	L	L	L	L	L	L
Washer fluid level	I	I	I	I	I	I	I	I	I	I	I	I	I
AIR CONDITIONER SYSTEM													
Cabin air filter				R					R				R

Chart symbols:

I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.

R: Replace

C: Clean

L: Lubricate

T: Tighten

Remarks

- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.

*1: Use FL22 type coolant in vehicles with the inscription “FL22” on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.

*2: According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or kilometer period to ensure long-term reliability.

00-00

GENERAL INFORMATION

Schedule 2: (Unique Driving Conditions) for Mexico

- Repeated short-distance driving
- Driving in dusty conditions
- Driving with extended use of brakes
- Driving in areas where salt or other corrosive materials are used
- Driving on rough or muddy roads
- Extended periods of idling or low-speed operation
- Driving for long periods in cold temperatures or extremely humid climates
- Driving in extremely hot conditions
- Driving in mountainous conditions continually

Maintenance Interval	Number of months or kilometers, whichever comes first													
	Months	3	6	9	12	15	18	21	24	27	30	33	36	
	×1000 km	5	10	15	20	25	30	35	40	45	50	55	60	
ENGINE														
Engine valve clearance	Audibly inspect every 120,000 km, if noisy, adjust													
Drive belts									I					
Engine oil	R	R	R	R	R	R	R	R	R	R	R	R	R	
Engine oil filter	R	R	R	R	R	R	R	R	R	R	R	R	R	
COOLING SYSTEM														
Cooling system									I					
Engine coolant	FL22 type *1	Replace at first 190,000 km or 10 years; after that, every 60,000 km or 3 years												
	Others								R					
Engine coolant level		I	I	I	I	I	I	I	I	I	I	I	I	
FUEL SYSTEM														
Air cleaner element			C		R			C		R		C		R
Fuel lines and hoses									I*2					
Hoses and tubes for emission									I*2					
Fuel filter									R					
IGNITION SYSTEM														
Spark plugs	Replace every 60,000 km													
ELECTRICAL SYSTEM														
Function of all lights		I	I	I	I	I	I	I	I	I	I	I	I	
CHASSIS and BODY														
Brake lines, hoses and connections					I				I				I	
Brake fluid level			I		I			I				I	I	
Brake fluid									R					
Disc brakes			I		I			I				I	I	
Tire (Rotation)	Rotate every 10,000 km													
Tire inflation pressure and tire wear			I		I			I				I	I	
Steering operation and linkages			I		I			I				I	I	
Power steering fluid level			I		I			I				I	I	
Front and rear suspension, ball joints and wheel bearing axial play					I				I				I	
Driveshaft dust boots					I				I				I	
Bolts and nuts on chassis and body					T				T				T	
Exhaust system and heat shields					I				I				I	
All locks and hinges			L		L			L		L		L	L	
Washer fluid level			I		I			I		I		I	I	
AIR CONDITIONER SYSTEM														
Cabin air filter					R				R				R	

GENERAL INFORMATION

00-00

Cont.

Maintenance Interval	Number of months or kilometers, whichever comes first												
	Months	39	42	45	48	51	54	57	60	63	66	69	72
	×1000 km	65	70	75	80	85	90	95	100	105	110	115	120
ENGINE													
Engine valve clearance	Audibly inspect every 120,000 km, if noisy, adjust												
Drive belts				I									I
Engine oil	R	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter	R	R	R	R	R	R	R	R	R	R	R	R	R
COOLING SYSTEM													
Cooling system				I									I
Engine coolant	FL22 type *1	Replace at first 190,000 km or 10 years; after that, every 60,000 km or 3 years											
	Others				R								R
Engine coolant level	I	I	I	I	I	I	I	I	I	I	I	I	I
FUEL SYSTEM													
Air cleaner element		C		R		C		R		C		R	
Fuel lines and hoses				I*2									I
Hoses and tubes for emission				I*2									I
Fuel filter				R									R
IGNITION SYSTEM													
Spark plugs	Replace every 60,000 km												
ELECTRICAL SYSTEM													
Function of all lights	I	I	I	I	I	I	I	I	I	I	I	I	I
CHASSIS and BODY													
Brake lines, hoses and connections				I				I					I
Brake fluid level		I					I		I		I		
Brake fluid				R									R
Disc brakes		I		I		I		I		I		I	
Tire (Rotation)	Rotate every 10,000 km												
Tire inflation pressure and tire wear		I		I		I		I		I		I	
Steering operation and linkages		I		I		I		I		I		I	
Power steering fluid level		I		I		I		I		I		I	
Front and rear suspension, ball joints and wheel bearing axial play				I				I					I
Driveshaft dust boots				I				I					I
Bolts and nuts on chassis and body				T				T					T
Exhaust system and heat shields				I				I					I
All locks and hinges		L		L		L		L		L		L	
Washer fluid level		I		I		I		I		I		I	
AIR CONDITIONER SYSTEM													
Cabin air filter				R				R					R

Chart symbols:

I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.

R: Replace

C: Clean

L: Lubricate

T: Tighten

GENERAL INFORMATION

Remarks

- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.
 - *1: Use FL22 type coolant in vehicles with the inscription "FL22" on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.
 - *2: According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or kilometer period to ensure long-term reliability.

ENGINE

01

SECTION

01-02A

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DTC P0222:00 [LF, L5]	DTC P2016:00 [LF, L5]	01-02A-228

ON-BOARD DIAGNOSTIC [LF, L5]

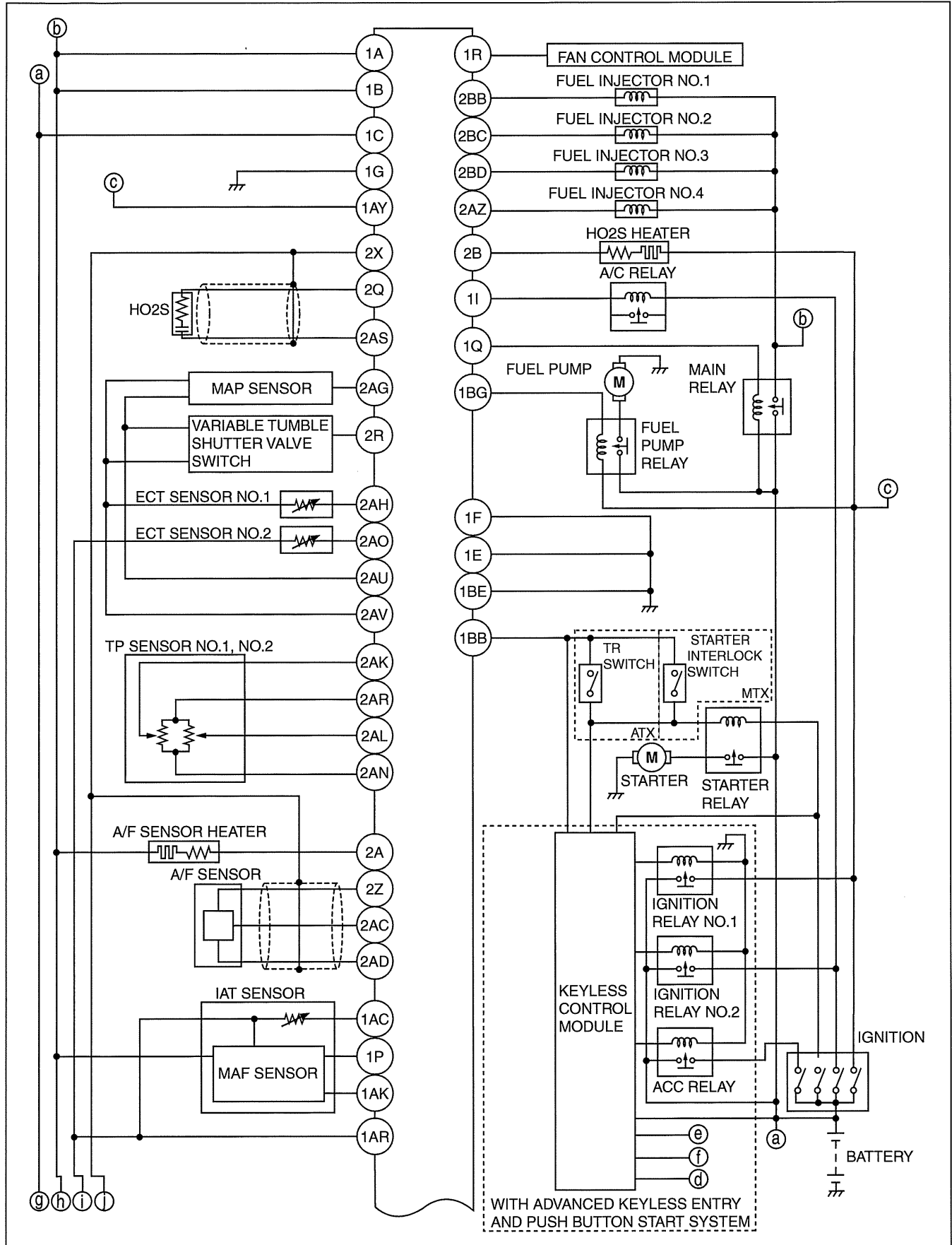
DTC P2017:00 [LF, L5]	01-02A-230	DTC P2183:00 [LF, L5].....	01-02A-255
DTC P2097:00 [LF, L5]	01-02A-232	DTC P2195:00 [LF, L5].....	01-02A-257
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01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [LF, L5]

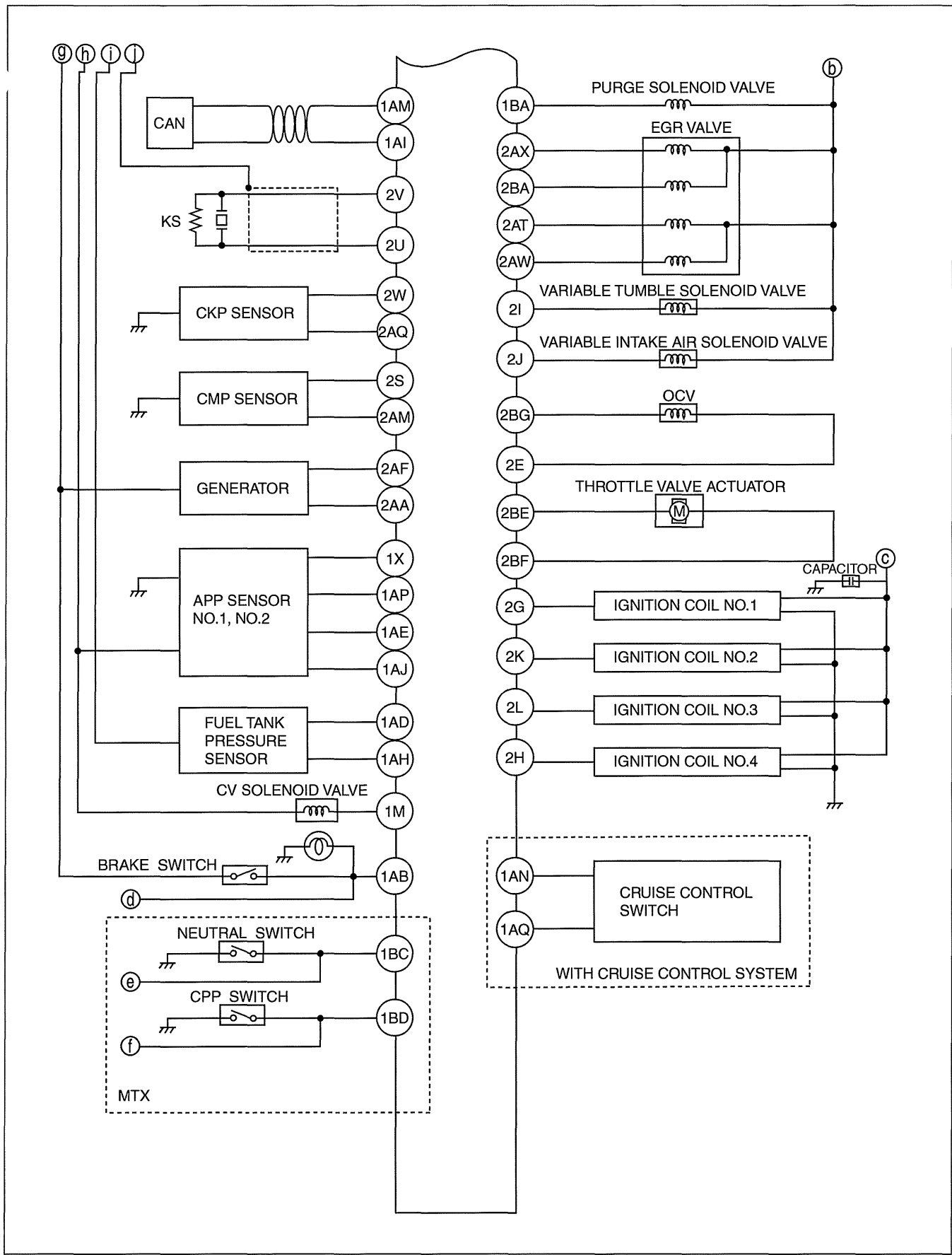
id0102c8800100



am3un000036

ON-BOARD DIAGNOSTIC [LF, L5]

01-02A



am3uun000045

ON-BOARD DIAGNOSTIC [LF, L5]

MONITORING SYSTEM AND CONTROL SYSTEM DEVICE RELATIONSHIP CHART [LF, L5]

id0102c8800200

x: Applicable

Component	Oxygen sensor monitor	Oxygen sensor heater monitor	Catalyst monitor	Misfire monitor	Fuel system monitor	EVAP system monitor	EGR system monitor	Thermostat monitor
Input								
Battery		X		X		X		
Ignition switch	X	X				X		
A/C switch, refrigerant pressure sensor (high, low pressure)							X	X
TP sensor	X		X	X	X	X	X	
ECT sensor	X	X	X	X	X	X	X	X
IAT sensor	X		X		X	X	X	X
MAF sensor	X	X	X	X	X		X	X
A/F sensor	X	X	X		X			
HO2S	X	X			X			
Fuel gauge sender unit						X		
BARO sensor	X					X		
MAP sensor							X	
CMP sensor				X				
CKP sensor	X	X	X	X	X	X	X	X
VSS	X					X	X	X
Output								
Fuel injector					X			
A/F sensor heater		X						
HO2S heater		X						
EGR valve							X	
Purge solenoid valve	X		X		X	X		
CV solenoid valve						X		
MIL	X	X	X	X	X	X	X	X
DLC-2	X	X	X	X	X	X	X	X

OBD-II PENDING TROUBLE CODE [LF, L5]

id0102c8800400

- These appear when a problem is detected in a monitored system. The code for a failed system is stored in the PCM memory in the first drive cycle. This code is called the pending code. If the PCM determines that the system has returned to normal or the problem was mistakenly detected, it deletes the pending code. If the problem is found in the second drive cycle, too the PCM determines that the system is malfunctioning, and the DTC is stored.

OBD-II FREEZE FRAME DATA [LF, L5]

id0102c8800500

- This is technical data which indicates the engine condition at the time of the first malfunction. This data will remain in the memory even if another emission-related DTC is stored, with the exception of the Misfire or Fuel System DTCs. Once FREEZE FRAME DATA for the Misfire or Fuel System DTC is stored, it will overwrite any previous data and the FREEZE FRAME DATA will not be overwritten again.

ON-BOARD DIAGNOSTIC [LF, L5]

OBD-II ON-BOARD SYSTEM READINESS TEST [LF, L5]

id0102c8800600

- This shows the OBD-II systems operating status. If any monitor function is incomplete, the M-MDS will identify which monitor function has not been completed. Misfires, Fuel System and Comprehensive Components (CCM) are continuous monitoring-type functions. The catalyst, EGR system, evaporation system and oxygen sensor will be monitored under drive cycles. The OBD-II diagnostic system is initialized by performing the DTC cancellation procedure or disconnecting the negative battery cable.

OBD-II READ/CLEAR DIAGNOSTIC TEST RESULTS [LF, L5]

id0102c8800800

01-02A

- This retrieves all stored DTCs in the PCM and clears the DTC, FREEZE FRAME DATA, On-Board Readiness Test Results, Diagnostic Monitoring Test Results and Pending Trouble Codes.

OBD-II PARAMETER IDENTIFICATION (PID) ACCESS [LF, L5]

id0102c8800900

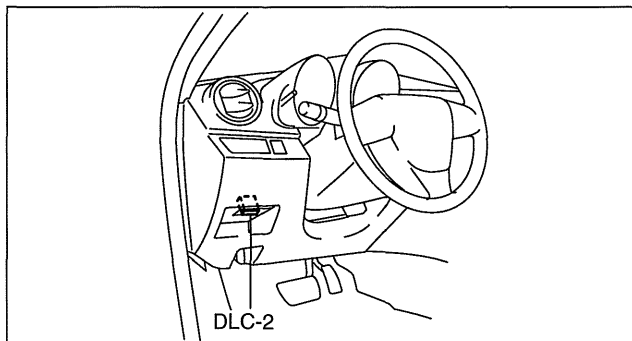
- The PID mode allows access to certain data values, analog and digital inputs and outputs, calculated values and system status information. Since PID values for output devices are PCM internal data values, inspect each device to identify which output devices are malfunctioning.

ON-BOARD DIAGNOSTIC TEST [LF, L5]

id0102c8801000

DTC Reading Procedure

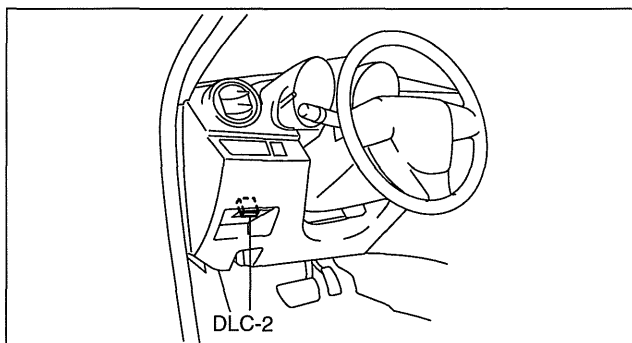
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.
4. Verify the DTC according to the directions on the M-MDS screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
5. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE" (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].).



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Pending Trouble Code Access Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.
4. Retrieve the pending trouble codes according to the directions on the M-MDS screen.

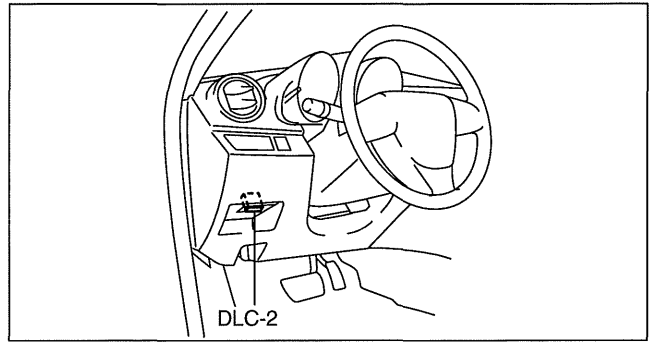


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ON-BOARD DIAGNOSTIC [LF, L5]

Freeze Frame PID Data Access Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.
4. Retrieve the freeze frame PID data according to the directions on the M-MDS screen.



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Note

- Freeze frame data/snapshot data appears at the top of the help screen when the displayed DTC is selected.

Freeze frame data

- The freeze frame data consists of data for vehicle and engine control system operation conditions when malfunctions in the engine control system are detected and stored in the PCM.
- Freeze frame data is stored at the instant the malfunction indicator lamp illuminates, and only a part of the DTC data is stored.
- For the freeze frame data, if there are several malfunctions in the engine control system, the data for the malfunction which occurred initially is stored. Thereafter, if a misfire or fuel injection control malfunction occurs, data from the misfire or fuel injection control malfunction is written over the initially stored data. However, if the initially stored freeze frame data is a misfire or fuel injection control malfunction, it is not overwritten.

Snapshot data

- The snap shot data stores the currently detected DTC data.
- The recording timing for the freeze frame data/snap shot data differs depending on the number of DTC drive cycles.
 - For a DTC with a drive cycle number 1, only the malfunction determination data is recorded.
 - For a DTC with a drive cycle number 2, both the malfunction determination and undetermined data is recorded.

Freeze frame data table

Note

- Refer to PID monitor table for confirm the engine control system operation status while the PCM does not store the DTC. (See 01-40A-8 PCM INSPECTION [LF, L5])
- Freeze frame data items are not displayed, according to detected DTC.

Freeze frame data item	Unit			Description	Corresponding PID data monitor item
FUELSYS1	Open Loop/Closed Loop/ OL-Drive/OL-Fault/CL- Fault			Fuel system status	FUELSYS
LOAD	%			Calculated engine load	—
ECT	°C	°F		Engine coolant temperature	ECT
SFT1	%			Short term fuel trim	SHRTFT1
LFT1	%			Long term fuel trim	LONGFT1
MAP	kPa	psi	Bar	Manifold absolute pressure	MAP
RPM	RPM			Engine speed	RPM
VS	KPH	MPH		Vehicle speed	VSS
SPARKADV	°			Ignition timing	SPARKADV
IAT	°C	°F		Intake air temperature	IAT
MAF	g/sec			Mass airflow	MAF
TP	%			Throttle valve position No.1	TP1
RUNTM	hh:mm:ss			Time from engine start	—

ON-BOARD DIAGNOSTIC [LF, L5]

Freeze frame data item	Unit			Description	Corresponding PID data monitor item
EGRPCT	%			Target EGR valve position	SEGRP_DSD
EVAPPCT	%			Purge solenoid valve controlled value	EVAPCP
FLI	%			Fuel level in fuel tank	FLI
WARMUPS	—			Number of warm-up cycle after DTC cleared	—
CLRDIST	Km	miles		Mileage after DTC cleared	—
EVAP_VP	kPa	psi	Bar	Fuel tank pressure	FTP
BARO	kPa	psi	Bar	Barometric pressure	BARO
CATTEMP11	°C	°F		Estimated catalytic converter temperature	CATT11_DSD
VPWR	V			Module supply voltage	VPWR
ALV	%			Engine load	LOAD
EQ_RAT	—			Target equivalence ratio (lambda)	EQ_RAT11_DSD
TP_REL	%			Relative throttle position	TP REL
AAT	°C	°F		Ambient air temperature	AAT
TP_B	%			Throttle valve position No.2	TP2
APP_D	%			Accelerator pedal position No.1	APP1
APP_E	%			Accelerator pedal position No.2	APP2
TAC_PCT	%			Target throttle valve position	ETC_DSD

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Snapshot data table

Note

- Refer to PID monitor table for confirm the engine control system operation status while the PCM does not store the DTC. (See 01-40A-8 PCM INSPECTION [LF, L5])
- Snapshot data items are not displayed, according to detected DTC.

Snapshot data item	Unit			Definition	Corresponding PID data monitor item
FUELSYS	OL/CL/OL-Drive/OL-Fault/CL-Fault			Fuel system status	FUELSYS
LOAD_C	%			Calculated engine load	—
ECT	°C	°F		Engine coolant temperature	ECT
SHRTFT1	%			Short term fuel trim	SHRTFT1
LONGFT1	%			Long term fuel trim	LONGFT1
MAP	kPa	psi	Bar	Manifold absolute pressure	MAP
RPM	RPM			Engine speed	RPM
VSS	KPH	MPH		Vehicle speed	VSS
SPARKADV	°			Ignition timing	SPARKADV
IAT	°C	°F		Intake air temperature	IAT
MAF	g/sec			Mass airflow	MAF
TP1	%			Throttle valve position No.1	TP1
EG_RUN_TIME	—			Time from engine start	—
SEGRP_DSD	%			Target EGR valve position	SEGRP DSD
EVAPCP	%			Purge solenoid valve controlled value	EVAPCP
FLI	%			Fuel level in fuel tank	FLI
CLR_CNT	—			Number of warm-up cycle after DTC cleared	—
CLR_DIST	Km	miles		Mileage after DTC cleared	—
FTP	kPa	psi	Bar	Fuel tank pressure	FTP
BARO	kPa	psi	Bar	Barometric pressure	BARO
CATT11_DSD	°C	°F		Estimated catalytic converter temperature	CATT11_DSD
VPWR	V			Module supply voltage	VPWR
LOAD	%			Engine load	LOAD
EQ_RAT11_DSD	—			Target equivalence ratio (lambda)	EQ_RAT11_DSD
TP REL	%			Relative throttle position	TP REL
AAT	°C	°F		Ambient air temperature	AAT
TP2	%			Throttle valve position No.2	TP2

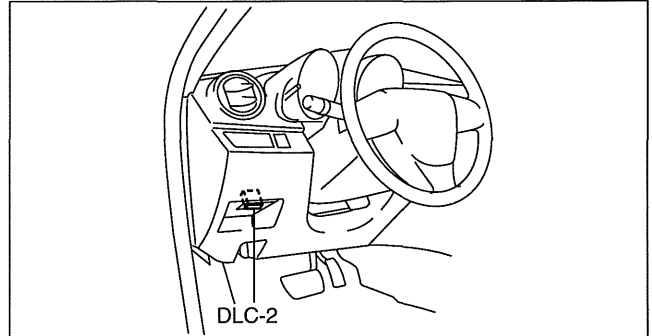
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ON-BOARD DIAGNOSTIC [LF, L5]

Snapshot data item	Unit	Definition	Corresponding PID data monitor item
APP1	%	Accelerator pedal position No.1	APP1
APP2	%	Accelerator pedal position No.2	APP2
ETC_DSD	%	Target throttle valve position	ETC_DSD

On-Board System Readiness Tests Access Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Powertrain".
 2. Select "OBD Test Modes".
 3. Select "Mode 1 Powertrain Data".
 4. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "OBDII Modes".
 2. Select "Mode 1 Powertrain Data".
 3. Select "PCM".
3. Then, select the "****SUP" and "***EVAL" PIDs in the PID selection screen.
4. Monitor those PIDs and check it system monitor is completed.

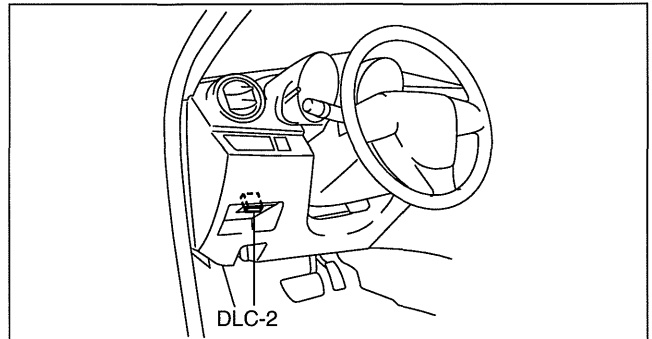


PID/DATA Monitor and Record Procedure

Note

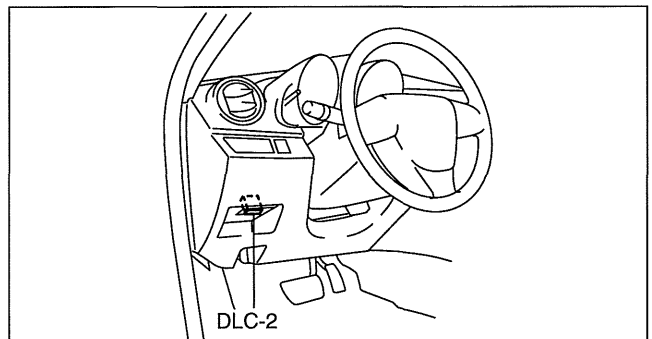
- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the detections on the screen.



Diagnostic Monitoring Test Results Access Procedure

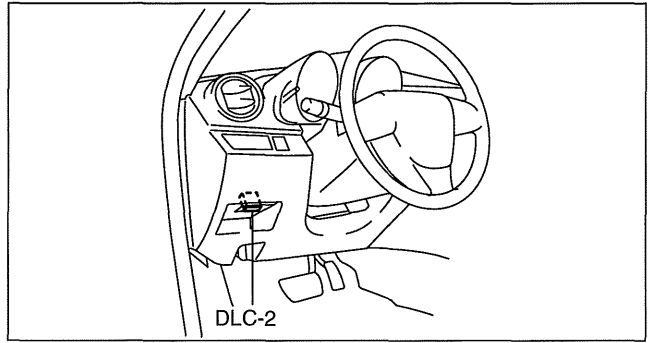
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Powertrain".
 2. Select "OBD Test Modes".
 3. Select "Mode 6 On-Board Test Results".
 - When using the PDS (Pocket PC)
 1. Select "OBDII Modes".
 2. Select "Mode 6 On-Board Test Results".
3. Verify the diagnostic monitoring test result according to the directions on the screen.



ON-BOARD DIAGNOSTIC [LF, L5]

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "DataLogger".
3. Select the simulation items from the PID table.
4. Perform the simulation function, inspect the operations for each parts.
 - If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

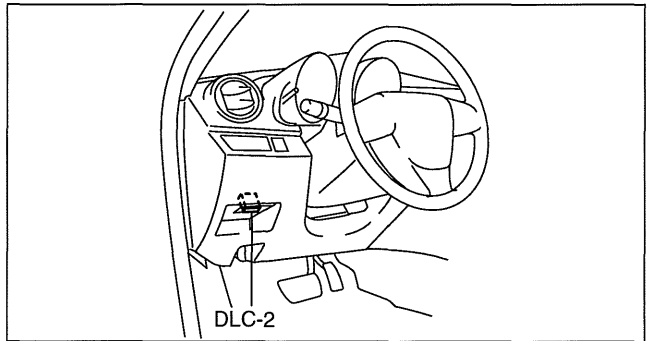


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AFTER REPAIR PROCEDURE [LF, L5]

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 4. Select "Retrieve CMDTCs".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
 4. Select "Retrieve CMDTCs".
3. Verify the DTC according to the directions on the M-MDS screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Verify that no DTCs are displayed.



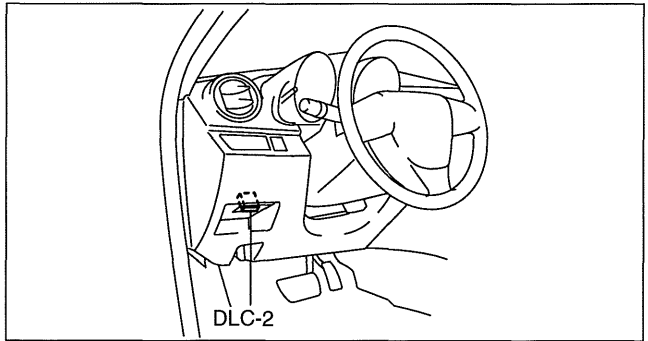
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KOEO/KOER SELF TEST [LF, L5]

KOEO Self Test

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "KOEO On Demand Self Test" and perform procedures according to directions on the M-MDS screen.
4. Verify the DTC according to the directions on the M-MDS screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
5. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].)



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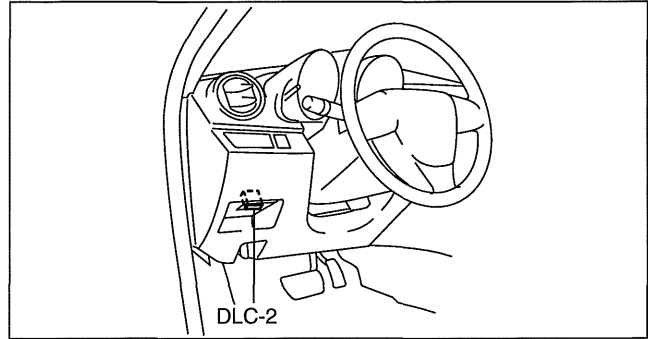
ON-BOARD DIAGNOSTIC [LF, L5]

KOER Self Test

Note

- For vehicles with the variable valve timing control, execute a KOER self test after the variable valve timing learning is finished.
 - A KOER self test cannot be executed if the variable timing valve learning is not finished.
 - The variable valve timing learning is cleared if the PCM backup power supply is interrupted (including battery removal), or after reprogramming.
 - To perform variable valve timing learning, the engine speed needs to be increased momentarily to **approx. 2,000 rpm**.

1. Connect the M-MDS to the DLC-2.
2. Idle the engine.
3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
4. Then, select the "KOER On Demand Self Test" and perform procedures according to directions on the M-MDS screen.
5. Verify the DTC according to the directions on the M-MDS screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
6. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].)



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OBD-II DRIVE MODE [LF, L5]

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- Using the OBD-II Drive Mode, the monitoring item requested by OBD-II regulations can be easily diagnosed.
- Performing the Drive Mode inspects the OBD-II system for proper operation and must be performed to ensure that no additional DTCs are present.
- The OBD-II Drive Mode is divided into the specific Drive Mode and single Drive Mode.
- For the specific Drive Mode, specified Drive Modes have been set for each individual monitoring item requested by OBD-II regulations, and they can be diagnosed individually. For the single Drive Mode, the entire monitoring item requested by OBD-II regulations can be diagnosed.
- The following modes are in the specific Drive Mode. The applicable system is diagnosed by driving in the following Drive Modes.
 - Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode)
 - Mode 06 (EVAP System Repair Verification Drive Mode)
- The following systems are diagnosed with the single Drive Mode.
 - EGR system
 - Oxygen sensor (A/F sensor, HO2S)
 - Oxygen sensor heater (A/F sensor heater, HO2S heater)
 - Catalytic converter (TWC)
 - Evaporative (EVAP) system

Caution

- **While performing the Drive Mode, always operate the vehicle in a safe and lawful manner.**
- **When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.**

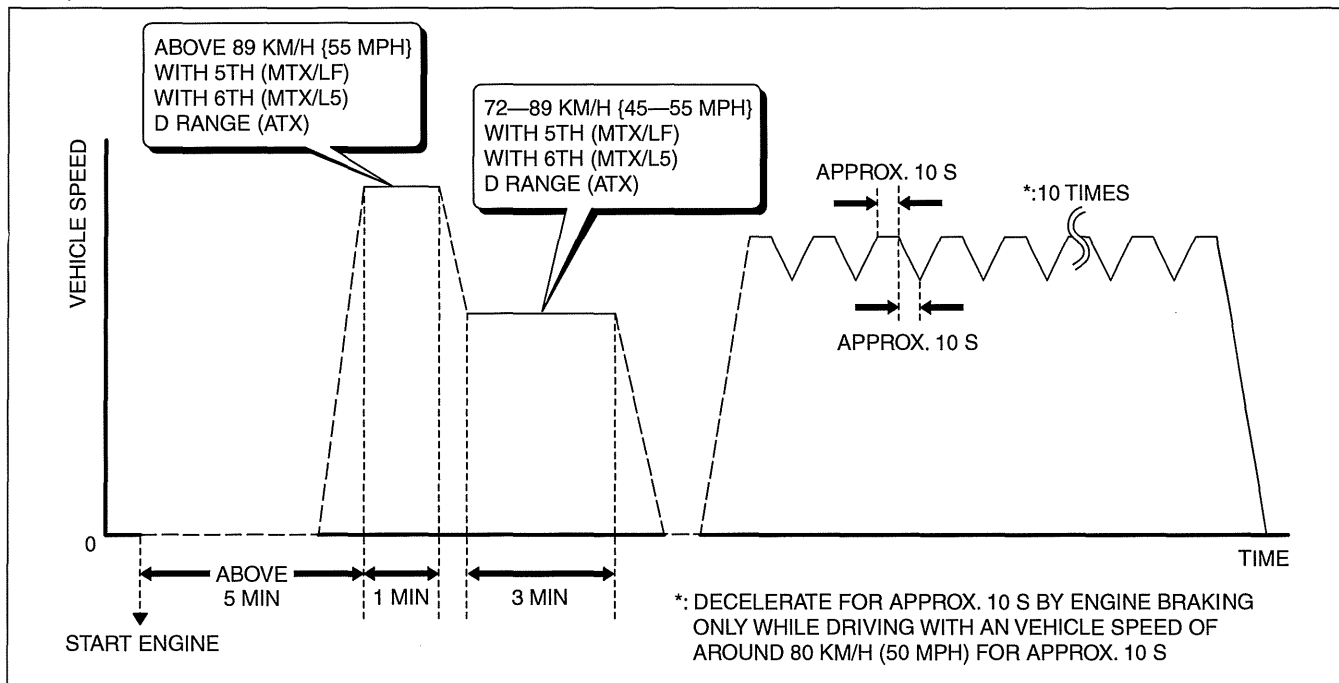
Note

- Vehicle speed and engine speed detected by the PCM may differ from that indicated by the speedometer and tachometer. Use the M-MDS to monitor vehicle speed.
- If the OBD-II system inspection is not completed during the Drive Mode, the following causes are considered:
 - The OBD-II system detects the malfunction.
 - The Drive Mode procedure is not completed correctly.
- Disconnecting the battery will reset the memory. Do not disconnect the battery during and after Drive Mode.
- The M-MDS can be used at anytime through the course of the Drive Mode to monitor the completion status. Monitoring can be done by viewing the ON BOARD SYSTEM READINESS menu.
- The OBD monitoring status can be confirmed with the ignition switch operation. During KOEO, the MIL illuminates for a fail-light inspection for **approx. 17 s**. The OBD monitoring status is confirmed after the fail-light inspection.
 - If all of the diagnosis is completed even one time, the MIL will continue to illuminate.
 - If all of the diagnosis is not completed, the MIL flashes for **approx. 7 s**, and then it illuminates until the engine is started.

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Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode)

1. Start the engine and warm it up completely.
2. Verify all accessory loads (A/C, headlights, blower fan, rear window defroster) are off.
3. Drive the vehicle as shown in the graph. The driving conditions before driving at constant speed are not specified.



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4. Stop the vehicle and access ON BOARD SYSTEM READINESS menu of GENERIC OBD-II FUNCTION to verify the OBD monitoring status.
 - If completed, the OBD monitoring status items change from non-completed to completed.
 - If not completed, switch the ignition to off then repeat from Step 4.
5. Access DIAGNOSTIC MONITORING TEST RESULTS menu of GENERIC OBD-II FUNCTIONS to verify the monitor results.
 - If detected values are not within the specification, repair has not been completed.
6. Verify no DTCs are available.

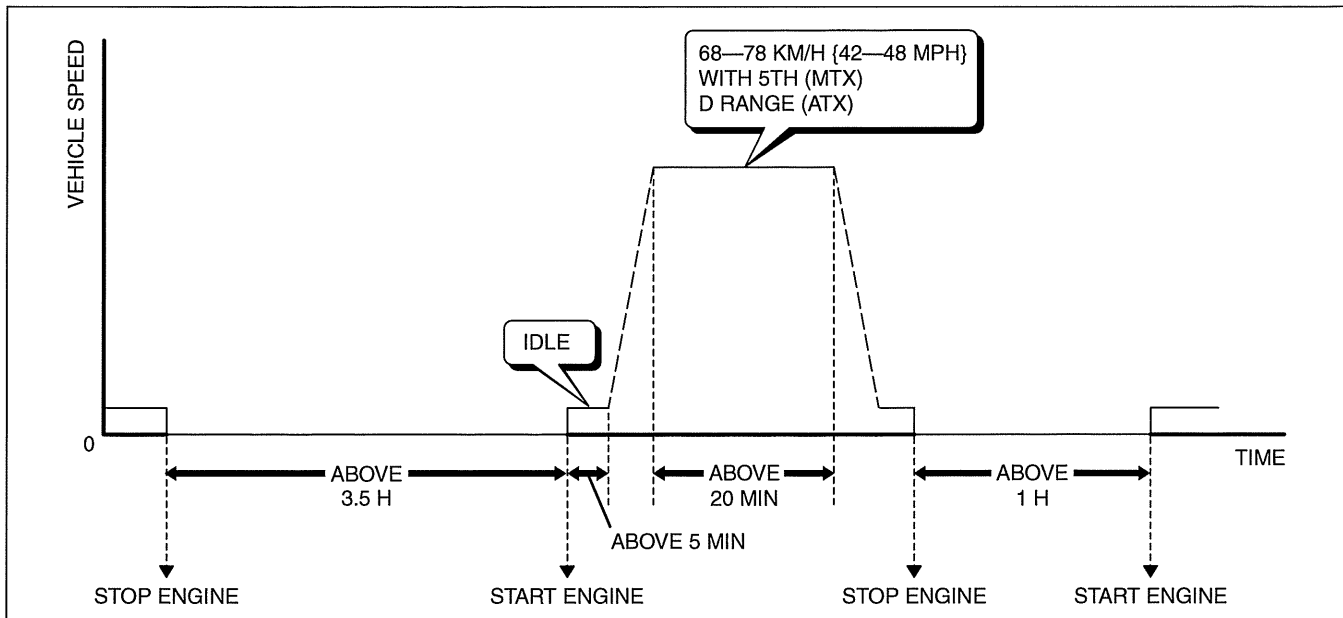
ON-BOARD DIAGNOSTIC [LF, L5]

Mode 06 (EVAP System Repair Verification Drive Mode)

Note

- If “EVAP System Repair Verification Drive Mode” cannot be performed (it is impossible to drive the vehicle under this Drive Mode condition), perform evaporative system test procedure as an alternative. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].)

1. Verify that all of the following PIDs are within the following specifications. All PIDs must be within specifications before engine is started to initiate the evaporative system test.
 - BARO: **72.2 kPa {542 mmHg, 21.3 inHg} or higher**
 - FLI: **20—80%**
 - IAT: **5—35 °C {41—95 °F}**
 - VPWR: **above 10.9 V**
2. Start the engine and warm it up completely.
3. Clear the DTC from the PCM memory using the M-MDS (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].).
4. Drive the vehicle as shown in the graph.



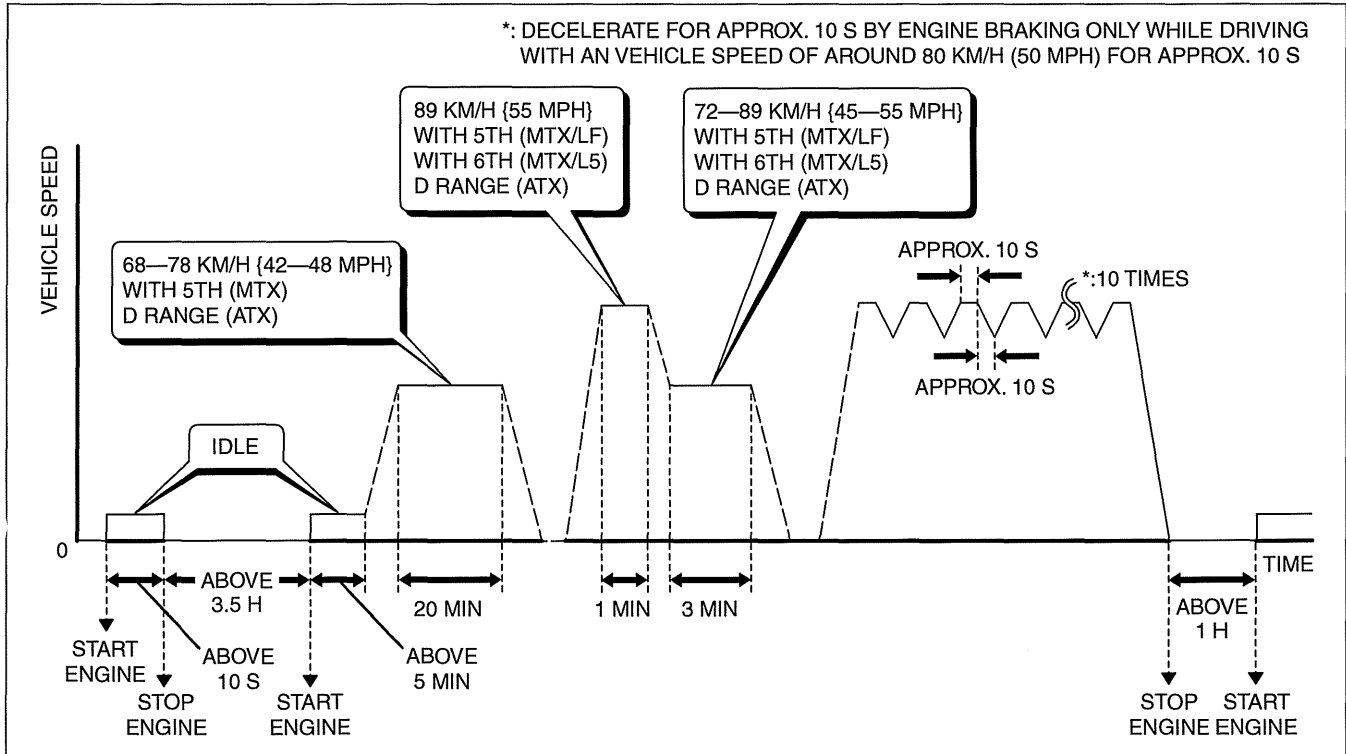
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5. Access the ON BOARD SYSTEM READINESS to verify the OBD monitoring status.
 - If completed, the OBD monitoring status items change from non-completed to completed.
 - If not completed, switch the ignition to off then go back to Step 1.
6. Access the DIAGNOSTIC MONITORING TEST RESULTS to verify the monitor results.
 - If detected values are not within specification, repair has not completed.
7. Verify no DTCs are available.

Single Drive Mode

1. Start the engine and warm it up completely.
2. Clear the DTC from the PCM memory using the M-MDS (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5]).
3. Verify all accessory loads (A/C, headlights, blower fan, rear window defroster) are off.
4. Verify that all of the following PIDs are within the following specifications. All PIDs must be within specifications from Step 5 to Step 6.
 - BARO: **72.2 kPa {542 mmHg, 21.3 inHg} or higher**
 - FLI: **20—80%**
 - IAT: **5—35 °C {41—95 °F}**
 - VPWR: **above 10.9 V**
5. With the vehicle stopped, race the engine at the engine speed indicated, and then drive the vehicle as shown in the graph. The driving conditions before driving at constant speed are not specified. If possible, monitor RPM PID for engine speed during this procedure.

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6. Switch the ignition to off.
7. Access the ON BOARD SYSTEM READINESS to verify the OBD monitoring status.
 - If completed, all of the OBD monitoring status items change from non-completed to completed.
 - If not completed, switch the ignition to off, then perform the applicable specific Drive Mode for any monitoring item that was not in the detection condition.
8. Access the DIAGNOSTIC MONITORING TEST RESULTS to verify the monitor results.
 - If detected values are not within specification, repair has not been completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DIAGNOSTIC MONITORING TEST RESULTS [LF, L5]

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- The purpose of this test mode is to confirm the result of OBD-II monitor diagnostic test results. The result values stored when particular monitor is completed are displayed. If the monitor is not completed, initial value is displayed.

OBD Monitor ID	Test ID	Description	Related system	Scaling ID	Unit
01	80	A/F sensor lean-to-rich response time (calculated)	A/F sensor, HO2S	20	Ratio
01	81	A/F sensor rich-to-lean response time (calculated)		20	Ratio
01	82	A/F sensor lean-to-rich response time (calculated)		20	Ratio
01	83	A/F sensor rich-to-lean response time (calculated)		20	Ratio
02	03	Low HO2S voltage for switch time calculation (constant)		0A	Voltage
02	04	High HO2S voltage for switch time calculation (constant)		0A	Voltage
02	05	HO2S rich-to-lean response time (calculated)		10	Time
02	80	HO2S response time out (calculated)		10	Time
21	80	A/F sensor and HO2S switching time ratio	Catalyst	20	Ratio
31	83	EGR pressure variation	EGR	17	Pressure
35	80	Over - retarded	Variable valve timing	9C	deg.CA
35	81	Over - advanced	Variable valve timing	9C	deg.CA
3A	80	Phase 0 end pressure result and test limits	EVAP system	FE	Pa
3A	81	Phase 4 vapor generation minimum change in pressure and test limits	EVAP system	FE	Pa
3A	82	Phase 0 end pressure result and test limits	EVAP system	FE	Pa
3B	80	Phase 2 0.040" cruise leak check vacuum bleed-up and test limits	EVAP system	FE	Pa
3C	81	EONV positive pressure test result and limits	EVAP system	FE	Pa
3C	82	EONV negative pressure (vacuum) test result and limits	EVAP system	FE	Pa
3C	83	Normalized average of four EONV tests results and limits	EVAP system	03	Raw Value
3D	80	Blocked EVAP system line - screening test	EVAP system	A9	Pa/s
3D	81	Blocked EVAP system line - fault confirmation test	EVAP system	FE	Pa
A2	0B	Cylinder No.1 average misfire counts for last 10 DC	Misfire	24	Counts
A2	0C	Cylinder No.1 misfire counts for last/current DC		24	Counts
A3	0B	Cylinder No.2 average misfire counts for last 10 DC		24	Counts
A3	0C	Cylinder No.2 misfire counts for last/current DC		24	Counts
A4	0B	Cylinder No.3 average misfire counts for last 10 DC		24	Counts
A4	0C	Cylinder No.3 misfire counts for last/current DC		24	Counts
A5	0B	Cylinder No.4 average misfire counts for last 10 DC		24	Counts
A5	0C	Cylinder No.4 misfire counts for last/current DC		24	Counts

*1 : California emission regulation applicable model

ON-BOARD DIAGNOSTIC [LF, L5]

DTC TABLE [LF, L5]

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×: Applicable
—: Not applicable

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type *1	Memory function	Page
P0011:00	CMP timing over-advanced	ON	OFF	2	CCM	C, R	×	(See 01-02A-26 DTC P0011:00 [LF, L5].)
P0012:00	CMP timing over-retarded	ON	OFF	2	CCM	C, R	×	(See 01-02A-28 DTC P0012:00 [LF, L5].)
P0016:00	CKP-CMP correlation	ON	OFF	2	CCM	C	×	(See 01-02A-30 DTC P0016:00 [LF, L5].)
P0031:00	A/F sensor heater control circuit low input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02A-32 DTC P0031:00 [LF, L5].)
P0032:00	A/F sensor heater control circuit high input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02A-34 DTC P0032:00 [LF, L5].)
P0037:00	HO2S heater control circuit low input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02A-36 DTC P0037:00 [LF, L5].)
P0038:00	HO2S heater control circuit high input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02A-38 DTC P0038:00 [LF, L5].)
P0053:00	A/F sensor heater resistance	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02A-40 DTC P0053:00 [LF, L5].)
P0054:00	HO2S heater resistance	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02A-42 DTC P0054:00 [LF, L5].)
P0069:00	Manifold absolute pressure/ atmospheric pressure correlation	ON	OFF	2	CCM	C	×	(See 01-02A-44 DTC P0069:00 [LF, L5].)
P00B3:00	ECT sensor No.2 circuit low input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02A-45 DTC P00B3:00 [LF, L5].)
P00B4:00	ECT sensor No.2 circuit high input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02A-47 DTC P00B4:00 [LF, L5].)
P0101:00	MAF sensor circuit range/ performance problem	ON	OFF	2	CCM	C	×	(See 01-02A-49 DTC P0101:00 [LF, L5].)
P0102:00	MAF sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-52 DTC P0102:00 [LF, L5].)

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ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0103:00	MAF sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-54 DTC P0103:00 [LF, L5].)
P0107:00	MAP sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-56 DTC P0107:00 [LF, L5].)
P0108:00	MAP sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-58 DTC P0108:00 [LF, L5].)
P0111:00	IAT sensor circuit range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02A-60 DTC P0111:00 [LF, L5].)
P0112:00	IAT sensor circuit low input	ON	ON	1	CCM	C, O, R	×	(See 01-02A-61 DTC P0112:00 [LF, L5].)
P0113:00	IAT sensor circuit high input	ON	ON	1	CCM	C, O, R	×	(See 01-02A-63 DTC P0113:00 [LF, L5].)
P0116:00	ECT sensor No.1 circuit range/performance problem	ON	OFF	1	Engine cooling system	C	×	(See 01-02A-65 DTC P0116:00 [LF, L5].)
P0117:00	ECT sensor No.1 circuit low input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02A-67 DTC P0117:00 [LF, L5].)
P0118:00	ECT sensor No.1 circuit high input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02A-69 DTC P0118:00 [LF, L5].)
P0122:00	TP sensor No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-71 DTC P0122:00 [LF, L5].)
P0123:00	TP sensor No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-73 DTC P0123:00 [LF, L5].)
P0125:00	Insufficient coolant temperature for closed loop fuel control	ON	OFF	2	Engine cooling system	C	×	(See 01-02A-75 DTC P0125:00 [LF, L5].)
P0126:00	Thermostat stuck open	ON	OFF	2	Engine cooling system	C	×	(See 01-02A-77 DTC P0126:00, P0128:00 [LF, L5].)
P0128:00								
P0130:00	A/F sensor circuit problem	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-80 DTC P0130:00 [LF, L5].)
P0131:00	A/F sensor circuit low input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-81 DTC P0131:00 [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type ^{*1}	Memory function	Page
P0132:00	A/F sensor circuit high input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-83 DTC P0132:00 [LF, L5].)
P0133:00	A/F sensor circuit slow response	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02A-85 DTC P0133:00 [LF, L5].)
P0134:00	A/F sensor circuit no activity detected	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02A-88 DTC P0134:00 [LF, L5].)
P0137:00	HO2S circuit low input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-91 DTC P0137:00 [LF, L5].)
P0138:00	HO2S circuit high input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-93 DTC P0138:00 [LF, L5].)
P0139:00	HO2S circuit slow response	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02A-95 DTC P0139:00 [LF, L5].)
P0140:00	HO2S circuit no activity detected	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02A-98 DTC P0140:00 [LF, L5].)
P0171:00	Fuel trim system too lean	ON	OFF	2	Fuel system	C, R	×	(See 01-02A-101 DTC P0171:00 [LF, L5].)
P0172:00	Fuel trim system too rich	ON	OFF	2	Fuel system	C, R	×	(See 01-02A-105 DTC P0172:00 [LF, L5].)
P0222:00	TP sensor No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-110 DTC P0222:00 [LF, L5].)
P0223:00	TP sensor No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-112 DTC P0223:00 [LF, L5].)
P0300:00	Random misfire detected	Flash /ON	OFF	1 or 2	Misfire	C	×	(See 01-02A-114 DTC P0300:00 [LF, L5].)
P0301:00	Cylinder No.1 misfire detected	Flash /ON	OFF	1 or 2	Misfire	C	×	(See 01-02A-118 DTC P0301:00, P0302:00, P0303:00, P0304:00 [LF, L5].)
P0302:00	Cylinder No.2 misfire detected							
P0303:00	Cylinder No.3 misfire detected							
P0304:00	Cylinder No.4 misfire detected							
P0327:00	KS circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-121 DTC P0327:00 [LF, L5].)
P0328:00	KS circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-123 DTC P0328:00 [LF, L5].)

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ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0335:00	CKP sensor circuit problem	ON	OFF	1	CCM	C, R	×	(See 01-02A-125 DTC P0335:00 [LF, L5].)
P0340:00	CMP sensor circuit problem	ON	OFF	1	CCM	C, R	×	(See 01-02A-128 DTC P0340:00 [LF, L5].)
P0401:00	EGR flow insufficient detected	ON	OFF	2	EGR system	C, R	×	(See 01-02A-131 DTC P0401:00 [LF, L5].)
P0403:00	EGR control circuit problem	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-133 DTC P0403:00 [LF, L5].)
P0421:00	Warm up catalyst system efficiency below threshold	ON	OFF	2	Catalyst	C	×	(See 01-02A-135 DTC P0421:00 [LF, L5].)
P0442:00	EVAP system leak detected (small leak)	ON	OFF	2	EVAP system	C	×	(See 01-02A-137 DTC P0442:00, P0455:00, P0456:00 [LF, L5].)
P0443:00	Purge solenoid valve circuit problem	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-147 DTC P0443:00 [LF, L5].)
P0446:00	CV solenoid valve control circuit problem	ON	OFF	2	CCM	C	×	(See 01-02A-149 DTC P0446:00 [LF, L5].)
P0451:00	Fuel tank pressure sensor range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02A-151 DTC P0451:00 [LF, L5].)
P0452:00	Fuel tank pressure sensor low input	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-153 DTC P0452:00 [LF, L5].)
P0453:00	Fuel tank pressure sensor high input	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-155 DTC P0453:00 [LF, L5].)
P0454:00	Fuel tank pressure sensor intermittent	ON	OFF	2	CCM	C, R	×	(See 01-02A-157 DTC P0454:00 [LF, L5].)
P0455:00	EVAP system leak detected (gross leak/no flow)	ON	OFF	2	EVAP system	C	×	(See 01-02A-137 DTC P0442:00, P0455:00, P0456:00 [LF, L5].)
P0456:00*7	EVAP system leak detected (very small leak)	ON	OFF	1 or 2	EVAP system	C	×	(See 01-02A-137 DTC P0442:00, P0455:00, P0456:00 [LF, L5].)
P0457:00	EVAP system leak detected (fuel cap loose/off)	ON*5	OFF	2	EVAP system	C	×	(See 01-02A-158 DTC P0457:00 [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type ^{*1}	Memory function	Page
P0460:00	Fuel level sensor circuit malfunction	ON	OFF	2	CCM	C, R	×	(See 01-02A-159 DTC P0460:00 [LF, L5].)
P0461:00	Fuel gauge sender unit circuit range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02A-160 DTC P0461:00 [LF, L5].)
P0462:00	Fuel gauge sender unit circuit low input	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-161 DTC P0462:00 [LF, L5].)
P0463:00	Fuel gauge sender unit circuit high input	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-162 DTC P0463:00 [LF, L5].)
P0480:00	Cooling fan control circuit problem	OFF	OFF	1	Other	C, O, R	×	(See 01-02A-163 DTC P0480:00 [LF, L5].)
P0500:00	VSS circuit problem	ON	OFF	2	CCM	C	×	(See 01-02A-165 DTC P0500:00 [LF, L5].)
P0505:00 ^{*6}	IAC system problem	OFF	OFF	—	Other	R	—	(See 01-02A-166 DTC P0505:00 [LF, L5].)
P0506:00	Idle air control system RPM lower than expected	ON	OFF	2	CCM	C	×	(See 01-02A-168 DTC P0506:00 [LF, L5].)
P0507:00	Idle air control system RPM higher than expected	ON	OFF	2	CCM	C	×	(See 01-02A-170 DTC P0507:00 [LF, L5].)
P050A:00	Cold start idle air control system performance problem	ON	OFF	2	Cold start emission reduction strategy monitoring	C	×	(See 01-02A-171 DTC P050A:00 [LF, L5].)
P050B:00	Cold start ignition timing performance problem	ON	OFF	2	Cold start emission reduction strategy monitoring	C	×	(See 01-02A-173 DTC P050B:00 [LF, L5].)
P0571:00	Brake switch circuit problem	OFF	OFF	1	Other	C	×	(See 01-02A-174 DTC P0571:00 [LF, L5].)
P0579:00 ^{*2}	Cruise control multi-function input circuit range/performance problem	OFF	OFF	1	Other	C	×	(See 01-02A-176 DTC P0579:00 [LF, L5].)
P0581:00 ^{*2}	Cruise control multi-function input circuit high input	OFF	OFF	1	Other	C	×	(See 01-02A-179 DTC P0581:00 [LF, L5].)
P0600:00	Serial communication link	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-182 DTC P0600:00 [LF, L5].)

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ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0601:00	PCM memory check sum error	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-183 DTC P0601:00 [LF, L5].)
P0602:00	PCM programming error	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-184 DTC P0602:00 [LF, L5].)
P0604:00	PCM random access memory error	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-185 DTC P0604:00 [LF, L5].)
P0606:00	PCM processor error	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-185 DTC P0606:00 [LF, L5].)
P060B:00* ⁸	Internal control module A/D processing performance problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02C-1 DTC P060B:00 [L5].)
P060C:00* ⁸	Internal control module main processor performance problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02C-2 DTC P060C:00, P061D:00 [L5].)
P0610:00	PCM vehicle configuration error	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-188 DTC P0610:00 [LF, L5].)
P061B:00* ⁸	Internal control module torque calculation performance problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02C-3 DTC P061B:00 [L5].)
P061D:00* ⁸	Internal control module engine air mass performance problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02C-2 DTC P060C:00, P061D:00 [L5].)
P061F:00* ⁸	Internal control module throttle valve actuator controller performance problem	OFF	OFF	1	Other	C, O, R	×	(See 01-02C-4 DTC P061F:00 [L5].)
P0638:00	Throttle valve actuator control circuit range/performance problem	ON	OFF	1	CCM	C	×	(See 01-02A-191 DTC P0638:00 [LF, L5].)
P064D:00	Internal control module A/F sensor processor performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02A-192 DTC P064D:00 [LF, L5].)
P0661:00	Variable intake air solenoid valve circuit low input	OFF	OFF	1	Other	C, O, R	×	(See 01-02A-193 DTC P0661:00 [LF, L5].)
P0662:00	Variable intake air solenoid valve circuit high input	OFF	OFF	1	Other	C, O, R	×	(See 01-02A-195 DTC P0662:00 [LF, L5].)
P0685:00	Main relay control circuit open	ON	OFF	2	CCM	C	×	(See 01-02A-197 DTC P0685:00 [LF, L5].)
P06B8:00	Internal control module non-volatile random access memory error	ON	OFF	1	CCM	C, O	×	(See 01-02A-198 DTC P06B8:00 [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0703:00	Brake switch input circuit problem	ON	OFF	2	CCM	C	×	(See 01-02A-199 DTC P0703:00 [LF, L5].)
P0704:00*4	CPP switch input circuit problem	ON	OFF	2	CCM	C	×	(See 01-02A-201 DTC P0704:00 [LF, L5].)
P0850:00*4	Neutral switch input circuit problem	ON	OFF	2	CCM	C	×	(See 01-02A-204 DTC P0850:00 [LF, L5].)
P1260:00	Immobilizer system problem	OFF	OFF	—	Other	C, O	—	(See 01-02A-206 DTC P1260:00 [LF, L5].)
P144A:00	EVAP system purge vapor line restricted/blocked	ON	OFF	2	EVAP system	C	×	(See 01-02A-207 DTC P144A:00 [LF, L5].)
P1450:00	Unable to bleed up fuel tank vacuum	ON	OFF	2	CCM	C	×	(See 01-02A-208 DTC P1450:00 [LF, L5].)
P2004:00	Variable tumble shutter valve stuck open	ON	OFF	2	CCM	C, R	×	(See 01-02A-217 DTC P2004:00 [LF, L5].)
P2006:00	Variable tumble shutter valve stuck closed	ON	OFF	2	CCM	C, R	×	(See 01-02A-221 DTC P2006:00 [LF, L5].)
P2009:00	Variable tumble solenoid valve circuit low input	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-224 DTC P2009:00 [LF, L5].)
P2010:00	Variable tumble solenoid valve circuit high input	ON	OFF	2	CCM	C, O, R	×	(See 01-02A-226 DTC P2010:00 [LF, L5].)
P2016:00	Variable tumble shutter valve switch circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-228 DTC P2016:00 [LF, L5].)
P2017:00	Variable tumble shutter valve switch circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-230 DTC P2017:00 [LF, L5].)
P2088:00	OCV circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-210 DTC P2088:00 [LF, L5].)
P2089:00	OCV circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-212 DTC P2089:00 [LF, L5].)
P2096:00	Target A/F feedback system too lean	ON	OFF	2	Fuel system	C	×	(See 01-02A-213 DTC P2096:00 [LF, L5].)

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ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P2097:00	Target A/F feedback system too rich	ON	OFF	2	Fuel system	C	×	(See 01-02A-232 DTC P2097:00 [LF, L5].)
P2100:00	Throttle valve actuator circuit open	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-235 DTC P2100:00 [LF, L5].)
P2101:00	Throttle valve actuator circuit range/performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02A-237 DTC P2101:00 [LF, L5].)
P2105:00	Throttle valve actuator control system-forced engine shutdown	ON	OFF	1	CCM	C, R	×	(See 01-02A-239 DTC P2105:00 [LF, L5].)
P2107:00	Throttle valve actuator control module processor error	ON	OFF	1	CCM	C, R	×	(See 01-02A-240 DTC P2107:00 [LF, L5].)
P2108:00	Throttle valve actuator control module performance error	ON	OFF	1	CCM	C, R	×	(See 01-02A-240 DTC P2108:00 [LF, L5].)
P2110:00*8	Throttle valve actuator control system-forced limited RPM	ON	OFF	1	CCM	C, R	×	(See 01-02C-5 DTC P2110:00 [L5].)
P2119:00	Throttle valve actuator control throttle body range/performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02A-242 DTC P2119:00 [LF, L5].)
P2122:00	APP sensor No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-243 DTC P2122:00 [LF, L5].)
P2123:00	APP sensor No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-245 DTC P2123:00 [LF, L5].)
P2126:00	APP sensor No.2 circuit range/performance no sub type information	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-247 DTC P2126:00 [LF, L5].)
P2127:00	APP sensor No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-249 DTC P2127:00 [LF, L5].)
P2128:00	APP sensor No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-251 DTC P2128:00 [LF, L5].)
P2135:00	TP sensor No.1/No.2 voltage correlation problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-253 DTC P2135:00 [LF, L5].)
P2138:00	APP sensor No.1/No.2 voltage correlation problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-254 DTC P2138:00 [LF, L5].)
P2183:00	ECT sensor No.2 circuit range/performance problem	ON	OFF	2	Engine cooling system	C	×	(See 01-02A-255 DTC P2183:00 [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P2195:00	A/F sensor signal stuck lean	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02A-257 DTC P2195:00 [LF, L5].)
P2196:00	A/F sensor signal stuck rich	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02A-259 DTC P2196:00 [LF, L5].)
P2228:00	BARO sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-262 DTC P2228:00 [LF, L5].)
P2229:00	BARO sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-264 DTC P2229:00 [LF, L5].)
P2237:00	A/F sensor positive current control circuit open	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-265 DTC P2237:00 [LF, L5].)
P2243:00	A/F sensor reference voltage circuit open	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-267 DTC P2243:00 [LF, L5].)
P2251:00	A/F sensor negative current control circuit open	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02A-269 DTC P2251:00 [LF, L5].)
P2502:00	Charging system voltage problem	OFF	ON	1	Other	C, R	×	(See 01-02A-271 DTC P2502:00 [LF, L5].)
P2503:00	Charging system voltage low input	OFF	ON	1	Other	C, R	×	(See 01-02A-273 DTC P2503:00 [LF, L5].)
P2504:00	Charging system voltage high input	OFF	ON	1	Other	C, R	×	(See 01-02A-275 DTC P2504:00 [LF, L5].)
P2507:00	PCM battery voltage low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02A-276 DTC P2507:00 [LF, L5].)
P2610:00	PCM internal engine off timer performance problem	ON	OFF	2	CCM	C	×	(See 01-02A-278 DTC P2610:00 [LF, L5].)
U0073:00	CAN system communication error							(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0101:00*3	Communication error to TCM							(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0121:00	Communication error to ABS HU/CM or DSC HU/CM							(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

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ON-BOARD DIAGNOSTIC [LF, L5]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
U0155:00	Communication error to instrument cluster							(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U3000:41	PCM processor error	OFF	OFF	—	Other	C, O	—	(See 01-02A-279 DTC U3000:41 [LF, L5].)

*1 : C: CMDTC self test, O: KOEO self test, R: KOER self test

*2 : With cruise control system

*3 : ATX

*4 : MTX

*5 : The fuel cap warning light illuminates

*6 : KOER self test only

*7 : California emission regulation applicable model

*8 : L5

DTC P0011:00 [LF, L5]

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DTC P0011:00	CMP timing over-advanced
DETECTION CONDITION	<ul style="list-style-type: none"> The actual valve timing is over-advanced by 15 ° from the target valve timing for specified period when the OCV is controlled in the maximum valve timing retard condition. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> Engine speed: below 4,000 rpm Engine coolant temperature: 60—110 °C {140—230 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> OCV malfunction Spool valve in OCV is stuck in advanced position Variable valve timing mechanism malfunction <ul style="list-style-type: none"> Variable valve timing mechanism misinstallation Loose timing chain or improper valve timing due to timing chain slippage Stopper pin mechanism malfunction Variable valve timing mechanism is stuck in advanced position PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT OCV <ul style="list-style-type: none"> Inspect the OCV. (See 01-10A-19 OIL CONTROL VALVE (OCV) INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the OCV, then go to Step 7. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	VERIFY VALVE TIMING MECHANISM INSTALLATION <ul style="list-style-type: none"> • Verify the valve timing mechanism installation for the following parts: <ul style="list-style-type: none"> — Crankshaft pulley lock bolt — Camshaft sprocket lock bolt — Timing chain • Is there any malfunction? 	Yes	Reinstall the misinstallation or loose parts correctly, then go to Step 7. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT STOPPER PIN MECHANISM <ul style="list-style-type: none"> • Remove the timing chain. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].) • Inspect the stopper pin mechanism. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable valve timing actuator, then go to Step 7. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT ROTOR POSITION <ul style="list-style-type: none"> • Remove the variable valve timing actuator. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].) • Is the rotor at the maximum valve timing advanced position? 	Yes	Reinstall or replace the variable valve timing actuator, then go to the next step. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Variable valve timing mechanism is normal. Note <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • An intermittent concern might be removed using the cleaning mode of the variable valve timing control function. Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Switch the ignition to off. • Start the engine and warm it up completely. • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0012:00 [LF, L5]

id0102c8700200

DTC P0012:00	CMP timing over-retarded
DETECTION CONDITION	<ul style="list-style-type: none"> The actual valve timing is over-retarded by 10 ° from the target valve timing for specified period when the OCV system control is within the feedback range. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> Engine speed: below 4,000 rpm Engine coolant temperature: 60—110 °C {140—230 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Low engine oil pressure OCV malfunction <ul style="list-style-type: none"> Spool valve in the OCV is stuck in retard position Timing chain misinstallation Engine oil runners are clogged or have leakage PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P2088:00 or P2089:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-210 DTC P2088:00 [LF, L5].) (See 01-02A-212 DTC P2089:00 [LF, L5].)
		No	Go to the next step.
4	VERIFY ENGINE OIL PRESSURE <ul style="list-style-type: none"> Start the engine. Does the oil pressure warning light illuminate? 	Yes	Inspect the engine oil pressure. (See 01-11A-5 OIL PRESSURE INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
5	INSPECT OCV <ul style="list-style-type: none"> Stop the engine. Inspect the OCV. (See 01-10A-19 OIL CONTROL VALVE (OCV) INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the OCV, then go to Step 8. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY TIMING CHAIN INSTALLATION <ul style="list-style-type: none"> Remove the timing chain cover. Is the camshaft timing mark at the correct point? 	Yes	Go to the next step.
		No	Reinstall the timing chain, then go to Step 8. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
7	INSPECT ENGINE OIL RUNNER <ul style="list-style-type: none"> • Inspect the following engine oil runners for clogging or leakage: <ul style="list-style-type: none"> — Between oil pressure switch and OCV — Between OCV and variable valve timing actuator — In variable valve timing actuator • Is there any clogging or leakage? 	Yes	Repair or replace the suspected runner, then go to the next step.
		No	Variable valve timing mechanism is normal. Note <ul style="list-style-type: none"> • This DTC is detected by intermittent concern. • An intermittent concern might be removed using the cleaning mode of the variable valve timing control function. Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Switch the ignition to off. • Start the engine and warm it up completely. • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0016:00 [LF, L5]

id0102c8145600

DTC P0016:00	CKP-CMP correlation
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the input pulses from the CKP sensor and CMP sensor. If the input pulse pick-up timing do not match each other, the PCM determines that the camshaft position does not coincide with the crankshaft position. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CKP sensor malfunction <ul style="list-style-type: none"> — Connector or terminals malfunction — Foreign material on CKP sensor — Damaged or scratched CKP sensor pulse wheel • CMP sensor malfunction <ul style="list-style-type: none"> — Connector or terminals malfunction — Foreign material on CMP sensor — Damaged or scratched CMP sensor pulse wheel • PCM connector or terminals malfunction • Improper valve timing • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT CKP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CKP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
4	INSPECT CKP SENSOR FOR FOREIGN MATERIAL <ul style="list-style-type: none"> • Visually inspect the CKP sensor for foreign materials. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) • Is there any foreign material on the CKP sensor? 	Yes	Remove the foreign material from the CKP sensor, then go to Step 13.
		No	Go to the next step.
5	INSPECT CKP SENSOR PULSE WHEEL <ul style="list-style-type: none"> • Visually inspect the CKP sensor pulse wheel. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) • Are there any damage or scratches at the CKP sensor pulse wheel? 	Yes	Replace the CKP sensor pulse wheel, then go to Step 13. (See 01-10A-30 CYLINDER HEAD GASKET REPLACEMENT [LF, L5].)
		No	Go to the next step.
6	INSPECT CKP SENSOR <ul style="list-style-type: none"> • Reconnect the CKP sensor connector. • Inspect the CKP sensor. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CKP sensor, then go to Step 13. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
7	INSPECT CMP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CMP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
8	INSPECT CMP SENSOR FOR FOREIGN MATERIAL <ul style="list-style-type: none"> • Visually inspect the CMP sensor for foreign materials. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) • Is there any foreign material on the CMP sensor? 	Yes	Remove the foreign material from the CMP sensor, then go to Step 13.
		No	Go to the next step.
9	INSPECT CMP SENSOR PULSE WHEEL <ul style="list-style-type: none"> • Visually inspect the CMP sensor pulse wheel. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) • Are there any damage or scratches at the CMP sensor pulse wheel? 	Yes	Replace the CMP sensor pulse wheel, then go to Step 13. (See 01-10A-30 CYLINDER HEAD GASKET REPLACEMENT [LF, L5].)
		No	Go to the next step.
10	INSPECT CMP SENSOR <ul style="list-style-type: none"> • Reconnect the CMP sensor connector. • Inspect the CMP sensor. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CMP sensor, then go to Step 13. (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
12	INSPECT VALVE TIMING <ul style="list-style-type: none"> • Inspect valve timing. • Is there any malfunction? 	Yes	Adjust the valve timing properly, then go to the next step. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
13	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

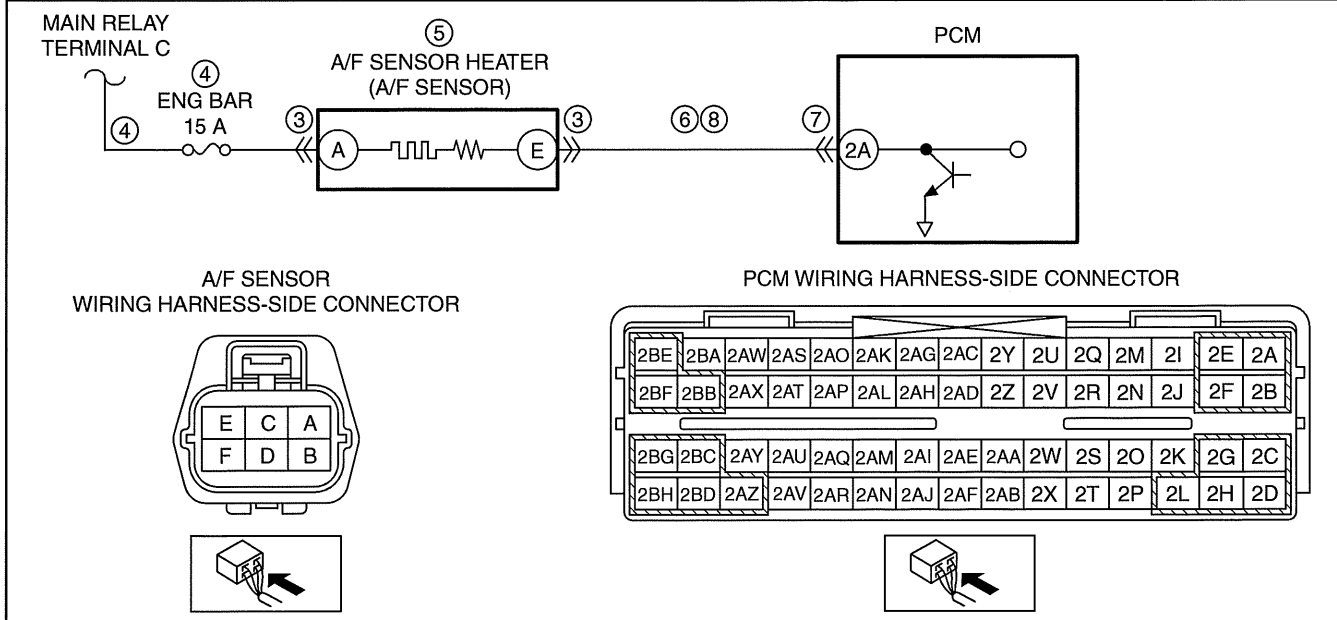
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0031:00 [LF, L5]

id0102c8700400

DTC P0031:00	A/F sensor heater control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor heater output voltage. If the PCM turns the A/F sensor heater off but the A/F sensor heater circuit remains low voltage, the PCM determines that the A/F sensor heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction Short to ground or open circuit in A/F sensor power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and A/F sensor terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and A/F sensor terminal A A/F sensor heater malfunction Short to ground in wiring harness between A/F sensor terminal E and PCM terminal 2A PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal E and PCM terminal 2A PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between A/F sensor terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 9. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Inspect for continuity between A/F sensor terminal E (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal E (wiring harness-side) and PCM terminal 2A (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

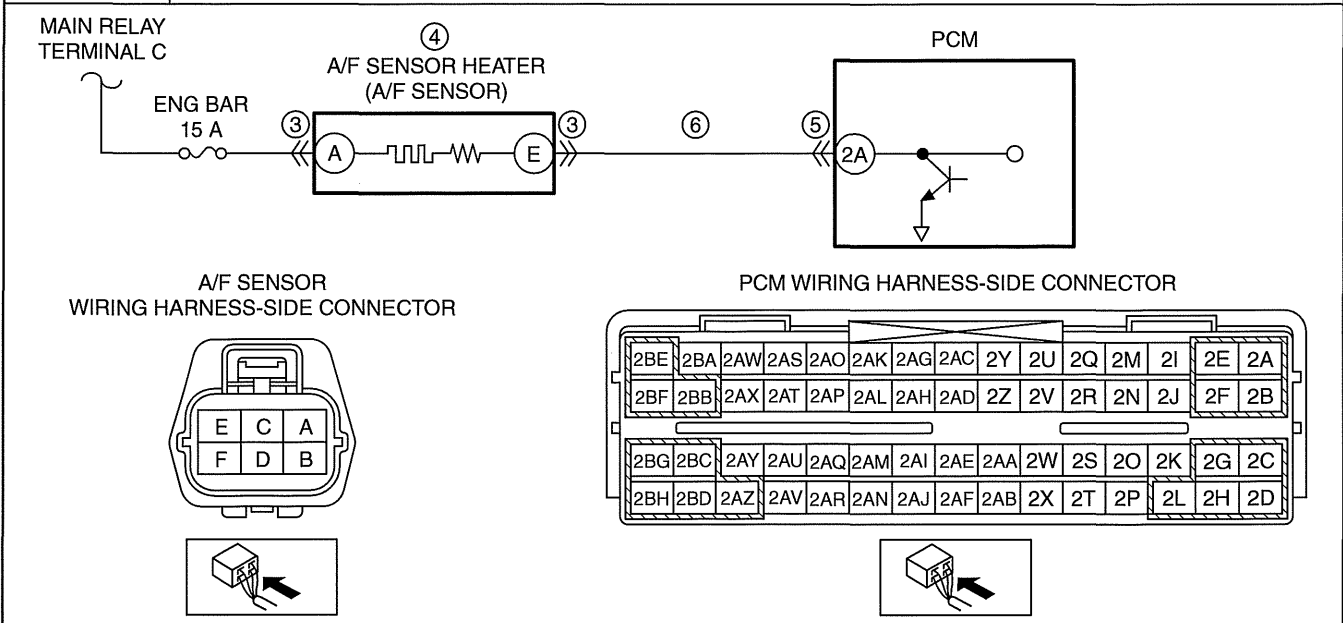
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0032:00 [LF, L5]

id0102c8700500

DTC P0032:00	A/F sensor heater control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor heater output voltage. If the PCM turns the A/F sensor heater on but the A/F sensor heater circuit remains high voltage, the PCM determines that the A/F sensor heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction A/F sensor heater malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between A/F sensor terminal E and PCM terminal 2A PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 7. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 2A (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

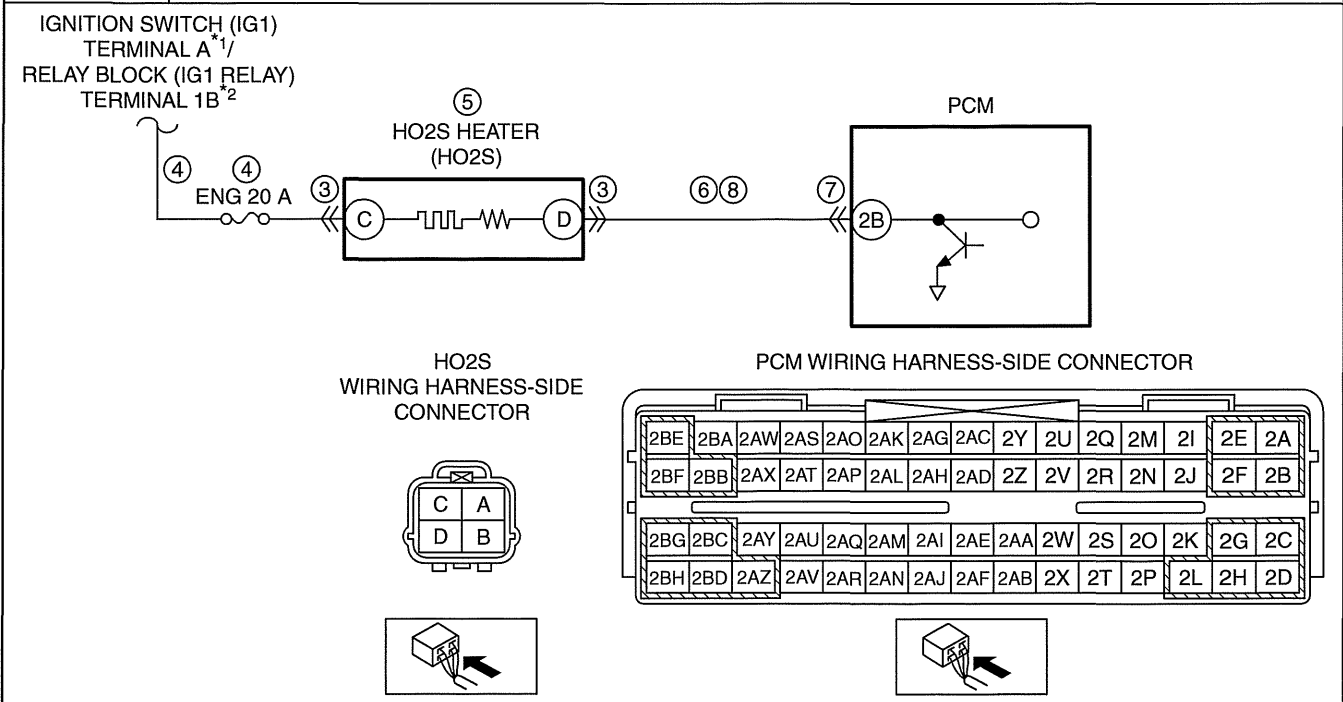
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0037:00 [LF, L5]

id0102c8700600

DTC P0037:00	HO2S heater control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the HO2S heater output voltage. If the PCM turns the HO2S heater off but the HO2S heater circuit remains low voltage, the PCM determines that the HO2S heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (A/F sensor heater, HO2S heater). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • HO2S connector or terminals malfunction • Short to ground or open circuit in HO2S heater power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between ignition switch terminal A^{*1}/relay block terminal 1B^{*2} and HO2S terminal C — ENG 20 A fuse malfunction — Open circuit in wiring harness between ignition switch terminal A^{*1}/relay block terminal 1B^{*2} and HO2S terminal C • HO2S heater malfunction • Short to ground in wiring harness between HO2S terminal D and PCM terminal 2B • PCM connector or terminals malfunction • Open circuit in wiring harness between HO2S terminal D and PCM terminal 2B • PCM malfunction



*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT HO2S HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between HO2S terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG 20 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT HO2S HEATER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the HO2S heater. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 9. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Inspect for continuity between HO2S terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT HO2S CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Inspect for continuity between HO2S terminal D (wiring harness-side) and PCM terminal 2B (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0038:00 [LF, L5]

id0102c8700700

DTC P0038:00	HO2S heater control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the HO2S heater output voltage. If the PCM turns the HO2S heater on but the HO2S heater circuit remains high voltage, the PCM determines that the HO2S heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction HO2S heater malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between HO2S terminal D and PCM terminal 2B PCM malfunction

*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
4	INSPECT HO2S HEATER <ul style="list-style-type: none"> • Inspect the HO2S heater. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 7. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 2B (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

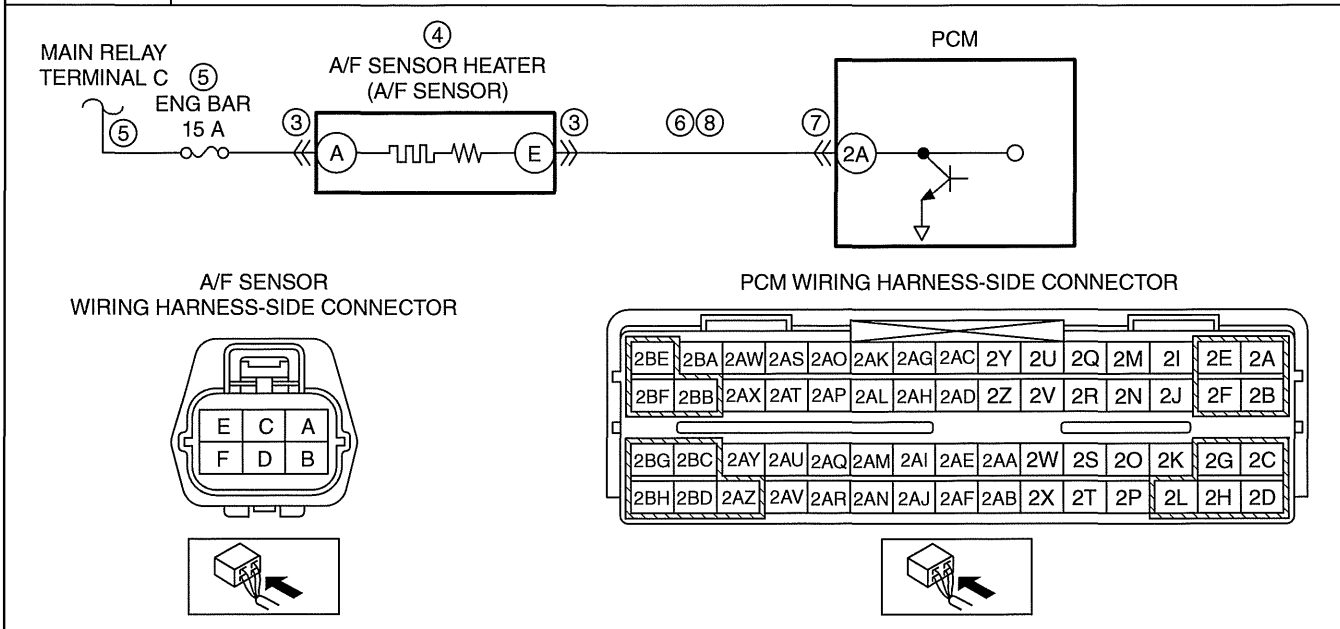
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0053:00 [LF, L5]

id0102c8933800

DTC P0053:00	A/F sensor heater resistance
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor heater resistance when under the A/F sensor heater control. If the resistance is more than 30 ohms, the PCM determines that there is a A/F sensor circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a intermittent monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction A/F sensor heater malfunction Short to ground or open circuit in A/F sensor heater power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and A/F sensor terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and A/F sensor terminal A Short to ground between A/F sensor terminal E and PCM terminal 2A PCM connector or terminals malfunction Open circuit between A/F sensor terminal E and PCM terminal 2A PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 9. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT A/F SENSOR HEATER CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between A/F sensor terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between A/F sensor terminal E (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between A/F sensor terminal E (wiring harness-side) and PCM terminal 2A (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0054:00 [LF, L5]

id0102c8933900

DTC P0054:00	HO2S heater resistance
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the HO2S heater resistance when under the HO2S heater control. If the resistance is more than 34 ohms, the PCM determines that there is a HO2S heater circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction HO2S heater malfunction Short to ground or open circuit in HO2S heater power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between ignition switch terminal A^{*1}/relay block terminal 1B^{*2} terminal C and HO2S terminal C ENG 20 A fuse malfunction Open circuit in wiring harness between ignition switch terminal A^{*1}/relay block terminal 1B^{*2} and HO2S terminal C Short to ground between HO2S terminal D and PCM terminal 2B PCM connector or terminals malfunction Open circuit between HO2S terminal D and PCM terminal 2B PCM malfunction

IGNITION SWITCH TERMINAL A^{*1}/
RELAY BLOCK TERMINAL 1B^{*2}

PCM

HO2S
WIRING HARNESS-SIDE
CONNECTOR

PCM WIRING HARNESS-SIDE CONNECTOR

*1 : Vehicles with advanced keyless entry and push button start system

*2 : Vehicles without advanced keyless entry and push button start system

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT HO2S HEATER <ul style="list-style-type: none"> • Inspect the HO2S heater. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 9. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT HO2S HEATER CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between HO2S terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG 20 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Switch the ignition to off. • Inspect for continuity between HO2S terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT HO2S CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Inspect for continuity between HO2S terminal D (wiring harness-side) and PCM terminal 2B (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0069:00 [LF, L5]

id0102c8300000

DTC P0069:00	Manifold absolute pressure/atmospheric pressure correlation
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors difference between intake manifold vacuum and atmospheric pressure. If the difference is below -12 kPa {-90 mmHg, -3.5 inHg} or above 12 kPa {90 mmHg, 3.5 inHg} when the following conditions are met, the PCM determines that there is a MAP sensor performance problem. <p>MONITORING CONDITIONS</p> <p>— 12—15 s from when ignition is switched to off</p> <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor malfunction or substandard performance BARO sensor malfunction or substandard performance PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON. Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0107:00, P0108:00, P2228:00 or P2229:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-56 DTC P0107:00 [LF, L5].) (See 01-02A-58 DTC P0108:00 [LF, L5].) (See 01-02A-262 DTC P2228:00 [LF, L5].) (See 01-02A-264 DTC P2229:00 [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (Mode 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0069:00 on the FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT MAP SENSOR <ul style="list-style-type: none"> Inspect the MAP sensor. (See 01-40A-26 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the MAP sensor, then go to step 7. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT BARO SENSOR <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Access the BARO PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the value within the specification? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

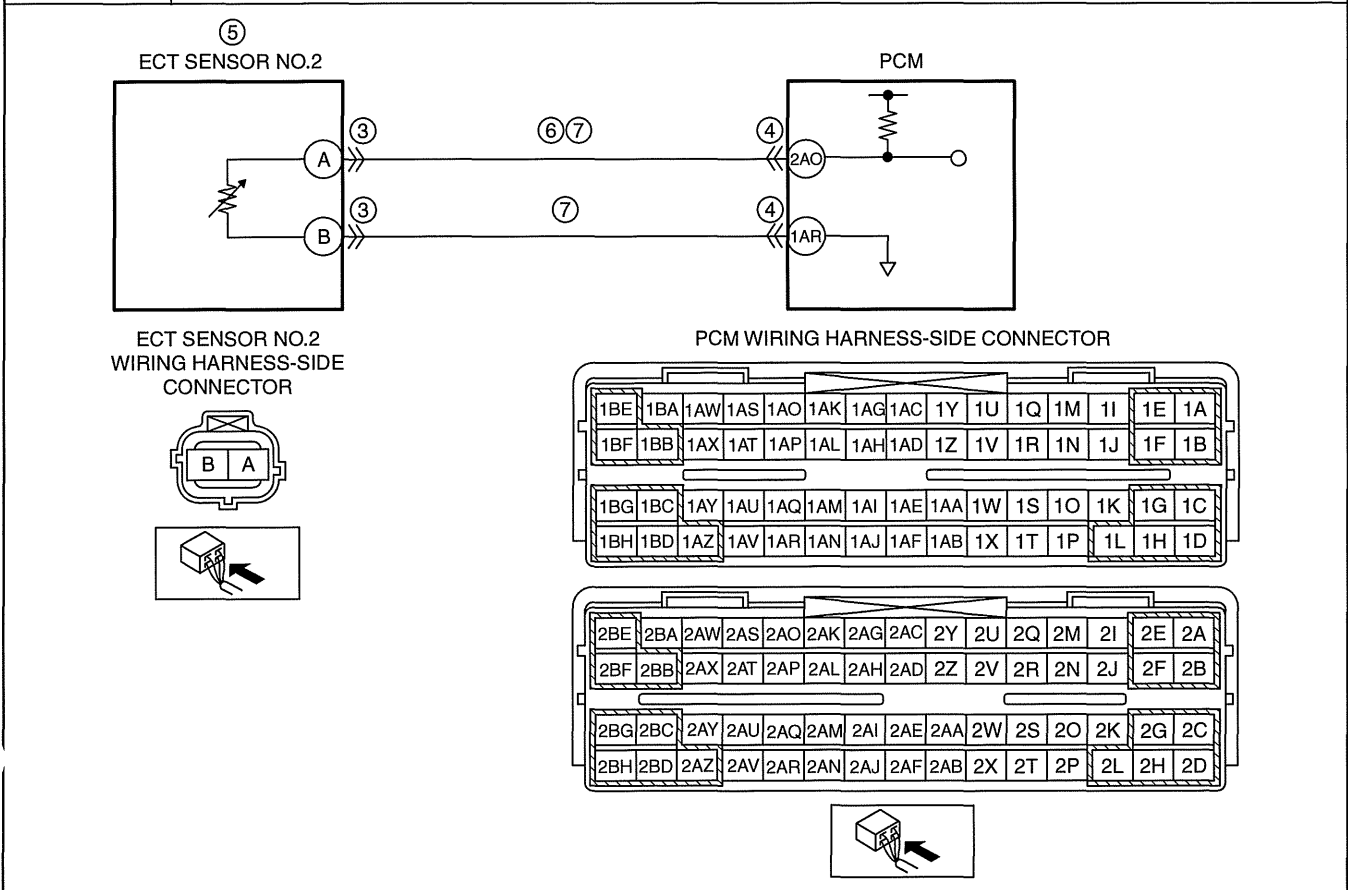
01-02A

STEP	INSPECTION		ACTION
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and warm it up completely. Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P00B3:00 [LF, L5]

id0102c8934000

DTC P00B3:00	ECT sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.2 signal. If the PCM detects that the ECT sensor No.2 voltage is below 0.25 V for 5 s, the PCM determines that the ECT sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.2 connector or terminals malfunction PCM connector or terminals malfunction ECT sensor No.2 malfunction Short to ground in wiring harness between ECT sensor No.2 terminal A and PCM terminal 2AO ECT sensor No.2 signal circuit and ground circuit are shorted to each other PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.2 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	VERIFY PID DATA FOR ECT SENSOR NO.2 MALFUNCTION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the ECT2 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify the ECT2 value when disconnecting ECT sensor No.2 connector. • Is the ECT2 value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the ECT sensor No.2, then go to Step 8. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
6	INSPECT ECT SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Inspect for continuity between ECT sensor No.2 terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
7	INSPECT ECT SENSOR NO.2 SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Inspect for continuity between ECT sensor terminals A and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to the next step.
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

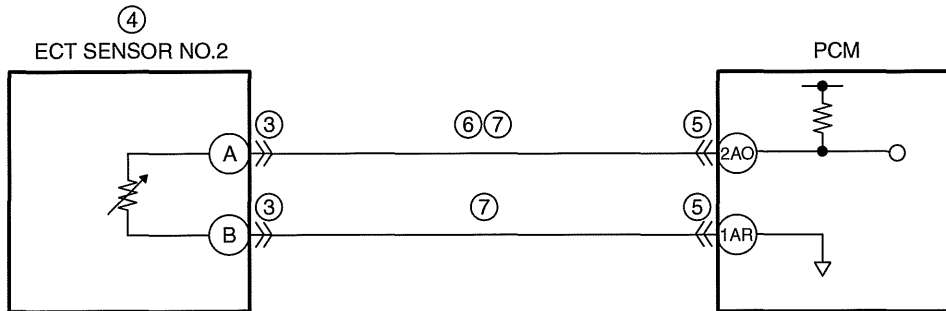
STEP	INSPECTION		ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P00B4:00 [LF, L5]

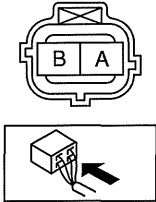
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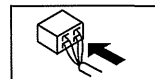
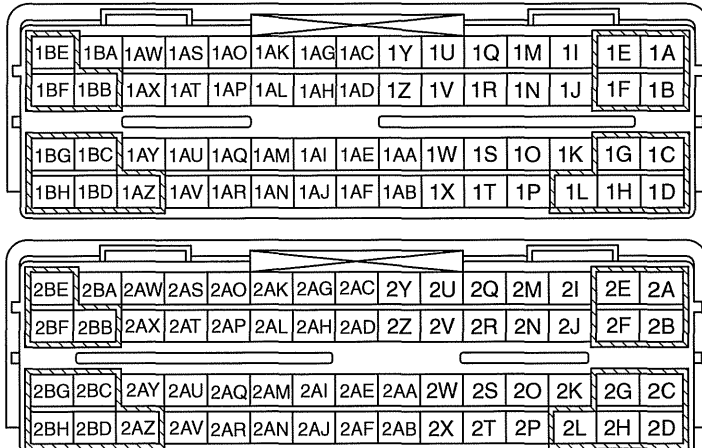
DTC P00B4:00	ECT sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.2 signal. If the PCM detects that the ECT sensor No.2 voltage is above 4.95 V for 5 s, the PCM determines that the ECT sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.2 connector or terminals malfunction ECT sensor No.2 malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between ECT sensor No.2 terminal A and PCM terminal 2AO Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — ECT sensor No.2 terminal A—PCM terminal 2AO — ECT sensor No.2 terminal B—PCM terminal 1AR PCM malfunction



ECT SENSOR NO.2
WIRING HARNESS-SIDE
CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.2 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
4	VERIFY PID DATA FOR ECT SENSOR NO.2 MALFUNCTION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the ECT2 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Connect a jumper wire between ECT sensor terminals A and B (wiring harness-side). • Is the voltage 4.6 V or below? 	Yes	Replace the ECT sensor No.2, then go to Step 8. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between ECT sensor No.2 terminal A (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT ECT SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — ECT sensor terminal A—PCM terminal 2AO — ECT sensor terminal B—PCM terminal 1AR • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0101:00 [LF, L5]

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01-02A

DTC P0101:00	MAF sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> When the conditions are as follows, the PCM compares the intake airflow amount with the estimated intake airflow amount (calculated from the barometric pressure, MAP sensor and throttle opening angle). <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> Engine speed: below 4,500 rpm Barometric pressure divided by intake manifold absolute pressure: above 1.2 Throttle position–throttle position before 20 ms: below 10% Battery voltage: above 8 V <ul style="list-style-type: none"> If over a period continuing for 5 s, the cumulative value of the intake airflow amount divided by the estimated intake airflow amount is 1.35 or more, and intake airflow amount multiplied by the estimated intake airflow amount is 6 g/s {0.8 lb/min} or more, the PCM determines that the detected mass air flow amount is above is too high. If over a period continuing for 5 s, the cumulative value of the intake airflow amount divided by the estimated intake airflow amount is 0.65 or less, and intake airflow amount multiplied by the estimated intake airflow amount is 6 g/s {0.8 lb/min} or less, the PCM determines that the detected mass air flow amount is above is too low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF sensor connector or terminals malfunction PCM connector or terminals malfunction MAF sensor malfunction MAP sensor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P2108:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-240 DTC P2108:00 [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the following PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — ECT1 — ECT2 — TP REL — RPM • Warm up the engine until ECT1 and ECT2 PIDs are above -200 °C {-392 °F}. • Idle the engine for 5 s or more. <ul style="list-style-type: none"> Caution <ul style="list-style-type: none"> • While the driving, always operate the vehicle in a safe and lawful manner. • Drive the vehicle under the following two PID conditions: <ul style="list-style-type: none"> Condition 1 <ul style="list-style-type: none"> — TP REL: 50—87.5% — RPM: above 500 rpm — 4th gear (MTX), D range (ATX) Condition 2 <ul style="list-style-type: none"> — TP REL: above 80% — RPM: below 2,000 rpm — Gear in • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the “INTERMITTENT CONCERNS TROUBLESHOOTING” procedure. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)
5	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT MAF SENSOR <ul style="list-style-type: none"> • Inspect the MAF sensor. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 9. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Inspect the MAP sensor. (See 01-40A-26 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAP sensor, then go to the next step. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to connect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine. • Warm up the engine until ECT1 and ECT2 PIDs are above -200 °C {-392 °F}. • Idle engine for 5 s or more. Caution <ul style="list-style-type: none"> • While the driving, always operate the vehicle in a safe and lawful manner. • Drive the vehicle under the following two PID conditions: Condition 1 <ul style="list-style-type: none"> — TP REL: 50—87.5% — RPM: above 500 rpm — 4th gear (MTX), D range (ATX) Condition 2 <ul style="list-style-type: none"> — TP REL: above 80% — RPM: below 2,000 rpm — Gear in • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

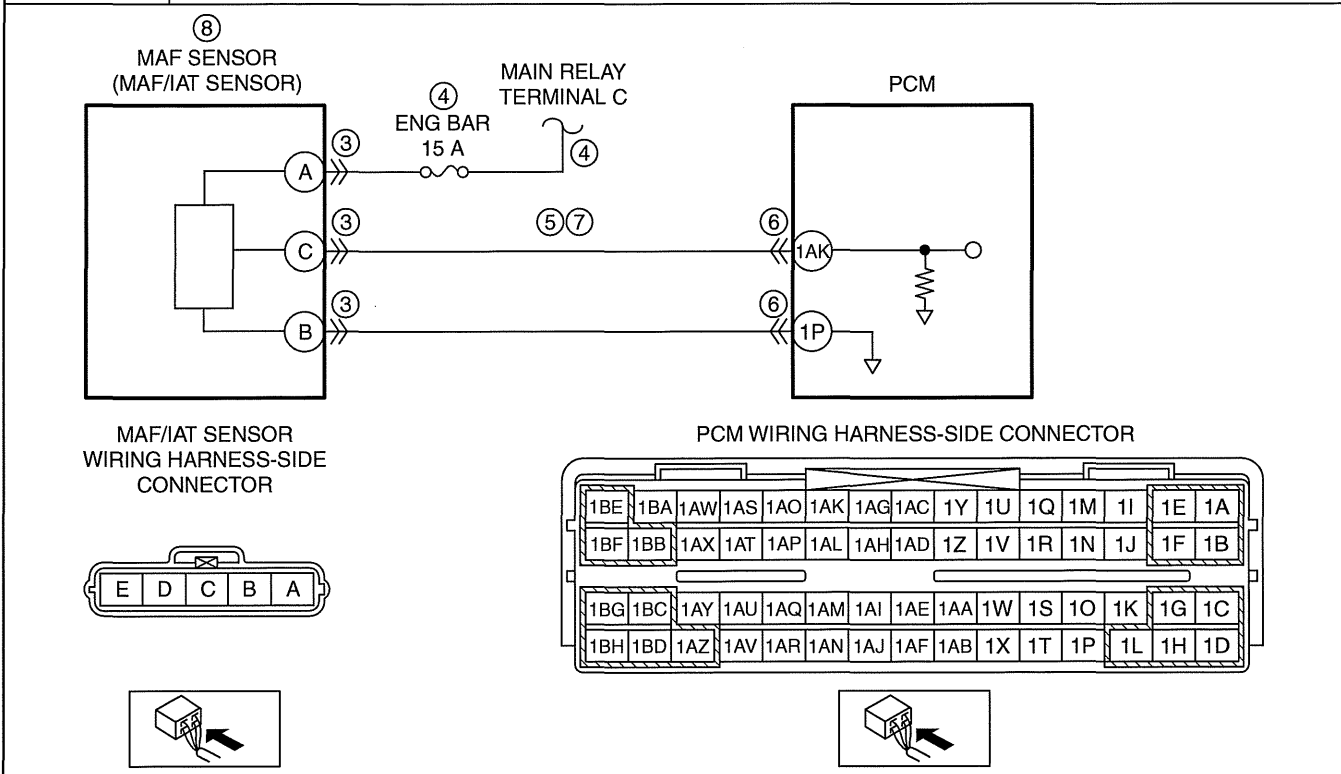
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0102:00 [LF, L5]

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DTC P0102:00	MAF sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from the MAF sensor when the engine running. If the input voltage is below 0.2 V for 5 s, the PCM determines that the MAF sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction Short to ground or open circuit in MAF sensor power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and MAF/IAT sensor terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and MAF/IAT sensor terminal A Short to ground in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK PCM connector or terminals malfunction Open circuit in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK MAF sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT MAF SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the MAF/IAT sensor terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between MAF/IAT sensor terminal C (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Inspect for continuity between MAF/IAT sensor terminal C (wiring harness-side) and PCM terminal 1AK (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT MAF SENSOR <ul style="list-style-type: none"> • Inspect the MAF sensor. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

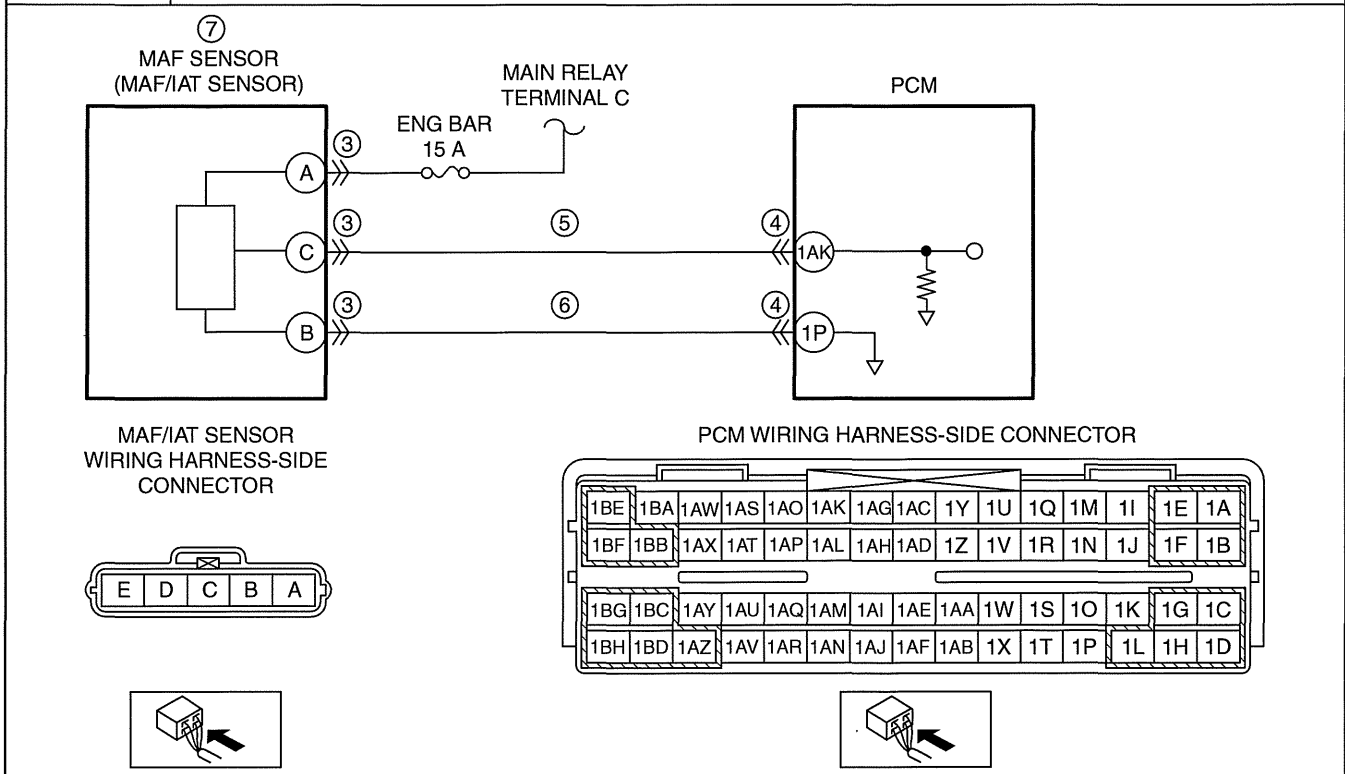
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0103:00 [LF, L5]

id0102c8701000

DTC P0103:00	MAF sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the MAF sensor when the engine running. If the input voltage is above 4.9 V for 5 s, the PCM determines that the MAF sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK Open circuit in wiring harness between MAF/IAT sensor terminal B and PCM terminal 1P MAF sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 1AK (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT MAF SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between MAF/IAT sensor terminal B (wiring harness-side) and PCM terminal 1P (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT MAF SENSOR <ul style="list-style-type: none"> • Inspect the MAF sensor. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT POWER SUPPLY CIRCUIT VOLTAGE AT MAP SENSOR CONNECTOR Note <ul style="list-style-type: none"> • If DTC P0122:00 is also retrieved with P0107:00, go to CONSTANT VOLTAGE troubleshooting procedure. • Switch the ignition to ON (engine off). • Measure the voltage between MAP sensor terminal C (wiring harness-side) and body ground. • Is the voltage within 4.5—5.5 V? 	Yes	Go to the next step.
		No	Go to Step 6.
5	INSPECT MAP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 12.
		No	Replace the MAP sensor, then go to Step 12. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
6	INSPECT MAP SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor connector. • Inspect for continuity between MAP sensor terminal C (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 12.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 12.
		No	Go to the next step.
8	INSPECT MAP SENSOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAP sensor and PCM connectors are disconnected. • Inspect for continuity between MAP sensor terminal C (wiring harness-side) and PCM terminal 2AU (wiring harness-side). • Is there continuity? 	Yes	Go to Step 12.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
9	INSPECT MAP SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor and PCM connectors. • Inspect for continuity between MAP sensor terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 12.
		No	Go to the next step.
10	INSPECT MAP SENSOR SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • MAP sensor and PCM connectors are disconnected. • Inspect for continuity between MAP sensor terminals D and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 12.
		No	Go to the next step.
11	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Reconnect the MAP sensor and PCM connectors. • Inspect the MAP sensor. (See 01-40A-26 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAP sensor, then go to the next step. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

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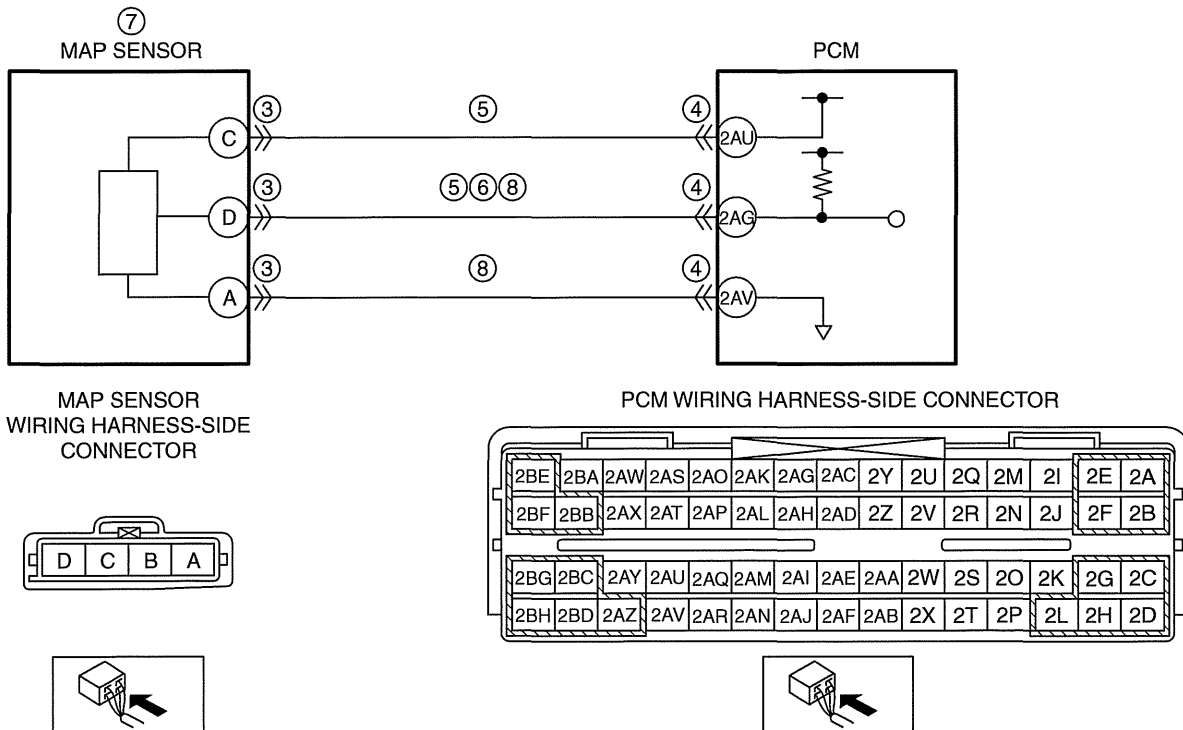
ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Switch the ignition to ON (engine off). Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0108:00 [LF, L5]

id0102c8701200

DTC P0108:00	MAP sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the MAP sensor. If input the voltage is above 4.9 V for 5 s, the PCM determines that the MAP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor connector or terminals malfunction PCM connector or terminals malfunction MAP sensor signal circuit and power supply circuit are shorted to each other Short to power supply in wiring harness between MAP sensor terminal D and PCM terminal 2AG MAP sensor malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> MAP sensor terminal A—PCM terminal 2AV MAP sensor terminal D—PCM terminal 2AG PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
5	INSPECT MAP SENSOR SIGNAL AND POWER SUPPLY CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • MAP sensor and PCM connectors are disconnected. • Inspect for continuity between MAP sensor terminals C and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 9.
		No	Go to the next step.
6	INSPECT MAP SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between MAP sensor terminal D (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Inspect the MAP sensor. (See 01-40A-26 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAP sensor, then go to Step 9. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT MAP SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor and PCM connectors. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — MAP sensor terminal A—PCM terminal 2AV — MAP sensor terminal D—PCM terminal 2AG • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Switch the ignition to ON (engine off). Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0111:00 [LF, L5]

id0102c8701300

DTC P0111:00	IAT sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> If the intake air temperature is higher than the engine coolant temperature by 18 °C {32 °F} for 1.2 s or the intake air temperature is lower than the engine coolant temperature by -48 °C {-54 °F} for 1.2 s with the ignition switch is ON*, the PCM determines that there is a IAT sensor circuit range/performance problem. *: Ignition switch is ON when 6 h or more have passed since the ignition was switched to off. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction IAT sensor malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
4	INSPECT IAT SENSOR <ul style="list-style-type: none"> Inspect the IAT sensor. (See 01-40A-25 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [LF, L5]) Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 6. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

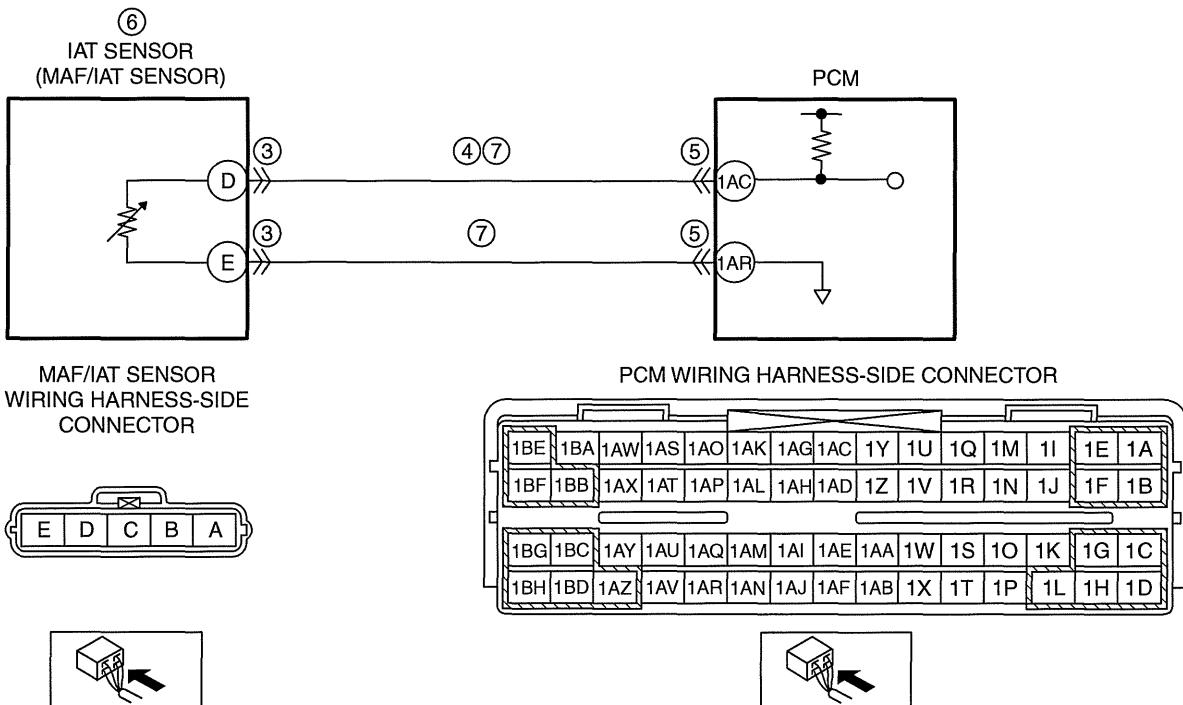
STEP	INSPECTION	ACTION	
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to the next step.
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Drive the vehicle under snapshot data condition. Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

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DTC P0112:00 [LF, L5]

id0102c8701400

DTC P0112:00	IAT sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the IAT sensor signal. If the PCM detects that the IAT sensor voltage is below 0.1 V for 5 s, the PCM determines that the IAT sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction Short to ground in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1AC PCM connector or terminals malfunction IAT sensor malfunction IAT sensor signal circuit and ground circuit are shorted to each other PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
4	INSPECT IAT SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Inspect for continuity between MAF/IAT sensor terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a short to ground, then go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	VERIFY PID DATA FOR IAT SENSOR MALFUNCTION <ul style="list-style-type: none"> • Reconnect the MAF/IAT sensor and PCM connectors. • Connect the M-MDS to the DLC-2. • Access the IAT PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify the IAT value when disconnect the MAF/IAT sensor connector. • Is the IAT value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the MAF/IAT sensor, then go to Step 8. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
7	INSPECT IAT SENSOR SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Disconnect the MAF/IAT sensor and PCM connectors. • Inspect for continuity between MAF/IAT sensor terminals D and E (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness , then go to the next step.
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

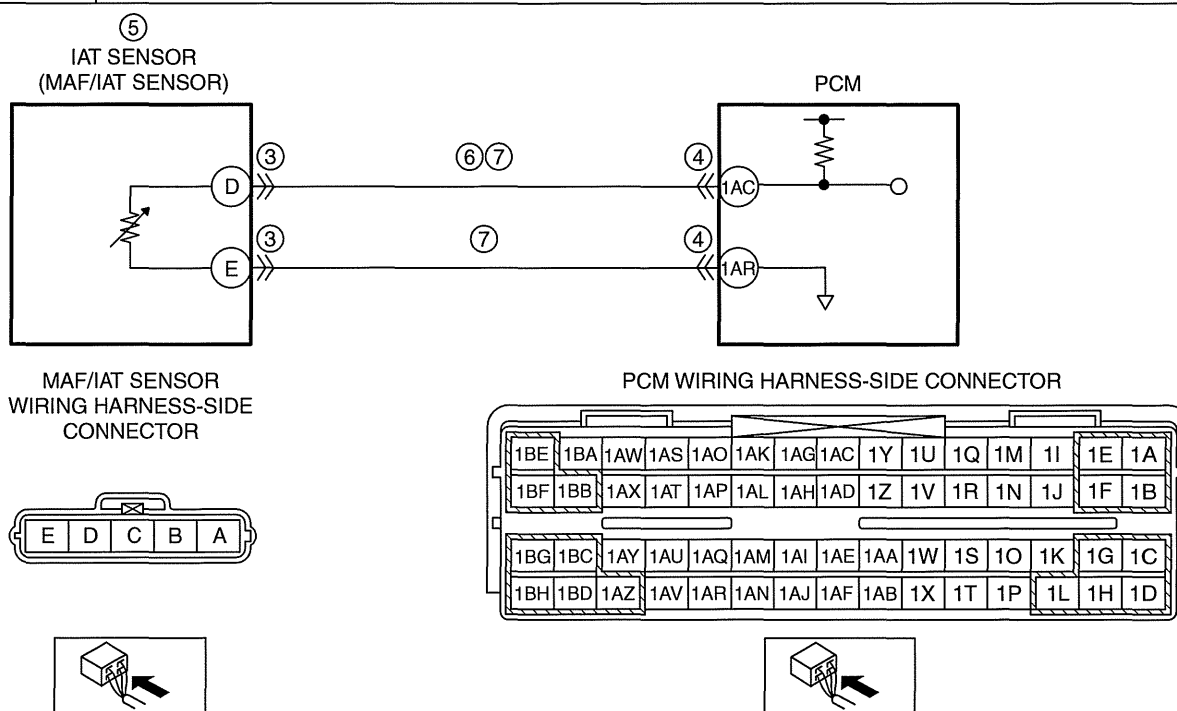
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0113:00 [LF, L5]

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01-02A

DTC P0113:00	IAT sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the IAT sensor signal. If the PCM detects that the IAT sensor voltage is above 4.9 V for 5 s, the PCM determines that the IAT sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction PCM connector or terminals malfunction IAT sensor malfunction Short to power supply in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1AC Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — MAF/IAT sensor terminal D—PCM terminal 1AC — MAF/IAT sensor terminal E—PCM terminal 1AR PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	VERIFY PID DATA FOR IAT SENSOR MALFUNCTION <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Reconnect the PCM connector. • Connect the M-MDS to the DLC-2. • Access the IAT PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Connect a jumper wire between MAF/IAT sensor terminals D and E (wiring harness-side). • Is the voltage below 4.9 V? 	Yes	Replace the MAF/IAT sensor, then go to Step 8. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT IAT SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Disconnect the PCM connector. • Switch the ignition to ON (engine off). • Measure the voltage between MAF/IAT sensor terminal D (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT IAT SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — MAF/IAT sensor terminal D—PCM terminal 1AC — MAF/IAT sensor terminal E—PCM terminal 1AR • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0116:00 [LF, L5]

id0102c8146800

DTC P0116:00	ECT sensor No.1 circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the maximum value and minimum value of engine coolant temperature when the engine is started and 5 min have been passed after leaving the vehicle 6 h or more. If difference between maximum and minimum values of engine coolant temperature is below 6 °C {43 °F} the PCM determines that there is an ECT sensor circuit No.1 range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.1 connector or terminals malfunction PCM connector or terminals malfunction ECT sensor No.1 malfunction Thermostat malfunction PCM malfunction

01-02A

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes Go to the next step.
		No Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0116:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to troubleshooting for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
4	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the ECT sensor No.1 connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
6	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> Inspect the ECT sensor No.1. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the ECT sensor No.1, then go to Step 9. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION				
7	COMPARE ECT1 PID VALUE <ul style="list-style-type: none"> • Prepare a new ECT sensor No.1. • Connect the ECT sensor No.1 connector to the new one without installing to the engine. • Switch the ignition to ON and record the ECT1 PID value. • Switch the ignition to off. • Replace the malfunction ECT sensor No.1 with new one. • Start the engine and wait for 5 min. • Record the ECT1 PID value. • Is the difference between each ECT1 PID values more than 6 °C {43 °F}? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to Step 9.</td> </tr> </table>	Yes	Go to the next step.	No	Go to Step 9.
Yes	Go to the next step.					
No	Go to Step 9.					
8	INSPECT THERMOSTAT <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the thermostat. (See 01-12A-12 THERMOSTAT INSPECTION [LF, L5].) • Is there any malfunction? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Replace the thermostat, then go to the next step. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the thermostat, then go to the next step. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)	No	Go to the next step.
Yes	Replace the thermostat, then go to the next step. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)					
No	Go to the next step.					
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Switch the ignition to off. • Start the engine and warm it up completely. • Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the same DTC present? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)	No	Go to the next step.
Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)					
No	Go to the next step.					
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)					
No	DTC troubleshooting completed.					

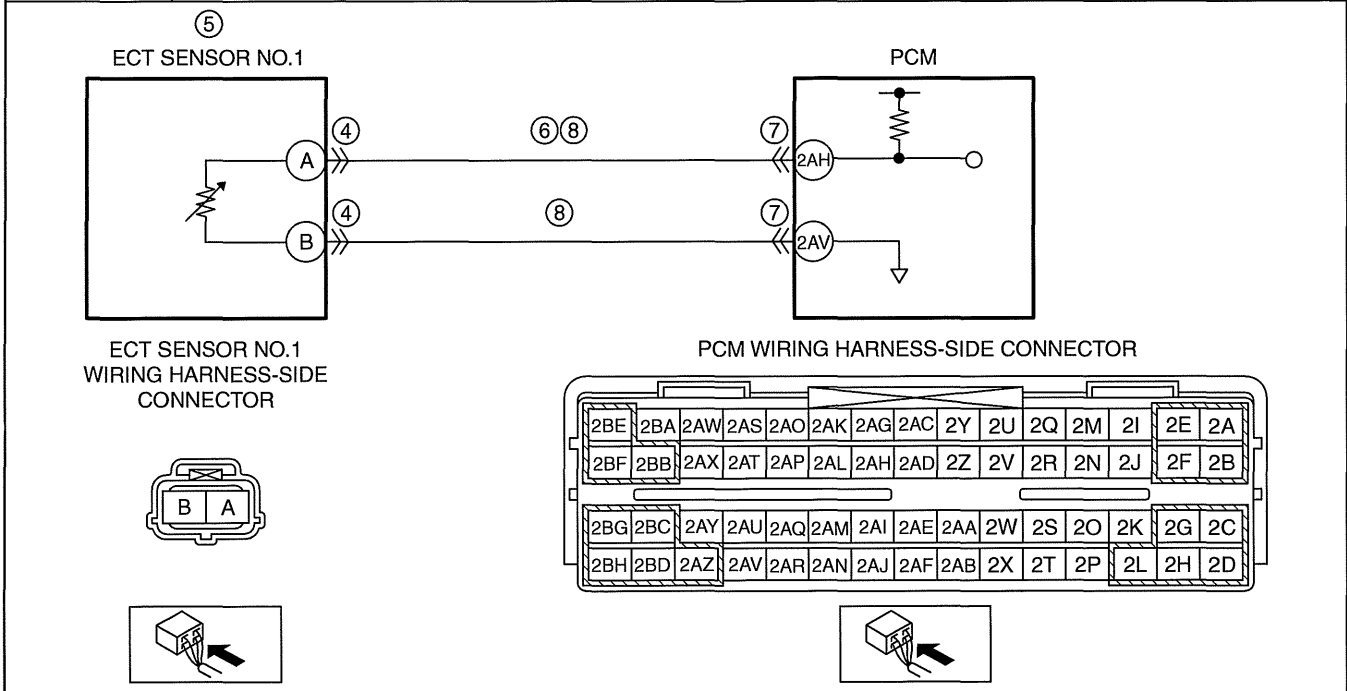
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0117:00 [LF, L5]

id0102c8701600

01-02A

DTC P0117:00	ECT sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.1 signal. If the PCM detects that the ECT sensor No.1 voltage is below 0.2 V for 5 s, the PCM determines that the ECT sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Engine overheating (Cooling system malfunction) ECT sensor No.1 connector or terminals malfunction ECT sensor No.1 malfunction Short to ground in wiring harness between ECT sensor No.1 terminal A and PCM terminal 2AH PCM connector or terminals malfunction ECT sensor No.1 signal circuit and ground circuit are shorted to each other PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY ENGINE CONDITION <ul style="list-style-type: none"> Is the engine overheating? 	Yes	Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].).
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.1 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
5	VERIFY PID DATA FOR ECT MALFUNCTION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the ECT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify and compare the ECT1 PID values when disconnecting and connecting ECT sensor No.1 connector. • Does the ECT1 value change? 	Yes	Replace the ECT sensor No.1, then go to Step 9. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.1 connector. • Inspect for continuity between ECT sensor No.1 terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT ECT SENSOR NO.1 SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • ECT sensor No.1 and PCM connectors are disconnected. • Inspect for continuity between ECT sensor No.1 terminals A and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to the next step.
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

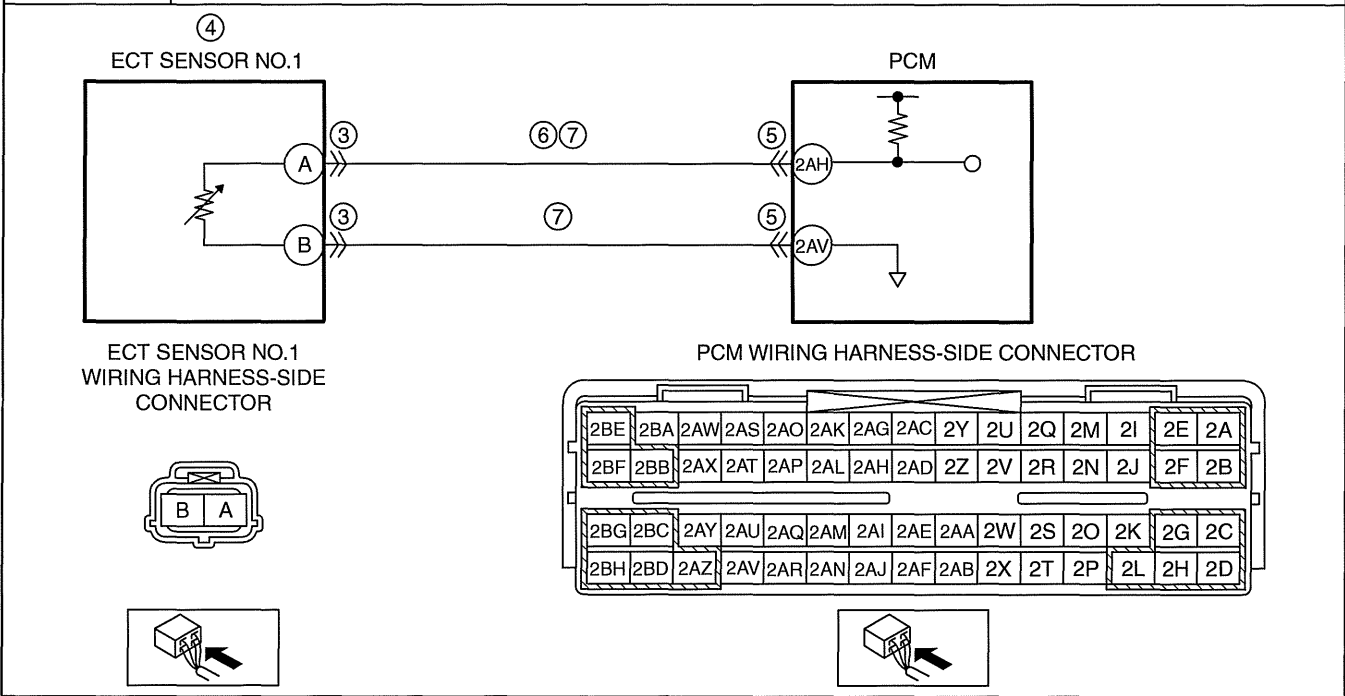
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0118:00 [LF, L5]

id0102c8701700

01-02A

DTC P0118:00	ECT sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.1 signal. If the PCM detects that the ECT sensor No.1 voltage is above 4.6 V for 5 s, the PCM determines that the ECT sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.1 connector or terminals malfunction ECT sensor No.1 malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between ECT sensor No.1 terminal A and PCM terminal 2AH Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — ECT sensor No.1 terminal A—PCM terminal 2AH — ECT sensor No.1 terminal B—PCM terminal 2AV PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the ECT sensor No.1 connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	VERIFY PID DATA FOR ECT SENSOR NO.1 MALFUNCTION <ul style="list-style-type: none"> • ECT sensor No.1 connector is disconnected. • Connect the M-MDS to the DLC-2. • Access the ECT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Connect a jumper wire between ECT sensor No.1 terminals A and B (wiring harness-side). • Is the voltage 4.6 V or below? 	Yes	Replace the ECT sensor No.1, then go to Step 8. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • ECT sensor No.1 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between ECT sensor No.1 terminal A (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT ECT SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • ECT sensor No.1 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — ECT sensor No.1 terminal A—PCM terminal 2AH — ECT sensor No.1 terminal B—PCM terminal 2AV • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

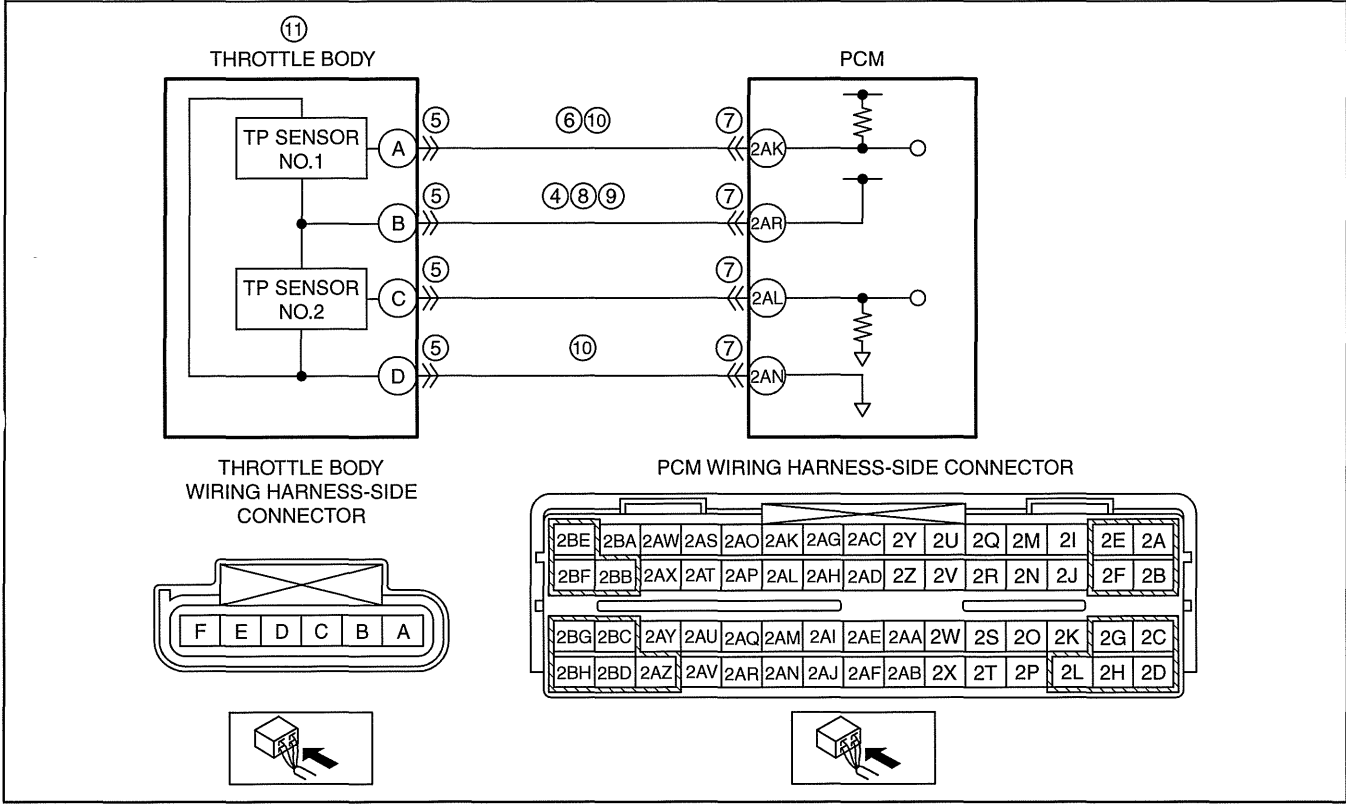
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0122:00 [LF, L5]

id0102c8701800

01-02A

DTC P0122:00	TP sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the TP sensor No.1 voltage is below 0.2 V while the engine is running, the PCM determines that the TP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction conditions in first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction Short to ground in wiring harness between throttle body terminal A and PCM terminal 2AK PCM connector or terminals malfunction Open circuit in wiring harness between throttle body terminal B and PCM terminal 2AR Short to ground in wiring harness between throttle body terminal B and PCM terminal 2AR TP sensor No.1 signal circuit and ground circuit are shorted to each other TP sensor No.1 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY PID DATA FOR TP SENSOR NO.1 MALFUNCTION <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Access the TP1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Connect a jumper wire between throttle body terminals A and B (wiring harness-side). Is the voltage above 4.9 V? 	Yes	Go to the next step.
		No	Go to Step 9.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT POWER SUPPLY CIRCUIT VOLTAGE AT THROTTLE BODY CONNECTOR Note <ul style="list-style-type: none"> • If DTC P0107:00 is also retrieved with P0122:00, go to CONSTANT VOLTAGE troubleshooting procedure. • Switch the ignition to ON (engine off). • Measure the voltage between throttle body terminal B (wiring harness-side) and body ground. • Is the voltage within 4.5—5.5 V? 	Yes	Go to the next step.
		No	Go to Step 6.
5	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 12.
		No	Replace the throttle body, then go to Step 12. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
6	INSPECT TP1 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Inspect for continuity between throttle body terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 12.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 12.
		No	Go to the next step.
8	INSPECT TP1 POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminal B (wiring harness-side) and PCM terminal 2AR (wiring harness-side). • Is there continuity? 	Yes	Go to Step 12.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
9	INSPECT TP1 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body and PCM connectors. • Inspect for continuity between throttle body terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 12.
		No	Go to the next step.
10	INSPECT TP1 SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminals A and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 12.
		No	Go to the next step.
11	INSPECT TP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect the throttle body and PCM connectors are disconnected. • Inspect the TP sensor No.1. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

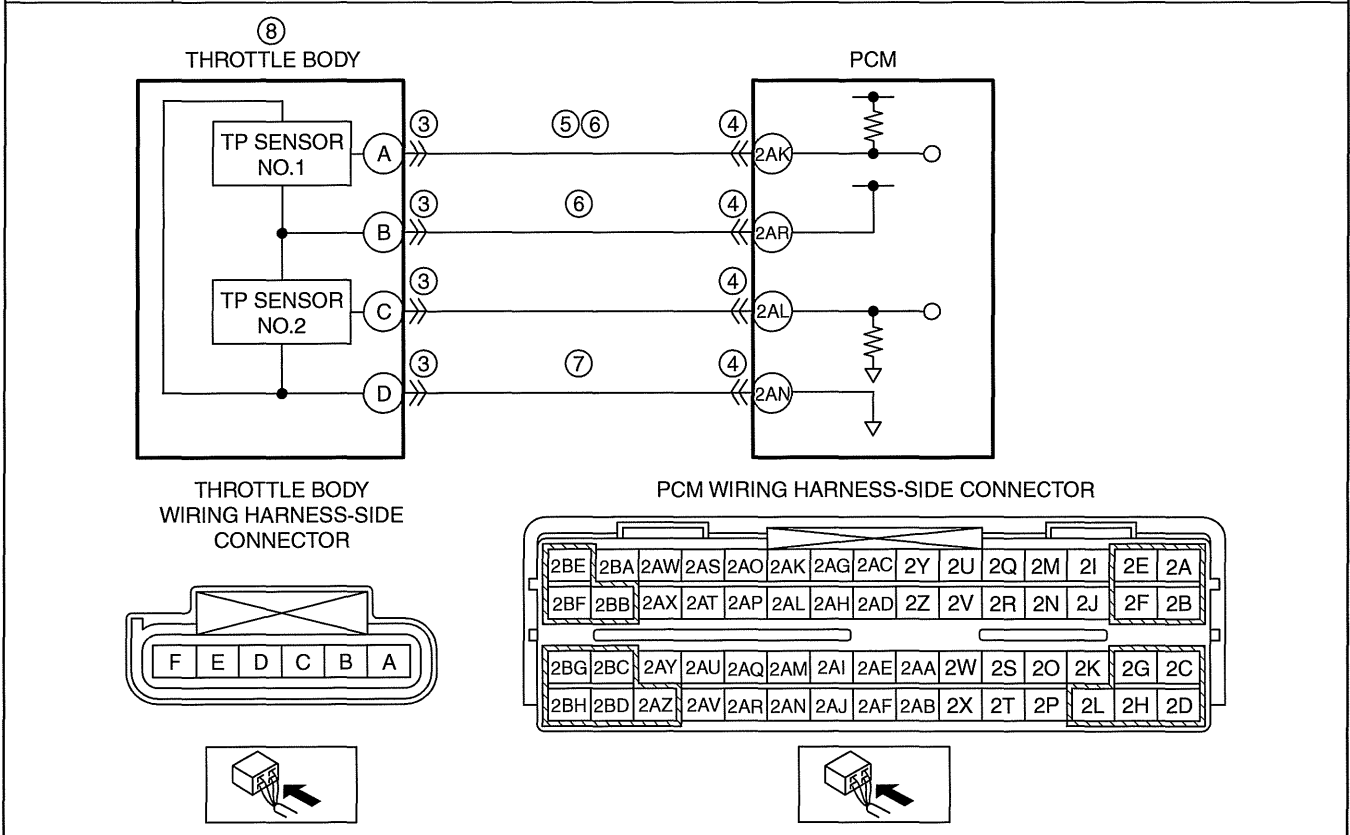
01-02A

STEP	INSPECTION		ACTION
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Switch the ignition to ON (engine off). Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0123:00 [LF, L5]

id0102c8701900

DTC P0123:00	TP sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects the TP sensor No.1 voltage is to be above 4.85 V after switch the ignition to ON, PCM determines that TP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction Short to power supply circuit in wiring harness between throttle body terminal A and PCM terminal 2AK TP sensor No.1 signal circuit and power supply circuit are shorted to each other Open circuit in wiring harness between throttle body terminal D and PCM terminal 2AN TP sensor No.1 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
5	INSPECT TP1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between throttle body terminal A (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT TP1 SIGNAL AND POWER SUPPLY CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between throttle body terminals A and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 9.
		No	Go to the next step.
7	INSPECT TP SENSOR NO.1 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminal D (wiring harness-side) and PCM terminal 2AN (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT TP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect the throttle body and PCM connectors. • Inspect the TP sensor No.1. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Switch the ignition to ON (engine off). Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0125:00 [LF, L5]

id0102c8702000

DTC P0125:00	Insufficient coolant temperature for closed loop fuel control
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.1 signal after engine is started while the engine is cold. If the engine coolant temperature does not reach the expected temperature for a specified period, the PCM determines that it has taken an excessive amount of time for the engine coolant temperature to reach the temperature necessary to start closed-loop fuel control. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.1 connector or terminals malfunction ECT sensor No.1 malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT <ul style="list-style-type: none"> Access the ECT PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the ECT PID value above 60 °C {140 °F}? 	Yes	Intermittent concern exists. <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERNS TROUBLESHOOTING" procedure. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.1 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
5	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to Step 7. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Switch the ignition to ON (engine off). • Access the ECT PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Wait until the ECT PID value below 20 °C {68 °F}. • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0126:00, P0128:00 [LF, L5]

id0102c8900800

01-02A

DTC P0126:00	Thermostat stuck open
DTC P0128:00	
DETECTION CONDITION	<p>P0126:00</p> <ul style="list-style-type: none"> The PCM monitors detects based on following calculation with ECT sensor No.2 and estimated ECT sensor No.2* at judge timing. When the difference between ECT sensor No.2 and the estimated ECT sensor No.2 is at the set value or more, a malfunction is detected. *: Estimated ECT sensor No.2 output value when it is determined that there is a thermostat-open malfunction. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> IAT: above -10 °C {14 °F} Vehicle speed: over 40 km/h {25 mph} Absolute load: above 14% <p>P0128:00</p> <ul style="list-style-type: none"> The PCM monitors MAF, IAT, VSS and ECT signals and calculate radiator's heat radiation ratio while following monitoring conditions are met. If calculated value exceeds specification, the PCM determines that the thermostat is stuck open. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> IAT: above -10 °C {14 °F} ECT at engine start: below 52 °C {126 °F} Vehicle speed: over 40 km/h {25 mph} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Thermostat malfunction ECT sensor malfunction Cooling system malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT THERMOSTAT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the thermostat. (See 01-12A-12 THERMOSTAT INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the thermostat, then go to Step 7. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)
		No	P0126:00: <ul style="list-style-type: none"> Go to Step 6. P0128:00: <ul style="list-style-type: none"> Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to Step 7. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to Step 7.
6	INSPECT ECT SENSOR NO.2 <ul style="list-style-type: none"> • Inspect the ECT sensor No.2. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.2, then go to the next step. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY MONITORING CONDITION FOR REPAIR VERIFICATION <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Cool down the engine. <p>Note</p> <ul style="list-style-type: none"> • If workshop inside and outside temperature difference is significant, PCM might not operate thermostat monitor. Therefore, it is recommended to cool down engine out of workshop. <ul style="list-style-type: none"> • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Access the ECT and IAT PIDs using the M-MDS under the following conditions: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <p>P0126:00 — IAT: above -10 °C {14 °F}</p> <p>P0128:00 — IAT: above -10 °C {14 °F} — ECT: below 36 °C {97 °F} — Difference between ECT and IAT: below 6 °C {10.8 °F}</p> <ul style="list-style-type: none"> • Is there any PID that out of the specification? 	Yes	Take corrective action (e.g. cool down engine). Repeat this step.
		No	P0126:00: <ul style="list-style-type: none"> • Go to the next step. P0128:00: <ul style="list-style-type: none"> • Go to Step 9.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0126:00 COMPLETED <ul style="list-style-type: none"> • Start engine and turn off the electrical load and A/C. • Access the THM_2 (Temp unit) and THM_MIN_2 (Temp unit) PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <p>Note</p> <ul style="list-style-type: none"> • This test requires actual driving. Chassis roller cannot be used for this test. • During the test drive, constant speed should be maintained, although 2 or 3 stops during every 5 min of driving time (e.g. for traffic signals) is acceptable. Stop-and-go (e.g. in case of traffic congestion) is not acceptable during the test period. • Test period depends on ECT at engine start. (e.g. if ECT is -10 °C {14 °F}, monitoring period is 38 min and ECT is 30 °C {86 °F}, monitoring period is 8 min) <ul style="list-style-type: none"> • Verify the THM_2 and THM_MIN_2 PIDs values. • Is the THM_2 value above THM_MIN_2 value? 	Yes	Go to Step 10.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
9	VERIFY TROUBLESHOOTING OF DTC P0128:00 COMPLETED <ul style="list-style-type: none"> • Start engine and turn off the electrical load and A/C. • Access the THM_1 (Temp and Num units), THM_MAX_1 (Num unit) and THM_MIN_1 (Temp unit) PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <p>Note</p> <ul style="list-style-type: none"> • This test requires actual driving. Chassis roller cannot be used for this test. • During the test drive, constant speed should be maintained, although 2 or 3 stops (e.g. for traffic signals) is acceptable. Stop-and-go (e.g. in case of traffic congestion) is not acceptable during the test period. <ul style="list-style-type: none"> • Verify the THM_1, THM_MAX_1 and THM_MIN_1 PIDs values. • Are THM_1 value of Num unit below THM_MAX_1 value and THM_1 value of Temp unit above THM_MIN_1 value? 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0130:00 [LF, L5]

id0102c8702100

DTC P0130:00	A/F sensor circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the voltage between PCM terminal 2AD and 2AC while the A/F sensor active. If the voltage deviate from specified range, the PCM determines that there is a A/F sensor circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • PCM connector or terminals malfunction • A/F sensor malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
5	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor and PCM connectors. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

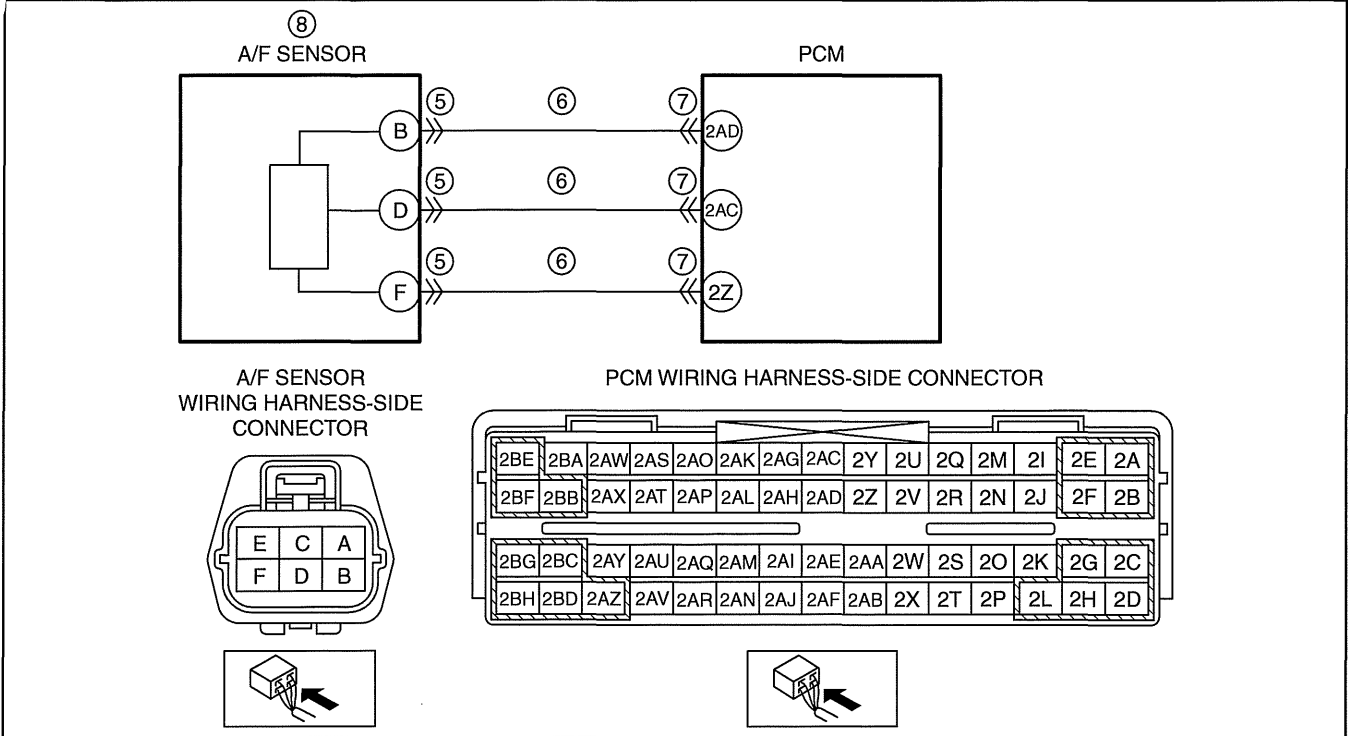
STEP	INSPECTION		ACTION
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0131:00 [LF, L5]

id0102c8702200

01-02A

DTC P0131:00	A/F sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the A/F sensor while the engine is running. If the following PCM terminal voltage is below specified, the PCM determines that the A/F sensor circuit voltage is low. <ul style="list-style-type: none"> — PCM terminal 2Z: 2 V — PCM terminal 2AC: 1.2 V — PCM terminal 2AD: 1.2 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal B—PCM terminal 2AD — A/F sensor terminal D—PCM terminal 2AC — A/F sensor terminal F—PCM terminal 2Z PCM connector or terminals malfunction A/F sensor malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0131:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
6	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — A/F sensor terminal B — A/F sensor terminal D — A/F sensor terminal F • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor and PCM connectors. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

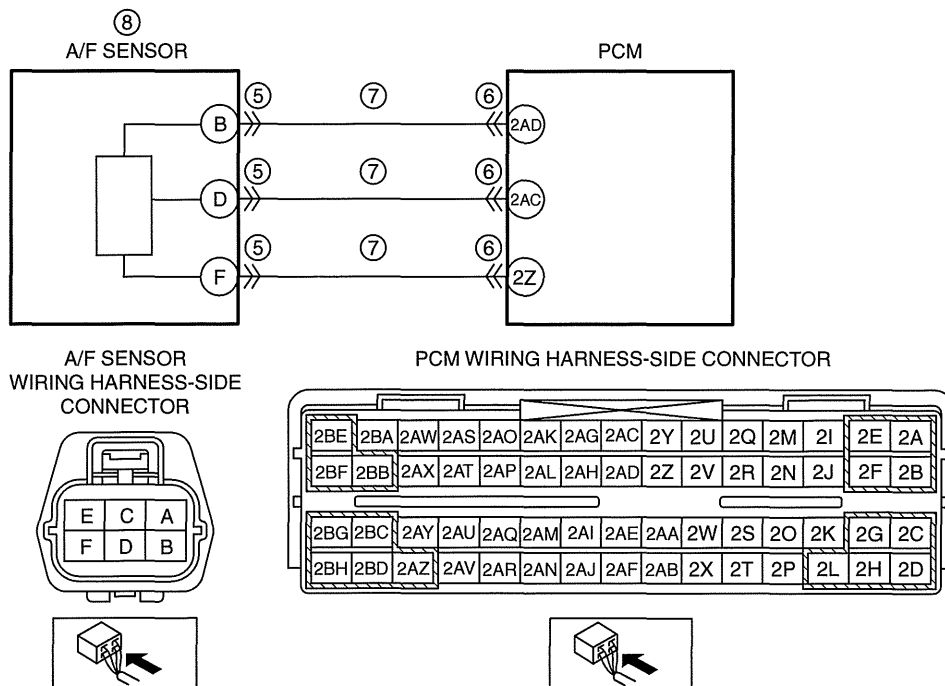
STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0132:00 [LF, L5]

id0102c8702300

DTC P0132:00	A/F sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the input voltage from the A/F sensor when the engine is running. If the following PCM terminal voltage is above specified, the PCM determines that the A/F sensor circuit voltage is high. <ul style="list-style-type: none"> — PCM terminal 2Z: battery voltage -1.2 V — PCM terminal 2AC: 6.2 V — PCM terminal 2AD: battery voltage -1.2 V Diagnostic support note • This is a continuous monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • PCM connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal B—PCM terminal 2AD — A/F sensor terminal D—PCM terminal 2AC — A/F sensor terminal F—PCM terminal 2Z • A/F sensor malfunction • PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0132:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — A/F sensor terminal B — A/F sensor terminal D — A/F sensor terminal F • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor and PCM connectors. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0133:00 [LF, L5]

id0102c8702400

DTC P0133:00	A/F sensor circuit slow response
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the A/F sensor terminal D current slow response and delayed response while the A/F fluctuation being provided when following monitoring conditions are met. If the average value of slow response and/or delayed response is more than specified value, the PCM determine that the A/F sensor has a deterioration. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • A/F sensor heater monitor is completed. • Fuel system loop status is closed loop fuel control. — ECT sensor and A/F sensor heater are normal — Engine speed: 1,200—3,500 rpm — Charging efficiency: 16—63% — Intake airflow amount: 5—40 g/s {0.7—5.2 lb/min} — Engine coolant temperature: above 60 °C {140 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor malfunction <ul style="list-style-type: none"> — Connector or terminals malfunction — Leakage exhaust system • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Fuel leakage in fuel line from fuel distribution pipe to fuel pump — Clogged or restricted fuel filter — Pressure regulator malfunction — Fuel pump unit malfunction • Purge solenoid valve malfunction • Engine malfunction <ul style="list-style-type: none"> — Leakage engine coolant — Insufficient engine compression • A/F sensor malfunction <ul style="list-style-type: none"> — A/F sensor deterioration — Related wiring harness malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0443:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-147 DTC P0443:00 [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0133:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 14.
		No	Go to the next step.
6	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> • Reconnect the A/F sensor connector. • Visually inspect if there is any gas leakage between the exhaust manifold and A/F sensor. • Is there gas leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 14.
		No	Go to the next step.
7	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 10.
8	INSPECT FUEL LINE LEAKAGE <ul style="list-style-type: none"> • Visually inspect the leakage from fuel line between fuel distribution pipe to fuel pump. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 14.
		No	Go to the next step.
9	INSPECT FUEL FILTER <ul style="list-style-type: none"> • Visually inspect the foreign materials or stain inside fuel filter. • Is there any foreign materials or stain? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 14.
		No	Replace the fuel pump unit, then go to Step 14. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 14. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 14.
		No	Go to the next step.
12	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 14.
		No	Go to the next step.
13	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect the related wiring harness. If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning wiring harness, then go to the next step. If there is no malfunction: <ul style="list-style-type: none"> • Go to the next step.
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle under the monitoring conditions. • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

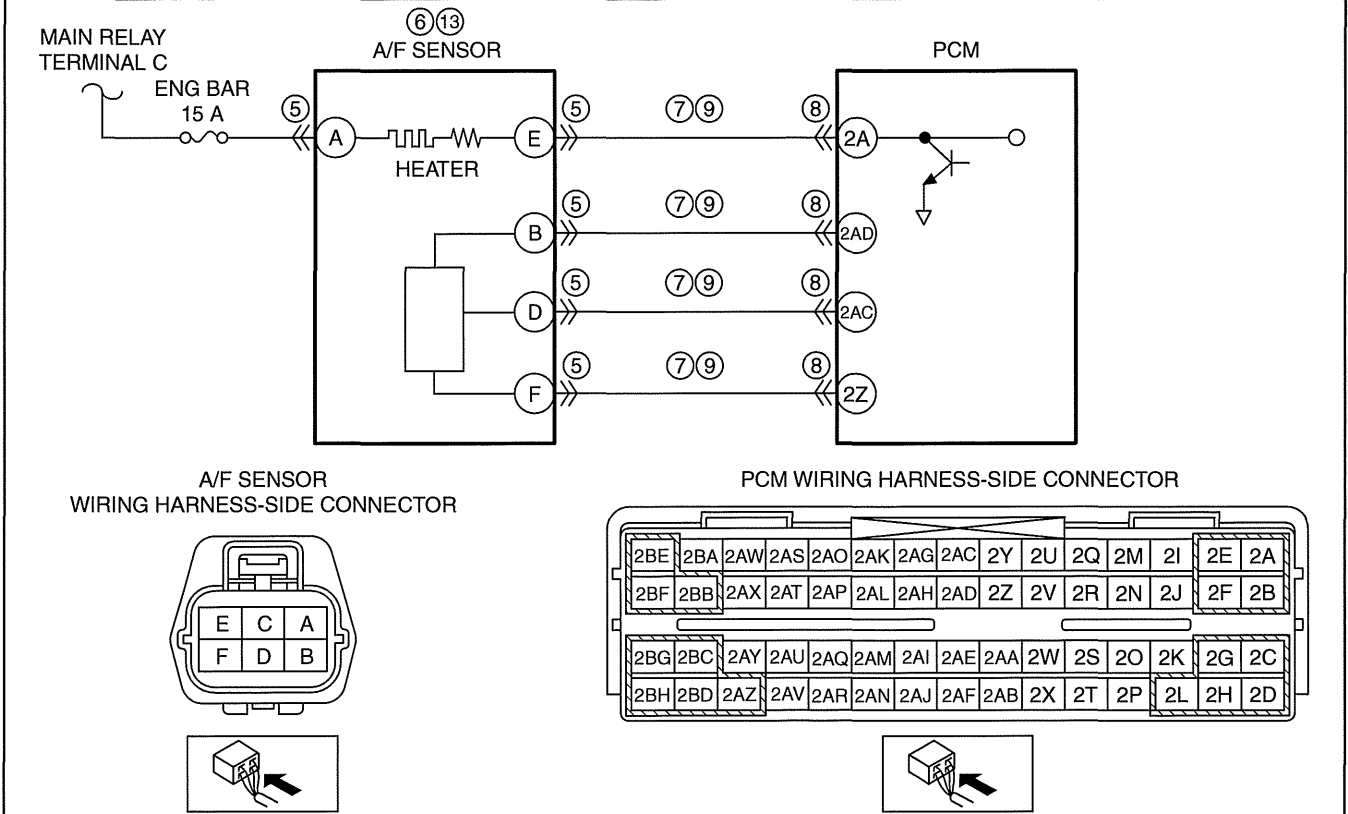
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0134:00 [LF, L5]

id0102c8702500

<p>DTC P0134:00</p>	<p>A/F sensor circuit no activity detected</p>
<p>DETECTION CONDITION</p>	<ul style="list-style-type: none"> • The PCM monitors the element impedance A/F sensor when the following conditions are met. Under the following monitoring conditions, the element impedance more than specified value, the PCM determines that the A/F sensor is not activated. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • A/F sensor heater is turned on for 35 s or more • Battery voltage: 11—18 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
<p>POSSIBLE CAUSE</p>	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • A/F sensor heater malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal E—PCM terminal 2A — A/F sensor terminal B—PCM terminal 2AD — A/F sensor terminal D—PCM terminal 2AC — A/F sensor terminal F—PCM terminal 2Z • PCM connector or terminals malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal E—PCM terminal 2A — A/F sensor terminal B—PCM terminal 2AD — A/F sensor terminal D—PCM terminal 2AC — A/F sensor terminal F—PCM terminal 2Z • Leakage exhaust system • Engine malfunction <ul style="list-style-type: none"> — Leakage engine coolant — Insufficient engine compression • A/F sensor malfunction • PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <p>Note</p> <ul style="list-style-type: none"> If fuel monitor DTC, DTC P0132:00 is retrieved, ignore it until P0134:00 is fixed. Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P2237:00 or P2251:00 also present? 	Yes Go to the applicable DTC inspection. (See 01-02A-265 DTC P2237:00 [LF, L5].) (See 01-02A-269 DTC P2251:00 [LF, L5].)
		No Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0134:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.
6	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 14. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> A/F sensor connector is disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> A/F sensor terminal E A/F sensor terminal B A/F sensor terminal D A/F sensor terminal F Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 14.
		No Go to the next step.
8	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	INSPECT A/F SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — A/F sensor terminal E—PCM terminal 2A — A/F sensor terminal B—PCM terminal 2AD — A/F sensor terminal D—PCM terminal 2AC — A/F sensor terminal F—PCM terminal 2Z • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 14.
10	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> • Reconnect the A/F sensor connector. • Visually inspect if there is any gas leakage between the exhaust manifold and A/F sensor. • Is there gas leakage? 	Yes	Repair or replace the malfunctioning part according to inspection results, then go to Step 14.
		No	Go to the next step.
11	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the “ENGINE COOLANT LEAKAGE INSPECTION”. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to inspection results, then go to Step 14.
		No	Go to the next step.
12	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 14.
		No	Go to the next step.
13	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

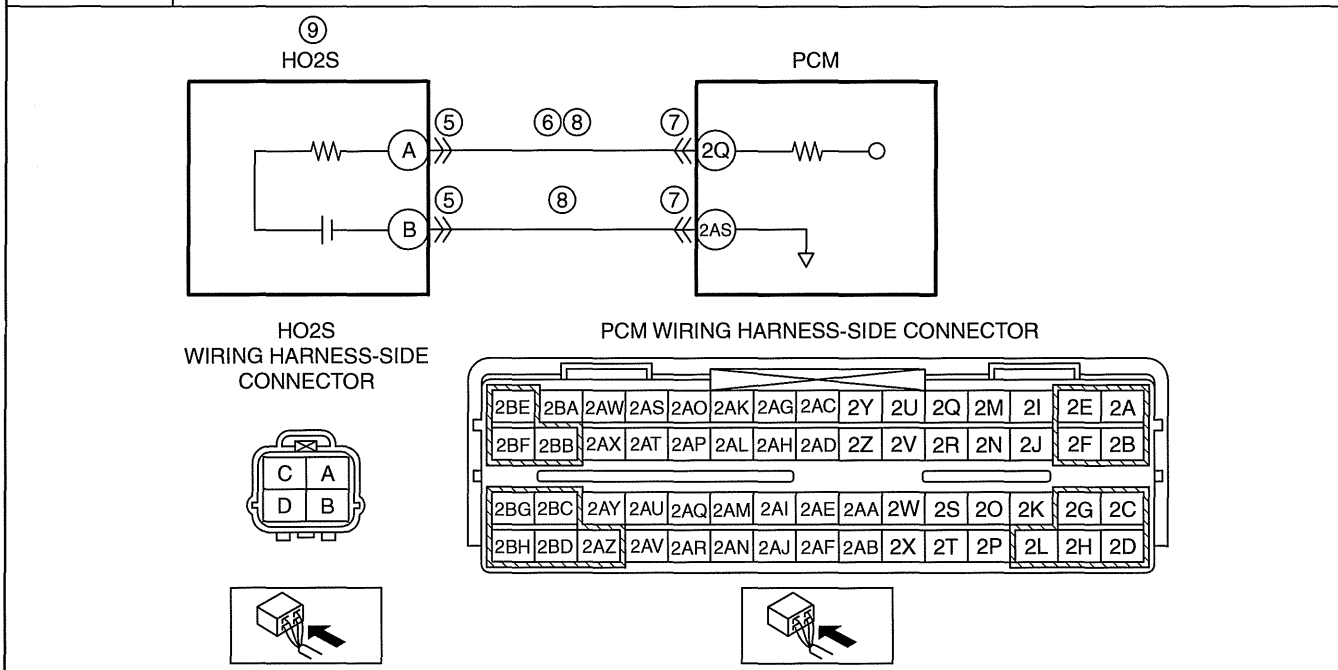
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0137:00 [LF, L5]

id0102c8300300

01-02A

DTC P0137:00	HO2S circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from HO2S. If the input voltage from the HO2S is below -1.15 V or HO2S bias voltage below 1.3 V for 5 s while the HO2S is active, the PCM determines that circuit input is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q PCM connector or terminals malfunction Open circuit in wiring between the following terminals: <ul style="list-style-type: none"> — HO2S terminal A—PCM terminal 2Q — HO2S terminal B—PCM terminal 2AS HO2S malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (Mode 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0137:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 10.
		No	Go to the next step.
6	INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 10.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 10.
		No	Go to the next step.
8	INSPECT HO2S CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — HO2S terminal A—PCM terminal 2Q — HO2S terminal B—PCM terminal 2AS • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
9	INSPECT HO2S <ul style="list-style-type: none"> • Reconnect the HO2S and PCM connectors. • Inspect the HO2S. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the HO2S, then go to the next step. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

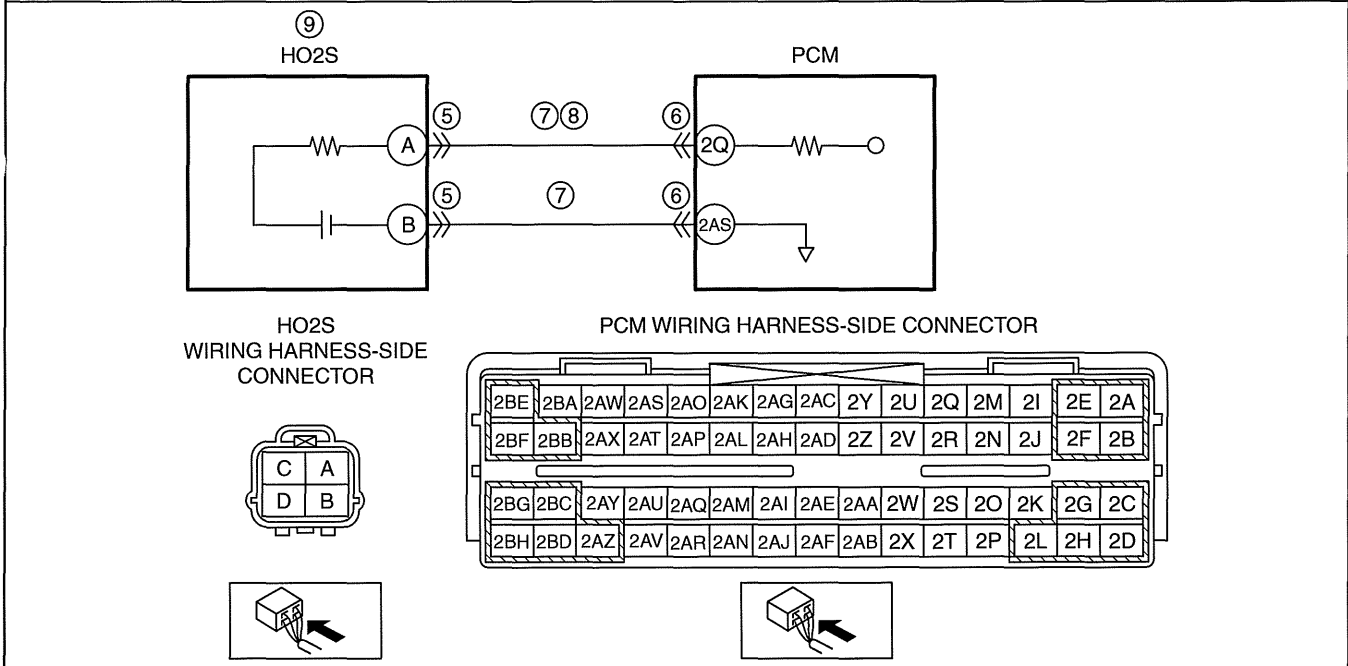
STEP	INSPECTION	ACTION	
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0138:00 [LF, L5]

id0102c8702600

01-02A

DTC P0138:00	HO2S circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from HO2S. If the input voltage from the HO2S is above 1.2 V or HO2S bias voltage above 1.7 V for 5 s, the PCM determines that circuit input is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction PCM connector or terminals malfunction HO2S circuits are shorted to each other Short to power supply in wiring harness between HO2S terminal A and PCM terminal 2Q HO2S malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0138:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the HO2S connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 10.
		No Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 10.
		No Go to the next step.
7	INSPECT HO2S CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> HO2S and PCM connectors are disconnected. Inspect for continuity between HO2S terminal A and B (wiring harness-side). Is there continuity? 	Yes Repair or replace the malfunctioning wiring harness, then go to Step 10.
		No Go to the next step.
8	INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> HO2S and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between HO2S terminal A (wiring harness-side) and body ground. Is there any voltage? 	Yes Repair or replace the wiring harness for a short to power supply, then go to Step 10.
		No Go to the next step.
9	INSPECT HO2S <ul style="list-style-type: none"> Reconnect the HO2S and PCM connectors. Inspect the HO2S. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the HO2S, then go to the next step. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0139:00 [LF, L5]

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DTC P0139:00	HO2S circuit slow response
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the rich (0.55 V) to lean (0.3 V) response time of the HO2S. The PCM measures the response time when the following conditions are met. The PCM determines a HO2S response deterioration malfunction when the measured response time is more than 0.12 s (LF)/0.10 s (L5) for 2 of 3 times. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • During deceleration fuel cut • Estimated temperature of the zirconia element inside the HO2S: above 450 °C {842 °F} <ul style="list-style-type: none"> • The PCM monitors for a time-out malfunction (when HO2S remains above 0.2 V for longer than a specified period of time during fuel cut control). The PCM measures the amount of time from when the following conditions are met until the HO2S output voltage drops below 0.2 V. The PCM determines a HO2S time-out malfunction when the detected time is more than 4 s for 2 of 3 times. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • During deceleration fuel cut • Estimated temperature of the zirconia element inside the HO2S: above 450 °C {842 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • HO2S malfunction <ul style="list-style-type: none"> — Looseness HO2S — Leakage exhaust system — HO2S deterioration • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Fuel leakage on fuel line from fuel distribution pipe and fuel pump — Clogged or restricted fuel filter — Pressure regulator malfunction — Fuel pump unit malfunction • Purge solenoid valve malfunction • Engine malfunction <ul style="list-style-type: none"> — Leakage engine coolant — Insufficient engine compression • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0443:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-147 DTC P0443:00 [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (Mode 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0139:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> Inspect if the HO2S is loosely installed. Is the HO2S installed securely? 	Yes	Go to the next step.
		No	Retighten the HO2S, then go to Step 17.
6	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> Visually inspect if there is any gas leakage is found between the exhaust manifold and HO2S. Is there gas leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 17.
		No	Go to the next step.
7	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 17. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT LONG TERM FUEL TRIM <ul style="list-style-type: none"> Access the LONGFT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Compare the PID with snapshot data recorded at Step 1. Is it below snapshot data value? 	Yes	Engine is driven under rich condition. <ul style="list-style-type: none"> Go to the next step.
		No	Engine is driven under lean condition. <ul style="list-style-type: none"> Go to Step 11.
9	INSPECT FUEL LINE PRESSURE (EXCESSIVE FUEL LINE PRESSURE) <ul style="list-style-type: none"> Switch the ignition to off. <p>Note</p> <ul style="list-style-type: none"> If engine will not start, inspect fuel the line pressure with ignition is switched to ON. Inspect fuel line pressure while the engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 14.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	INSPECT FUEL PUMP <ul style="list-style-type: none"> • Inspect the fuel pump maximum pressure and fuel return pipe for clogging. (See 01-14A-14 FUEL PUMP UNIT INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 17.
		No	Replace the fuel pump unit, then go to Step 17. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
11	INSPECT FUEL LINE PRESSURE (LOW FUEL LINE PRESSURE) <ul style="list-style-type: none"> • Switch the ignition to off. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel the line pressure with ignition is switched to ON. • Inspect fuel line pressure while the engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 14.
12	INSPECT FUEL LINE LEAKAGE <ul style="list-style-type: none"> • Visually inspect the leakage from the fuel pump to fuel distributor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 17.
		No	Go to the next step.
13	INSPECT FUEL FILTER <ul style="list-style-type: none"> • Visually inspect the foreign materials or stain inside fuel filter (low-pressure side). • Is there any foreign material or stain? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 17.
		No	Replace the fuel pump unit, then go to Step 17. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
14	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 17. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
15	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step 17.
		No	Go to the next step.
16	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
17	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
18	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

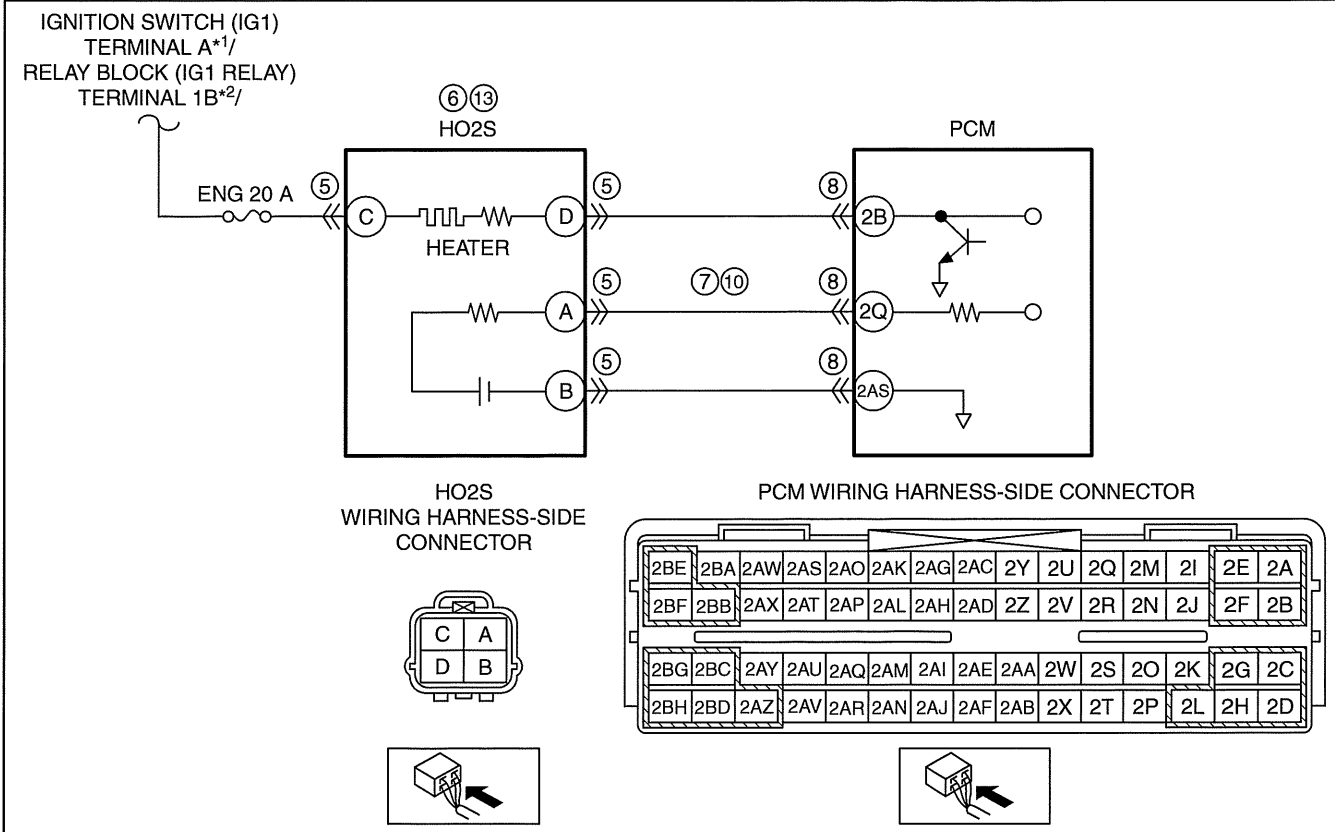
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0140:00 [LF, L5]

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DTC P0140:00	HO2S circuit no activity detected
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the HO2S when the following conditions are met. Under the following monitoring conditions, if the input voltage from the HO2S does not even exceed 0.6 V though the short term fuel trim is controlled up to 20.5% for 20.8 s, the PCM determines that HO2S circuit is not activated. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Estimated temperature of the zirconia element inside the HO2S above 450 °C {842 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction HO2S heater malfunction Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q PCM connector or terminals malfunction Leakage exhaust system Open circuit in wiring harness between HO2S terminal A and PCM terminal 2Q Engine malfunction <ul style="list-style-type: none"> — Leakage engine coolant — Insufficient engine compression HO2S malfunction PCM malfunction



*1 : Vehicles without advanced keyless entry and push button start system
 *2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <p>Note</p> <ul style="list-style-type: none"> If fuel monitor DTC, DTC P0132:00 is retrieved, ignore it until P0140:00 is fixed. Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0140:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the HO2S connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.
6	INSPECT HO2S HEATER <ul style="list-style-type: none"> HO2S connector is disconnected. Inspect the HO2S heater. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the HO2S, then go to Step 14. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> HO2S connector is disconnected. Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 14.
		No Go to the next step.
8	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 14.
		No Go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> • Reconnect the HO2S connector. • Visually inspect the exhaust system from exhaust manifold to HO2S. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
10	INSPECT HO2S SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the HO2S connector. • HO2S and PCM connectors are disconnected. • Inspect for continuity between HO2S terminal A (wiring harness-side) and PCM terminal 2Q (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 14.
11	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
12	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 14.
		No	Go to the next step.
13	INSPECT HO2S <ul style="list-style-type: none"> • Reconnect the HO2S and PCM connectors. • Inspect the HO2S. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to the next step. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0171:00 [LF, L5]

id0102c8934200

DTC P0171:00	Fuel trim system too lean
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors short term fuel trim (SHRTFT) and long term fuel trim (LONGFT) values when closed loop fuel control. If the LONGFT and the sum total of these fuel trims exceed preprogrammed criteria, the PCM determines that the fuel system is too lean. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Misfire • Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction • A/F sensor heater malfunction • A/F sensor malfunction <ul style="list-style-type: none"> — Looseness A/F sensor — Leakage exhaust system — A/F sensor deterioration • Air suction in intake air system • MAF sensor malfunction • Improper operation of purge control system • Fuel supply system malfunction <ul style="list-style-type: none"> — Pressure regulator malfunction — Fuel pump unit malfunction — Fuel leakage on fuel line from fuel delivery pipe and fuel pump — Fuel filter clogged or restricted — Fuel return hose clogged • Ignition system malfunction <ul style="list-style-type: none"> — Ignition coil related wiring harness malfunction — Spark plug malfunction — Ignition coil malfunction • Improper operation of variable valve timing control system • Insufficient engine compression • Improper operation of fuel injector • PCM malfunction

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	If misfire DTC is present: <ul style="list-style-type: none"> • Go to Step 11. If other DTC is present: <ul style="list-style-type: none"> • Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	If drive ability concern is present: <ul style="list-style-type: none"> • Go to Step 11. If drive ability concern is not present: <ul style="list-style-type: none"> • Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0171:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS. (See 01-40A-8 PCM INSPECTION [LF, L5].) — APP1 — APP2 — ECT1 — MAF — TP REL — VSS • Is there any signal that is far out of specification when the ignition is switched to ON and the engine runs? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) conditions. (See 01-40A-8 PCM INSPECTION [LF, L5].) — APP1 — APP2 — ECT — MAF — TP REL — VSS • Is there any signal which causes drastic changes? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Go to the next step.
7	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 21. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor connector. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 11.
9	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 21.
10	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Replace the A/F sensor, then go to Step 21. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
11	INSPECT INTAKE AIR SYSTEM FOR EXCESSIVE AIR SUCTION <ul style="list-style-type: none"> • Visually inspect the hose in intake air system for looseness, cracks or damages. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
12	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify that the MAF PID changes quickly according to engine RPM. • Is the MAF PID value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to Step 14.
		No	Go to the next step.
13	INSPECT FOR EXCESSIVE AIR SUCTION OF INTAKE AIR SYSTEM <ul style="list-style-type: none"> • Visually inspect for loosen, cracks or damages hoses on intake air system. <p>Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the source of air suction, then go to Step 21.
		No	Replace the MAF/IAT sensor, then go to Step 21. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [LF, L5].)
14	INSPECT PURGE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Purge Control System Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Go to the next step.
15	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p>Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. <ul style="list-style-type: none"> • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	If fuel pressure is too high: <ul style="list-style-type: none"> • Replace the fuel pump unit, then go to Step 21. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [LF, L5].) If fuel pressure is low: <ul style="list-style-type: none"> • Go to the next step.
		No	Go to Step 17.
16	INSPECT FUEL LINE <ul style="list-style-type: none"> • Visually inspect the fuel line from fuel pump to fuel delivery pipe. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Inspect the low-pressure side fuel filter for follows: <ul style="list-style-type: none"> • Foreign materials or stain inside fuel filter. If foreign materials or stain is found inside fuel filter (low-pressure side): <ul style="list-style-type: none"> • Clean of fuel tank and filter. If foreign materials or stain is not found: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [LF, L5].) Go to Step 21.
17	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Carry out the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
18	INSPECT VARIABLE VALVE TIMING CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
19	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 21.
		No	Go to the next step.
20	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
21	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Stop the vehicle and access the ON BOARD READINESS TEST to inspect Drive Mode completion status. • Verify the FUEL_EVAL PID changes to yes. <ul style="list-style-type: none"> — If not, perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
22	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0172:00 [LF, L5]

id0102c8934300

DTC P0172:00	Fuel trim system too rich
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors short fuel trim (SHRTFT) and long fuel trim (LONGFT) values when closed loop fuel control. If the LONGFT and the sum total of these fuel trims exceed preprogrammed criteria, the PCM determines that the fuel system is too rich. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Misfire • Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction • A/F sensor heater malfunction • A/F sensor malfunction <ul style="list-style-type: none"> — Looseness A/F sensor — A/F sensor deterioration • MAF sensor malfunction • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Pressure regulator malfunction — Fuel pump unit malfunction — Fuel leakage on fuel line from fuel delivery pipe and fuel pump — Fuel filter clogged or restricted — Fuel return hose clogged • Improper connection of purge control system • Improper operation of EGR valve system • Improper operation of variable tumble solenoid valve • Improper operation of PCV valve • PCM malfunction

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	If misfire DTC is present: <ul style="list-style-type: none"> • Go to Step 10. If other DTC is present: <ul style="list-style-type: none"> • Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	If drive ability concern is present: <ul style="list-style-type: none"> • Go to Step 10. If drive ability concern is not present: <ul style="list-style-type: none"> • Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0172:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS. (See 01-40A-8 PCM INSPECTION [LF, L5].) — APP1 — APP2 — ECT1 — MAF — TP REL — VSS • Is there any signal that is far out of specification when the ignition is switched to ON and the engine runs? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 18.
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) conditions. (See 01-40A-8 PCM INSPECTION [LF, L5].) — APP1 — APP2 — ECT — MAF — TP REL — VSS • Is there any signal which causes drastic changes? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 18.
		No	Go to the next step.
7	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 18. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor connector. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 10.
9	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes	Replace the A/F sensor, then go to Step 18. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Retighten the A/F sensor, then go to Step 18.
10	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify that the MAF PID changes quickly according to engine RPM. • Is the MAF PID value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the MAF/IAT sensor, then go to Step 18. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
11	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p>Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. <ul style="list-style-type: none"> • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes If fuel pressure is too high: <ul style="list-style-type: none"> • Replace the fuel pump unit, then go to Step 18. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) If fuel pressure is low: <ul style="list-style-type: none"> • Go to the next step.
		No Go to Step 13.
12	INSPECT FUEL LINE <ul style="list-style-type: none"> • Visually inspect the fuel line from fuel pump to fuel delivery pipe. • Is there any leakage? 	Yes Repair or replace the malfunctioning parts according to the inspection results, then go to Step 18.
		No Inspect the low-pressure side fuel filter for follows: <ul style="list-style-type: none"> • Foreign materials or stain inside fuel filter. If foreign materials or stain is found inside fuel filter (low-pressure side): <ul style="list-style-type: none"> • Clean of fuel tank and filter. If foreign materials or stain is not found: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) Go to Step 18.
13	INSPECT LONG TERM FUEL TRIM <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the purge hose from intake manifold and plug opening end of hose and intake manifold. • Access the LONGFT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Does it shift to positive value? 	Yes Go to the next step.
		No Go to Step 15.
14	INSPECT PURGE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Purge Control System Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Repair or replace the malfunctioning parts according to the inspection results, then go to Step 18.
		No Go to the next step.
15	INSPECT EGR VALVE OPERATION <ul style="list-style-type: none"> • Perform the EGR Control System Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Repair or replace the malfunctioning parts according to the inspection results, then go to Step 18.
		No Go to the next step.
16	INSPECT VARIABLE TUMBLE CONTROL OPERATION <ul style="list-style-type: none"> • Perform the Variable Tumble Control Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Repair or replace the malfunctioning parts according to the inspection results, then go to Step 18.
		No Go to the next step.
17	INSPECT PCV VALVE OPERATION <ul style="list-style-type: none"> • Inspect the PCV valve operation. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the PCV valve, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
18	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Stop the vehicle and access the ON BOARD READINESS TEST to inspect Drive Mode completion status. • Verify the FUEL_EVAL PID changes to yes. — If not, perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
19	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P2110:00 [L5]

id0102c9303500

DTC P2110:00	Throttle valve actuator control system-forced limited RPM
DETECTION CONDITION	<ul style="list-style-type: none"> • The throttle valve actuator control system is in the failure mode effects management mode. Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Throttle valve actuator control module internal processor error • APP sensor malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT THROTTLE BODY AND PCM <ul style="list-style-type: none"> • Switch the ignition to off. • Visually inspect the following for obvious signs of damage: <ul style="list-style-type: none"> — Throttle body — PCM • Is a concern present? 	Yes	Isolate the concern and repair if necessary, then go to Step 6.
		No	Go to the next step.
5	INSPECT APP SENSOR <ul style="list-style-type: none"> • Inspect the APP sensor. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

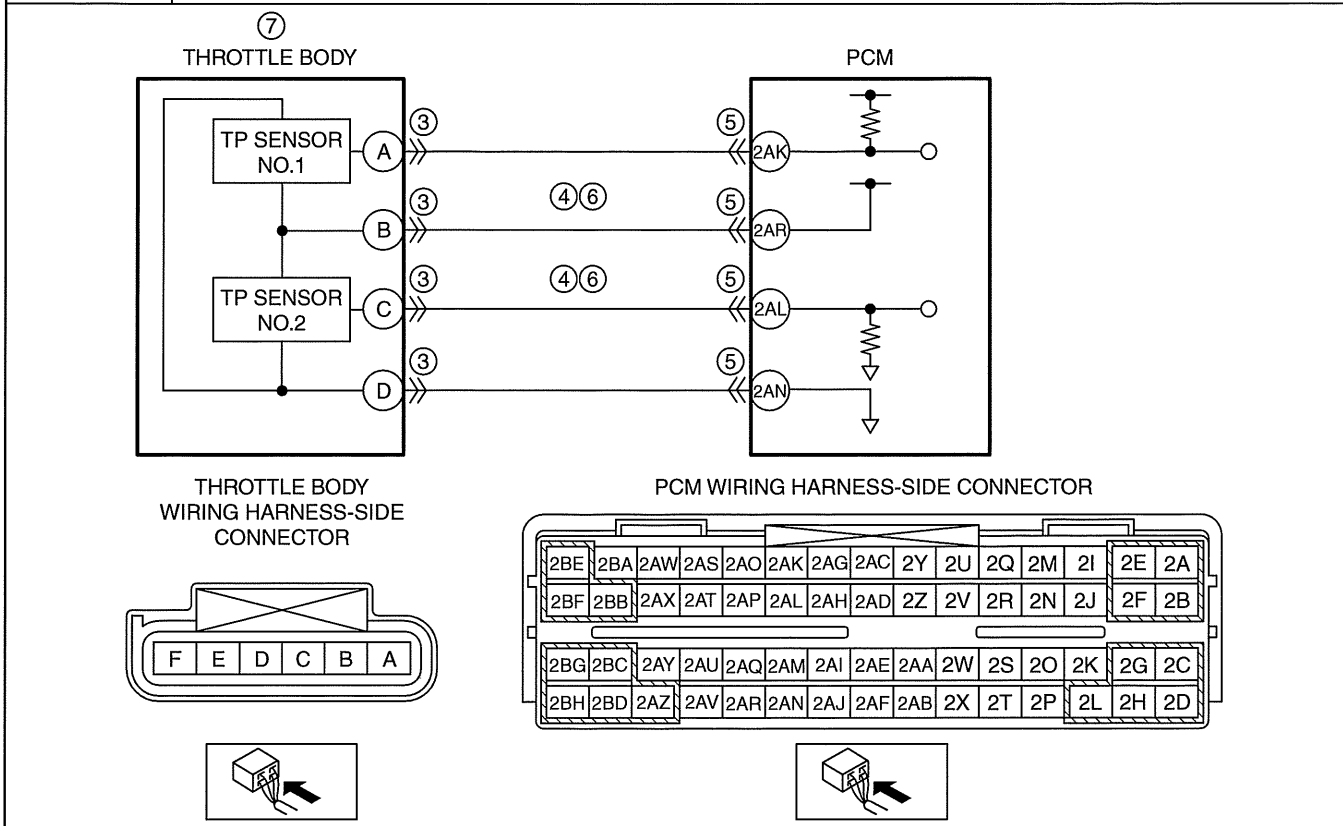
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0222:00 [LF, L5]

id0102c8702800

DTC P0222:00	TP sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects TP sensor No.2 voltage is to be below 0.2 V after switch the ignition to ON, the PCM determines that TP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AR — Throttle body terminal C—PCM terminal 2AL PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AR — Throttle body terminal C—PCM terminal 2AL TP sensor No.2 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
4	INSPECT TP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Throttle body terminal B — Throttle body terminal C • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AR — Throttle body terminal C—PCM terminal 2AL • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT TP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect the throttle body and PCM connectors. • Inspect the TP sensor No.2. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

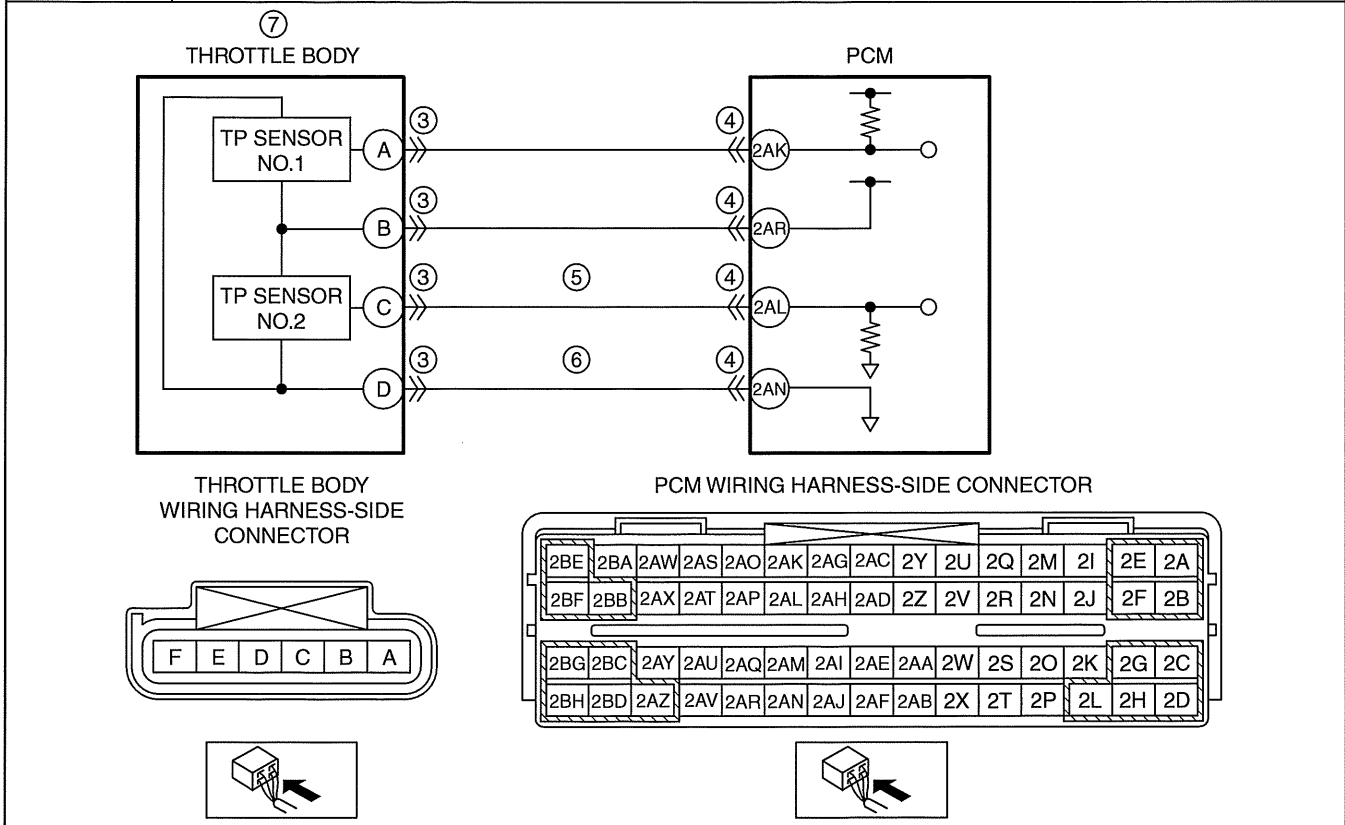
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0223:00 [LF, L5]

id0102c8702900

DTC P0223:00	TP sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects the TP sensor No.2 voltage is to be above 4.85 V after switch the ignition to ON, the PCM determines that the TP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between throttle body terminal C and PCM terminal 2AL Open circuit in wiring harness between throttle body terminal D and PCM terminal 2AN TP sensor No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the throttle body connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Throttle body and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between throttle body terminal C (wiring harness-side) and body ground. Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Switch the ignition to off. Throttle body and PCM connectors are disconnected. Inspect for continuity between throttle body terminal D (wiring harness-side) and PCM terminal 2AN (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT TP SENSOR NO.2 <ul style="list-style-type: none"> Reconnect the throttle body and PCM connectors. Inspect the TP sensor No.2. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0300:00 [LF, L5]

id0102c8703200

DTC P0300:00	Random misfire detected
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors CKP sensor input signal interval time. The PCM calculates the change of interval time for each cylinder. If the change of interval time exceeds the preprogrammed criteria, the PCM detects a misfire in the corresponding cylinder. While the engine is running, the PCM counts the number of misfires that occurred at 200 crankshaft revolutions and 1,000 crankshaft revolutions and calculates the misfire ratio for each crankshaft revolution. If the ratio exceeds the preprogrammed criteria, the PCM determines that a misfire, which can damage the catalytic converter or affect emission performance, has occurred. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (misfire). • The MIL illuminates if the PCM detects the misfire which affects emission performance in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • The MIL flashes if the PCM detects a misfire which can damage the catalytic converter during the first drive cycle. • PENDING CODE is available if the PCM detects the misfire which affects emission performance during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor No.1 signal malfunction — IAT sensor signal malfunction — MAF sensor signal malfunction — CKP sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction • CMP sensor connector or terminals malfunction • CMP sensor malfunction • CKP sensor connector or terminals malfunction • CKP sensor malfunction • Ignition system malfunction <ul style="list-style-type: none"> — Spark plug malfunction — Ignition coil related wiring harness malfunction — Ignition coil malfunction • MAF sensor malfunction • Excessive air suction in intake air system (between MAF sensor and intake manifold) • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Fuel leakage in fuel line — Clogged or restricted fuel filter — Fuel pressure regulator (built-in fuel pump unit) malfunction — Fuel runout — Fuel pump unit malfunction • Purge solenoid valve malfunction • Improper operation of variable valve timing control system • EGR valve malfunction • Engine malfunction <ul style="list-style-type: none"> — Leakage engine coolant — Insufficient engine compression • PCV valve malfunction • Poor quality fuel • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (misfire related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — APP1 — APP2 — ECT1 — IAT — MAF — RPM — TP REL — VSS • Is there any signal that is far out of specification when switch the ignition to ON and the engine idles? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — APP1 — APP2 — ECT1 — IAT — MAF — RPM — TP REL — VSS • Is there any signal which causes drastic changes? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Go to the next step.
6	INSPECT CMP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CMP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 25.
		No	Go to the next step.
7	INSPECT CMP SENSOR <ul style="list-style-type: none"> • Inspect the CMP sensor. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CMP sensor, then go to Step 25. (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT CKP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the CKP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 25.
		No	Go to the next step.
9	INSPECT CKP SENSOR <ul style="list-style-type: none"> • Inspect the CKP sensor. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CKP sensor, then go to Step 25. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Carry out the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is strong blue spark visible at each cylinder? 	Yes	Go to Step 14.
		No	Go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
11	INSPECT SPARK PLUG <ul style="list-style-type: none"> • Remove the spark plug. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].) • Inspect the spark plug. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the spark plug, then go to Step 25. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	INSPECT IGNITION COIL RELATED WIRING HARNESS <ul style="list-style-type: none"> • Inspect the ignition coil related wiring harness condition (intermittent open or short) for all cylinders. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 25.
		No	Go to the next step.
13	INSPECT IGNITION COIL <ul style="list-style-type: none"> • Inspect the ignition coil for all cylinders. (See 01-18A-2 IGNITION COIL INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the malfunctioning ignition coil, then go to Step 25. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	VERIFY PID DATA FOR MAF SENSOR MALFUNCTION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Race the engine and verify that the MAF PID changes quickly according to change in the engine speed. • Is the MAF PID response normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to Step 16.
		No	Go to the next step.
15	INSPECT INTAKE AIR SYSTEM FOR AIR SUCTION <ul style="list-style-type: none"> • Inspect for air leakage between the following: <ul style="list-style-type: none"> — MAF sensor and throttle body — Throttle body and intake manifold Note <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Replace the MAF/IAT sensor, then go to Step 25. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
16	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. Note <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 19.
17	INSPECT FUEL LINE LEAKAGE <ul style="list-style-type: none"> • Visually inspect the leakage from fuel line. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Go to the next step.
18	INSPECT FUEL FILTER <ul style="list-style-type: none"> • Visually inspect the foreign materials or stain inside fuel filter. • Is there any foreign materials or stain? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Replace the fuel pump unit, then go to Step 25. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
19	VERIFY SIMULATION ITEM FOR PURGE SOLENOID VALVE MALFUNCTION <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the vacuum pump to the purge solenoid valve and apply vacuum to the solenoid. • Verify that the solenoid holds vacuum. • Switch the ignition to ON (engine off). • Access the EVAPCP PID of simulation item using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Set the purge solenoid value to 100% for the EVAPCP PID. • Verify that the purge solenoid value releases vacuum while the 100% for the EVPCP PID. • Is the purge solenoid valve operation normal? 	Yes	Go to the next step.
		No	Replace the purge solenoid valve, then go to Step 25. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
20	INSPECT VARIABLE VALVE TIMING CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Go to the next step.
21	INSPECT EGR VALVE <ul style="list-style-type: none"> • Inspect the EGR valve. (See 01-16A-9 EGR VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the EGR valve, then go to Step 25. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
22	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 25.
		No	Go to the next step.
23	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
24	INSPECT PCV VALVE OPERATION <ul style="list-style-type: none"> • Remove the PCV valve. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].) • Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Poor quality fuel is used. <ul style="list-style-type: none"> • Replace the fuel, then go to the next step.
25	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
26	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0301:00, P0302:00, P0303:00, P0304:00 [LF, L5]

id0102c8703300

DTC P0301:00	Cylinder No.1 misfire detected
DTC P0302:00	Cylinder No.2 misfire detected
DTC P0303:00	Cylinder No.3 misfire detected
DTC P0304:00	Cylinder No.4 misfire detected
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the CKP sensor input signal interval time. The PCM calculates the change of interval time for each cylinder. If the change of interval time exceeds the preprogrammed criteria, the PCM detects a misfire in the corresponding cylinder. While the engine is running, the PCM counts the number of misfires that occurred at 200 crankshaft revolutions and 1,000 crankshaft revolutions and calculates the misfire ratio for each crankshaft revolution. If the ratio exceeds the preprogrammed criteria, the PCM determines that a misfire, which can damage the catalytic converter or affect emission performance, has occurred. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (misfire). • The MIL illuminates if the PCM detects the misfire which affects emission performance in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • The MIL flashes if the PCM detects the misfire which can damage the catalytic converter during first drive cycle. • PENDING CODE is available if the PCM detects the misfire which affects emission performance during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor No.1 signal malfunction — IAT sensor signal malfunction — MAF sensor signal malfunction — CKP sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction • Ignition system malfunction <ul style="list-style-type: none"> — Spark plug malfunction — Ignition coil related wiring harness malfunction — Ignition coil connector or terminals malfunction — Ignition coil malfunction • Excessive air suction in intake air system (between MAF sensor and intake manifold) • Fuel injector operation malfunction <ul style="list-style-type: none"> — Fuel injector related wiring harness malfunction — Fuel injector connector or terminals malfunction — Fuel injector malfunction • Engine malfunction <ul style="list-style-type: none"> — Leakage engine coolant — Insufficient engine compression • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (misfire related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — APP1 — APP2 — ECT1 — IAT — MAF — RPM — TP REL — VSS • Is there any signal that is far out of specification when switch the ignition to ON and the engine idles? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION <ul style="list-style-type: none"> • Access the following PIDs under FREEZE FRAME DATA (Mode 2) condition. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — APP1 — APP2 — ECT1 — IAT — MAF — RPM — TP REL — VSS • Is there any signal which causes drastic changes? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
6	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Carry out the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5]) • Is strong blue spark visible at each cylinder? 	Yes	Go to Step 10.
		No	Go to the next step.
7	INSPECT SPARK PLUG CONDITION <ul style="list-style-type: none"> • Remove the spark plug. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].) • Inspect the spark plug. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the spark plug, then go to Step 16. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT IGNITION COIL RELATED WIRING HARNESS OR CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the ignition coil related wiring harness condition (intermittent open or short) for all cylinders and connector for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
9	INSPECT IGNITION COIL <ul style="list-style-type: none"> • Inspect the ignition coil for all cylinders. (See 01-18A-2 IGNITION COIL INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the malfunctioning ignition coil, then go to Step 16. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	INSPECT INTAKE AIR SYSTEM FOR AIR SUCTION <ul style="list-style-type: none"> • Inspect for air leakage at the following: <ul style="list-style-type: none"> — Around connection of dynamic chamber and intake manifold — Around connection of intake manifold and cylinder head Note <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
11	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Remove the intake air system parts. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) • Disconnect the fuel injector connector on suspected cylinder. • Connect the NOID LIGHT to fuel injector terminals. • Inspect dim of light during cranking. • Does the light illuminate? 	Yes	Go to the next step.
		No	Go to Step 14.
12	INSPECT FUEL INJECTOR RELATED WIRING HARNESS OR CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the fuel injector related wiring harness condition (intermittent open or short) and connector for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
13	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> • Remove the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].) • Switch the fuel injector with the fuel injector on other cylinder. • Start the engine and idle it. • Is the misfire DTC for cylinder which has a suspected fuel injector? 	Yes	Replace the malfunctioning fuel injector, then go to Step 16. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
15	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
16	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

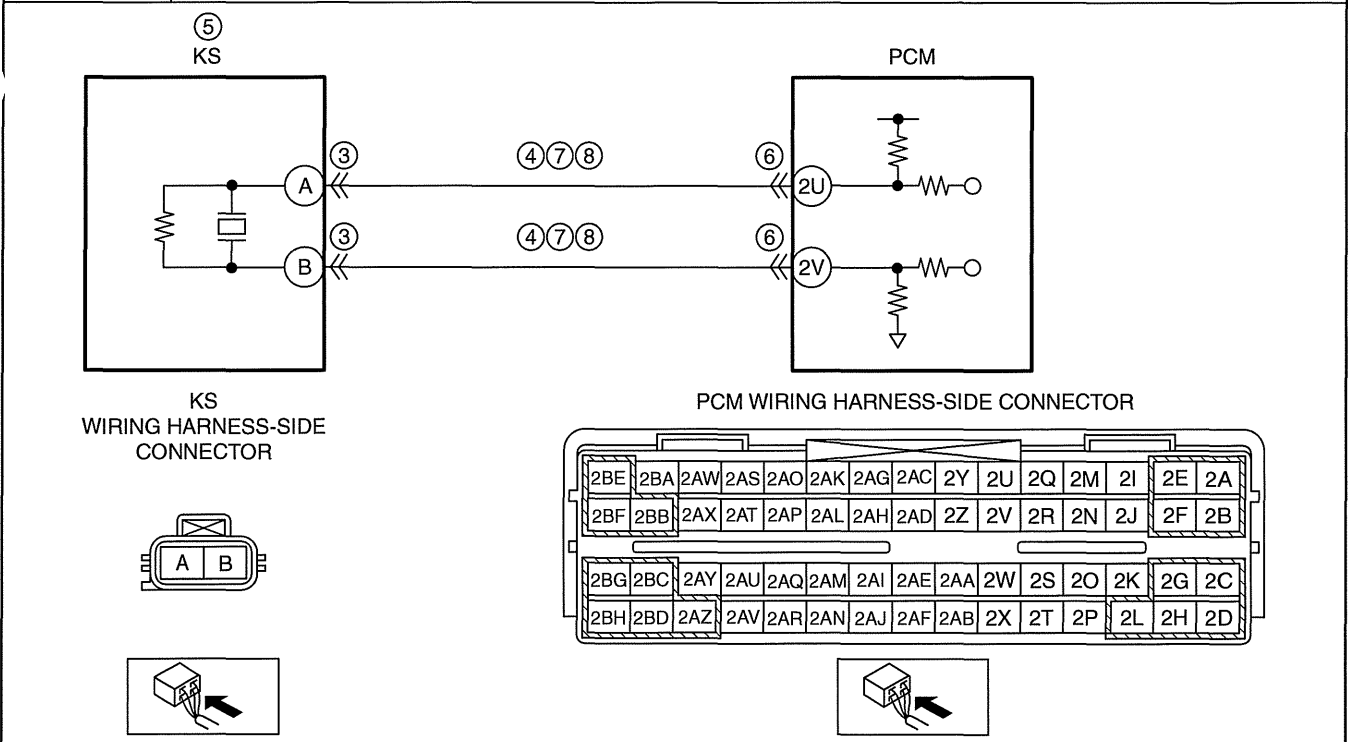
STEP	INSPECTION	ACTION
17	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes
		No

DTC P0327:00 [LF, L5]

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01-02A

DTC P0327:00	KS circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input signal from the KS when the engine is running. If the input voltage is below 0.2 V for 5 s, the PCM determines that the KS circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> KS connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V KS malfunction PCM connector or terminals malfunction KS circuits are shorted to each other Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT KS CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the KS connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT KS CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> KS connector is disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — KS terminal A — KS terminal B Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
5	INSPECT KS <ul style="list-style-type: none"> Inspect the KS. (See 01-40A-33 KNOCK SENSOR (KS) INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the KS, then go to Step 9. (See 01-40A-33 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT KS CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> KS and PCM connectors are disconnected. Inspect for continuity between KS terminals A and B (wiring harness-side). Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 9.
		No	Go to the next step.
8	INSPECT KS CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> KS and PCM connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for an open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

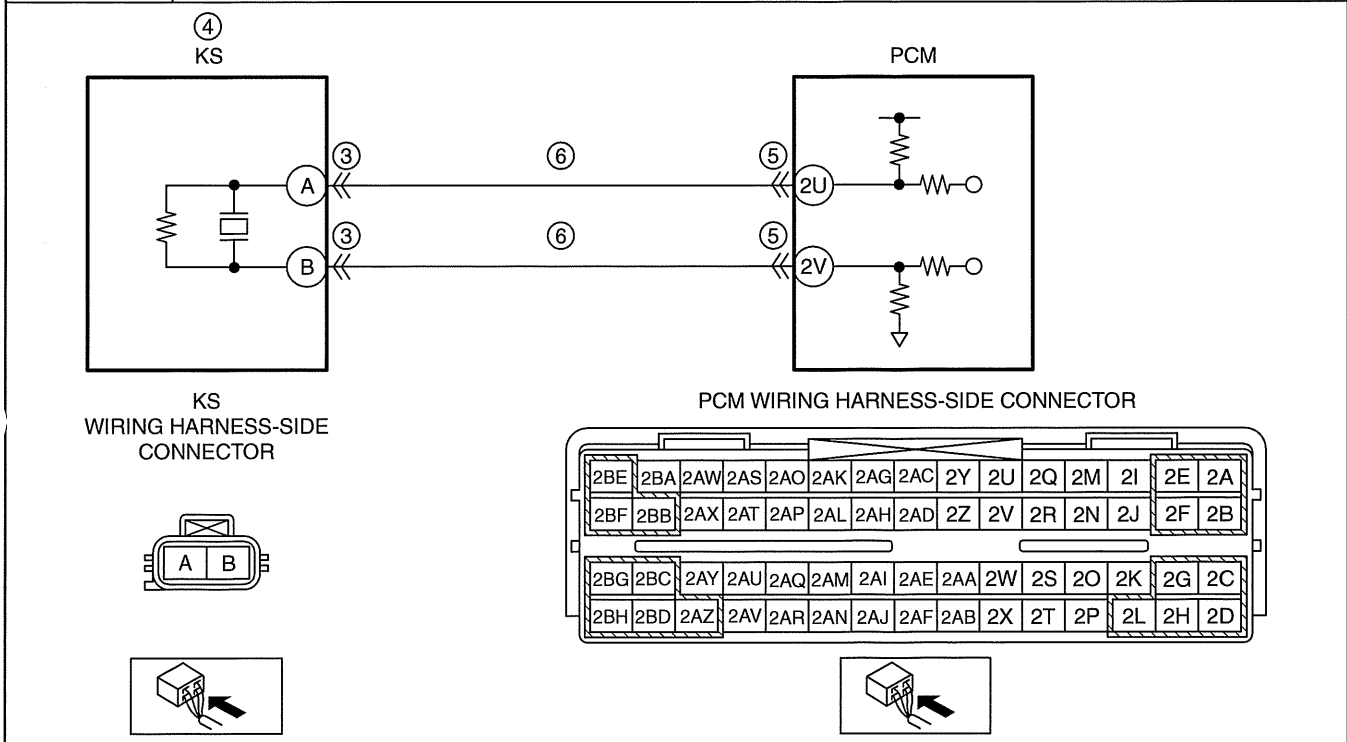
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0328:00 [LF, L5]

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01-02A

DTC P0328:00	KS circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the KS when the engine is running. If the input voltage is above 4.8 V for 5 s, the PCM determines that KS circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction conditions during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> KS connector or terminals malfunction KS malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT KS CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the KS connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT KS <ul style="list-style-type: none"> • Inspect the KS. (See 01-40A-33 KNOCK SENSOR (KS) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the KS, then go to Step 7. (See 01-40A-33 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
6	INSPECT KS CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • KS and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — KS terminal A — KS terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

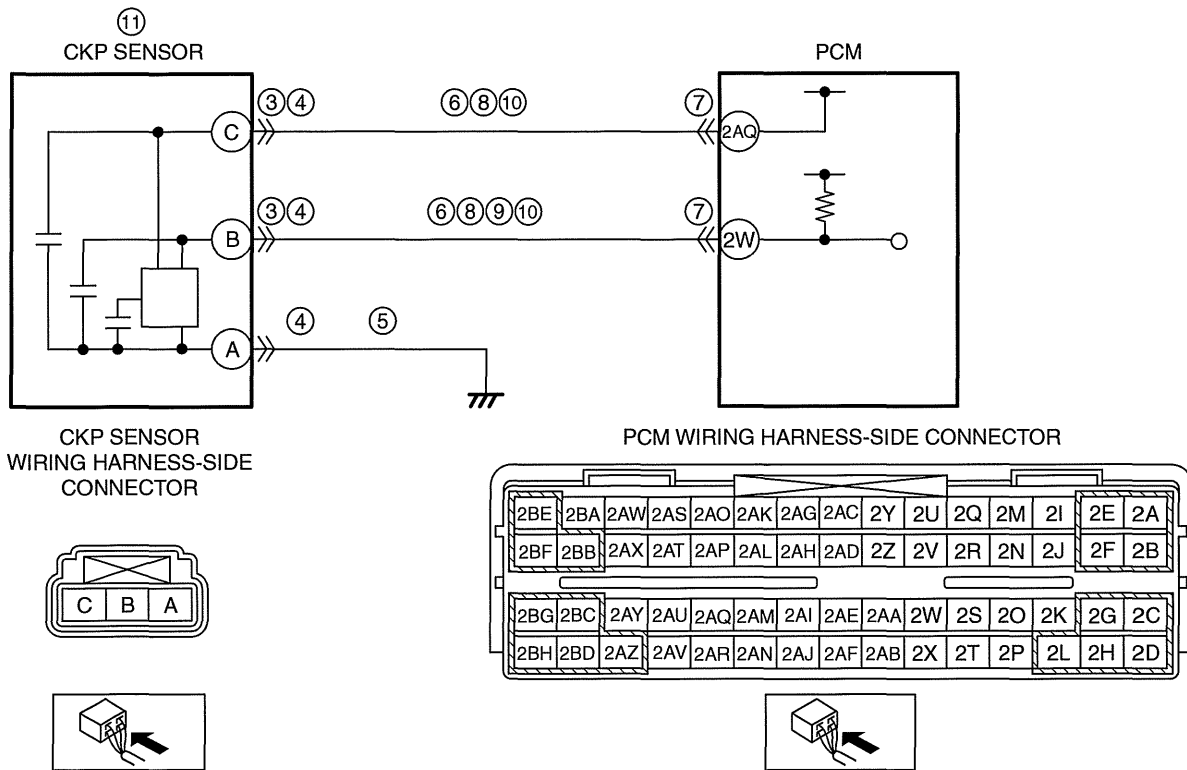
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0335:00 [LF, L5]

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01-02A

DTC P0335:00	CKP sensor circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM does not receive the input voltage from the CKP sensor for 4.2 s while the MAF is 1.95 g/s {0.25 lb/min} or above, the PCM determines that the CKP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CKP sensor connector or terminals malfunction Open circuit between CKP sensor terminal A and body ground Short to ground between the following terminals: <ul style="list-style-type: none"> — CKP sensor terminal C—PCM terminal 2AQ — CKP sensor terminal B—PCM terminal 2W PCM connector or terminals malfunction CKP sensor circuits are shorted to each other Short to the power supply between CKP sensor terminal B and PCM terminal 2W Open circuit between the following terminals: <ul style="list-style-type: none"> — CKP sensor terminal C—PCM terminal 2AQ — CKP sensor terminal B—PCM terminal 2W CKP sensor malfunction <ul style="list-style-type: none"> — CKP sensor is dirty — CKP sensor pulse wheel malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY CKP SENSOR VOLTAGE <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the CKP sensor connector. Connect the voltmeter between the CKP sensor terminals B and C (sensor-side). Measure the voltage in the AC range while cranking the engine. Is there any voltage? 	Yes Go to the next step.
		No Go to step 11.
4	INSPECT CKP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> CKP sensor connector is disconnected. Switch the ignition to off. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 12.
		No Go to the next step.
5	INSPECT CKP CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> CKP sensor connector is disconnected. Inspect for continuity between CKP sensor terminal A (wiring harness-side) and body ground. Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
6	INSPECT CKP SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> CKP sensor connector is disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — CKP sensor terminal C — CKP sensor terminal B Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 12.
		No Go to the next step.
		No Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 12.
		No Go to the next step.
8	INSPECT CKP SENSOR CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> CKP sensor and PCM connectors are disconnected. Inspect for continuity between CKP sensor terminals B and C (wiring harness-side). Is there continuity? 	Yes Repair or replace the malfunctioning wiring harness, then go to Step 12.
		No Go to the next step.
9	INSPECT CKP SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> CKP sensor and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between CKP sensor terminal B (wiring harness-side) and body ground. Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 12.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	INSPECT CKP CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CKP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — CKP sensor terminal C—PCM terminal 2AQ — CKP sensor terminal B—PCM terminal 2W • Is there continuity? 	Yes	Go to Step 12.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
11	INSPECT CKP SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the CKP sensor. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5]) • Is there any malfunction? 	Yes	Replace the CKP sensor, then go to the next step. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <p>Note</p> <ul style="list-style-type: none"> • The MAF PID should indicate 1.95 g/s {0.25 lb/min} or above during this test. <ul style="list-style-type: none"> • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

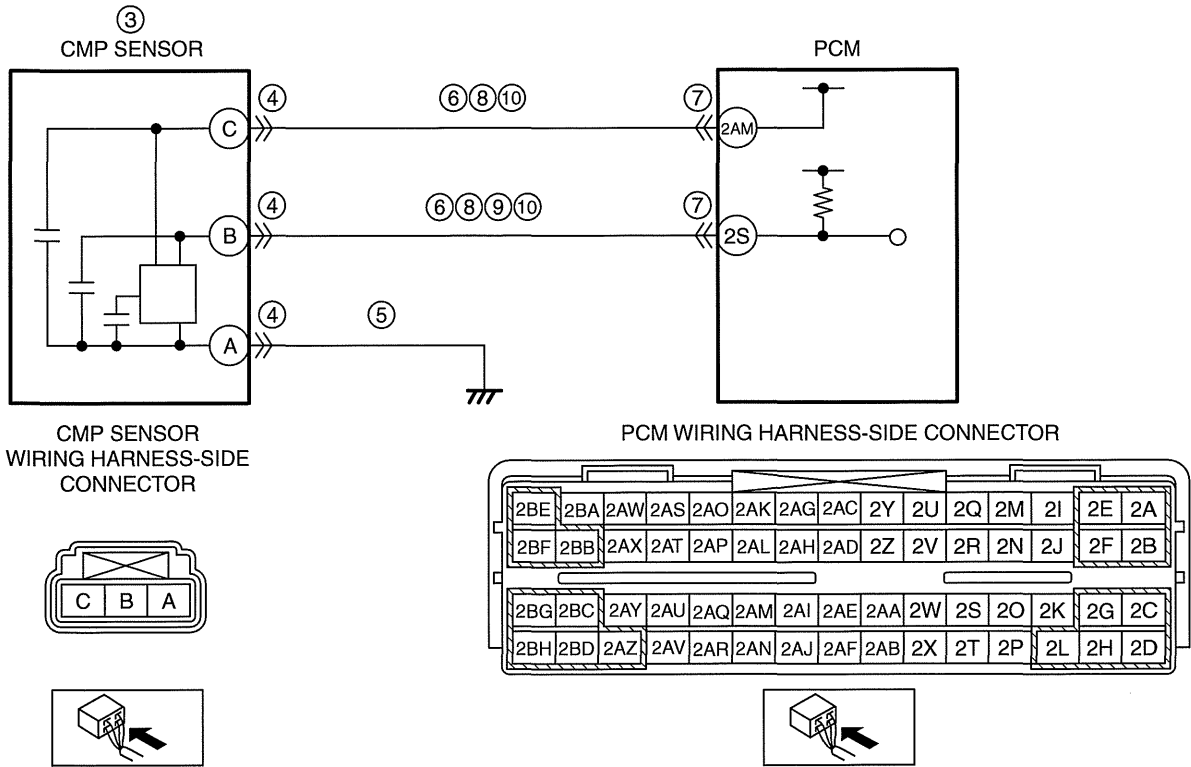
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0340:00 [LF, L5]

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DTC P0340:00	CMP sensor circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the CMP sensor when the engine is running. If the PCM does not receive the input voltage from the CMP sensor while the PCM receives the input signal from the CKP sensor, the PCM determines that the CMP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CMP sensor malfunction <ul style="list-style-type: none"> — CMP sensor is dirty — CMP sensor pulse wheel malfunction CMP sensor connector or terminals malfunction Open circuit in wiring harness between CMP sensor terminal A and body ground Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — CMP sensor terminal C—PCM terminal 2AM — CMP sensor terminal B—PCM terminal 2S PCM connector or terminals malfunction CMP sensor circuits are shorted to each other Short to the power supply in wiring harness between CMP sensor terminal B and PCM terminal 2S Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — CMP sensor terminal C—PCM terminal 2AM — CMP sensor terminal B—PCM terminal 2S CKP sensor connector or terminals malfunction Variable valve timing mechanism misinstallation <ul style="list-style-type: none"> — Loose timing chain or improper valve timing — Loose camshaft sprocket lock bolt — Loose crankshaft pulley lock bolt Stopper pin mechanism malfunction Variable valve timing mechanism is stuck in advanced position PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CMP SENSOR VOLTAGE <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the CMP sensor connector. Connect a voltmeter between CMP sensor terminals B and C (sensor-side). Inspect the voltage in AC range while cranking the engine. Is there any voltage? 	Yes	Go to the next step.
		No	Visually inspect the CMP sensor pulse wheel. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results. (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
4	INSPECT CMP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> CMP sensor connector is disconnected. Switch the ignition to off. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
5	INSPECT CMP SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> CMP sensor connector is disconnected. Inspect for continuity between CMP sensor terminal A (wiring harness-side) and body ground. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 15.
6	INSPECT CMP SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> CMP sensor connector is disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — CMP sensor terminal C — CMP sensor terminal B Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 15.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
8	INSPECT CMP SENSOR CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> CMP sensor and PCM connectors are disconnected. Inspect for continuity between CMP sensor terminals B and C (wiring harness-side). Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 15.
		No	Go to the next step.
9	INSPECT CMP SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> CMP sensor and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between the CMP sensor terminal B (wiring harness-side) and body ground. Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 15.
		No	Go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	INSPECT CMP SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CMP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — CMP sensor terminal C—PCM terminal 2AM — CMP sensor terminal B—PCM terminal 2S • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 15.
11	INSPECT CKP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the CKP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
12	VERIFY VALVE TIMING MECHANISM INSTALLATION <ul style="list-style-type: none"> • Verify the valve timing mechanism installation for the following parts: <ul style="list-style-type: none"> — Timing chain — Camshaft sprocket lock bolt — Crankshaft pulley lock bolt • Is there any malfunction? 	Yes	Reinstall the misinstallation or loose parts correctly, then go to Step 15. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
13	INSPECT STOPPER PIN MECHANISM <ul style="list-style-type: none"> • Remove the timing chain. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].) • Inspect the stopper pin. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable valve timing actuator, then go to Step 15. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	INSPECT ROTOR POSITION <ul style="list-style-type: none"> • Remove the variable valve timing actuator. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].) • Is the rotor at the maximum valve timing advanced position? 	Yes	Reinstall or replace the variable valve timing actuator, then go to the next step. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Variable valve timing mechanism is normal. <p>Note</p> <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed by cleaning the variable valve timing mode control function. <p>Go to the next step.</p>

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
15	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <p>Note</p> <ul style="list-style-type: none"> • The MAF PID should indicate 1.95 g/s {0.25 lb/min} or above during this test. <ul style="list-style-type: none"> • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
16	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0401:00 [LF, L5]

id0102c8704200

DTC P0401:00	EGR flow insufficient detected
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the difference in the intake manifold pressures when the EGR is operated and when it is stopped. If the difference is too small, the PCM determines that the EGR flow insufficient. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (EGR system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • MAP sensor malfunction • EGR valve malfunction • EGR valve passage malfunction <ul style="list-style-type: none"> — Gasket of EGR valve malfunction — Clogged EGR valve passage • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EGR system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the MAP sensor. (See 01-40A-26 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAP sensor, then go to Step 7. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT EGR VALVE OPERATION <ul style="list-style-type: none"> • Perform the EGR Control System Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Does the EGR system operate properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result, then go to Step 7.
6	INSPECT EGR VALVE PASSAGE <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].) • Visually inspect the gasket installation of EGR valve and EGR valve passage for clogging. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Stop the vehicle and access the ON BOARD READINESS TEST to inspect the Drive Mode completion status. • Verify that the ON BOARD READINESS TEST status changing to YES. • Perform the Diagnostic Monitoring Test Results Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify the #31:83 (EGR pressure variation) value. (See 01-02A-16 DIAGNOSTIC MONITORING TEST RESULTS [LF, L5].) • Is the value out of the specification? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Repeat this step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

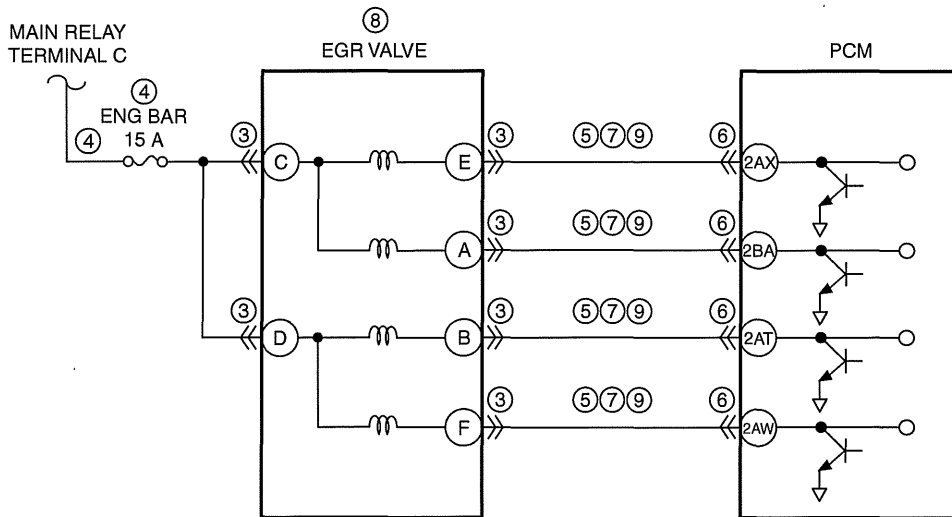
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0403:00 [LF, L5]

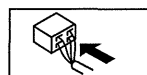
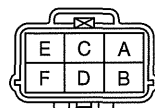
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01-02A

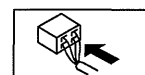
DTC P0403:00	EGR control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the EGR valve. If the voltage remain low or high, the PCM determines that the EGR valve circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction conditions in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> EGR valve connector or terminals malfunction Short to ground or open circuit in EGR valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Main relay terminal C—EGR valve terminal C Main relay terminal C—EGR valve terminal D — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Main relay terminal C—EGR valve terminal C Main relay terminal C—EGR valve terminal D Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AX — EGR valve terminal A—PCM terminal 2BA — EGR valve terminal B—PCM terminal 2AT — EGR valve terminal F—PCM terminal 2AW PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AX — EGR valve terminal A—PCM terminal 2BA — EGR valve terminal B—PCM terminal 2AT — EGR valve terminal F—PCM terminal 2AW EGR valve malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AX — EGR valve terminal A—PCM terminal 2BA — EGR valve terminal B—PCM terminal 2AT — EGR valve terminal F—PCM terminal 2AW PCM malfunction



EGR VALVE WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT EGR VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the EGR valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 10.
		No	Go to the next step.
4	INSPECT EGR VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • EGR valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — EGR valve terminal C — EGR valve terminal D • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 10.
5	INSPECT EGR CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • EGR valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — EGR valve terminal E — EGR valve terminal A — EGR valve terminal B — EGR valve terminal F • is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 10.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 10.
		No	Go to the next step.
7	INSPECT EGR CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • EGR valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — EGR valve terminal E — EGR valve terminal A — EGR valve terminal B — EGR valve terminal F • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
8	INSPECT EGR VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the EGR valve. (See 01-16A-9 EGR VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the EGR valve, then go to Step 10. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	INSPECT EGR CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • EGR valve and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AX — EGR valve terminal A—PCM terminal 2BA — EGR valve terminal B—PCM terminal 2AT — EGR valve terminal F—PCM terminal 2AW • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0421:00 [LF, L5]

id0102c8704400

DTC P0421:00	Warm up catalyst system efficiency below threshold
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM compares the number of A/F sensor and HO2S inversions for a predetermined time. The PCM monitors the HO2S inversion counts when the following conditions are met. The PCM detects inversion ratio. If the inversion ratio is below specification, the PCM determine that catalyst system has deteriorated. <ul style="list-style-type: none"> — The A/F sensor inversion counts is as prescribed when the following monitoring conditions are met: — The accumulated occurrence time of the following monitoring conditions has exceeded the prescribed time limit: <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Catalyst converter temperature: more than 400 °C {752 °F} — Engine speed: <ul style="list-style-type: none"> • 1,350–3,000 rpm (LF/ATX) • 1,500–3,000 rpm (LF/MTX) • 1,200–3,000 rpm (L5/ATX) • 1,300–3,000 rpm (L5/MTX) — Charging efficiency: 15—48% (engine speed: 2,000 rpm) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (catalyst). • The MIL illuminates if PCM detects above malfunction condition in two consecutive drive cycles or in one drive cycle while DTC for the same malfunction has been stored in PCM. • PENDING CODE is available if PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Leakage exhaust system • Looseness A/F sensor • Looseness HO2S • TWC malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (catalyst related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> • Visually inspect the exhaust gas system. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
5	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor for looseness. • Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 8.
6	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> • Inspect the HO2S for looseness. • Is the HO2S installed securely? 	Yes	Go to the next step.
		No	Retighten the HO2S, then go to Step 8.
7	INSPECT TWC <ul style="list-style-type: none"> • Inspect the TWC. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the TWC, then go to the next step. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0442:00, P0455:00, P0456:00 [LF, L5]

id0102c8896000

DTC P0442:00	EVAP system leak detected (small leak)
DTC P0455:00	EVAP system leak detected (gross leak/no flow)
DTC P0456:00	EVAP system leak detected (very small leak)
DETECTION CONDITION	<p>P0442:00</p> <ul style="list-style-type: none"> • P0442:00 indicates that a leak has been detected as small as 1 mm {0.04 in} in the EVAP vapor management valve solenoid system when there is less than 0.988 kPa {7.41 mmHg, 0.292 inHg} bleed-up over 20 s at 75% fuel fill. Bleed-up and evaluation time vary as a function of fuel fill level. The vapor generation limit is more than 0.286 kPa {2.15 mmHg, 0.085 inHg} over 150 s. <p>P0455:00</p> <ul style="list-style-type: none"> • P0455:00 indicates that a substantial leak or blockage has been detected in the EVAP system when there is -1.94 kPa {-14.6 mmHg, -0.575 inHg} or less vacuum for 75 s evaluation time. <p>P0456:00</p> <ul style="list-style-type: none"> • P0456:00 indicates that a fuel vapor leak from an opening as small as 0.508 mm {0.020 in} has been detected by the EVAP running loss monitor test. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (EVAP system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>DTC P0442:00, P0456:00</p> <ul style="list-style-type: none"> • After-market EVAP hardware (such as fuel filler cap) nonconforming to required specifications • Fuel filler cap loosely installed • Small leaks in components <ul style="list-style-type: none"> — CV solenoid is not seated on the charcoal canister — Cut or loose connection in the fuel vapor hoses/tubes — Fuel filler pipe damaged • Fuel filler cap and fuel filler pipe damaged • CV solenoid valve malfunction • Leaks in complete EVAP system • Small leaks from EVAP system return tube to charcoal canister • Small leaks between fuel tank vapor tube and fuel tank filler pipe • PCM malfunction <p>DTC P0455:00</p> <ul style="list-style-type: none"> • Purge solenoid valve related part malfunction <ul style="list-style-type: none"> — Blockage or loose vacuum hose between intake manifold and purge solenoid valve — Purge solenoid valve malfunction (blockage) • After-market EVAP hardware (such as fuel filler cap) not conforming to required specifications • Large EVAP system leak <ul style="list-style-type: none"> — Fuel filler cap malfunction (damaged, missing or loosely installed) — Both the input port vacuum hose and EVAP return tube are not attached to the CV solenoid valve — CV solenoid valve is not attached to the charcoal canister — Fuel vapor hoses/tubes disconnected or cracked — Fuel filler pipe and the fuel tank damaged • Blockage between CV solenoid valve and fuel vapor hose joint • CV solenoid valve malfunction • Fuel tank pressure sensor malfunction • PCM malfunction

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ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

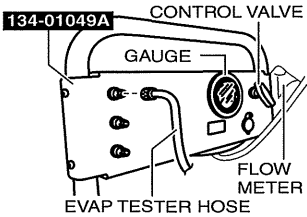
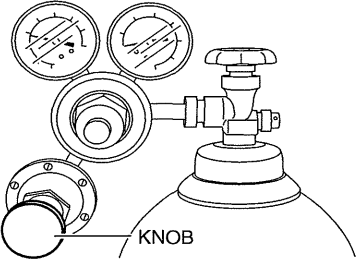
STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Are any related Service Bulletins available? 	Yes	Perform repair or diagnosis according to the available Service Bulletins. If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes	Go to the appropriate DTC troubleshooting. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	VERIFY DTC FOR SMALL LEAK <ul style="list-style-type: none"> Is the DTC P0456:00 present? 	Yes	Go to Step 9.
		No	Go to the next step.
5	VERIFY DTC FOR LARGE LEAK <ul style="list-style-type: none"> Is the DTC P0455:00 present? 	Yes	Verify that the purge solenoid valve is not blocked. If the purge solenoid valve is functioning correctly and receiving engine vacuum: <ul style="list-style-type: none"> Go to the next step.
		No	Go to the next step.
6	PRELIMINARY LEAK TEST (EXCEPT P0456:00) <ul style="list-style-type: none"> Perform the EVAP system leak inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Verify that all PIDs are within the following specifications: <p>Note</p> <ul style="list-style-type: none"> To successfully perform this procedure, all PIDs must be within specification before proceeding to the next step. <ul style="list-style-type: none"> Select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> Select "Powertrain". Select "Fuel". Select "EVAP Test". Verify that ECT and IAT are within specification at the confirmation screen. <ul style="list-style-type: none"> To successfully perform this procedure, ECT and IAT must be within specification before proceeding to the next step. The fuel level must be maintained within 15%—85%. The PCM will cancel the EVAP test if the fuel level is lower than 15% or higher than 85%. Allow the M-MDS to run the EVAP test. Does M-MDS indicate an EVAP system leak exists? 	Yes	Go to the next step.
		No	Go to Step 9.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION				
7	<p>PRELIMINARY LEAK TEST (EXCEPT P0456:00)</p> <ul style="list-style-type: none"> • Tighten the fuel-filler cap then repeat the EVAP system leak inspection using the M-MDS again. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Verify that all PIDs are within the following specifications: <p>Note</p> <ul style="list-style-type: none"> • To successfully perform this procedure, all PIDs must be within specification before proceeding to the next step. <ul style="list-style-type: none"> — Select the following items from the initialization screen of the M-MDS. — Select “Powertrain”. — Select “Fuel”. — Select “EVAP Test”. — Verify that ECT and IAT are within specification at the confirmation screen. To successfully perform this procedure, ECT and IAT must be within specification before proceeding to the next step. — The fuel level must be maintained within 15%—85%. The PCM will cancel the EVAP test if the fuel level is lower than 15% or higher than 85%. — Allow the M-MDS to run the EVAP test. • Does M-MDS still indicate an EVAP system leak exists? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>The fuel cap was not properly tightened. <ul style="list-style-type: none"> • Go to Step 14. </td> </tr> </table>	Yes	Go to the next step.	No	The fuel cap was not properly tightened. <ul style="list-style-type: none"> • Go to Step 14.
Yes	Go to the next step.					
No	The fuel cap was not properly tightened. <ul style="list-style-type: none"> • Go to Step 14. 					
8	<p>VISUALLY INSPECT COMPONENTS FOR LEAKS (EXCEPT P0456:00)</p> <ul style="list-style-type: none"> • Verify that the CV solenoid valve is properly seated on the charcoal canister. • Visually inspect for cut or loose connections to the fuel vapor hoses/tubes in the following locations: <ul style="list-style-type: none"> — Charcoal canister to CV solenoid valve — Charcoal canister to evaporative emission valve component — Evaporative emission valve component to the fuel tank (if applicable) — Check for fuel-filler pipe damage • Is a concern with a hose, tube, connection or valve visually evident? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Repair or install a new component if necessary. Afterwards, verify that the leak is repaired by repeating diagnostic Step 6. If the leak is repaired: <ul style="list-style-type: none"> • Go to Step 14. </td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Repair or install a new component if necessary. Afterwards, verify that the leak is repaired by repeating diagnostic Step 6. If the leak is repaired: <ul style="list-style-type: none"> • Go to Step 14. 	No	Go to the next step.
Yes	Repair or install a new component if necessary. Afterwards, verify that the leak is repaired by repeating diagnostic Step 6. If the leak is repaired: <ul style="list-style-type: none"> • Go to Step 14. 					
No	Go to the next step.					

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ON-BOARD DIAGNOSTIC [LF, L5]




STEP	INSPECTION		ACTION
9	<p>CALIBRATE LEAK TESTER FOR DIAGNOSIS</p> <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> Connect the EVAP Tester Hose (part of the SST) to the SELF-TEST port located on the control panel. Hand tighten the fitting. (Do not overtighten.) Turn the control valve to the TEST position; the gauge should read 331—381 mm {13—15 in} of water. <p>Note</p> <ul style="list-style-type: none"> If the gauge is not reading in this range, adjust the pressure by turning the black knob on the low pressure regulator at the nitrogen bottle. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> After verifying the regulator is properly calibrated, turn the control valve to the HOLD position. Verify that the gauge holds pressure and that the flow meter reads no flow. Does the gauge hold pressure and the flow meter read no flow? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Refer to the tester operator's manual for tester repair instructions.</p>

ON-BOARD DIAGNOSTIC [LF, L5]

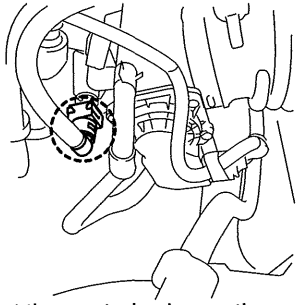
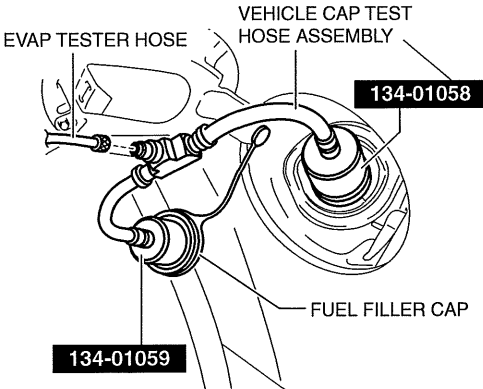
STEP	INSPECTION	ACTION												
10	<p>PRESSURIZE EVAP SYSTEM WITH NITROGEN TO TEST FOR LEAKS</p> <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve. Disconnect the purge solenoid valve hose from the intake manifold and insert SST AKS042808 into the purge solenoid valve hose. <div style="text-align: center;"> </div> <ul style="list-style-type: none"> Connect the EVAP Tester Hose to SST AKS042808. Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PID/DATA Monitor and Record Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Press the eraser icon to deselect the highlighted PIDs. <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="width: 30%;">Icon name</th> <th style="width: 70%;">Screen display</th> </tr> </thead> <tbody> <tr> <td>Eraser icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Tick icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control item activate icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Up icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> Select the EVAPCP and EVAPCV PIDs, then click the tick icon. Command EVAPCP to 100% duty cycle to open the purge solenoid valve. <ul style="list-style-type: none"> To open the purge solenoid valve, click the control item activate icon. Click the EVAPCP box on the left-hand side of the screen to select it. Click the control icon on the right-hand side of the screen. Click the up icon immediately below the control icon. Each click increases the duty cycle by 10%. Continue clicking until the M-MDS shows the purge solenoid valve is open 100%. 	Icon name	Screen display	Eraser icon		Tick icon		Control item activate icon		Control icon		Up icon		<p>Yes: Go to Step 12 to locate the leak.</p> <p>No: P0442:00 or P0455:00: <ul style="list-style-type: none"> Go to the next step. P0456:00: <ul style="list-style-type: none"> Go to Step 12. </p>
Icon name	Screen display													
Eraser icon														
Tick icon														
Control item activate icon														
Control icon														
Up icon														

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ON-BOARD DIAGNOSTIC [LF, L5]






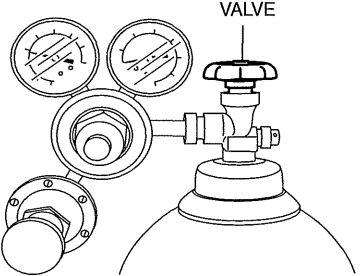










STEP	INSPECTION		ACTION				
	<ul style="list-style-type: none"> • Command EVAPCV to ON to Close the CV solenoid valve. <ul style="list-style-type: none"> — To close the CV solenoid valve, click the control item activate icon. — Click the EVAPCV box in the upper left-hand corner of the screen to select it. — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon (the EVAPCV should now be on). • Turn the control valve to the TEST position and let the system fill. A drop in the gauge pressure should be noted along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses. <p>Note</p> <ul style="list-style-type: none"> • If the gauge and the flow meter do not settle to a measurable level after 2—3 min, then refer to the Mazda Workshop Manual to verify that the canister vent valve is properly closed. If the canister vent valve is properly closed, the EVAP system has a large leak. <ul style="list-style-type: none"> • Does the test indicate that a leak exists? 	<p>Yes</p> <p>No</p>	<p>Go to Step 12 to locate the leak.</p> <p>P0442:00 or P0455:00:</p> <ul style="list-style-type: none"> • Go to the next step. <p>P0456:00:</p> <ul style="list-style-type: none"> • Go to Step 12. 				
11	<p>CHECKING SYSTEM FOR BLOCKAGE</p> <ul style="list-style-type: none"> • Leave the tester in the test position • Access the EVAPCV PID, command the CV solenoid valve open. <ul style="list-style-type: none"> — To open the CV solenoid valve, click the down icon (the EVAPCV should now be off). <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="width: 50%; text-align: center;">Icon name</th> <th style="width: 50%; text-align: center;">Screen displ</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">down icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Does the flow indicator in the flow meter immediately jump to the top? 	Icon name	Screen displ	down icon		<p>Yes</p> <p>No</p>	<p>Go to the next step</p> <p>System is blocked between the intake manifold and the fuel tank pressure sensor:</p> <ul style="list-style-type: none"> • Locate and remove blockage then perform Step 10.
Icon name	Screen displ						
down icon							

ON-BOARD DIAGNOSTIC [LF, L5]

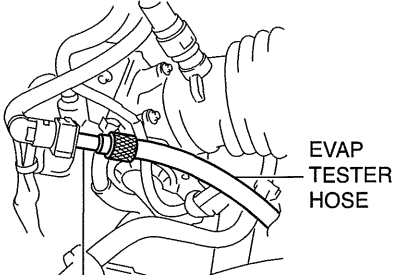
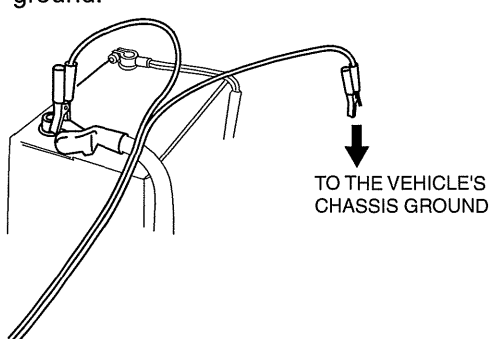















STEP	INSPECTION	ACTION
12	<p>PRESSURIZE EVAP SYSTEM WITH NITROGEN TO TEST PURGE SOLENOID FOR LEAKAGE</p> <ul style="list-style-type: none"> Reconnect the purge solenoid valve hose.  <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position. Remove the fuel-filler cap from the vehicle. <ul style="list-style-type: none"> If the fuel-filler cap is not a MAZDA part or equivalent, replace it. <p>Note</p> <ul style="list-style-type: none"> INSPECT FUEL-FILLER CAP AND FILLER NECK <ul style="list-style-type: none"> Visually inspect for damage, insufficient sealing, rust, cracks or warps on the filler cap and filler neck. Repair or replace if necessary. <ul style="list-style-type: none"> Connect the receiver assembly (SST: 134-01059) to the vehicle cap test hose assembly (part of the SST) and the fuel-filler cap from the vehicle.  <ul style="list-style-type: none"> Connect the cap adaptor (SST: 134-01058) to the vehicle cap test hose assembly (part of the SST) and to the fuel-filler neck. Connect the EVAP Tester Hose (part of the SST) to the center fitting of the vehicle cap test hose assembly (part of the SST). Connect M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PID/DATA Monitor and Record Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) 	<p>Yes: Replace the purge solenoid valve, then go to the next step. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)</p> <p>No: Go to the next step.</p>

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ON-BOARD DIAGNOSTIC [LF, L5]


STEP	INSPECTION	ACTION																
	<ul style="list-style-type: none"> • Press the eraser icon to deselect the highlighted PIDs. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 50%;">Icon name</th> <th style="width: 50%;">Screen display</th> </tr> </thead> <tbody> <tr> <td>Eraser icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Tick icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control item activate icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Up icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Select PID EVAPCV, then click the tick icon. • Command EVAPCV to ON to close the CV solenoid valve. <ul style="list-style-type: none"> — To close the CV solenoid valve, click the control item activate icon. — Click the EVAPCV box in the upper left-hand corner of the screen to select it. — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon (the EVAPCV should now be on). • Verify that the valve on the nitrogen bottle is still open. <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> • Turn the control valve to the TEST position and let the system fill. A drop in the gauge pressure should be noted along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses. • Does the test indicate that a leak exists? 	Icon name	Screen display	Eraser icon		Tick icon		Control item activate icon		Control icon		Up icon		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center; vertical-align: top;">Yes</td> <td style="padding-left: 10px;">Replace the purge solenoid valve, then go to the next step. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">No</td> <td style="padding-left: 10px;">Go to the next step.</td> </tr> </table>	Yes	Replace the purge solenoid valve, then go to the next step. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)	No	Go to the next step.
Icon name	Screen display																	
Eraser icon																		
Tick icon																		
Control item activate icon																		
Control icon																		
Up icon																		
Yes	Replace the purge solenoid valve, then go to the next step. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)																	
No	Go to the next step.																	

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION												
13	<p>LOCATE LEAKAGE POINT</p> <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position and the valve on the nitrogen bottle valve is open. Disconnect the purge solenoid valve hose from the intake manifold and insert SST AKS042808 into the purge solenoid valve hose.  <p style="text-align: center;">AKS042808</p> <ul style="list-style-type: none"> Connect the EVAP Tester Hose to SST AKS042808. Connect the 12 volt power connector leads on the smoke generation unit to the vehicle's battery. Make sure to connect the red lead to the positive post (+) or power, and the black lead to the vehicle's chassis ground.  <p style="text-align: center;">↓ TO THE VEHICLE'S CHASSIS GROUND</p> <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PID/DATA Monitor and Record Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Press the eraser icon to deselect the highlighted PIDs. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">Icon name</th> <th style="text-align: center;">Screen display</th> </tr> </thead> <tbody> <tr> <td>Eraser icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Tick icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control item activate icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Up icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> Access the EVAPCP and EVAPCV PIDs, then click the tick icon. 	Icon name	Screen display	Eraser icon		Tick icon		Control item activate icon		Control icon		Up icon		<p>Yes: Repair or install a new component if necessary, then go to the next step.</p> <p>No: Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.</p>
Icon name	Screen display													
Eraser icon														
Tick icon														
Control item activate icon														
Control icon														
Up icon														

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
	<ul style="list-style-type: none"> Command EVAPCP to 100% duty cycle to open the purge solenoid valve. <ul style="list-style-type: none"> — To open the purge solenoid valve, click the control item activate icon. — Click the EVAPCP box on the left-hand side of the screen to select it. — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon. Each click increases the duty cycle by 10%. Continue clicking until the M-MDS shows the purge solenoid valve is open 100%. Command EVAPCV to ON to close the CV solenoid valve. <ul style="list-style-type: none"> — To close the CV solenoid valve, click the control item activate icon. — Click the EVAPCV box in the upper left-hand corner of the screen to select it — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon (the EVAPCV should now be on). Turn the control valve to the TEST position. Press the remote smoke trigger on the smoke generation unit and let the system fill with smoke. <p style="text-align: center;">REMOTE SMOKE TRIGGER</p>  <p>Note</p> <ul style="list-style-type: none"> It may be necessary to lift the vehicle to provide sufficient clearance underneath to conduct a proper visual inspection of the fuel and EVAP system. NEVER depress the remote smoke trigger before opening the nitrogen tank valve and setting the tester control valve to TEST Use a 12 volt 400,000 candle power spot light (part # 4410000-100) or equivalent to help locate the smoke. Is a leak detected? 	Yes	Repair or install a new component if necessary, then go to the next step.
		No	Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.
14	<p>VERIFY DTC TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Is the DTC P0456:00 present? 	Yes	Verify that the leak is repaired by repeating diagnostic Step 10. If the leak is repaired: <ul style="list-style-type: none"> Go to the next step.
		No	Verify that the leak is repaired by repeating diagnostic Step 6. If the leak is repaired: <ul style="list-style-type: none"> Go to the next step.
15	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

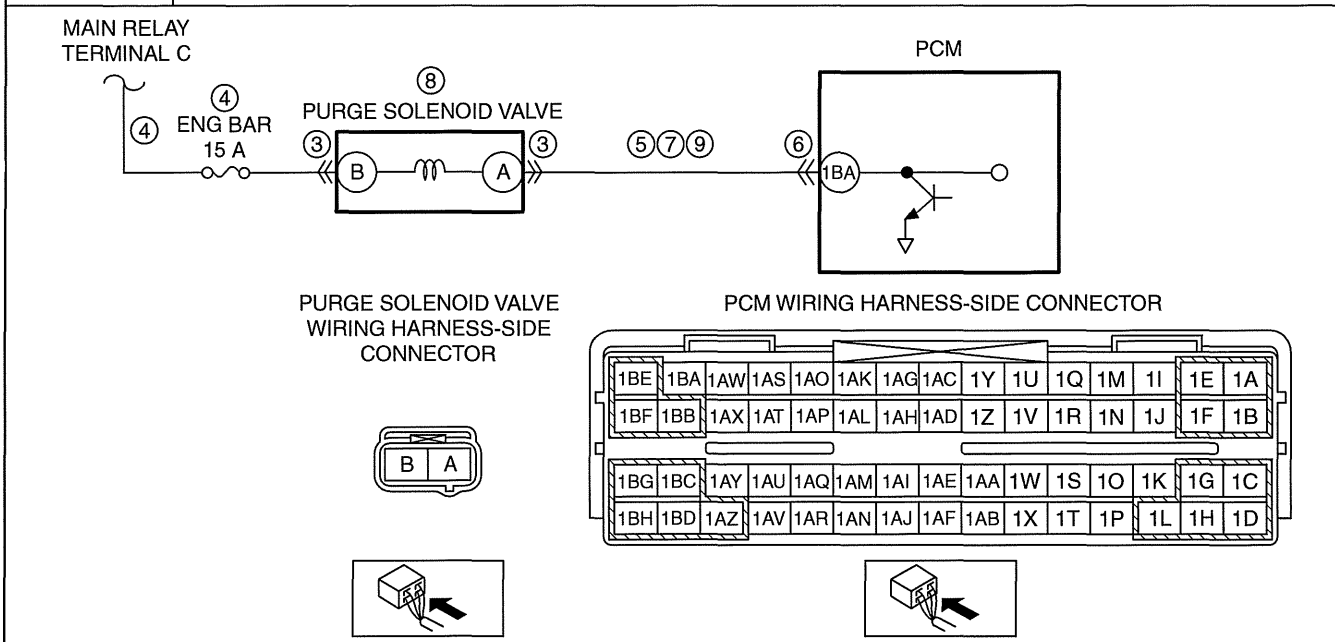
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0443:00 [LF, L5]

id0102c8704500

01-02A

DTC P0443:00	Purge solenoid valve circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the purge solenoid valve control signal voltage and current. If the following conditions are met, the PCM determines that there is the purge solenoid valve control circuit problem: <ul style="list-style-type: none"> — The PCM turns the purge solenoid valve off, but the voltage of the purge solenoid valve control signal remains low. — The PCM turns the purge solenoid valve on, but the current of the purge solenoid valve control signal remains high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Purge solenoid valve connector or terminals malfunction • Short to ground or open circuit in purge solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and purge solenoid valve terminal B — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and purge solenoid valve terminal B • Short to ground in wiring harness between purge solenoid valve terminal A and PCM terminal 1BA • PCM connector or terminals malfunction • Short to power supply in wiring harness between purge solenoid valve terminal A and PCM terminal 1BA • Purge solenoid valve malfunction • Open circuit in wiring harness between purge solenoid valve terminal A and PCM terminal 1BA • PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED • Has the snapshot data been recorded?	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT PURGE SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the purge solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 10.
		No	Go to the next step.
4	INSPECT PURGE SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Purge solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between purge solenoid valve terminal B (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 10.
5	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Purge solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between purge solenoid valve terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 10.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 10.
		No	Go to the next step.
7	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Purge solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between purge solenoid valve terminal A (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
8	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 10. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Purge solenoid valve and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between purge solenoid valve terminal A (wiring harness-side) and PCM terminal 1BA (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0446:00 [LF, L5]

id0102c8300600

DTC P0446:00	CV solenoid valve control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> • Monitors the CV solenoid valve circuit for an electrical failure. The test fails when the signal moves outside the minimum or maximum allowable calibrated parameters for a specified canister vent duty cycle by the PCM command. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CV solenoid valve connector or terminals malfunction • Short to ground or open circuit in CV solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and CV solenoid valve terminal A — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and CV solenoid valve terminal A • Short to ground in wiring harness between CV solenoid valve terminal B and PCM terminal 1M • PCM connector or terminals malfunction • Short to power supply in wiring harness between CV solenoid valve terminal B and PCM terminal 1M • CV solenoid valve malfunction • Open circuit in wiring harness between CV solenoid valve terminal B and PCM terminal 1M • PCM malfunction
<p style="text-align: center;">MAIN RELAY TERMINAL C</p> <p style="text-align: center;">PCM</p> <p style="text-align: center;">CV SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR</p> <p style="text-align: center;">PCM WIRING HARNESS-SIDE CONNECTOR</p>	

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT CV SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CV solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 11.
		No	Go to the next step.
5	INSPECT CV SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • CV solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between CV solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 11.
6	INSPECT CV SOLENOID VALVE CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • CV solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between CV solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 11.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 11.
		No	Go to the next step.
8	INSPECT CV SOLENOID VALVE CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • CV solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between CV solenoid valve terminal B (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	INSPECT CV SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the CV solenoid valve. (See 01-16A-16 CANISTER VENT (CV) SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CV solenoid valve, then go to Step 11. (See 01-16A-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	INSPECT CV SOLENOID VALVE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CV solenoid valve and PCM connectors are disconnected. • Inspect for continuity between CV solenoid valve terminal B (wiring harness-side) and PCM terminal 1M (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0451:00 [LF, L5]

id0102c8300700

DTC P0451:00	Fuel tank pressure sensor range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • Note <ul style="list-style-type: none"> • DTC P0451:00 is set for a fuel tank pressure sensor range (offset) concern. <p>The fuel tank pressure sensor output is offset by +/- 424 Pa {43.2 kgf/m², 0.0615 psi} or more.</p> <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Fuel tank pressure sensor connector or terminals malfunction • PCM connector or terminals malfunction • Fuel tank pressure sensor malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT FUEL TANK PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel tank pressure sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel tank pressure sensor. (See 01-40A-33 FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5].) • Is there malfunction? 	Yes	Replace the evaporative hose component, then go to Step 8. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	INSPECT PCM CONDITION <ul style="list-style-type: none"> • Visually inspect the PCM for the following: <ul style="list-style-type: none"> — Pushed out pins — Corrosion • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

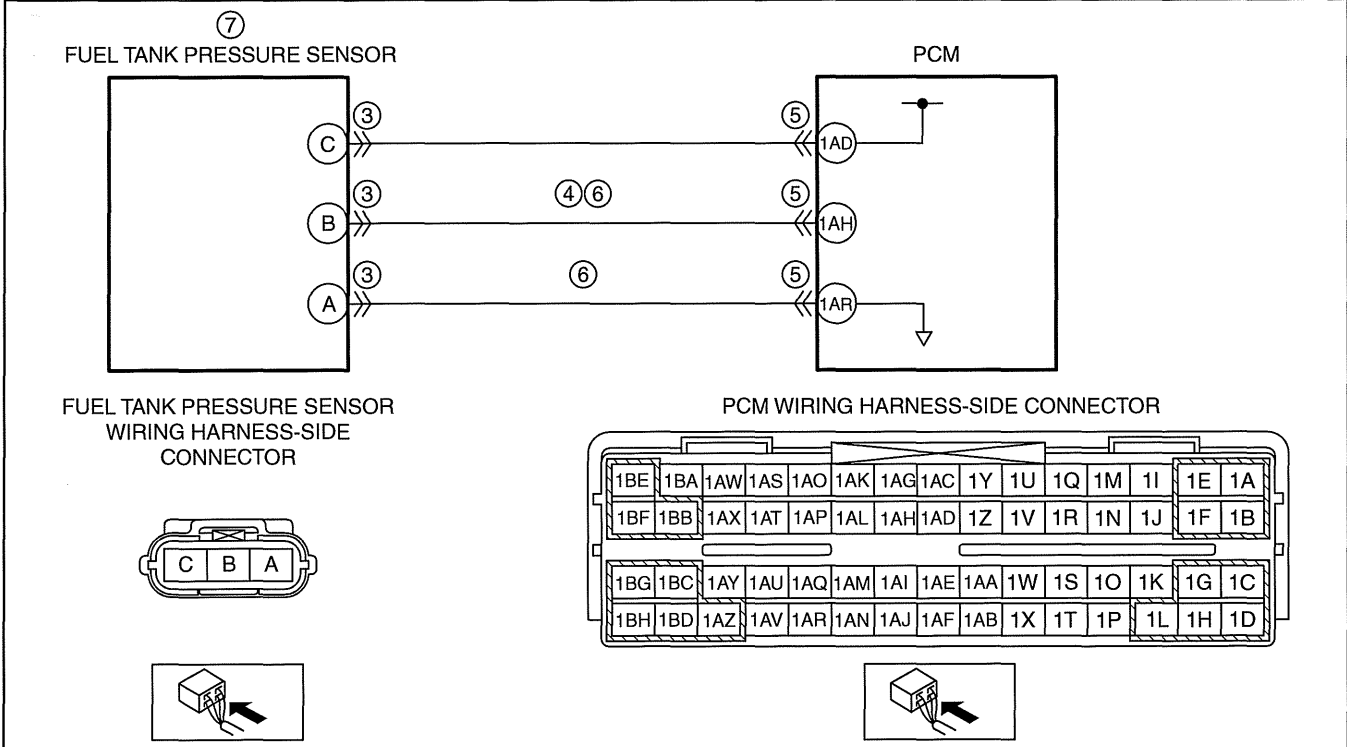
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0452:00 [LF, L5]

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01-02A

DTC P0452:00	Fuel tank pressure sensor low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the EVAP control system fuel tank pressure sensor input signal to the PCM. The test fails when the signal average drops below a minimum allowable calibrated parameter. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel tank pressure sensor connector or terminals malfunction Short to ground in wiring harness between fuel tank pressure sensor terminal B and PCM terminal 1AH PCM connector or terminals malfunction Fuel tank pressure sensor signal circuit and ground circuit are shorted to each other Fuel tank pressure sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL TANK PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the fuel tank pressure sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
4	VERIFY FUEL TANK PRESSURE SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel tank pressure sensor connector is disconnected. • Inspect for continuity between fuel tank pressure sensor terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 8.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 8.
		No Go to the next step.
6	INSPECT FUEL TANK PRESSURE SENSOR SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connectors are disconnected. • Inspect for continuity between fuel tank pressure sensor terminals A and B (wiring harness-side). • Is there continuity? 	Yes Repair or replace the malfunctioning wiring harness, then go to Step 8.
		No Go to the next step.
7	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel tank pressure sensor. (See 01-40A-33 FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the evaporative hose component, then go to the next step. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

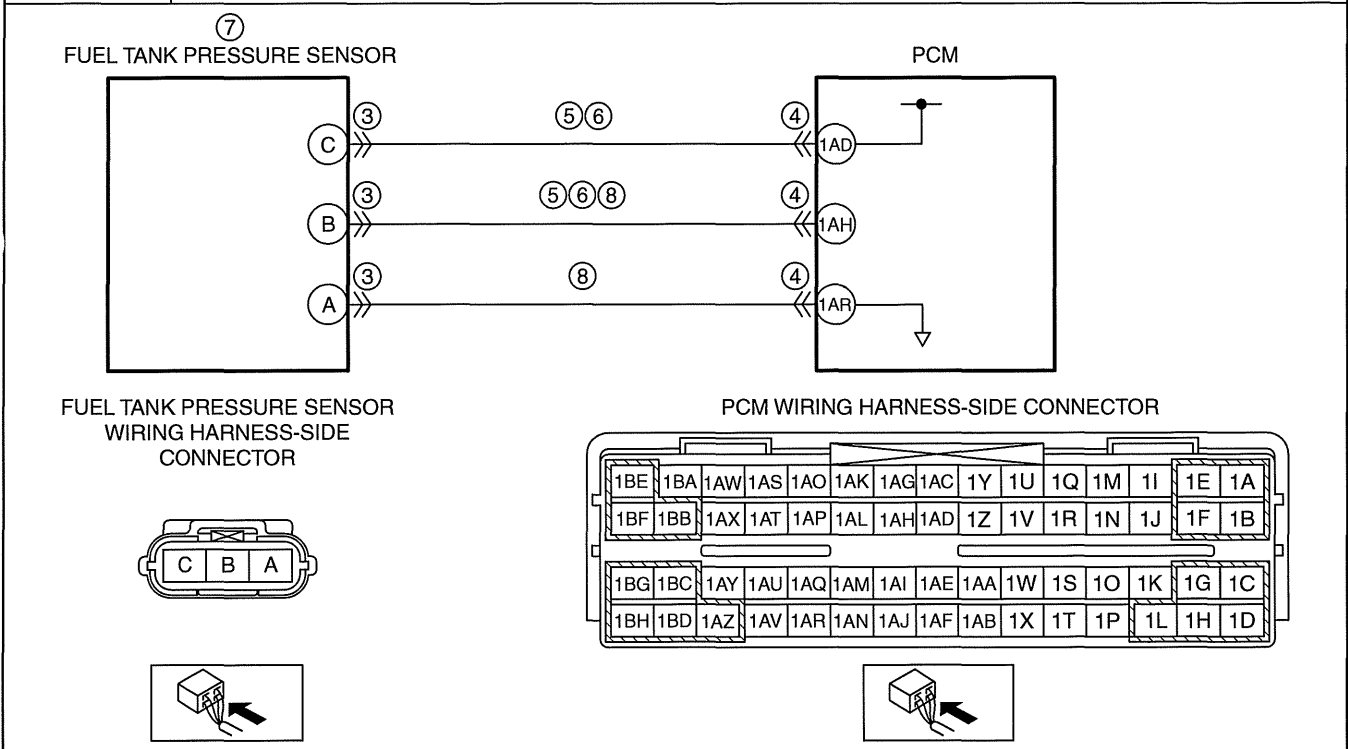
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0453:00 [LF, L5]

id0102c8300900

01-02A

DTC P0453:00	Fuel tank pressure sensor high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the EVAP control system fuel tank pressure sensor input signal to the PCM. The test fails when the signal average jumps above a minimum allowable calibrated parameter. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel tank pressure sensor connector or terminals malfunction PCM connector or terminals malfunction Fuel tank pressure sensor power circuit and signal circuit are shorted to each other Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal C—PCM terminal 1AD — Fuel tank pressure sensor terminal B—PCM terminal 1AH Fuel tank pressure sensor malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal B—PCM terminal 1AH — Fuel tank pressure sensor terminal A—PCM terminal 1AR PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT FUEL TANK PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel tank pressure sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
5	INSPECT FUEL TANK PRESSURE SENSOR POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connector. • Inspect for continuity between fuel tank pressure sensor terminal C and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL TANK PRESSURE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connector. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal C — Fuel tank pressure sensor terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the fuel tank pressure sensor. (See 01-40A-33 FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the evaporative hose component, then go to Step 9. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	INSPECT FUEL TANK PRESSURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connector. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal B—PCM terminal 1AH — Fuel tank pressure sensor terminal A—PCM terminal 1AR • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0454:00 [LF, L5]

id0102c8301000

DTC P0454:00	Fuel tank pressure sensor intermittent
DETECTION CONDITION	<ul style="list-style-type: none"> • The fuel tank pressure changes more than 1,993 Pa {8.0 in} of water in 0.1 s. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Fuel tank pressure sensor malfunction <ul style="list-style-type: none"> — Intermittent open or short in the fuel tank pressure sensor or the fuel tank pressure sensor signal • PCM malfunction

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Inspect the fuel tank pressure sensor. (See 01-40A-33 FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the evaporative hose component, then go to the next step. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERNS TROUBLESHOOTING" procedure. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0457:00 [LF, L5]

id0102c8301300

DTC P0457:00	EVAP system leak detected (fuel cap loose/off)
DETECTION CONDITION	<ul style="list-style-type: none"> • P0457:00 indicates that the initial vacuum could not be achieved after a refueling event and the purge vapor flow is excessive (gross leak). <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (EVAP system). • A check cap light will be illuminated after a malfunction has been detected on one driving cycle. The check cap light will be extinguished after the monitor has run without a malfunction (same or subsequent drive cycle). • The MIL will be illuminated after a malfunction has been detected on three consecutive driving cycles. The MIL will be extinguished after three consecutive driving cycles where the monitor was run without a malfunction. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Missing or loose fuel filler cap • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? <p>Note</p> <ul style="list-style-type: none"> • If the DTC P0455:00 is present, diagnose the DTC P0455:00 first. 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT FUEL FILLER CAP FOR MISSING OR LOOSENESS <ul style="list-style-type: none"> • Visually inspect the fuel filler cap for missing or looseness. • Is there any malfunction? 	Yes	Repair or replace the fuel filler cap, then go to the next step.
		No	Go to the next step.
5	PERFORM EVAP SYSTEM LEAK INSPECTION <ul style="list-style-type: none"> • Perform the EVAP system leak Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Leakage still exists. <ul style="list-style-type: none"> • Perform the DTC P0455:00 inspection. (See 01-02A-137 DTC P0442:00, P0455:00, P0456:00 [LF, L5].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 06 (EVAP System Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

DTC P0460:00 [LF, L5]

id0102c8301400

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DTC P0460:00	Fuel level sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel level input communications network message for a concern. The test fails when the PCM determines that the value of the fuel level input signal is stuck. The PCM calculates the amount of fuel used during operation. If the fuel level input signal does not change or does not correspond with the calculated fuel usage, the DTC P0460 is set. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction <ul style="list-style-type: none"> — Incorrectly installed fuel gauge — Fuel level input signal circuit malfunction Amount of fuel is empty or overfilled Fuel gauge sender unit malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No Go to the next step.
4	VERIFY STORED DTC IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> Switch the ignition to off then to ON (engine off). Perform the instrument cluster DTC inspection using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs present? 	Yes Go to the appropriate DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No Go to the next step.
5	INSPECT AMOUNT OF FUEL <ul style="list-style-type: none"> Visually inspect the amount of fuel. Is the amount of fuel normal? 	Yes Go to the next step.
		No Do the amount of the fuel to a proper level, then go to Step 7.
6	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) Is there any malfunction? 	Yes Replace the fuel gauge sender unit, then go to the next step. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0461:00 [LF, L5]

id0102c8301500

DTC P0461:00	Fuel gauge sender unit circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel tank level difference before and after the PCM-calculated fuel consumption has reached more than 25 L {26 US qt, 22 Imp qt}. If the difference is less than 5 %, the PCM determines that there is a fuel gauge sender unit circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel gauge sender unit malfunction Instrument cluster malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) Is there any malfunction? 	Yes	Replace the fuel gauge sender unit, then go to Step 5. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Is there any malfunction? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Drive the vehicle under the snapshot data condition. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

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DTC P0462:00 [LF, L5]

id0102c8301600

DTC P0462:00	Fuel gauge sender unit circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the fuel level signal and fuel gauge sender unit output voltage from the instrument cluster. If the PCM detects a fuel level or fuel gauge sender unit output voltage that is too low, the PCM determines that the fuel gauge sender unit circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Fuel gauge sender unit malfunction • Instrument cluster malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) • Is there any malfunction? 	Yes	Replace the fuel gauge sender unit, then go to Step 5. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) • Is there any malfunction? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0463:00 [LF, L5]

id0102c8301700

DTC P0463:00	Fuel gauge sender unit circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel level signal and fuel gauge sender unit output voltage from the instrument cluster. If the PCM detects a fuel level or fuel gauge sender unit output voltage that is too high, the PCM determines that the fuel gauge sender unit circuit has a malfunction. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel gauge sender unit malfunction Instrument cluster malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) Is there any malfunction? 	Yes	Replace the fuel gauge sender unit, then go to Step 5. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Is there any malfunction? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

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DTC P0480:00 [LF, L5]

id0102c8704600

DTC P0480:00	Cooling fan control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltages from the fan control module. If the voltage at the PCM terminal 1R remains low or high, the PCM determines that the fan control circuit has malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fan control module connector or terminals malfunction Short to ground or open circuit in fan control module power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and fan control module terminal 1D — FAN1 40 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and fan control module terminal 1D Short to ground in wiring harness between fan control module terminal 1C and PCM terminal 1R PCM connector or terminals malfunction Short to power supply in wiring harness between fan control module terminal 1C and PCM terminal 1R Open circuit in wiring harness between fan control module terminal 1C and PCM terminal 1R Fan control module malfunction PCM malfunction
<p style="text-align: center;"> FAN CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR PCM WIRING HARNESS-SIDE CONNECTOR </p>	

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT FAN CONTROL MODULE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fan control module connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
3	INSPECT FAN CONTROL MODULE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Fan control module connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between fan control module terminal 1D (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the FAN1 40 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
4	INSPECT FAN CONTROL MODULE CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Fan control module connector is disconnected. • Inspect for continuity between fan control module terminal 1C (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
6	INSPECT FAN CONTROL MODULE CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fan control module and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 1R (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FAN CONTROL MODULE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fan control module and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between fan control module terminal 1C (wiring harness-side) and PCM terminal 1R (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FAN CONTROL MODULE <ul style="list-style-type: none"> • Inspect the fan control module. (See 01-12A-15 COOLING FAN COMPONENT INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the fan control module, then go to the next step. (See 01-12A-13 COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Reconnect the negative battery cable. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

01-02A

DTC P0500:00 [LF, L5]

id0102c8704800

DTC P0500:00	VSS circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> If an error in the wheel speed signal from the ABS HU/CM or DSC HU/CM is detected by CAN when the following conditions are met: MONITORING CONDITIONS <ul style="list-style-type: none"> Neutral switch and clutch switch: off (MTX) Shift range: except P, N or R range (ATX) Absolute load: above 40% Engine speed: above 2,000 rpm Brake switch: off Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> VSS signal malfunction <ul style="list-style-type: none"> Front ABS wheel-speed sensor malfunction ABS HU/CM or DSC HU/CM connector or terminals malfunction PCM connector or terminals malfunction ABS HU/CM or DSC HU/CM malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Start the engine. Access the VSS PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> Vehicle speed 20 km/h {12.4 mph}: 20km/h {12.4 mph} Vehicle speed 40 km/h {24.8 mph}: 40km/h {24.8 mph} Is the PID reading within specification? 	Yes Intermittent concern exists. <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERNS TROUBLESHOOTING". (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Switch the ignition to ON (engine off). • Clear DTC from PCM memory using M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Warm up the engine completely. • Access the RPM and LOAD PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Drive the vehicle under the following conditions for 18 s: <ul style="list-style-type: none"> — Engine speed: above 2,000 rpm — Gear: except NEUTRAL — Load: above 40% • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0505:00 [LF, L5]

id0102c8704900

DTC P0505:00	IAC system problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM cannot control idle speed toward target idle speed while KOER self test. Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/C magnetic clutch malfunction • Generator control circuit malfunction • Air cleaner element clogged • Throttle body passage clogged • Insufficient engine compression (over capacity of blow-by gas) • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
3	INSPECT A/C MAGNETIC CLUTCH OPERATION <ul style="list-style-type: none"> • Turn the fan switch off. • Is the magnetic clutch still on? 	Yes Perform the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].)
		No Go to the next step.
4	INSPECT GENERATOR CONTROL CIRCUIT MALFUNCTION <ul style="list-style-type: none"> • Apply the electrical load. • Is the engine speed increased? 	Yes Go to the next step.
		No Repair the generator control circuit for short to power supply, then go to Step 8.
5	INSPECT AIR CLEANER ELEMENT <ul style="list-style-type: none"> • Remove the air cleaner element with the engine running. (See 01-13A-6 AIR CLEANER ELEMENT INSPECTION [LF, L5].) • Is the engine speed increased? 	Yes Clean or replace the air cleaner element, then go to Step 8.
		No Go to the next step.
6	INSPECT THROTTLE BODY PASSAGE <ul style="list-style-type: none"> • Switch the ignition to off. • Visually inspect the throttle body passage. • Is the throttle body passage clogged? 	Yes Clean or replace the throttle body passage, then go to Step 8.
		No Go to the next step.
7	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0506:00 [LF, L5]

id0102c8705000

DTC P0506:00	Idle air control system RPM lower than expected
DETECTION CONDITION	<ul style="list-style-type: none"> • The actual idle speed is lower than expected by 100 rpm for 14 s, when brake pedal is depressed (brake switch is ON) and steering wheel is held straight ahead (PSP switch is off). <p>Note</p> <ul style="list-style-type: none"> • If atmospheric pressure is less than 72.3 kPa {542 mmHg, 21.3 inHg} or intake air temperature is below -10 °C {14 °F}, the PCM cancels diagnosis of P0506:00. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction conditions in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/C magnetic clutch malfunction • Electronic throttle control system related sensor malfunction <ul style="list-style-type: none"> — APP sensor malfunction — TP sensor malfunction • Purge solenoid valve malfunction • Air cleaner element clogged • Air intake passage clogged • Throttle body passage clogged • Generator malfunction • Engine malfunction <ul style="list-style-type: none"> — Insufficient engine compression (over capacity of blow-by gas) — Poor quality fuel • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT A/C MAGNETIC CLUTCH OPERATION <ul style="list-style-type: none"> • Turn the fan switch off. • Is the magnetic clutch still on? 	Yes	Perform the symptom troubleshooting “NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY”. (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	INSPECT ELECTRONIC THROTTLE CONTROL SYSTEM RELATED SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the following parts: <ul style="list-style-type: none"> — APP sensor (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) — TP sensor (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 11. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	INSPECT AIR CLEANER ELEMENT <ul style="list-style-type: none"> • Remove the air cleaner element with the engine running. • Is the engine speed increased? 	Yes	Clean or replace the air cleaner element, then go to Step 11.
		No	Go to the next step.
8	INSPECT THROTTLE BODY PASSAGE <ul style="list-style-type: none"> • Visually inspect the throttle body passage. • Is the throttle body passage clogged? 	Yes	Clean or replace the throttle body passage, then go to Step 11.
		No	Go to the next step.
9	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 11. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Depress the brake pedal for 14 s or more. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0507:00 [LF, L5]

id0102c8705100

DTC P0507:00	Idle air control system RPM higher than expected
DETECTION CONDITION	<ul style="list-style-type: none"> The actual idle speed is higher than expected by 200 rpm for 14 s, when brake pedal is depressed (brake switch is ON) and steering wheel is held straight ahead (power steering pressure switch is off). <p>Note</p> <ul style="list-style-type: none"> If atmospheric pressure is less than 72.3 kPa {542 mmHg, 21.3 inHg} or intake air temperature is below -10 °C {14 °F}, the PCM cancels diagnosis of P0507:00. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction conditions in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Vacuum hose misinstallation Electronic throttle control system related sensor malfunction <ul style="list-style-type: none"> — APP sensor malfunction — TP sensor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT VACUUM HOSE CONNECTION <ul style="list-style-type: none"> Visually inspect the vacuum hoses for connecting. Is there any malfunction? 	Yes	Reconnect the vacuum hose accurately, then go to Step 6.
		No	Go to the next step.
5	INSPECT ELECTRONIC THROTTLE CONTROL SYSTEM RELATED SENSOR <ul style="list-style-type: none"> Inspect the following parts: <ul style="list-style-type: none"> — APP sensor (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) — TP sensor (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and warm it up completely. Depress the brake pedal for 14 s or more. Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P050A:00 [LF, L5]

id0102c8301800

DTC P050A:00	Cold start idle air control system performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The actual idle speed is lower than expected by specified for 8.4 s when the target idle speed correction value for cold start is above 0 rpm or ignition retard value is above as following: <ul style="list-style-type: none"> — 9.0 ° (L5) — 9.5 ° (LF/Except california emission regulation applicable model) — 11.0 ° (LF/California emission regulation applicable model) <p>Note</p> <ul style="list-style-type: none"> If atmospheric pressure is less than 72.3 kPa {542 mmHg, 21.3 inHg} or intake air temperature is below -10 °C {14 °F}, the PCM cancels diagnosis of P050A:00. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (cold start emission reduction strategy monitoring). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Air suction in intake air system Electronic throttle control system malfunction Throttle valve stuck or blockage PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (cold start emission reduction strategy monitoring related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the P050A:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
4	INSPECT INTAKE AIR SYSTEM FOR AIR SUCTION <ul style="list-style-type: none"> • Start the engine. • Inspect for air leakage between MAF sensor and intake manifold. <p>Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 7.
		No	Go to the next step.
5	VERIFY ELECTRONIC THROTTLE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Electronic Throttle Control System Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 7.
		No	Go to the next step.
6	INSPECT THROTTLE VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the throttle valve with connector connected. • Access the ETC_DSD PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Switch the ignition to ON (engine off). • Move the throttle valve using the ETC_DSD PID of simulation function. • Dose the throttle valve move smoothly? 	Yes	Go to the next step.
		No	Clean or replace the throttle valve and retest, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P050B:00 [LF, L5]

id0102c8301900

DTC P050B:00	Cold start ignition timing performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors actual ignition timing using the CKP sensor while electronic spark advance control fast idle correction operating. If the ignition timing is out of specified range, the PCM determines that the ignition timing at cold condition has performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (cold start emission reduction strategy monitoring). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Damaged or chipped CKP sensor pulse wheel CKP sensor malfunction Damaged or chipped CMP sensor pulse wheel CMP sensor malfunction PCM malfunction

01-02A

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (cold start emission reduction strategy monitoring related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the P050B:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
4	INSPECT CKP SENSOR AND PULSE WHEEL <ul style="list-style-type: none"> Visually inspect the CKP sensor and pulse wheel. Is there any damage or chip on the CKP sensor and pulse wheel? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
5	INSPECT CKP SENSOR <ul style="list-style-type: none"> Inspect the CKP sensor. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the CKP sensor, then go to Step 8. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT CMP SENSOR AND PULSE WHEEL <ul style="list-style-type: none"> Visually inspect the CMP sensor and pulse wheel. Is there any damage or chip on the CMP sensor and pulse wheel? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
7	INSPECT CMP SENSOR <ul style="list-style-type: none"> Inspect the CMP sensor. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the CMP sensor, then go to the next step. (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

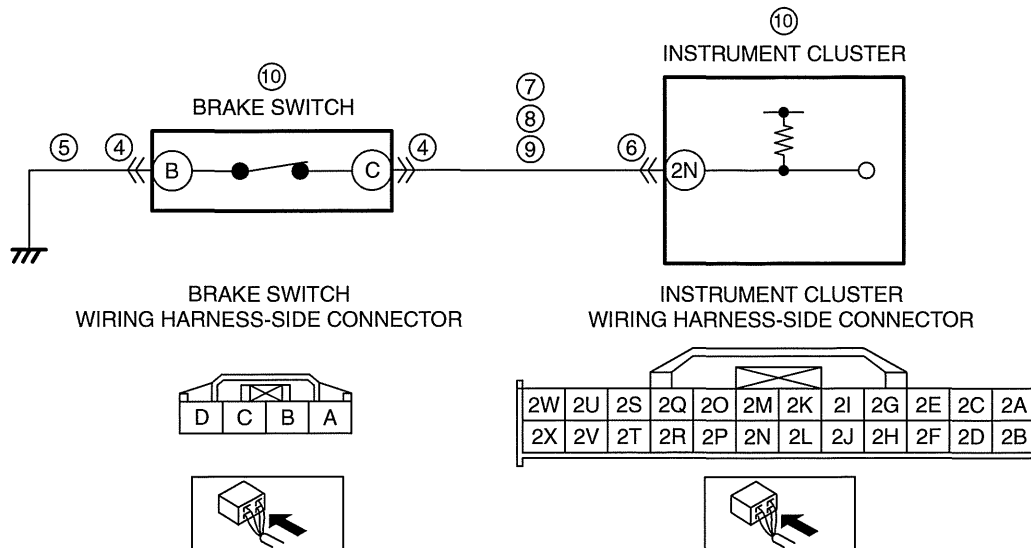
ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and warm it up completely. Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0571:00 [LF, L5]

id0102c8705500

DTC P0571:00	Brake switch circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors changes in input voltage for brake switch No.1 and No.2 (signal from instrument cluster). If the PCM detects that both brake switches No.1 and No.2 remain on or off for 15 s, it determines that the brake switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>Caution</p> <ul style="list-style-type: none"> Inspect the brake switch with it installed to the brake pedal, otherwise the brake switch may not operate normally. If the brake switch is removed from the brake pedal, replace the brake switch with a new one. <ul style="list-style-type: none"> Brake switch connector or terminals malfunction Instrument cluster connector or terminals malfunction Open circuit in wiring harness between brake switch terminal B and body ground Short to ground in wiring harness between brake switch terminal C and instrument cluster terminal 2N Short to power supply in wiring harness between brake switch terminal C and instrument cluster terminal 2N Open circuit in wiring harness between brake switch terminal C and instrument cluster terminal 2N Instrument cluster malfunction Brake switch malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY DTC FOR MODULE COMMUNICATION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Switch the ignition to ON (engine off). • Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC U0155:00 present? 	Yes	Go to the applicable DTC inspection. (See 09-02D-3 DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0703:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-199 DTC P0703:00 [LF, L5].)
		No	Go to the next step.
4	INSPECT BRAKE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the brake switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 11.
		No	Go to the next step.
5	INSPECT BRAKE SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Inspect for continuity between brake switch terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
6	INSPECT INSTRUMENT CLUSTER CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 11.
		No	Go to the next step.
7	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Inspect for continuity between brake switch terminal C (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 11.
		No	Go to the next step.
8	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between brake switch terminal C (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between brake switch terminal C (wiring harness-side) and instrument cluster terminal 2N (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
10	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) • Is there any malfunction? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Replace the brake switch, then go to the next step. (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Switch the ignition to ON (engine off). • Depress and release the brake pedal more than 5 times. • Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0579:00 [LF, L5]

id0102c8087000

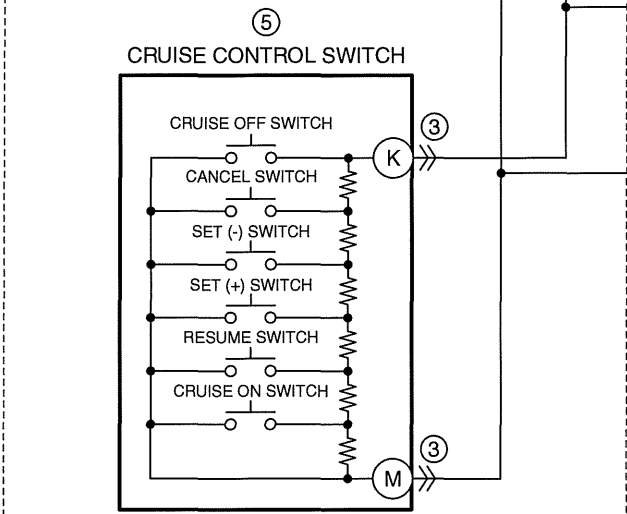
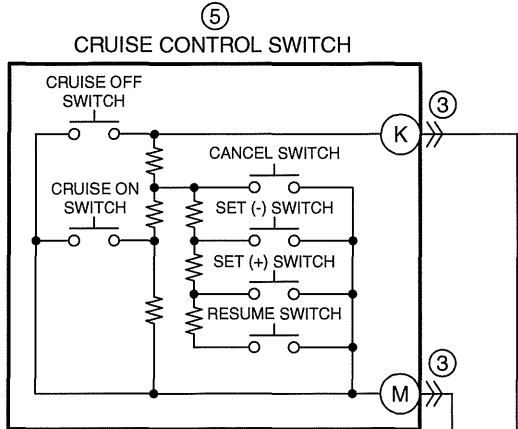
DTC P0579:00	Cruise control multi-function input circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the input signal from the cruise control switch. If the input signal does not change for 120 s, the PCM determines that the cruise control switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clock spring connector or terminals malfunction • Cruise control switch connector or terminals malfunction • Clock spring malfunction • Cruise control switch malfunction • Short to ground in wiring harness between cruise control switch terminal K and PCM terminal 1AQ • PCM connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Cruise control switch terminal K—PCM terminal 1AQ — Cruise control switch terminal M—PCM terminal 1AN • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Cruise control switch terminal K—PCM terminal 1AQ — Cruise control switch terminal M—PCM terminal 1AN • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

DTC
P0579:00

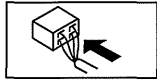
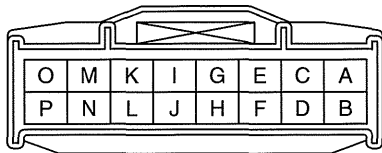
Cruise control multi-function input circuit range/performance problem

--- VEHICLES WITH MULTI INFORMATION DISPLAY SWITCH ---



VEHICLES WITHOUT MULTI INFORMATION DISPLAY SWITCH

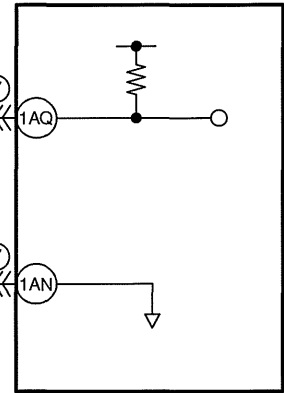
CRUISE CONTROL SWITCH
WIRING HARNESS-SIDE CONNECTOR



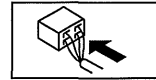
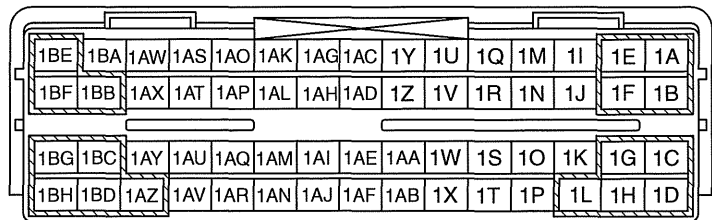
④
CLOCK SPRING



PCM



PCM WIRING HARNESS-SIDE CONNECTOR



01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT CLOCK SPRING CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the clock spring connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 10.
		No Go to the next step.
3	INSPECT CRUISE CONTROL SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the cruise control switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 10.
		No Go to the next step.
4	INSPECT CLOCK SPRING <ul style="list-style-type: none"> Inspect the clock spring. (See 08-10-23 CLOCK SPRING INSPECTION.) Is there any malfunction? 	Yes Replace the clock spring, then go to Step 10. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No Go to the next step.
5	INSPECT CRUISE CONTROL SWITCH <ul style="list-style-type: none"> Inspect the cruise control switch. (See 01-20A-1 CRUISE CONTROL SWITCH INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the steering switch, then go to Step 10. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No Go to the next step.
6	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Clock spring and cruise control switch connectors are disconnected. Reconnect the clock spring connector. Inspect for continuity between cruise control switch terminal K (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 10.
		No Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 10.
		No Go to the next step.
8	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Cruise control switch and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Cruise control switch terminal K — Cruise control switch terminal M Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Cruise control switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Cruise control switch terminal K—PCM terminal 1AQ — Cruise control switch terminal M—PCM terminal 1AN • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle using cruise control for 2 min or more. • Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0581:00 [LF, L5]

id0102c8879900

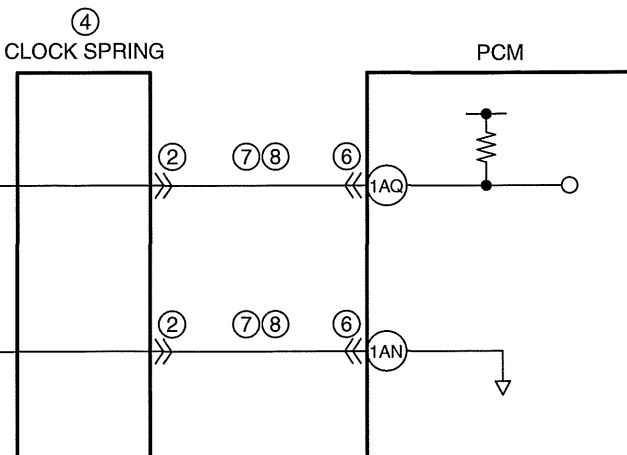
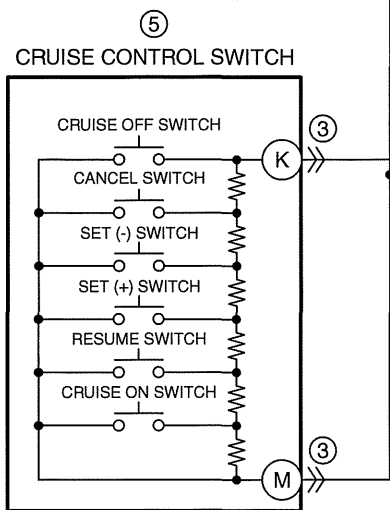
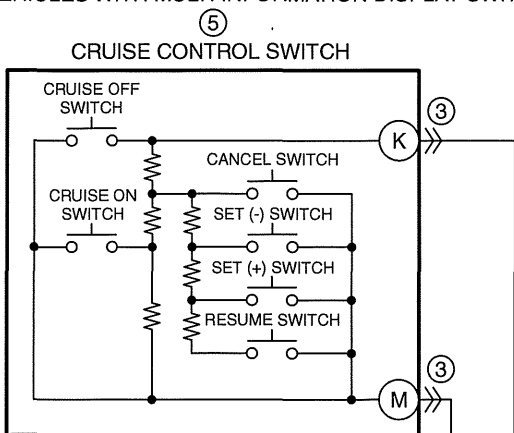
DTC P0581:00	Cruise control multi-function input circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the input signal from the cruise control switch. If the PCM detects that the cruise control switch voltage is above 4.84 V, the PCM determines that the cruise control switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clock spring connector or terminals malfunction • Cruise control switch connector or terminals malfunction • PCM connector or terminals malfunction • Clock spring malfunction • Cruise control switch malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Cruise control switch terminal K—PCM terminal 1AQ — Cruise control switch terminal M—PCM terminal 1AN • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Cruise control switch terminal K—PCM terminal 1AQ — Cruise control switch terminal M—PCM terminal 1AN • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

**DTC
P0581:00**

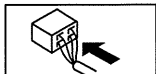
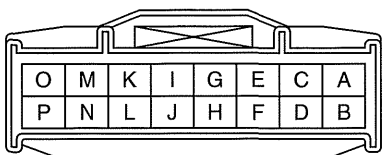
Cruise control multi-function input circuit high input

--- VEHICLES WITH MULTI INFORMATION DISPLAY SWITCH ---

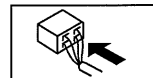
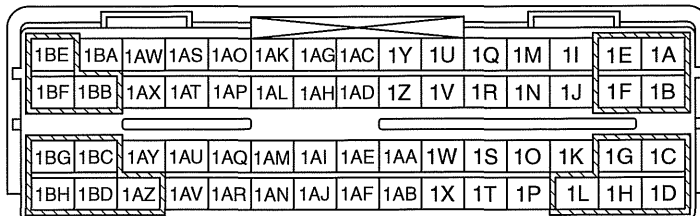


VEHICLES WITHOUT MULTI INFORMATION DISPLAY SWITCH

CRUISE CONTROL SWITCH
WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT CLOCK SPRING CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the clock spring connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
3	INSPECT CRUISE CONTROL SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the cruise control switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT CLOCK SPRING <ul style="list-style-type: none"> • Inspect the clock spring. (See 08-10-23 CLOCK SPRING INSPECTION.) • Is there any malfunction? 	Yes	Replace the clock spring, then go to Step 9. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT CRUISE CONTROL SWITCH <ul style="list-style-type: none"> • Inspect the cruise control switch. (See 01-20A-1 CRUISE CONTROL SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the steering switch, then go to Step 9. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Clock spring, cruise control switch and PCM connectors are disconnected. • Reconnect the clock spring connector. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Cruise control switch terminal K — Cruise control switch terminal M • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Cruise control switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Cruise control switch terminal K—PCM terminal 1AQ — Cruise control switch terminal M—PCM terminal 1AN • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and warm it up completely. Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

DTC P0600:00 [LF, L5]

id0102c8850400

DTC P0600:00	Serial communication link
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal malfunction. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on repair order, then go to the next step.
2	VERIFY RELATED SERVICE INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Information availability. Is any related Service Information available? 	Yes Perform repair or diagnosis according to the available Service Information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to the next step.
		No Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Switch the ignition to ON (engine off). Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0601:00 [LF, L5]

id0102c8705600

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DTC P0601:00	PCM memory check sum error
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal memory check sum error. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal memory malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0602:00 [LF, L5]

id0102c8705700

DTC P0602:00	PCM programming error
DETECTION CONDITION	<ul style="list-style-type: none"> • No configuration data in the PCM. <p>Note</p> <ul style="list-style-type: none"> • If the “PCM CONFIGURATION” is successful, the PCM stores the DTC P0602:00 and illuminates the MIL (system is normal). Clear the DTC P0602:00 using the M-MDS after the “PCM CONFIGURATION”. • The MIL goes out after three drive cycles with no failure (The DTCs remain in the PCM). <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM configuration has not been completed • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> • Perform the PCM configuration. (See 01-40A-22 PCM CONFIGURATION [LF, L5].) • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Perform the PCM configuration again, then go to the next step. (See 01-40A-22 PCM CONFIGURATION [LF, L5].)
		No	Go to Step 5.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0604:00 [LF, L5]

id0102c8705800

DTC P0604:00	PCM random access memory error
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal RAM malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal RAM malfunction

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0606:00 [LF, L5]

id0102c8705900

DTC P0606:00	PCM processor error
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal CPU malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal CPU malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

DTC P060B:00 [L5]

id0102c9302200

DTC P060B:00	Internal control module A/D processing performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> Indicates that an error occurred in the PCM. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 6.
		No Connect the PCM connector and verify that the connector seat correctly, then go to the next step.
5	INSPECT FOR REFERENCE VOLTAGE CONCERNS <ul style="list-style-type: none"> Inspect the PCM wiring harness for damage. Verify the correct operation of the sensors using ETCREF, VREF and related circuits. Is a concern present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

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DTC P060C:00, P061D:00 [L5]

id0102c9934500

DTC P060C:00	Internal control module main processor performance problem
DTC P061D:00	Internal control module engine air mass performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> Indicates an error occurred in the PCM. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM connector or terminals malfunction Software incompatibility issue PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 5.
		No	Connect the PCM connector and verify that the connector seat correctly, then go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT PCM FOR LATEST CALIBRATION <ul style="list-style-type: none"> • Reconnect the PCM connector. • Program the PCM to the latest calibration. • Switch the ignition to off. • Perform the KOEO self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Switch the ignition to off. • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Use the customer information to recreate the concern. • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to Step 6.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0610:00 [LF, L5]

id0102c8706000

DTC P0610:00	PCM vehicle configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM data configuration error. Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Configuration procedure has not been completed • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> • Perform the PCM configuration. (See 01-40A-22 PCM CONFIGURATION [LF, L5].) • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Perform the PCM configuration again, then go to the next step. (See 01-40A-22 PCM CONFIGURATION [LF, L5].)
		No	Go to Step 5.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

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DTC P061B:00 [L5]

id0102c9302400

DTC P061B:00	Internal control module torque calculation performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • Indicates that a calculation error occurred in the PCM. Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in PCM memory.
POSSIBLE CAUSE	Note <ul style="list-style-type: none"> • This DTC is an informational DTC and may be set in combination with a number of other DTCs which are causing the FMEM. Diagnose other DTCs first. <ul style="list-style-type: none"> • PCM connector or terminals malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to the next step.
		No	Connect the PCM connector and verify that the connector seat correctly, then go to the next step.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P061F:00 [L5]

id0102c9302600

DTC P061F:00	Internal control module throttle valve actuator controller performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> Indicates that a calculation error occurred in the PCM. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in PCM memory.
POSSIBLE CAUSE	Note <ul style="list-style-type: none"> This DTC is an informational DTC and may be set in combination with a number of other DTCs which are causing the FMEM. Diagnose other DTCs first. <ul style="list-style-type: none"> PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to the next step.
		No	Connect the PCM connector and verify that the connector seat correctly, then go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0638:00 [LF, L5]

id0102c8706100

DTC P0638:00	Throttle valve actuator control circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the actual TP with the target TP when the engine is running. If the difference is more than the specification, the PCM determines that there is a throttle valve actuator control circuit range/performance problem. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle valve actuator malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	INSPECT THROTTLE VALVE ACTUATOR <ul style="list-style-type: none"> Switch the ignition to off. Inspect the throttle valve actuator. (See 01-13A-6 THROTTLE BODY INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and warm it up completely. Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

DTC P064D:00 [LF, L5]

id0102c8302700

DTC P064D:00	Internal control module A/F sensor processor performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The A/F sensor IC integrated in PCM converts to voltage value for fuel control and for diagnosis based on the A/F sensor signal current and sends to CPU (integrated in PCM). If there is a transmission format error from the A/F sensor IC to the PCM, the PCM will detect a transmission error. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) Following conditions are met: <ul style="list-style-type: none"> Engine is running or ignition switch is ON A/F sensor signal voltage is 1.2V—battery voltage–1.2 V (PCM terminals 2Z, 2AC, 2AD) <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal malfunction (between CPU and A/F sensor control IC communication line)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

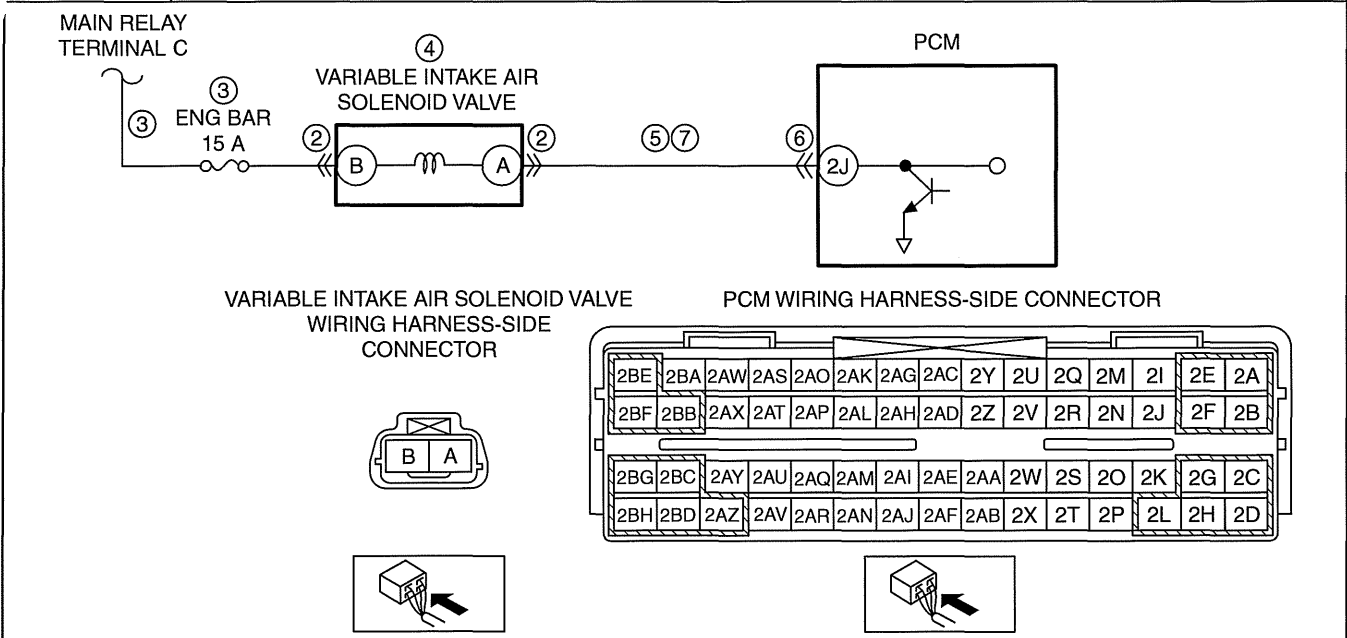
STEP	INSPECTION		ACTION
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0661:00 [LF, L5]

id0102c8850600

01-02A

DTC P0661:00	Variable intake air solenoid valve circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the variable intake air solenoid valve control signal. If the PCM turns the variable intake air solenoid valve off but the voltage still remains low, the PCM determines that the variable intake air solenoid valve circuit has malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable intake air solenoid valve connector or terminals malfunction Short to ground or open circuit in variable intake air solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and variable intake air solenoid valve terminal B — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and variable intake air solenoid valve terminal B Variable intake air solenoid valve malfunction Short to ground in wiring harness between variable intake air solenoid valve terminal A and PCM terminal 2J PCM connector or terminals malfunction Open circuit in wiring harness between variable intake air solenoid valve terminal A and PCM terminal 2J PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
2	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable intake air solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
3	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable intake air solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between variable intake air solenoid valve terminal B (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 8.
4	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the variable intake air solenoid valve. (See 01-13A-7 VARIABLE INTAKE AIR SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable intake air solenoid valve, then go to Step 8. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Variable intake air solenoid valve connector is disconnected. • Inspect for continuity between variable intake air solenoid valve terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 8.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
7	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable intake air solenoid valve and PCM connectors are disconnected. • Inspect for continuity between variable intake air solenoid valve terminal A (wiring harness-side) and PCM terminal 2J (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

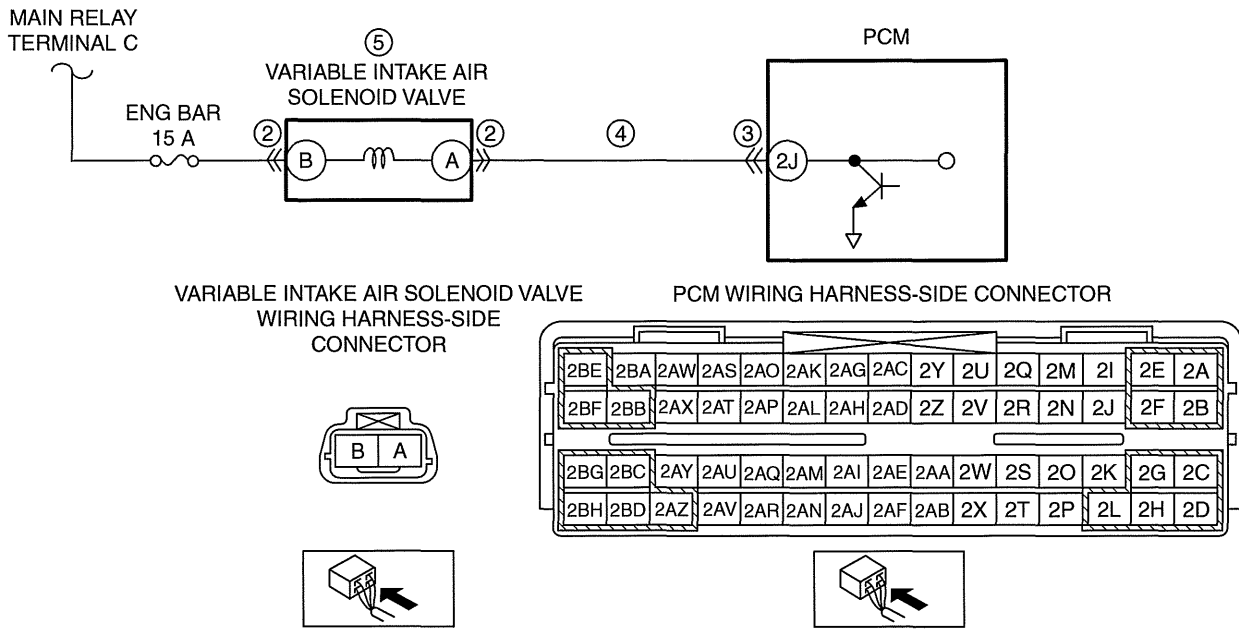
01-02A

STEP	INSPECTION		ACTION
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Access the RPM PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Increase the engine speed more than 4,600 rpm for 10 times. Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P0662:00 [LF, L5]

id0102c8850700

DTC P0662:00	Variable intake air solenoid valve circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the variable intake air solenoid valve control signal. If the PCM turns the variable intake air solenoid valve on but current at the PCM terminal still remains high, the PCM determines that the variable intake air solenoid valve circuit has malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable intake air solenoid valve connector or terminals malfunction Variable intake air solenoid valve malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between variable intake air solenoid valve terminal A and PCM terminal 2J PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the variable intake air solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 6.
		No Go to the next step.
3	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE <ul style="list-style-type: none"> Inspect the variable intake air solenoid valve. (See 01-13A-7 VARIABLE INTAKE AIR SOLENOID VALVE INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the variable intake air solenoid valve, then go to Step 6. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 6.
		No Go to the next step.
5	INSPECT VARIABLE INTAKE AIR SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Variable intake air solenoid valve and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between variable intake air solenoid valve terminal A (wiring harness-side) and body ground. Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Access the RPM PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Increase the engine speed more than 4,750 rpm for 10 times. Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0685:00 [LF, L5]

id0102c8302800

DTC P0685:00	Main relay control circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> This DTC sets when the ignition switch position run circuit indicates the key is in the off, ACC, or LOCK position, and the amount of time the PCM remains powered through the PCM power relay exceeds a predetermined amount of time. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Main relay malfunction PCM malfunction

01-02A

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAIN RELAY <ul style="list-style-type: none"> Switch the ignition to off. Remove the main relay. Inspect the main relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction? 	Yes	Replace the main relay, then go to the next step.
		No	Install the main relay, then go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and warm it up completely. Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P06B8:00 [LF, L5]

id0102c8316200

DTC P06B8:00	Internal control module non-volatile random access memory error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM internal EEPROM malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal EEPROM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

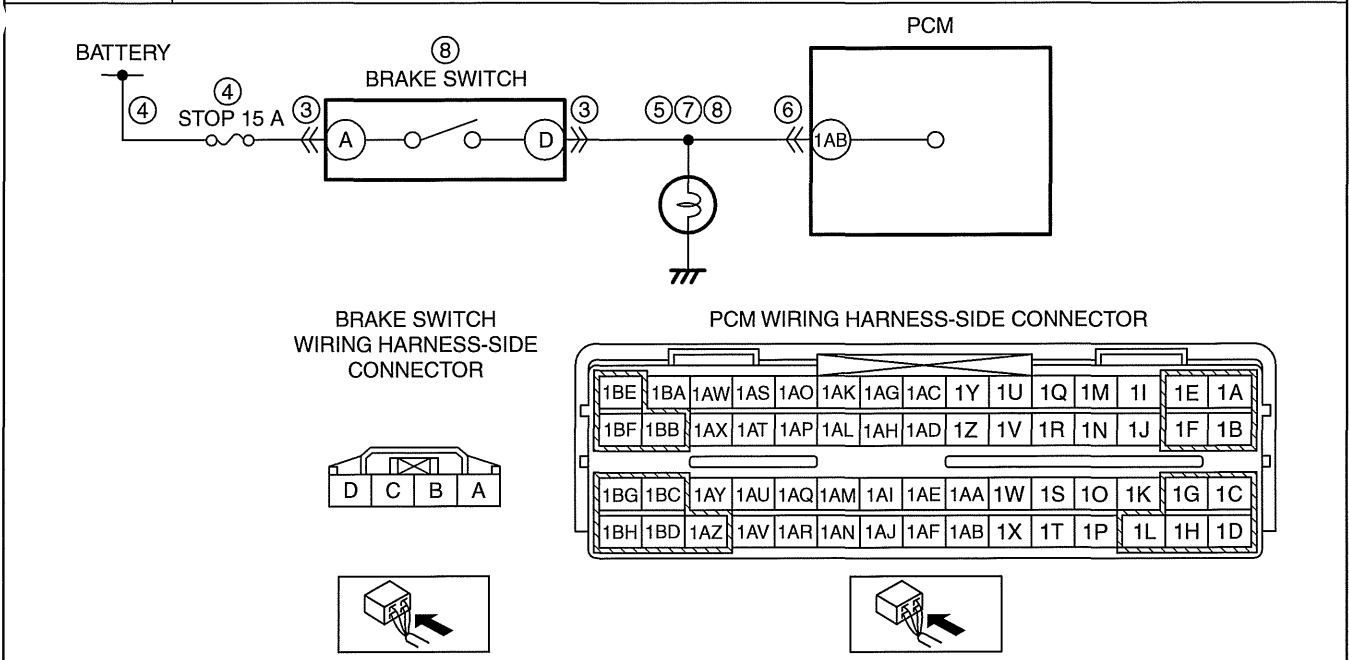
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0703:00 [LF, L5]

id0102c8706500

01-02A

DTC P0703:00	Brake switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the brake switch No.1. If the input signal does not change while following decelerating 8 times, the PCM determines that there is a brake switch No.1 input circuit problem. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Vehicle speed: from above 30 km/h {19 mph} to 30 km/h {19 mph} or less — Deceleration rate: exceed 3.8 km/h {2.4 mph} per 0.1 s <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>Caution</p> <ul style="list-style-type: none"> Inspect the brake switch with it installed to the brake pedal, otherwise the brake switch may not operate normally. If the brake switch is removed from the brake pedal, replace the brake switch with a new one. <ul style="list-style-type: none"> Brake switch connector or terminals malfunction Short to ground or open circuit in brake switch power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and brake switch terminal A — STOP 15 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and brake switch terminal A Short to ground in wiring harness between brake switch terminal D and PCM terminal 1AB PCM connector or terminals malfunction Short to power supply in wiring harness between brake switch terminal D and PCM terminal 1AB Open circuit in wiring harness between brake switch terminal D and PCM terminal 1AB Brake switch malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT BRAKE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the brake switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT BRAKE SWITCH POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between brake switch terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the STOP 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Switch the ignition to off. • Inspect for continuity between brake switch terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Brake switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 1AB (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between brake switch terminal D (wiring harness-side) and PCM terminal 1AB (wiring harness-side). • Is there continuity? 	Yes	Replace the brake switch, then go to the next step. (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle. • Repeat deceleration 8 times under both of the following conditions: <ul style="list-style-type: none"> — Vehicle speed: from above 30 km/h {19 mph} to 30 km/h {19 mph} or less — Deceleration rate: exceed 3.8 km/h {2.4 mph} per 0.1 s • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P0704:00 [LF, L5]

id0102c8706600

DTC P0704:00	CPP switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors changes in input voltage from the CPP switch. If the PCM does not detect the voltage changes while the vehicle runs with vehicle speed above 30 km/h {19 mph} and stops 8 times alternately, the PCM determines that the CPP switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CPP switch connector or terminals malfunction • CPP switch malfunction • Short to ground in wiring harness between CPP switch terminal A and PCM terminal 1BD • PCM connector or terminals malfunction • Open circuit in wiring harness between CPP switch terminal B and body ground • Open circuit in wiring harness between CPP switch terminal A and PCM terminal 1BD • PCM malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>PCM WIRING HARNESS-SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>CPP SWITCH WIRING HARNESS-SIDE CONNECTOR</p> </div> </div>	

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY WHETHER MALFUNCTION IS OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Perform the PID/DATA Monitor and Record Procedure and access the CPP PID. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify the CPP PID during operating the clutch pedal. • Is the PID normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	If the CPP PID is always On: <ul style="list-style-type: none"> • Go to the next step. If the CPP PID is always Off: <ul style="list-style-type: none"> • Go to Step 8.
4	INSPECT CPP SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CPP switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
5	INSPECT CPP SWITCH <ul style="list-style-type: none"> • Inspect the CPP switch. (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CPP switch, then go to Step 13. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • CPP switch connector is disconnected. • Inspect for continuity between CPP switch terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 13.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to Step 13.
8	INSPECT CPP SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CPP switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
9	INSPECT CPP SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CPP switch connector is disconnected. • Inspect for continuity between CPP switch terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 13.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	INSPECT CPP SWITCH <ul style="list-style-type: none"> • Inspect the CPP switch. (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the CPP switch, then go to Step 13. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
12	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CPP switch and PCM connectors are disconnected. • Inspect for continuity between CPP switch terminal A (wiring harness-side) and PCM terminal 1BD (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
13	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Start the engine. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Operate the clutch pedal while the vehicle runs and stops 8 times alternately. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

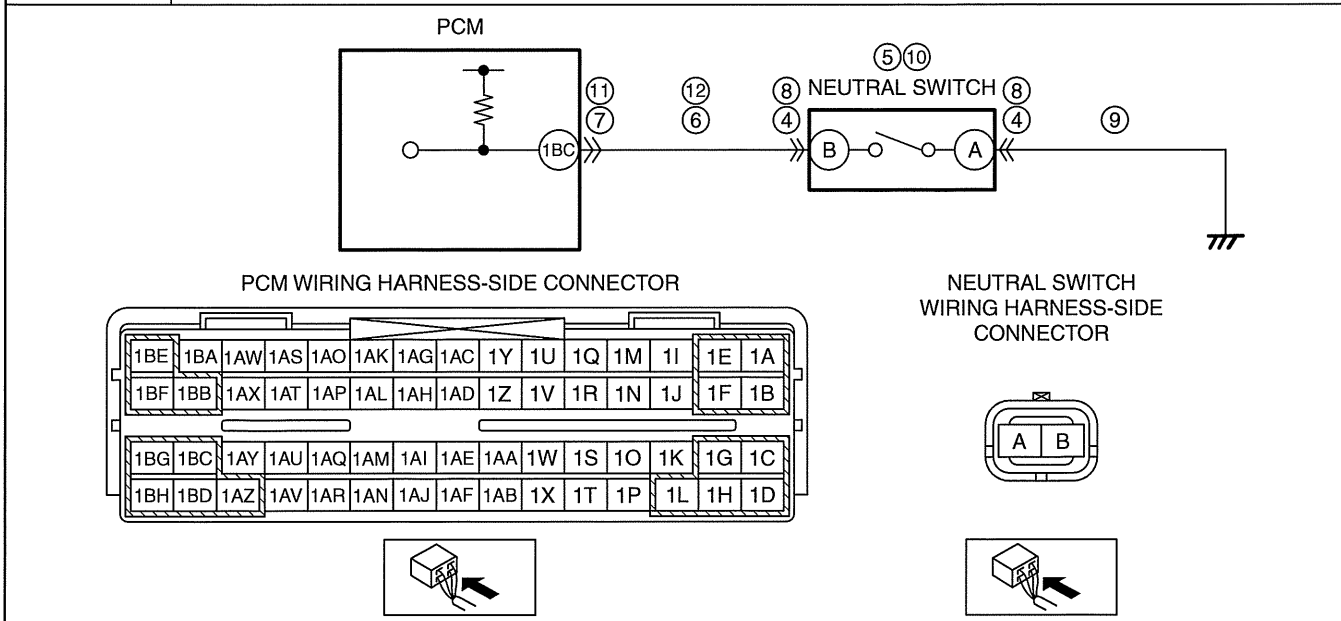
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P0850:00 [LF, L5]

id0102c8706700

DTC P0850:00	Neutral switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors changes in input voltage from the neutral switch. If the PCM does not detect the voltage changes while driving the vehicle at a vehicle speed above 30 km/h {19 mph} and the clutch pedal turns press and depress 10 times repeatedly, the PCM determines that the neutral switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Neutral switch connector or terminals malfunction Neutral switch malfunction Short to ground in wiring harness between neutral switch terminal B and PCM terminal 1BC PCM connector or terminals malfunction Open circuit in wiring harness between neutral switch terminal A and body ground Open circuit in wiring harness between neutral switch terminal B and PCM terminal 1BC PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY WHETHER MALFUNCTION IS OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Perform the PID/DATA Monitor and Record Procedure and access the CPP/PNP PID. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Verify the CPP/PNP PID during operating the gear. Is the PID normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	If the CPP/PNP PID is always Drive: <ul style="list-style-type: none"> Go to Step 8. If the CPP/PNP PID is always Neutral: <ul style="list-style-type: none"> Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT NEUTRAL SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the neutral switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
5	INSPECT NEUTRAL SWITCH <ul style="list-style-type: none"> • Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the neutral switch, then go to Step 13. (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].)
		No	Go to the next step.
6	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Neutral switch connector is disconnected. • Inspect for continuity between neutral switch terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 13.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to Step 13.
8	INSPECT NEUTRAL SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the neutral switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
9	INSPECT NEUTRAL SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Neutral switch connector is disconnected. • Inspect for continuity between neutral switch terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 13.
10	INSPECT NEUTRAL SWITCH <ul style="list-style-type: none"> • Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the neutral switch, then go to Step 13. (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].)
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 13.
		No	Go to the next step.
12	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Neutral switch and PCM connectors are disconnected. • Inspect for continuity between neutral switch terminal B (wiring harness-side) and PCM terminal 1BC (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
13	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Start the engine. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle above 30 km/h {19 mph} and stop vehicle. • Depress and release the clutch pedal more than 10 times during drive cycle. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P1260:00 [LF, L5]

id0102c8856800

DTC P1260:00	Immobilizer system problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The instrument cluster detects an immobilizer system malfunction. (Vehicles without advanced keyless entry and push button start system) • The keyless control module detects an immobilizer system malfunction. (Vehicles with advanced keyless entry and push button start system) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Immobilizer system malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	CONFIRM IMMOBILIZER SYSTEM DTC <ul style="list-style-type: none"> • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P144A:00 [LF, L5]

id0102c8303000

01-02A

DTC P144A:00	EVAP system purge vapor line restricted/blocked
DETECTION CONDITION	<ul style="list-style-type: none"> P144A:00 indicates that the P144A:00 blocked line diagnostic is designed to detect a full blockage in the vapor lines between the fuel tank pressure sensor and the fuel tank. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (EVAP system). The MIL illuminates if the PCM detects the above malfunction conditions in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Blockage(s) between fuel tank pressure sensor and fuel tank PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0451:00, P0452:00, P0453:00 or P0454:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-151 DTC P0451:00 [LF, L5].) (See 01-02A-153 DTC P0452:00 [LF, L5].) (See 01-02A-155 DTC P0453:00 [LF, L5].) (See 01-02A-157 DTC P0454:00 [LF, L5].)
		No	Go to the next step.
4	INSPECT FOR BLOCKED FUEL VAPOR TUBE BETWEEN FUEL TANK PRESSURE SENSOR AND FUEL TANK <ul style="list-style-type: none"> Switch the ignition to off. Remove the fuel vapor tube assembly. (See 01-14A-8 FUEL TANK REMOVAL/ INSTALLATION [LF, L5].) Visually inspect the fuel vapor tube for a blockage between the fuel tank pressure sensor and the connection to the fuel tank. Visually inspect the connection at the fuel tank for a blockage. Attempt to manually remove the blockage. Is the blockage visible and can be removed? 	Yes	Remove the blockage, then go to the next step.
		No	Replace a fuel vapor tube assembly, then go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the Drive Mode 06 (EVAP System Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

DTC P1450:00 [LF, L5]

id0102c8303100

DTC P1450:00	Unable to bleed up fuel tank vacuum
DETECTION CONDITION	<ul style="list-style-type: none"> P1450:00 indicates the Self Test has detected that the EVAP system is unable to bleed up fuel tank vacuum. Diagnostic support note <ul style="list-style-type: none"> This is an intermittent monitor (CCM). The MIL illuminates if the PCM detects the above malfunction conditions in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Excessive fuel tank vacuum <ul style="list-style-type: none"> Kinks or bends in the fuel vapor hoses and tubes Charcoal canister inlet port, CV solenoid valve, EVAP dust separator or outlet hose for contamination or foreign material CV solenoid valve malfunction <ul style="list-style-type: none"> Stuck open or close Fuel tank pressure sensor malfunction (built-in evaporative hose component) PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT FUEL TANK VACUUM <ul style="list-style-type: none"> • Switch the ignition to off. • Verify kinks or bends in the fuel vapor hoses and tubes. • Visually inspect the charcoal canister inlet port, CV solenoid valve, EVAP dust separator or outlet hose for contamination or foreign material. • Is a concern evident? 	Yes	Remove any contamination or foreign material around fuel vapor hoses and tubes. Repair the hoses, tubes or components if necessary, then go to Step 9.
		No	Go to the next step.
5	PERFORM EVAP SYSTEM LEAK INSPECTION <ul style="list-style-type: none"> • Connect the leak tester to the fuel filler pipe. • Switch the ignition to ON (engine off). • Access the EVAPCV PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Close the CV solenoid valve using the EVAPCV PID. • Pressurize the EVAP system to 3.48 kPa {26.1 mmHg, 1.03 inHg}. • Does the pressure reach 3.48 kPa {26.1 mmHg, 1.03 inHg}? 	Yes	Go to the next step.
		No	Replace the CV solenoid valve, then go to Step 9. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].)
6	INSPECT CV SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to ON (engine off). • Access the EVAPCV PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Open the CV solenoid valve using the EVAPCV PID. • Does the pressure drop immediately? 	Yes	Go to the next step.
		No	Replace the CV solenoid valve, then go to Step 9. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].)
7	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the charcoal canister outlet tube at the charcoal canister. • Switch the ignition to ON (engine off). • Select the Diagnostic Data Link using the M-MDS. • Select the PCM. • Access the FTP PID and record the reading. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the reading between 2.4—2.8 V? 	Yes	Go to the next step.
		No	Replace the evaporative hose component, then go to Step 9. (See 01-40A-33 FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5].)
8	PERFORM EVAP SYSTEM LEAK INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Reconnect the disconnected connectors and hoses. • Perform the EVAP system leak inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Leakage still exists. <ul style="list-style-type: none"> • Locate the leak point and repair. • Repeat this step.
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 06 (EVAP System Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

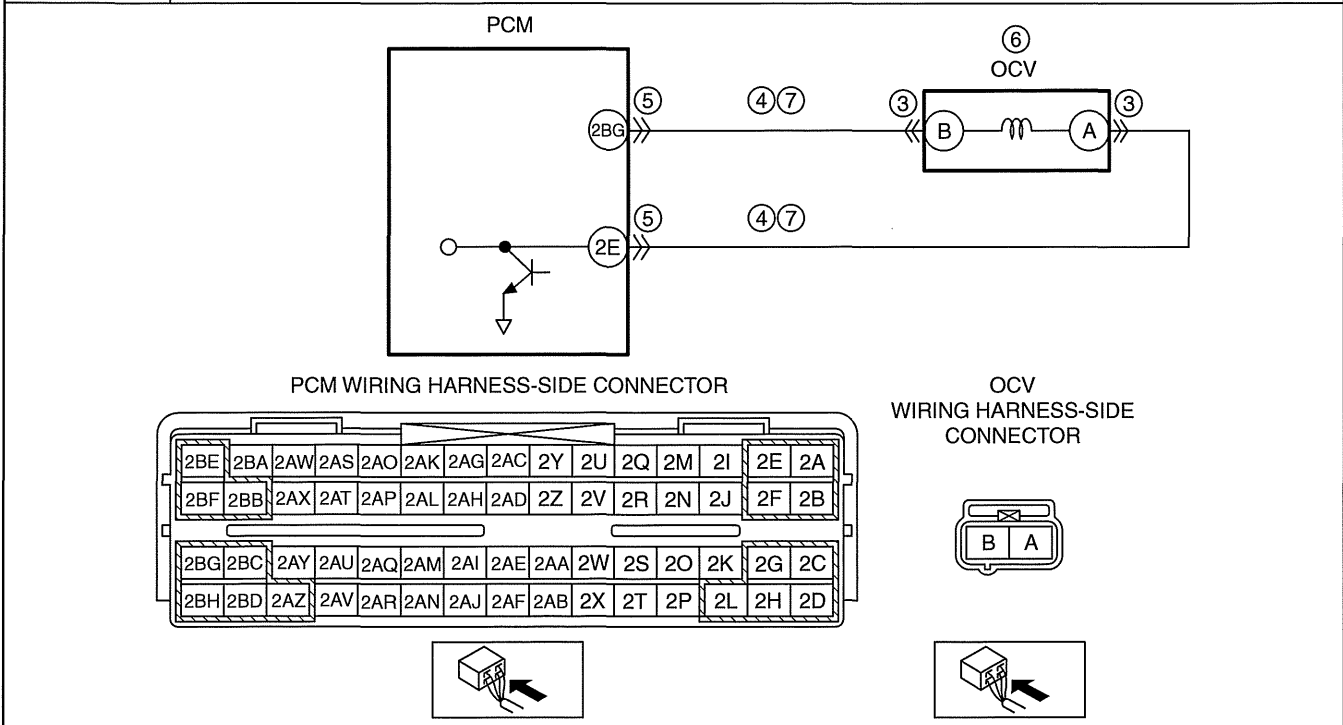
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2088:00 [LF, L5]

id0102c8707300

DTC P2088:00	OCV circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the OCV voltage. If the PCM detects the OCV control voltage (calculated from the OCV) is below the specification voltage (calculated from the battery positive voltage), the PCM determines that the OCV circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> OCV connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2BG — OCV terminal A—PCM terminal 2E PCM connector or terminals malfunction OCV malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2BG — OCV terminal A—PCM terminal 2E PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT OCV CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the OCV connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
4	INSPECT OCV CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • OCV connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — OCV terminal B — OCV terminal A • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 8.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 8.
		No Go to the next step.
6	INSPECT OCV <ul style="list-style-type: none"> • Inspect the OCV. (See 01-10A-19 OIL CONTROL VALVE (OCV) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the OCV, then go to Step 8. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	INSPECT OCV CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • OCV and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2BG — OCV terminal A—PCM terminal 2E • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

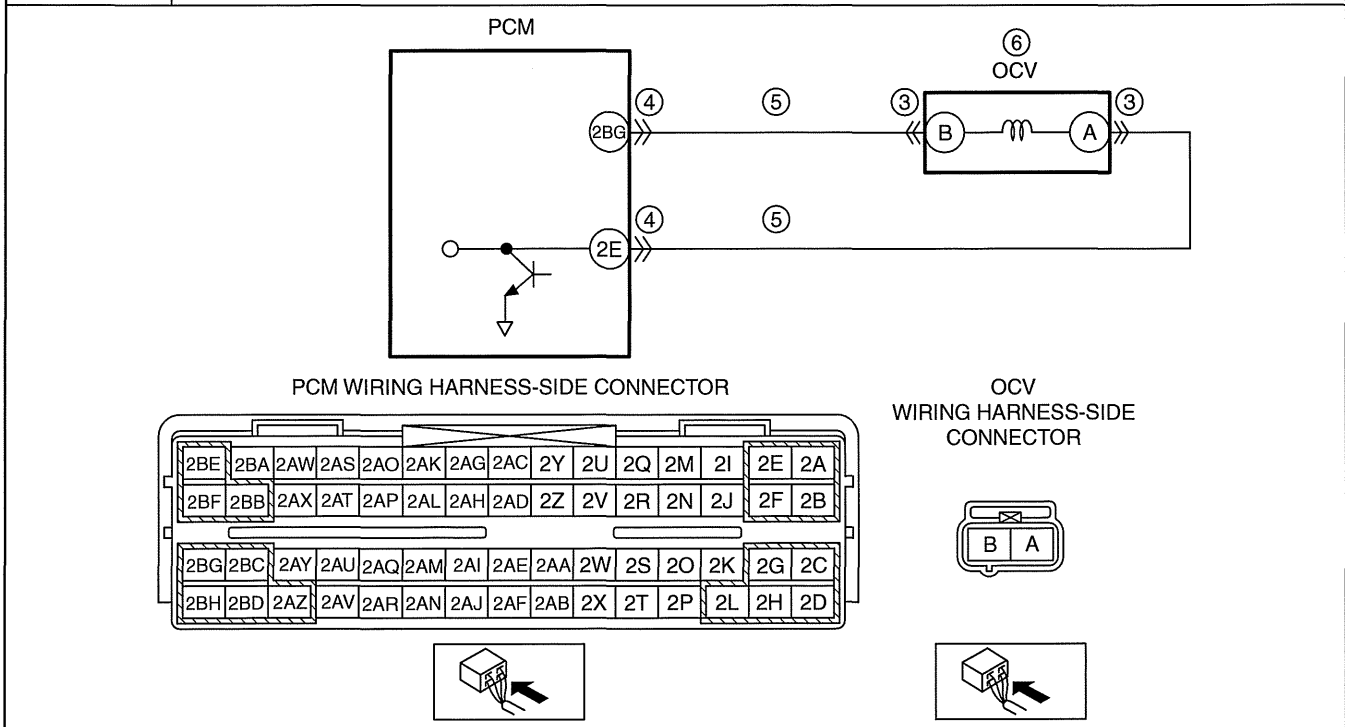
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2089:00 [LF, L5]

id0102c8707400

DTC P2089:00	OCV circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the OCV voltage. If the PCM detects that the OCV control voltage (calculated from the OCV) is above the specification voltage (calculated from battery positive voltage), the PCM determines that the OCV circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> OCV connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2BG — OCV terminal A—PCM terminal 2E OCV malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT OCV CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the OCV connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	INSPECT OCV CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • OCV and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — PCM terminal 2BG — PCM terminal 2E • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
6	INSPECT OCV <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the OCV. (See 01-10A-19 OIL CONTROL VALVE (OCV) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the OCV, then go to the next step. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P2096:00 [LF, L5]

id0102c8707500

DTC P2096:00	Target A/F feedback system too lean
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the target A/F fuel trim when under the target A/F feedback control. If the fuel trim is more than the specification, the PCM determines that the target A/F feedback system is too lean. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • HO2S malfunction • Leakage exhaust gas (between A/F sensor and HO2S) • IAT sensor malfunction • Erratic signal to PCM <ul style="list-style-type: none"> — ECT sensor No.1 signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction • A/F sensor malfunction • Leakage exhaust gas (between exhaust manifold and A/F sensor) • MAF sensor malfunction • Air suction in intake air system • Insufficient fuel line pressure • Leakage fuel • Fuel pump unit malfunction • Ignition system malfunction <ul style="list-style-type: none"> — Ignition coil related wiring harness malfunction • Fuel injector malfunction • Insufficient engine compression • ECT sensor No.1 malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2096:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 7.
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the A/F sensor and HO2S. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Replace the HO2S, then go to Step 20. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
7	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the IAT sensor. (See 01-40A-25 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 20. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — ECT1 — MAF — TP REL — VSS • Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
9	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) — ECT1 — MAF — TP REL — VSS • Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
10	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 12.
11	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Replace the A/F sensor, then go to Step 20. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
12	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify that the MAF PID changes quickly according to engine speed. • Is the MAF PID value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to Step 14.
		No	Go to the next step.
13	INSPECT INTAKE AIR SYSTEM FOR EXCESSIVE AIR SUCTION <ul style="list-style-type: none"> • Switch the ignition to off. • Visually inspect the hose in intake air system for looseness, cracks or damages. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Replace the MAF/IAT sensor, then go to Step 20. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
14	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 16.
15	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> • Visually inspect the fuel leakage in the fuel system. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Replace the fuel pump unit, then go to Step 20. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
16	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Carry out the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
17	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Go to the next step.
18	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Go to the next step.
19	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to the next step. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
20	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • After warming up the engine, maintain the idle status for 1 min or more. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
21	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

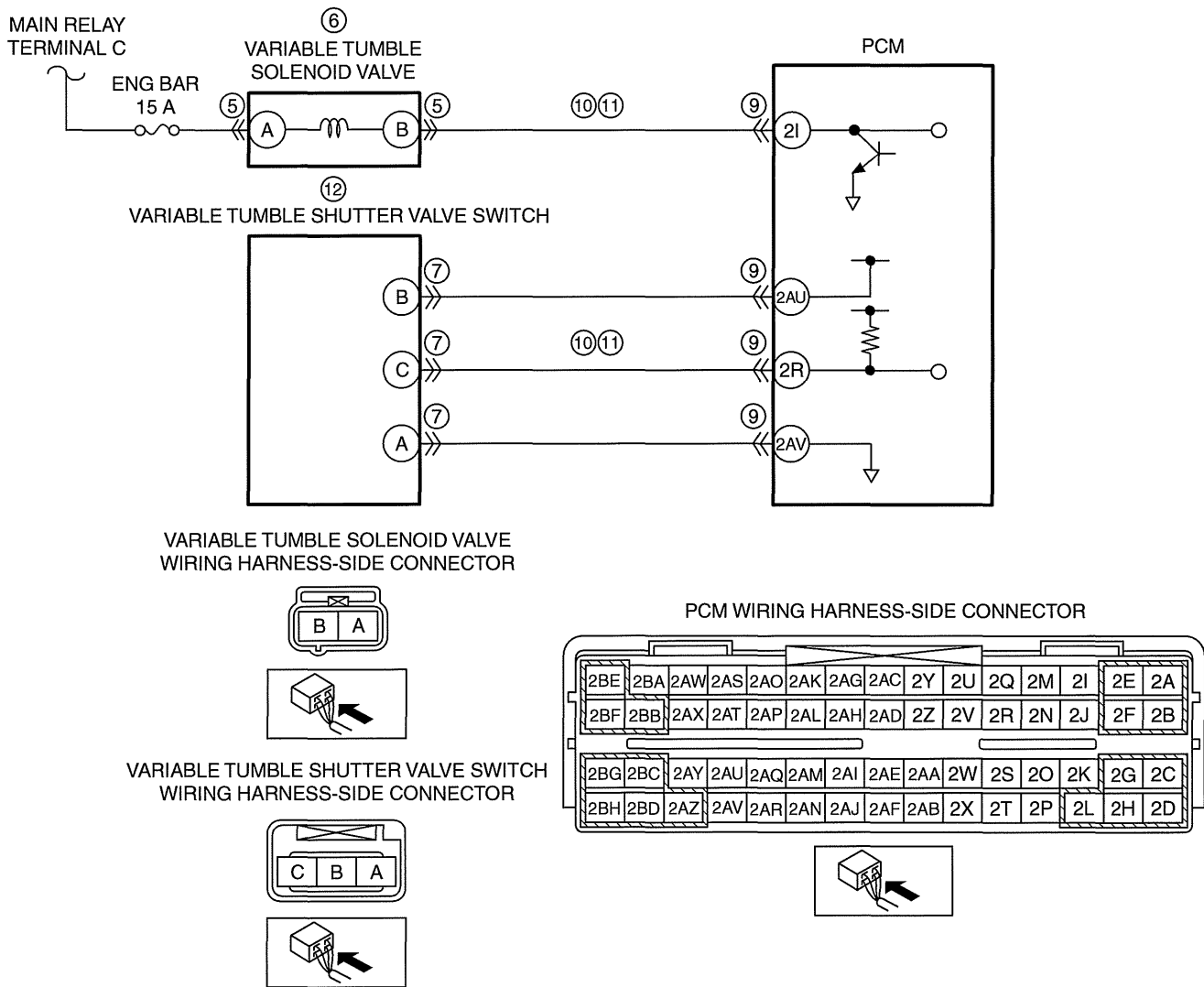
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2004:00 [LF, L5]

id0102c8303300

01-02A

DTC P2004:00	Variable tumble shutter valve stuck open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors mass the variable tumble shutter valve position using the variable tumble position sensor. If the PCM turns the variable tumble solenoid valve on but the variable tumble position still remain open for 5 s (the variable tumble position sensor off), the PCM determines that the variable tumble shutter valve has been stuck open. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable tumble solenoid valve connector or terminals malfunction Variable tumble solenoid valve malfunction Variable tumble shutter valve switch connector or terminals malfunction Variable tumble shutter valve actuator malfunction (stuck open) PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Variable tumble solenoid valve terminal B—PCM terminal 2I — Variable tumble shutter valve switch terminal C—PCM terminal 2R Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Variable tumble solenoid valve terminal B—PCM terminal 2I — Variable tumble shutter valve switch terminal C—PCM terminal 2R Variable tumble shutter valve switch malfunction Miss connecting or pull out the vacuum hose PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	CLASSIFY INTERMITTENT CONCERN OR CONTINUOUS CONCERN <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Drive the vehicle under the following conditions: <ul style="list-style-type: none"> Engine coolant temperature: above 60 °C {140 °F} Engine speed: below 3,750 rpm Throttle opening angle is below as followings: <ul style="list-style-type: none"> Engine speed—below 1,500 rpm: above 35% Engine speed—between 1,500—2,500 rpm: between 25—35% Engine speed—above 2,500 rpm: below 25% Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> Perform the “INTERMITTENT CONCERNS TROUBLESHOOTING” procedure. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)
4	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P2010, P2088:00 or P2089:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-226 DTC P2010:00 [LF, L5].) (See 01-02A-210 DTC P2088:00 [LF, L5].) (See 01-02A-212 DTC P2089:00 [LF, L5].)
		No	Go to the next step.
5	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the variable tumble solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 14.
		No	Go to the next step.
6	INSPECT VARIABLE TUMBLE SOLENOID VALVE <ul style="list-style-type: none"> Inspect the variable tumble solenoid valve. (See 01-13A-7 VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the variable tumble solenoid valve, then go to Step 14. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
7	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the variable tumble shutter valve switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 14.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
8	INSPECT VARIABLE TUMBLE SHUTTER VALVE ACTUATOR <ul style="list-style-type: none"> • Inspect the variable tumble shutter valve actuator. (See 01-13A-8 VARIABLE TUMBLE SHUTTER VALVE ACTUATOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable tumble shutter valve actuator, then go to Step 14. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
9	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 14.
		No	Go to the next step.
10	INSPECT SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Variable tumble solenoid valve, variable tumble shutter valve switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — PCM terminal 2I — PCM terminal 2R • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 14.
		No	Go to the next step.
11	INSPECT SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable tumble solenoid valve, variable tumble shutter valve switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Variable tumble solenoid valve terminal B— PCM terminal 2I — Variable tumble shutter valve switch terminal C—PCM terminal 2R • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 14.
12	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH <ul style="list-style-type: none"> • Inspect the variable tumble shutter valve switch. (See 01-40A-23 VARIABLE TUMBLE SHUTTER VALVE SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the intake manifold, then go to Step 14. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
13	VERIFY CONNECTION OF VACUUM HOSE ROUTING <ul style="list-style-type: none"> • Verify that the vacuum hoses are connected properly. (See 01-13A-3 INTAKE MANIFOLD VACUUM INSPECTION [LF, L5].) • Are the vacuum hoses connected properly? 	Yes	Go to the next step.
		No	Connect the vacuum hoses properly, then go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> — Engine coolant temperature: above 60 °C {140 °F} — Engine speed: below 3,750 rpm — Throttle opening angle is below as followings: <ul style="list-style-type: none"> • Engine speed—below 1,500 rpm: above 35% • Engine speed—between 1,500—2,500 rpm: between 25—35% • Engine speed—above 2,500 rpm: below 25% • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

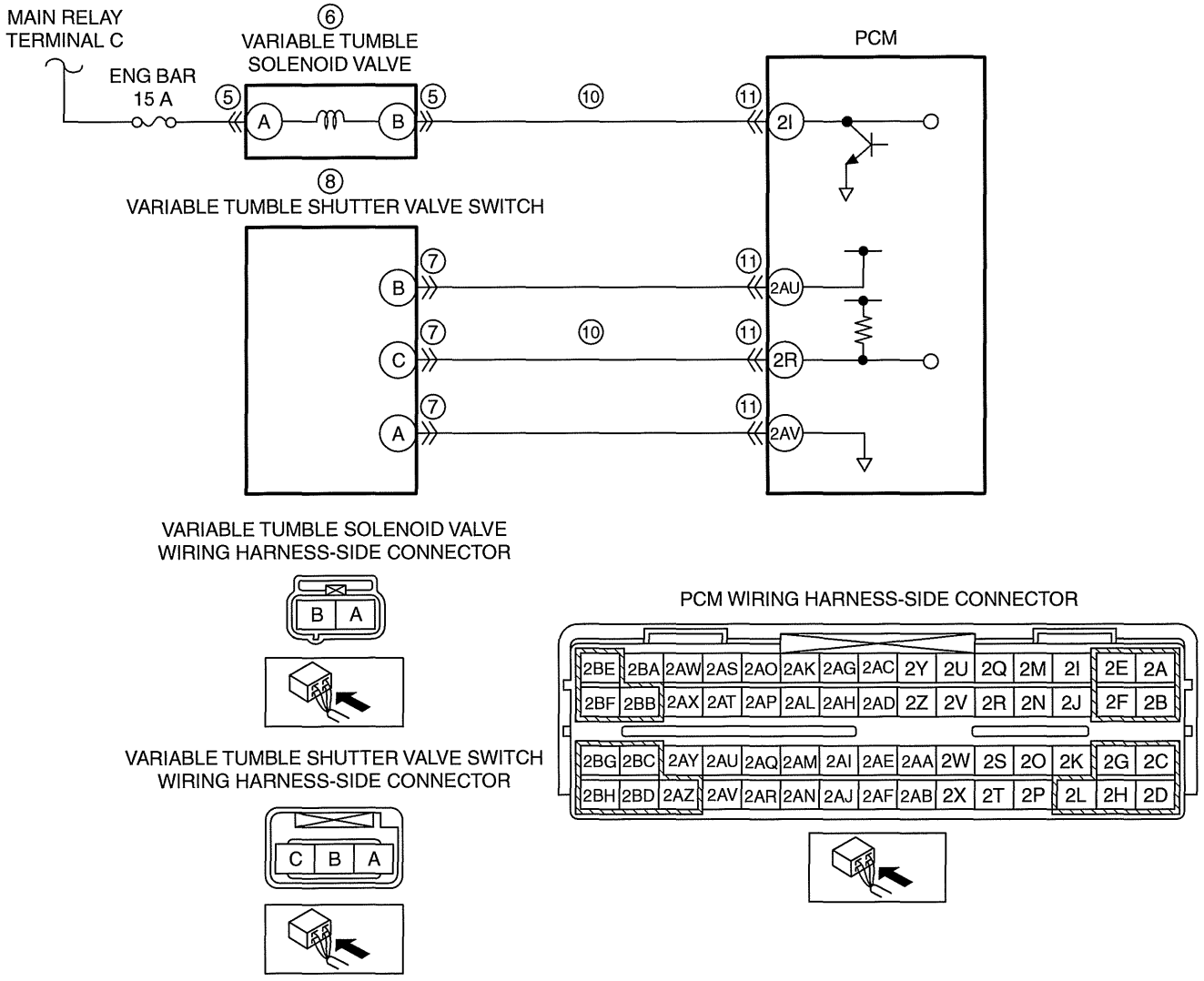
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2006:00 [LF, L5]

id0102c8303400

01-02A

DTC P2006:00	Variable tumble shutter valve stuck closed
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors mass the variable tumble shutter valve position using the variable tumble position sensor. If the PCM turns the variable tumble solenoid valve off but the variable tumble position still remain close for 5 s (the variable tumble position sensor on), the PCM determines that the variable tumble shutter valve has been stuck closed. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable tumble solenoid valve connector or terminals malfunction Variable tumble solenoid valve malfunction Variable tumble shutter valve switch connector or terminals malfunction Variable tumble shutter valve switch malfunction Variable tumble shutter valve actuator malfunction (stuck closed) Short to ground in wiring harness between variable tumble shutter valve switch terminal C and PCM terminal 2R Short to ground in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I PCM connector or terminals malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	CLASSIFY INTERMITTENT CONCERN OR CONTINUOUS CONCERN <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> — Engine coolant temperature: above 60 °C {140 °F} — Engine speed: below 3,750 rpm — Throttle opening angle is below as follows: <ul style="list-style-type: none"> • Engine speed—below 1,500 rpm: above 35% • Engine speed—between 1,500—2,500 rpm: between 25—35% • Engine speed—above 2,500 rpm: below 25% • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the “INTERMITTENT CONCERNS TROUBLESHOOTING” procedure. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)
4	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2009:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-224 DTC P2009:00 [LF, L5].)
		No	Go to the next step.
5	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable tumble solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 12.
		No	Go to the next step.
6	INSPECT VARIABLE TUMBLE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the variable tumble solenoid valve. (See 01-13A-7 VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable tumble solenoid valve, then go to Step 12. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the variable tumble shutter valve switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 12.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
8	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH <ul style="list-style-type: none"> • Reconnect the variable tumble shutter valve switch. • Inspect the variable tumble shutter valve switch. (See 01-40A-23 VARIABLE TUMBLE SHUTTER VALVE SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable tumble shutter valve switch, then go to Step 12. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	INSPECT VARIABLE TUMBLE SHUTTER VALVE ACTUATOR <ul style="list-style-type: none"> • Reconnect the variable tumble solenoid valve and PCM connectors. • Perform the Variable Tumble Control Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Go to the next step.
10	INSPECT VARIABLE TUMBLE SOLENOID VALVE OR VARIABLE TUMBLE SHUTTER VALVE SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable tumble solenoid valve, variable tumble shutter valve switch and PCM connectors. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Variable tumble shutter valve switch terminal C — Variable tumble solenoid valve terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 12.
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to the next step.
		No	Go to the next step.
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> — Engine coolant temperature: above 60 °C {140 °F} — Engine speed: below 3,750 rpm — Throttle opening angle is below as followings: <ul style="list-style-type: none"> • Engine speed—below 1,500 rpm: above 35% • Engine speed—between 1,500—2,500 rpm: between 25—35% • Engine speed—above 2,500 rpm: below 25% • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

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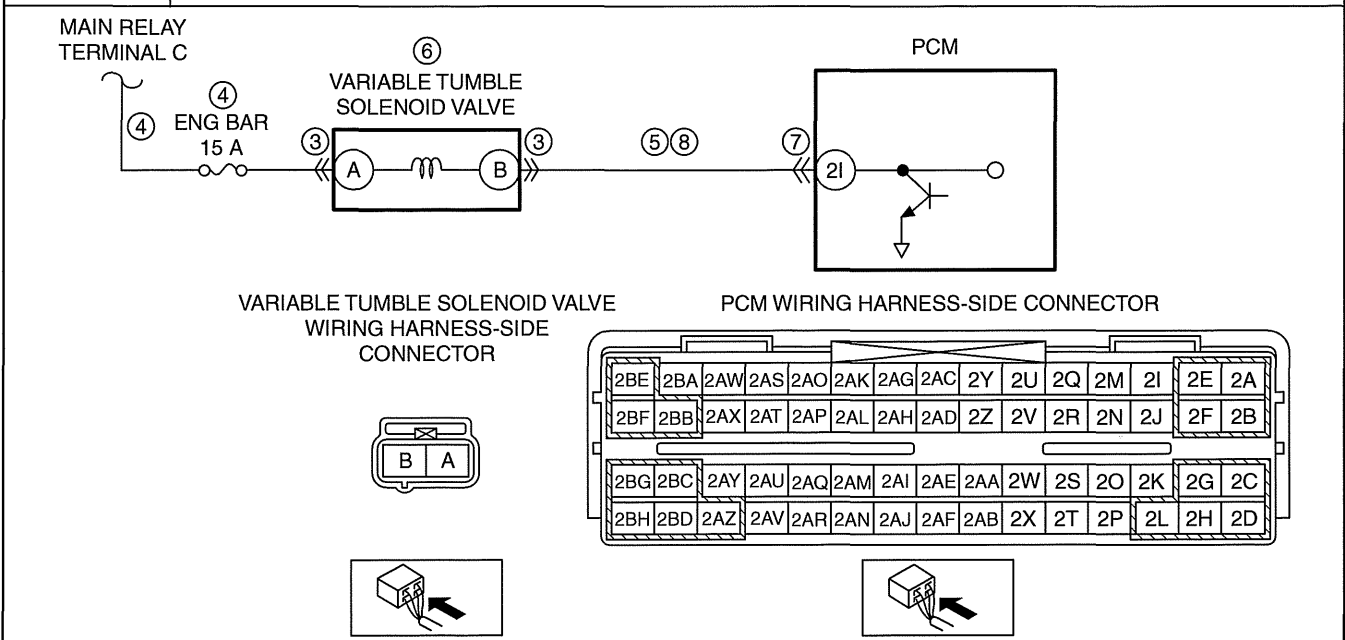
ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P2009:00 [LF, L5]

id0102c8850800

DTC P2009:00	Variable tumble solenoid valve circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors variable tumble solenoid valve control signal. If the PCM turns variable tumble solenoid valve off but voltage still remains low, the PCM determines that variable tumble solenoid valve circuit has malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable tumble solenoid valve connector or terminals malfunction Short to ground or open circuit in variable tumble solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and variable tumble solenoid valve terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and variable tumble solenoid valve terminal A Short to ground in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I Variable tumble solenoid valve malfunction PCM connector or terminals malfunction Open circuit in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable tumble solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT VARIABLE TUMBLE SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable tumble solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between variable tumble solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Variable tumble solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
6	INSPECT VARIABLE TUMBLE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the variable tumble solenoid valve. (See 01-13A-7 VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable tumble solenoid valve, then go to Step 9. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
8	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable tumble solenoid valve and PCM connectors are disconnected. • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and PCM terminal 2I (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P2010:00 [LF, L5]

id0102c8850900

DTC P2010:00	Variable tumble solenoid valve circuit high input																																																												
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the variable tumble solenoid valve control signal. If the PCM turns variable tumble solenoid valve on but the current still remains high, the PCM determines that the variable tumble solenoid valve circuit has malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory. 																																																												
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable tumble solenoid valve connector or terminals malfunction Variable tumble solenoid valve malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I PCM malfunction 																																																												
<p style="text-align: center;"> VARIABLE TUMBLE SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR PCM WIRING HARNESS-SIDE CONNECTOR </p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tbody> <tr> <td>2BE</td><td>2BA</td><td>2AW</td><td>2AS</td><td>2AO</td><td>2AK</td><td>2AG</td><td>2AC</td><td>2Y</td><td>2U</td><td>2Q</td><td>2M</td><td>2I</td><td>2E</td><td>2A</td> </tr> <tr> <td>2BF</td><td>2BB</td><td>2AX</td><td>2AT</td><td>2AP</td><td>2AL</td><td>2AH</td><td>2AD</td><td>2Z</td><td>2V</td><td>2R</td><td>2N</td><td>2J</td><td>2F</td><td>2B</td> </tr> <tr> <td>2BG</td><td>2BC</td><td>2AY</td><td>2AU</td><td>2AQ</td><td>2AM</td><td>2AI</td><td>2AE</td><td>2AA</td><td>2W</td><td>2S</td><td>2O</td><td>2K</td><td>2G</td><td>2C</td> </tr> <tr> <td>2BH</td><td>2BD</td><td>2AZ</td><td>2AV</td><td>2AR</td><td>2AN</td><td>2AJ</td><td>2AF</td><td>2AB</td><td>2X</td><td>2T</td><td>2P</td><td>2L</td><td>2H</td><td>2D</td> </tr> </tbody> </table>		2BE	2BA	2AW	2AS	2AO	2AK	2AG	2AC	2Y	2U	2Q	2M	2I	2E	2A	2BF	2BB	2AX	2AT	2AP	2AL	2AH	2AD	2Z	2V	2R	2N	2J	2F	2B	2BG	2BC	2AY	2AU	2AQ	2AM	2AI	2AE	2AA	2W	2S	2O	2K	2G	2C	2BH	2BD	2AZ	2AV	2AR	2AN	2AJ	2AF	2AB	2X	2T	2P	2L	2H	2D
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ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable tumble solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
4	INSPECT VARIABLE TUMBLE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the variable tumble solenoid valve. (See 01-13A-7 VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable tumble solenoid valve, then go to Step 7. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
6	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Variable tumble solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 2l (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

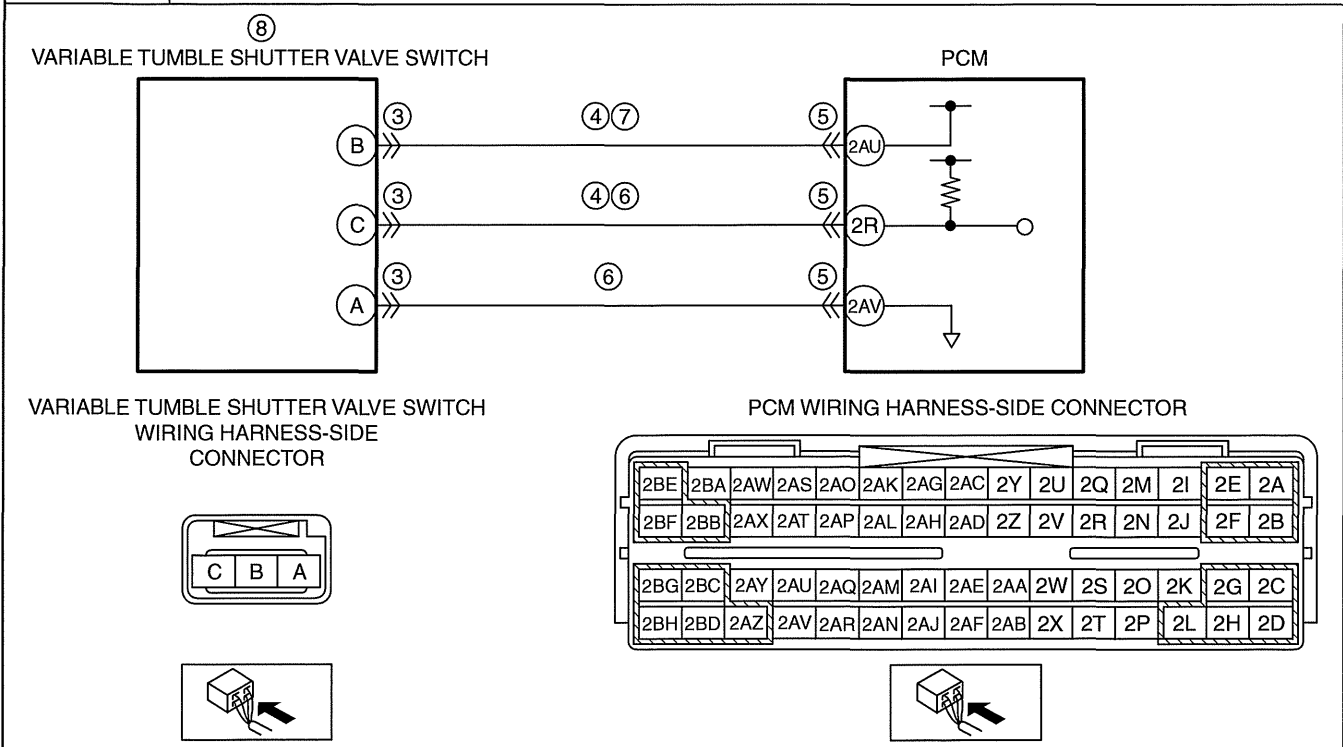
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2016:00 [LF, L5]

id0102c8707100

DTC P2016:00	Variable tumble shutter valve switch circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from SCV position sensor. If input voltage is below 0.1 V for 4.9 s, the PCM determines that the SCV position sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable tumble shutter valve switch connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Variable tumble shutter valve switch terminal B—PCM terminal 2AU — Variable tumble shutter valve switch terminal C—PCM terminal 2R PCM connector or terminals malfunction Variable tumble shutter valve switch signal circuit and ground circuit are shorted to each other Open circuit in wiring harness between variable tumble shutter valve switch terminal B and PCM terminal 2AU Variable tumble shutter valve switch malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the variable tumble shutter valve switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
4	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Variable tumble shutter valve switch connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Variable tumble shutter valve switch terminal B — Variable tumble shutter valve switch terminal C • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
6	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH SIGNAL AND GROUND CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Variable tumble shutter valve switch and PCM connectors. • Inspect for continuity between variable tumble shutter valve switch terminals C and A (wiring harness-side). • Is there continuity? 	Yes Repair or replace the malfunctioning wiring harness, then go to Step 9.
		No Go to the next step.
7	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the variable tumble shutter valve switch and PCM connectors. • Inspect for continuity between variable tumble shutter valve switch terminal B (wiring harness-side) and PCM terminal 2AU (wiring harness-side). • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH <ul style="list-style-type: none"> • Reconnect the variable tumble shutter valve switch and PCM connectors. • Inspect the variable tumble shutter valve switch. (See 01-40A-23 VARIABLE TUMBLE SHUTTER VALVE SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the variable tumble shutter valve switch, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

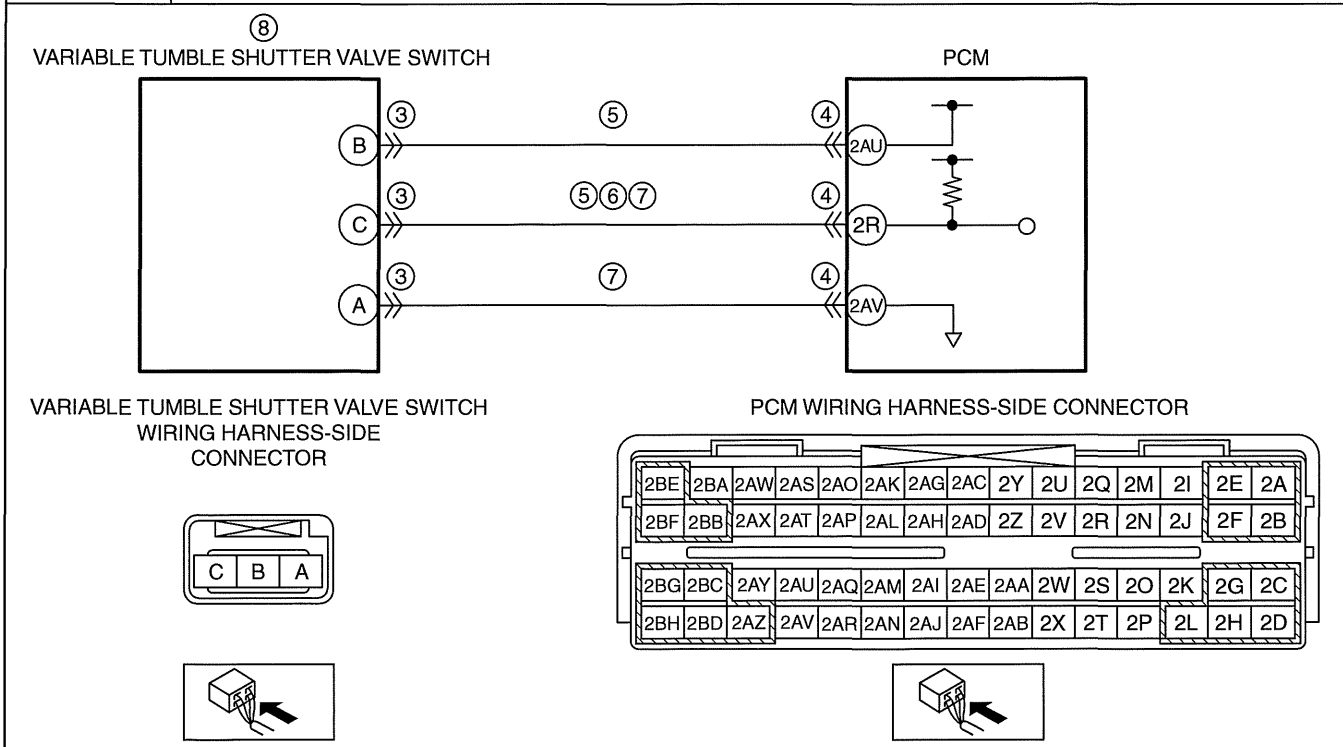
01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2017:00 [LF, L5]

id0102c8707200

DTC P2017:00	Variable tumble shutter valve switch circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from SCV position sensor. If input voltage is above 4.9 V for 4.9 s, the PCM determines that the SCV position sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable tumble shutter valve switch connector or terminals malfunction PCM connector or terminals malfunction Variable tumble shutter valve switch power supply circuit and signal circuit are shorted to each other Short to power supply in wiring harness between variable tumble shutter valve switch terminal C and PCM terminal 2R Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Variable tumble shutter valve switch terminal C—PCM terminal 2R Variable tumble shutter valve switch terminal A—PCM terminal 2AV Variable tumble shutter valve switch malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the variable tumble shutter valve switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
5	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH POWER SUPPLY AND SIGNAL CIRCUITS FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Variable tumble shutter valve switch and PCM connectors are disconnected. • Inspect for continuity between variable tumble shutter valve switch terminals B and C (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the malfunctioning wiring harness, then go to Step 9.
		No	Go to the next step.
6	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Variable tumble shutter valve switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between variable tumble shutter valve switch terminal C (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable tumble shutter valve switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Variable tumble shutter valve switch terminal C—PCM terminal 2R — Variable tumble shutter valve switch terminal A—PCM terminal 2AV • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT VARIABLE TUMBLE SHUTTER VALVE SWITCH <ul style="list-style-type: none"> • Reconnect variable tumble shutter valve switch and PCM connectors. • Inspect the variable tumble shutter valve switch. (See 01-40A-23 VARIABLE TUMBLE SHUTTER VALVE SWITCH INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the variable tumble shutter valve switch, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2097:00 [LF, L5]

id0102c8707600

DTC P2097:00	Target A/F feedback system too rich
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the target A/F fuel trim when under the target A/F feedback control. If the fuel trim is less than specification, the PCM determines that the target A/F feedback system is too rich. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction conditions during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • HO2S malfunction <ul style="list-style-type: none"> — Looseness HO2S — HO2S malfunction • IAT sensor malfunction • Erratic signal to PCM <ul style="list-style-type: none"> — ECT sensor No.1 signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction • A/F sensor malfunction <ul style="list-style-type: none"> — Looseness A/F sensor — A/F sensor malfunction • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Pressure regulator malfunction — Fuel pump unit malfunction — Fuel leakage on fuel line from fuel delivery pipe and fuel pump — Fuel filter clogged or restricted — Fuel return hose clogged • Purge solenoid valve malfunction • Ignition system malfunction <ul style="list-style-type: none"> — Ignition coil related wiring harness malfunction • Fuel injector malfunction • Insufficient engine compression • ECT sensor No.1 malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2097:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
5	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> • Inspect if the HO2S is loosely installed. • Is the HO2S installed securely? 	Yes Go to the next step.
		No Retighten the HO2S, then go to Step 20.
6	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the HO2S, then go to Step 20. (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the IAT sensor. (See 01-40A-25 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the MAF/IAT sensor, then go to Step 20. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
8	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — ECT1 — MAF — TP REL — VSS • Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes Go to the next step.
		No Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
9	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) <ul style="list-style-type: none"> — ECT1 — MAF — TP REL — VSS • Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes Go to the next step.
		No Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
10	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes Go to the next step.
		No Retighten the A/F sensor, then go to Step 20.
11	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 20. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
12	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. <ul style="list-style-type: none"> • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes If fuel pressure is too high: <ul style="list-style-type: none"> • Replace the fuel pump unit, then go to Step 20. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) If fuel pressure is low: <ul style="list-style-type: none"> • Go to the next step.
		No Go to the next step.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
13	INSPECT FUEL LINE <ul style="list-style-type: none"> • Visually inspect the fuel line from fuel pump to fuel delivery pipe. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Inspect the low-pressure side fuel filter for follows: <ul style="list-style-type: none"> • Foreign materials or stain inside fuel filter. If foreign materials or stain is found inside fuel filter (low-pressure side): <ul style="list-style-type: none"> • Clean of fuel tank and filter. If foreign materials or stain is not found: <ul style="list-style-type: none"> • Replace fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) Go to Step 20.
14	INSPECT LONG TERM FUEL TRIM <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Access the LONGFT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Compare the LONGFT1 PID with recorded snapshot data at Step 1. • Is the LONGFT1 PID above snapshot data value? 	Yes	Go to the next step.
		No	Go to Step 16.
15	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 20. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
16	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Carry out the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
17	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Go to the next step.
18	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 20.
		No	Go to the next step.
19	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect ECT sensor No.1. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to the next step. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
20	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • After warming up the engine, maintain the idle status for 1 min or more. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
21	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

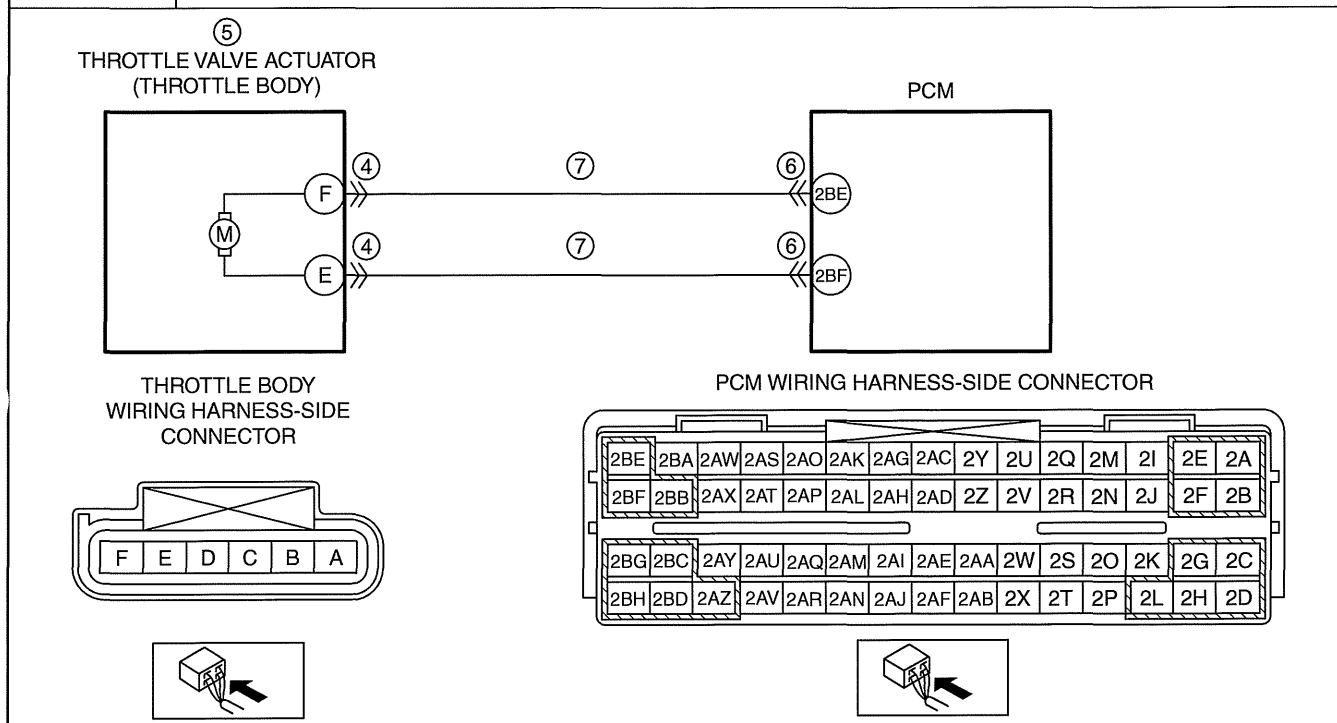
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2100:00 [LF, L5]

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01-02A

DTC P2100:00	Throttle valve actuator circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the electronic throttle valve actuator current. If the PCM detects the electronic throttle valve actuator current is below the specification current, the PCM determines that the electronic throttle valve actuator circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction Throttle valve actuator malfunction PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal F—PCM terminal 2BE — Throttle body terminal E—PCM terminal 2BF PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	CLASSIFY INTERMITTENT CONCERN OR CONTINUOUS CONCERN <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Start the engine and idle it. Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the same DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERNS TROUBLESHOOTING" procedure. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT THROTTLE VALVE ACTUATOR <ul style="list-style-type: none"> • Inspect the throttle valve actuator. (See 01-13A-6 THROTTLE BODY INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to Step 8. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
7	INSPECT THROTTLE VALVE ACTUATOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Throttle body terminal F—PCM terminal 2BE — Throttle body terminal E—PCM terminal 2BF • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

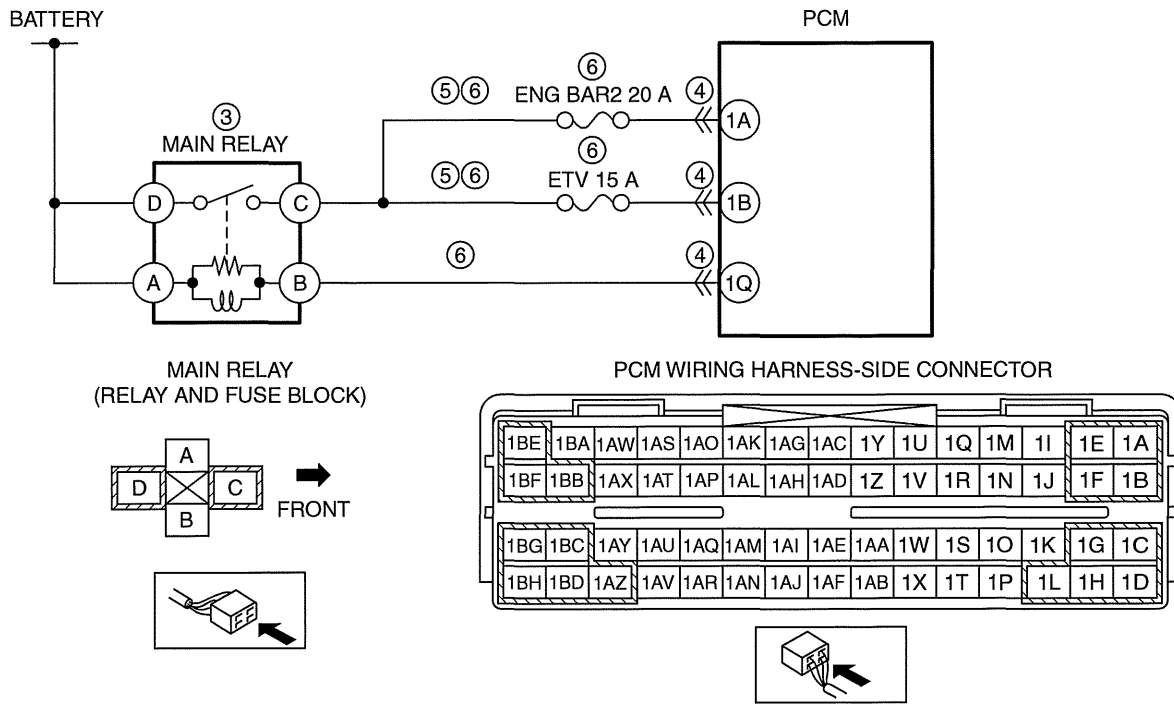
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2101:00 [LF, L5]

id0102c8707700

01-02A

DTC P2101:00	Throttle valve actuator circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM turns the main relay on but the input voltage is 4 V or less, the PCM determines that the main relay control circuit voltage is low. The PCM monitors the input voltage from the main relay. The PCM turns the main relay off but the input voltage is 4 V or more, the PCM determines that the main relay control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Main relay malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Main relay terminal C—PCM terminal 1A — Main relay terminal C—PCM terminal 1B Short to ground or open circuit in main relay circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Main relay terminal C—PCM terminal 1A Main relay terminal C—PCM terminal 1B Main relay terminal B—PCM terminal 1Q — ENG BAR2 20 A fuse malfunction — ETV 15 A fuse malfunction — Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Main relay terminal C—PCM terminal 1A Main relay terminal C—PCM terminal 1B Main relay terminal B—PCM terminal 1Q PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAIN RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the main relay. • Inspect the main relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the main relay, then go to Step 7.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 7.
		No	Go to the next step.
5	INSPECT MAIN RELAY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Main relay is removed. • PCM connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — PCM terminal 1A — PCM terminal 1B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
6	INSPECT MAIN RELAY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Main relay is removed. • PCM connector is disconnected. • Switch the ignition to off. • Install the main relay. • Switch the ignition to ON (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — PCM terminal 1A — PCM terminal 1B — PCM terminal 1Q • Is the voltage normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	If the PCM terminal 1A and/or 1B voltage is abnormal: <ul style="list-style-type: none"> • Inspect the ENG BAR2 20 A fuse and ETV 15 A fuse. <ul style="list-style-type: none"> — If the fuse is melt: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. • Replace the malfunctioning fuse. — If the fuse is deterioration: <ul style="list-style-type: none"> • Replace the malfunctioning fuse. — If the fuse is normal: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible open circuit. If the PCM terminal 1Q voltage is abnormal: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short or open circuit. Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2105:00 [LF, L5]

id0102c8851100

DTC P2105:00	Throttle valve actuator control system-forced engine shutdown
DETECTION CONDITION	<ul style="list-style-type: none"> The throttle valve actuator control system is in the failure mode effects management mode. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Damaged throttle body and/or PCM Throttle valve actuator control module internal processor malfunction PCM malfunction

01-02A

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No Go to the next step.
4	INSPECT THROTTLE VALVE ACTUATOR AND PCM <ul style="list-style-type: none"> Switch the ignition to off. Visually inspect the following for obvious signs of damage: <ul style="list-style-type: none"> Throttle body PCM Is a concern present? 	Yes Isolate the concern and repair if necessary, then go to Step 6.
		No Go to the next step.
5	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> Perform the PCM configuration. (See 01-40A-22 PCM CONFIGURATION [LF, L5].) Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Perform the PCM configuration again, then go to the next step. (See 01-40A-22 PCM CONFIGURATION [LF, L5].)
		No Go to Step 7.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2107:00 [LF, L5]

id0102c8707800

DTC P2107:00	Throttle valve actuator control module processor error
DETECTION CONDITION	<ul style="list-style-type: none"> • The throttle valve actuator control module internal processor error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM malfunction <ul style="list-style-type: none"> — Throttle valve actuator control module internal processor error

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P2108:00 [LF, L5]

id0102c8707900

DTC P2108:00	Throttle valve actuator control module performance error
DETECTION CONDITION	<ul style="list-style-type: none"> • If the PCM detects either of the following conditions, the PCM determines that throttle valve actuator control system has a malfunction. <ul style="list-style-type: none"> — TP sensor power supply voltage: below 4.4 V — TP sensor No.1 output voltage: below 0.2 V or above 4.85 V (DTC P0122:00 or P0123:00) — PCM internal circuit for TP sensor No.1 input circuit malfunction <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Throttle body connector or terminals malfunction • PCM connector or terminals malfunction • TP sensor No.1 malfunction • TP sensor No.2 malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P0122:00, P0123:00, P0222:00 or P0223:00 also present? 	Yes Go to the applicable DTC inspection. (See 01-02A-71 DTC P0122:00 [LF, L5].) (See 01-02A-73 DTC P0123:00 [LF, L5].) (See 01-02A-110 DTC P0222:00 [LF, L5].) (See 01-02A-112 DTC P0223:00 [LF, L5].)
		No Go to the next step.
4	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the throttle body connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
6	VERIFY INTERMITTENT MALFUNCTION AT TP SENSOR NO.1 CIRCUIT <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" to TP sensor No.1 related harnesses and connectors. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
		No Go to the next step.
7	VERIFY INTERMITTENT MALFUNCTION AT TP SENSOR NO.2 CIRCUIT <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" to TP sensor No.2 related harnesses and connectors. (See 01-03A-84 INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
		No Go to the next step.
8	INSPECT TP SENSOR <ul style="list-style-type: none"> Inspect the TP sensor No.1 and No.2. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

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ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

DTC P2119:00 [LF, L5]

id0102c8708200

DTC P2119:00	Throttle valve actuator control throttle body range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM compares the TP with the default TP when switch the ignition to off. If the TP is higher than the default TP, the PCM determines that there is a throttle valve actuator control throttle body range/performance problem. Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Throttle valve malfunction • Throttle valve actuator malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE VALVE ACTUATOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the throttle valve and throttle valve actuator. (See 01-13A-6 THROTTLE BODY INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

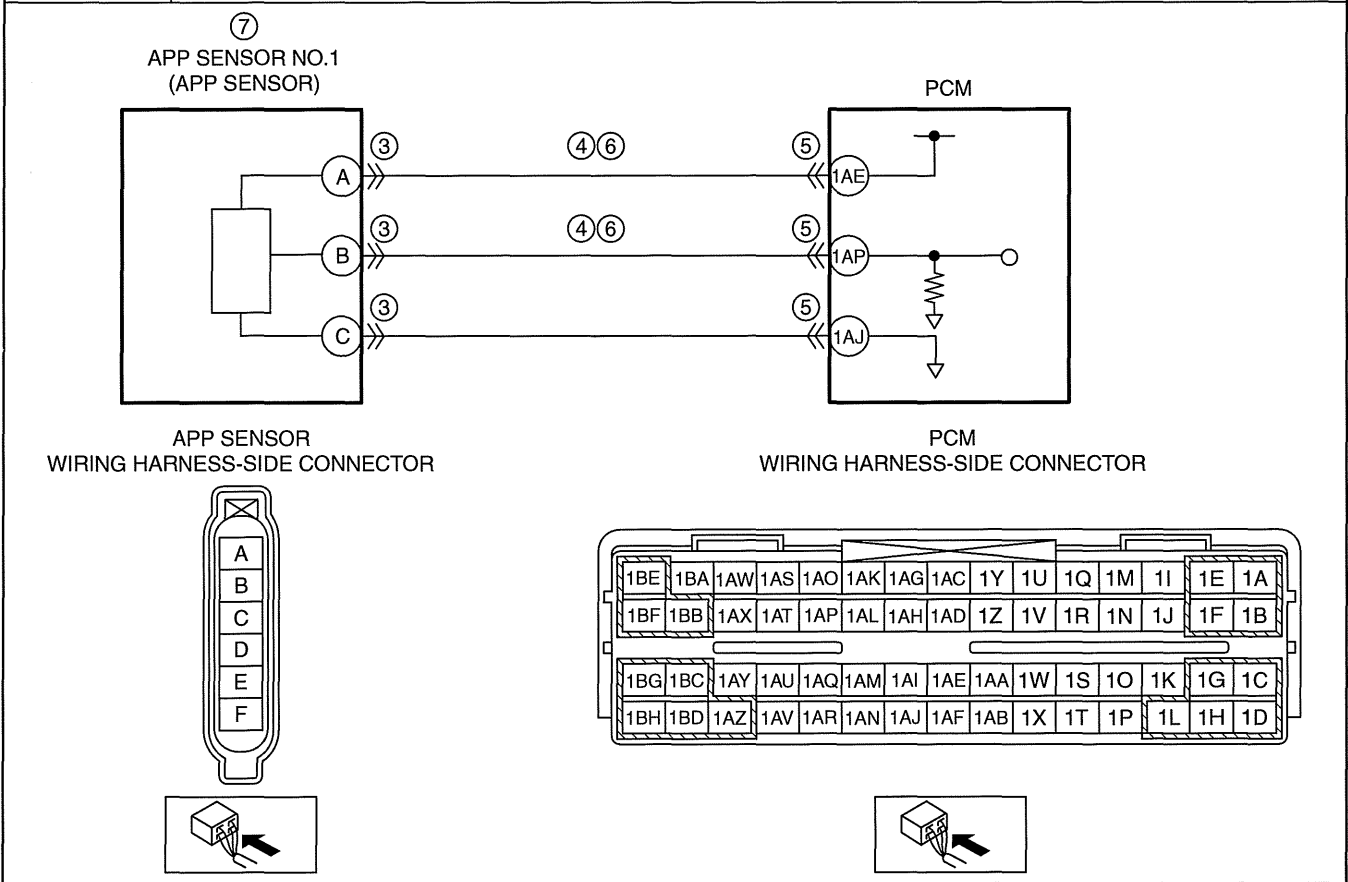
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2122:00 [LF, L5]

id0102c8708300

01-02A

DTC P2122:00	APP sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from APP sensor No.1 when the engine is running. If the input voltage is less than 0.2 V, the PCM determines that the APP sensor No.1 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1AE — APP sensor terminal B—PCM terminal 1AP PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1AE — APP sensor terminal B—PCM terminal 1AP APP sensor No.1 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
4	INSPECT APP SENSOR NO.1 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — APP sensor terminal A — APP sensor terminal B • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1AE — APP sensor terminal B—PCM terminal 1AP • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT APP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect the APP sensor and PCM connectors. • Inspect the APP sensor No. 1. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

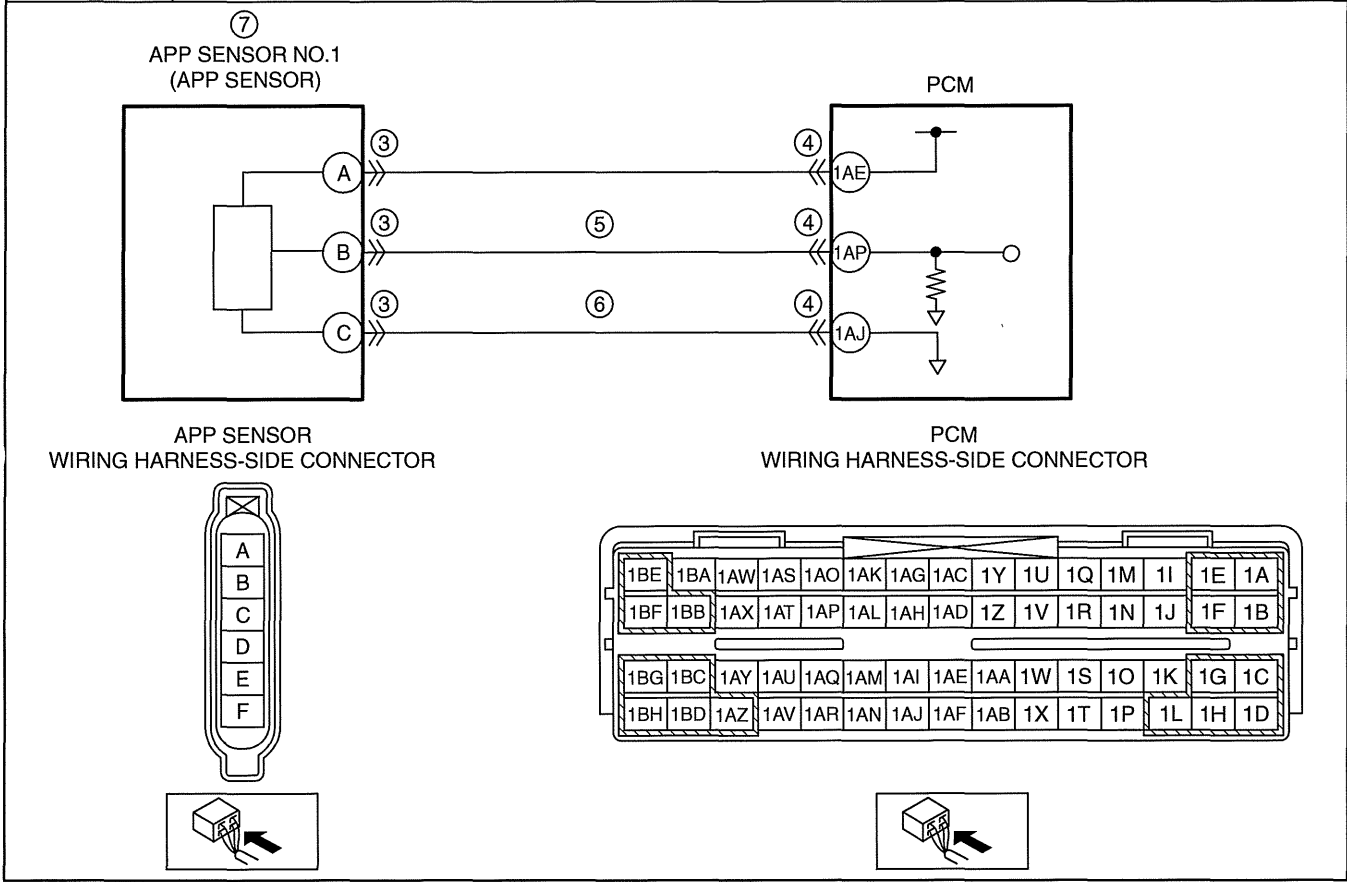
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2123:00 [LF, L5]

id0102c8708400

01-02A

DTC P2123:00	APP sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from APP sensor No.1 when the engine is running. If the input voltage is above 4.8 V, the PCM determines that the APP sensor No.1 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between APP sensor terminal B and PCM terminal 1AP Open circuit in wiring harness between APP sensor terminal C and PCM terminal 1AJ APP sensor No.1 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the APP sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT APP SENSOR NO.1 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 1AP (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminal C (wiring harness-side) and PCM terminal 1AJ (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT APP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect the APP sensor and PCM connectors. • Inspect the APP sensor No.1. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

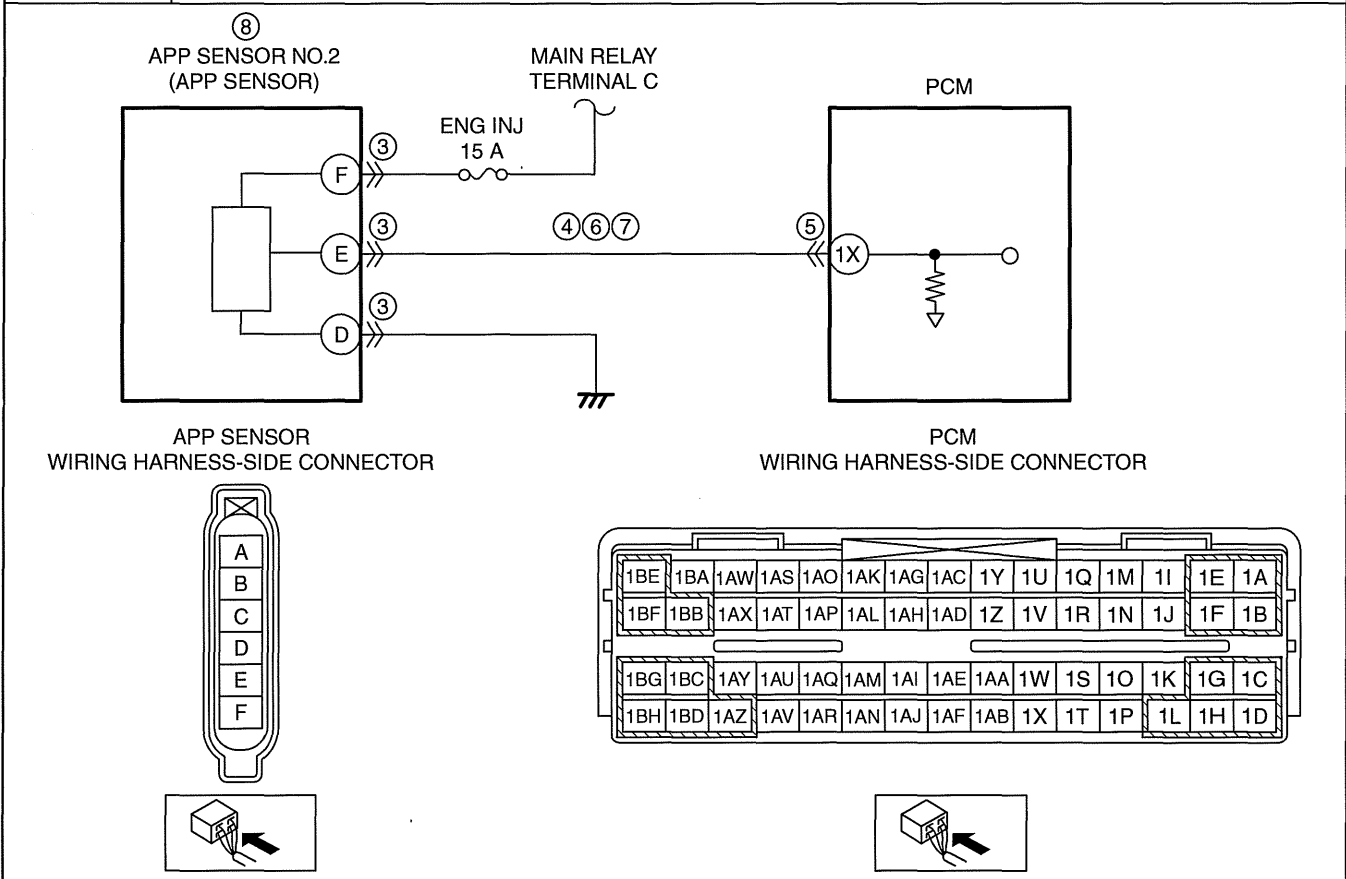
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2126:00 [LF, L5]

id0102c8934400

01-02A

DTC P2126:00	APP sensor No.2 circuit range/performance no sub type information
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the APP sensor duty signal. If the input signal (duty signal) is too high or too low than the set value, or the input signal intervals are too short or too long, the PCM determines that the APP sensor No.2 has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Short to ground in wiring harness between APP sensor terminal E and PCM terminal 1X PCM connector or terminals malfunction Short to power supply in wiring harness between APP sensor terminal E and PCM terminal 1X Open circuit in wiring harness between APP sensor terminal E and PCM terminal 1X APP sensor No.2 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between PCM terminal 1X (wiring harness-side) and body ground. • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT APP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and PCM terminal 1X (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect APP sensor and PCM connectors. • Inspect the APP sensor No.2. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

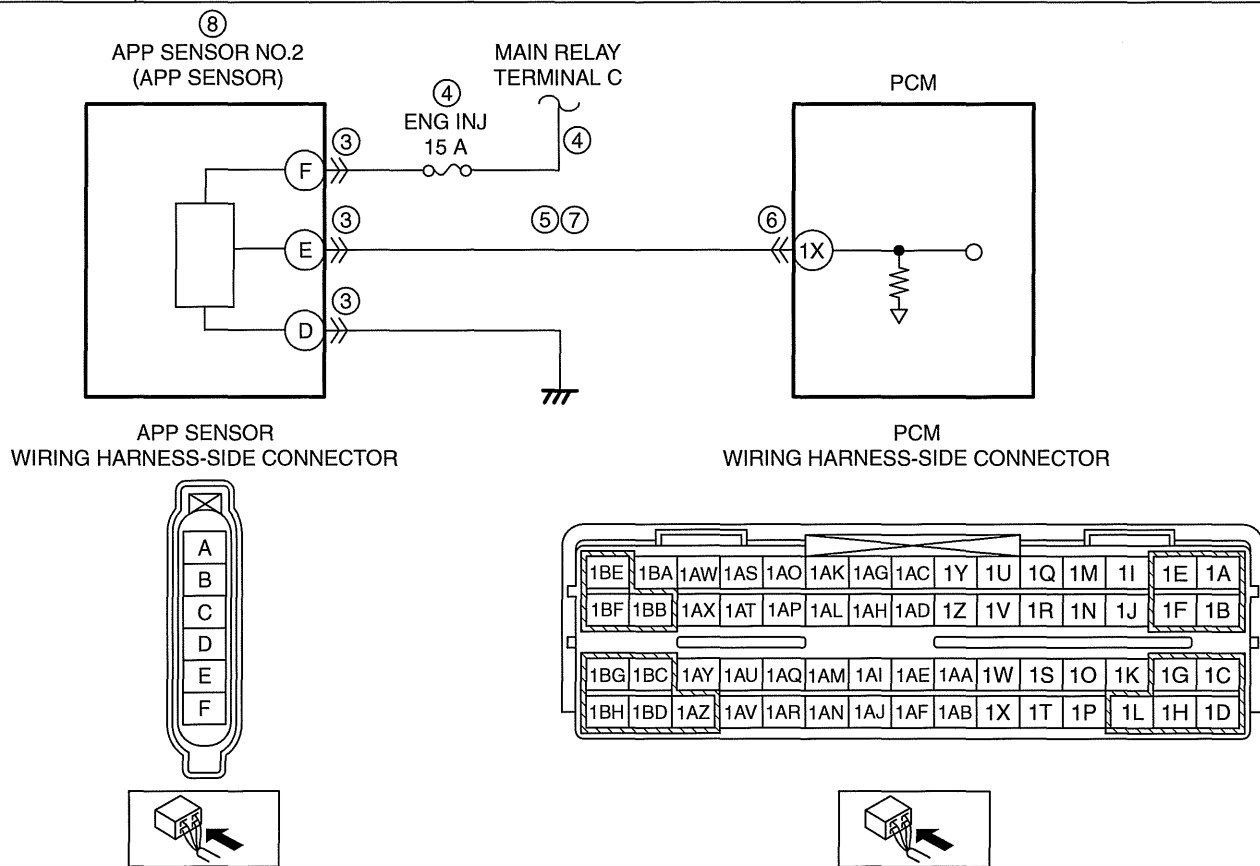
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2127:00 [LF, L5]

id0102c8708500

01-02A

DTC P2127:00	APP sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from APP sensor No.2 when the engine is running. If the input voltage is less than 0.2 V, the PCM determines that the APP sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Short to ground or open circuit in APP sensor No.2 power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and APP sensor terminal F — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and APP sensor terminal F Short to ground in wiring harness between APP sensor terminal E and PCM terminal 1X PCM connector or terminals malfunction Open circuit in wiring harness between APP sensor terminal E and PCM terminal 1X APP sensor No.2 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
4	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between APP sensor terminal F (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT APP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and PCM terminal 1X (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect the APP sensor and PCM connectors. • Inspect the APP sensor No.2. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

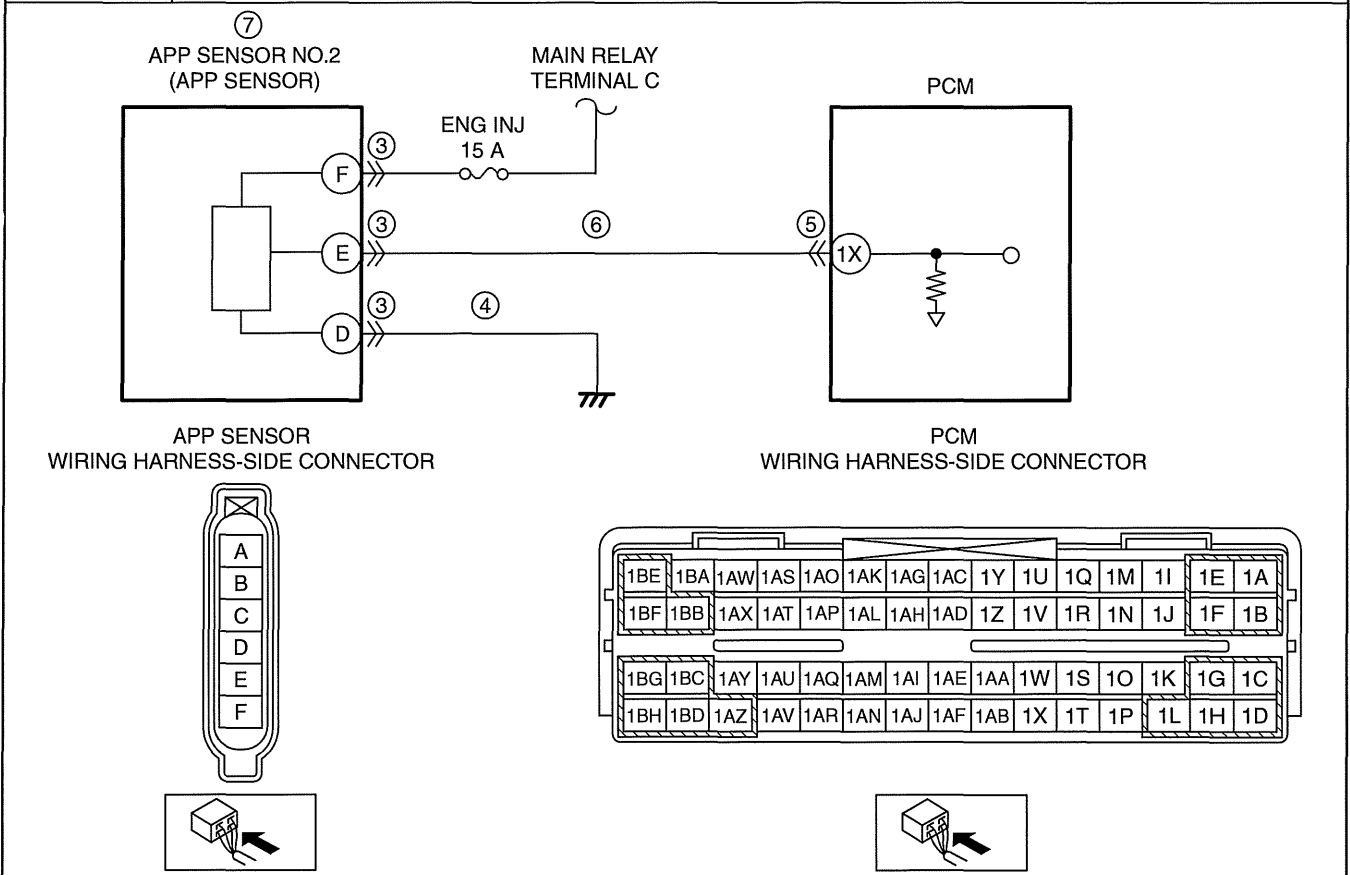
STEP	INSPECTION	ACTION
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes
		No

DTC P2128:00 [LF, L5]

id0102c8708600

01-02A

DTC P2128:00	APP sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from APP sensor No.2 when the engine is running. If the input voltage is more than 3 V, the PCM determines that the APP sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Open circuit in wiring harness between APP sensor terminal D and body ground PCM connector or terminals malfunction Short to power supply in wiring harness between APP sensor terminal E and PCM terminal 1X APP sensor No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the APP sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 8.
		No Go to the next step.
4	INSPECT APP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> APP sensor connector is disconnected. Inspect for continuity between APP sensor terminal D (wiring harness-side) and body ground. Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 8.
		No Go to the next step.
6	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> APP sensor and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between PCM terminal 1X (wiring harness-side) and body ground. Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No Go to the next step.
7	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> Switch the ignition to off. Reconnect APP sensor and PCM connectors. Inspect the APP sensor No.2. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2135:00 [LF, L5]

id0102c8708700

DTC P2135:00	TP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the input voltage from TP sensor No.1 with the input voltage from TP sensor No.2 when the engine is running. If the difference is more than the specification, the PCM determines that there is a TP sensor No.1/No.2 voltage correlation problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction TP sensor No.1/No.2 malfunction PCM malfunction

01-02A

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the throttle body connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.1/NO.2 <ul style="list-style-type: none"> Reconnect the throttle body and PCM connectors. Inspect the TP sensor No.1/No.2. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2138:00 [LF, L5]

id0102c8708800

DTC P2138:00	APP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the input voltage from APP sensor No.1 with the input voltage from APP sensor No.2 when the engine is running. If the difference is more than the specification, the PCM determines that there is an APP sensor No.1/No.2 angle correlation problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction PCM connector or terminals malfunction APP sensor No.1/No.2 malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the APP sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
5	INSPECT APP SENSOR NO.1/NO.2 <ul style="list-style-type: none"> Reconnect the APP sensor and PCM connectors. Inspect the APP sensor No.1/No.2. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the APP sensor, then go to the next step. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2183:00 [LF, L5]

id0102c8940000

DTC P2183:00	ECT sensor No.2 circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> When the ECT sensor No.2 detected temperature is approx. 8.1 °C higher than the IAT, or the ECT sensor No.2 detected temperature is approx. 13.8 °C less than the IAT with the ignition switch is ON*. *: Ignition switch is ON when 6s or mor have passed since the ignition was switched to off. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.2 connector or terminals malfunction PCM connector or terminals malfunction ECT sensor No.2 malfunction Thermostat malfunction PCM malfunction

01-02A

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system) been recorded? 	Yes Go to the next step.
		No Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (Mode 2) <ul style="list-style-type: none"> Is the DTC P2183:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to troubleshooting for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
4	INSPECT ECT SENSOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the ECT sensor No.2 connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to Step 9.
		No Go to the next step.
6	INSPECT ECT SENSOR NO.2 <ul style="list-style-type: none"> Inspect the ECT sensor No.2. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].) Is there any malfunction? 	Yes Replace the ECT sensor No.2, then go to Step 9. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
7	COMPARE ECT2 PID VALUE <ul style="list-style-type: none"> • Prepare a new ECT sensor No.2. • Connect the ECT sensor No.2 connector to the new one without installing to the engine. • Switch the ignition to ON and record the ECT PID value. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Switch the ignition to off. • Replace the malfunction ECT sensor No.2 with new one. • Start the engine and wait for 5 min or more. • Record the ECT2 PID value. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the difference between each ECT PID values 6 °C {43 °F} or more? 	Yes	Go to the next step.
		No	Go to Step 9.
8	INSPECT THERMOSTAT <ul style="list-style-type: none"> • Inspect the thermostat. (See 01-12A-12 THERMOSTAT INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the thermostat, then go to the next step. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Switch the ignition to off. • Start the engine and warm it up completely. • Perform the DTC Reading Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2195:00 [LF, L5]

id0102c8709300

01-02A

DTC P2195:00	A/F sensor signal stuck lean
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the equivalence ratio output when the following conditions are met. If the equivalence ratio is more than 1.15 for 25 s, the PCM determines that the A/F sensor signal remains lean. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — ECT: more than 60 °C {140 °F} — Engine speed: 1,000—3,200 rpm — Absolute load: 20—62.5% — Output voltage from the A/F sensor: more than 0.2 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor heater malfunction • A/F sensor malfunction <ul style="list-style-type: none"> — Looseness A/F sensor — Leakage exhaust system — A/F sensor malfunction • Air suction in intake air system • MAF sensor malfunction • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Pressure regulator (built-in fuel injection pump) malfunction — Fuel pump unit malfunction — Fuel leakage on fuel line from fuel distributor and fuel pump — Fuel filter clogged or restricted • Fuel injector malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2195:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 15. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 15.
7	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 15. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	INSPECT INTAKE AIR SYSTEM FOR EXCESSIVE AIR SUCTION <ul style="list-style-type: none"> • Visually inspect the hose in intake air system for looseness, cracks or damages. <p>Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
10	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify that the MAF PID changes quickly according to engine speed. • Is the MAF PID value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the MAF/IAT sensor, then go to Step 15. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
11	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p>Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. <ul style="list-style-type: none"> • Inspect fuel line pressure while engine running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Fuel pressure is too high: <ul style="list-style-type: none"> • Replace the fuel pump unit, then go to Step 15. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) Fuel pressure is low: <ul style="list-style-type: none"> • Go to the next step.
		No	Go to Step 14.
12	INSPECT FUEL LINE <ul style="list-style-type: none"> • Visually inspect the fuel line from fuel pump to fuel injector for any leakage. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
13	INSPECT FUEL FILTER <ul style="list-style-type: none"> • Visually inspect the fuel filter for foreign materials or stain. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
14	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
15	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
16	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P2196:00 [LF, L5]

id0102c8709400

DTC P2196:00	A/F sensor signal stuck rich
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the equivalence ratio when the following conditions are met. If the equivalence ratio is less than 0.85 for 25 s, the PCM determines that the A/F sensor signal remains rich. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — ECT: more than 60 °C {140 °F} — Engine speed: 1,000—3,200 rpm — Absolute load: 20—62.5% — Output voltage from the A/F sensor: less than 0.7 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor heater malfunction • A/F sensor malfunction <ul style="list-style-type: none"> — Looseness A/F sensor — Leakage exhaust system — A/F sensor malfunction • Air suction in intake air system • MAF sensor malfunction • Fuel supply system malfunction or improper fuel line pressure <ul style="list-style-type: none"> — Pressure regulator (built-in fuel injection pump) malfunction — Fuel pump unit malfunction — Fuel leakage on fuel line from fuel distributor and fuel pump — Fuel filter clogged or restricted • Fuel injector malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2196:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the A/F sensor heater. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 15. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 15.
7	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 15. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	INSPECT INTAKE AIR SYSTEM FOR EXCESSIVE AIR SUCTION <ul style="list-style-type: none"> • Visually inspect the hose in intake air system for looseness, cracks or damages. <p>Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
10	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Verify that the MAF PID changes quickly according to engine speed. • Is the MAF PID value normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the MAF/IAT sensor, then go to Step 15. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
11	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Switch the ignition to off. <p>Note</p> <ul style="list-style-type: none"> • If engine will not start, inspect fuel line pressure with ignition is switched to ON. <ul style="list-style-type: none"> • Inspect the fuel line pressure while the engine is running. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Fuel pressure is too high: <ul style="list-style-type: none"> • Replace the fuel pump unit, then go to Step 15. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) Fuel pressure is low: <ul style="list-style-type: none"> • Go to the next step.
		No	Go to Step 14.
12	INSPECT FUEL LINE <ul style="list-style-type: none"> • Visually inspect the fuel line from fuel pump to fuel injector for any leakage. • Is there any leakage? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
13	INSPECT FUEL FILTER <ul style="list-style-type: none"> • Visually inspect the fuel filter for foreign materials or stain. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to Step 15.
		No	Go to the next step.
14	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning parts according to the inspection results, then go to the next step.
		No	Go to the next step.
15	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
16	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2228:00 [LF, L5]

id0102c8153200

DTC P2228:00	BARO sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from the BARO sensor. If the input voltage is below 1.95 V for 5 s, the PCM determines that BARO sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BARO sensor (built-in PCM) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT BARO SENSOR <ul style="list-style-type: none"> Inspect the BARO sensor. (See 01-40A-26 BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2229:00 [LF, L5]

id0102c8153300

DTC P2229:00	BARO sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors input voltage from the BARO sensor. If the input voltage is above 4.45 V for 5 s, the PCM determines that BARO sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BARO sensor (built-in PCM) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT BARO SENSOR <ul style="list-style-type: none"> Inspect the BARO sensor. (See 01-40A-26 BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

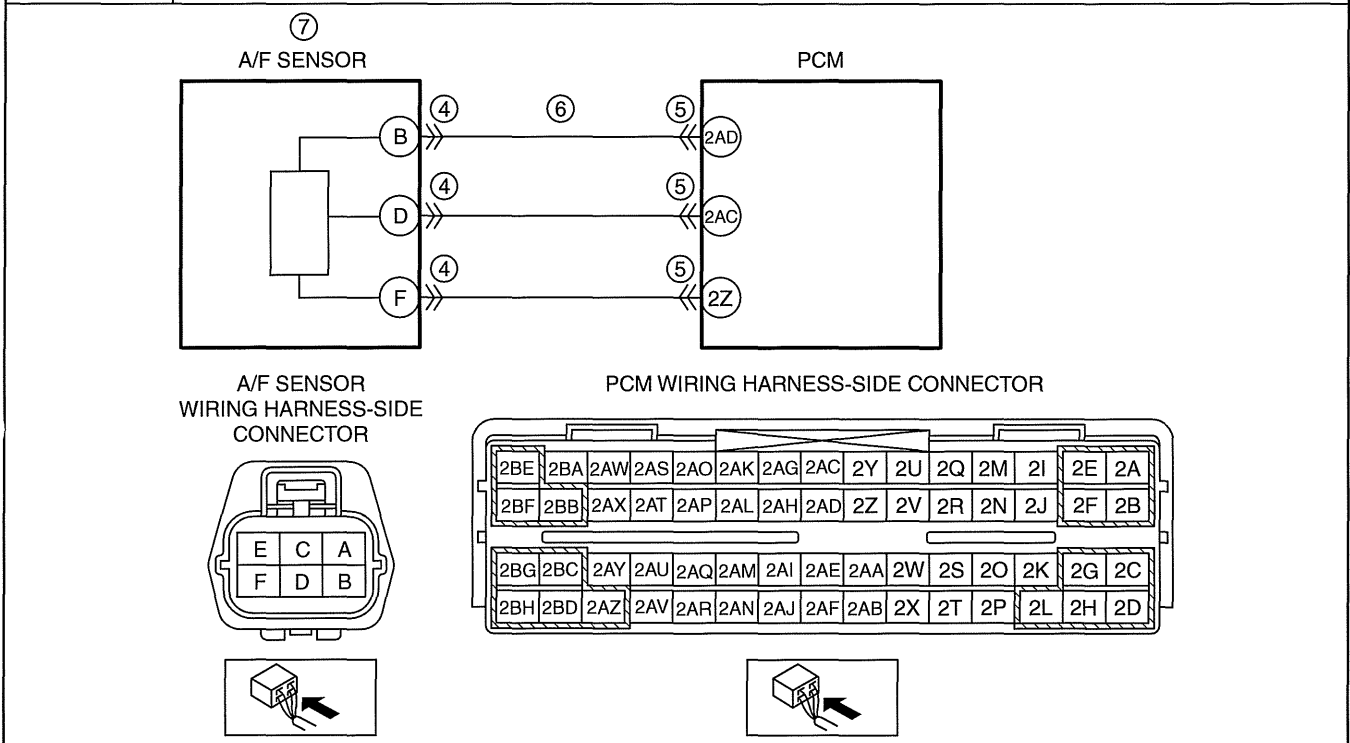
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2237:00 [LF, L5]

id0102c8851200

01-02A

DTC P2237:00	A/F sensor positive current control circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor terminal D current. If the current approx. 0 A while the A/F sensor active, the PCM determines that the A/F sensor positive current control circuit is open. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if PCM detects the above malfunction conditions during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal B and PCM terminal 2AD A/F sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the DTC P2237:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)

ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION	
4	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT A/F SENSOR POSITIVE CURRENT CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal B (wiring harness-side) and PCM terminal 2AD (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor and PCM connectors. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

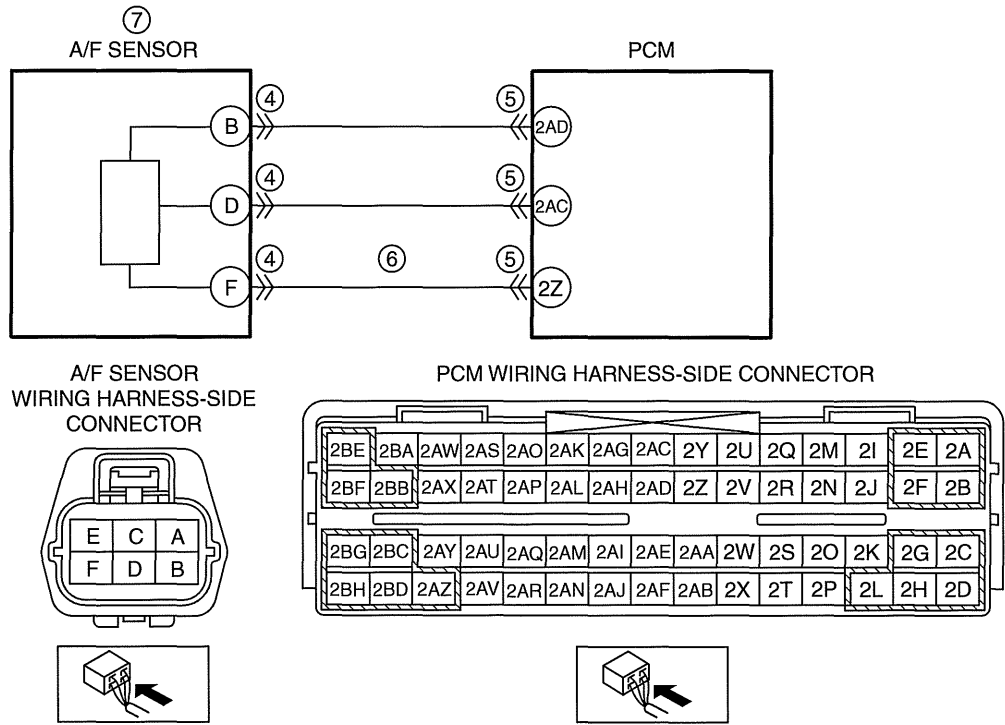
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2243:00 [LF, L5]

id0102c8303600

01-02A

DTC P2243:00	A/F sensor reference voltage circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the A/F sensor terminal F voltage. If the either of the following condition is met, the PCM determines that the A/F sensor reference voltage circuit is open. <ul style="list-style-type: none"> — The A/F sensor terminal F voltage is specified voltage or more for 30 s. — The PCM detects the DTC P0134:00 while the pending code P2243:00 is stored. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • Engine is running • Battery voltage: 11—18 V • A/F sensor element impedance specified or more <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycle or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • PCM connector or terminals malfunction • Open circuit in wiring harness between A/F sensor terminal F and PCM terminal 2Z • A/F sensor malfunction • PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2243:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
4	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT A/F SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal F (wiring harness-side) and PCM terminal 2Z (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor and PCM connectors. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02A-12 OBD-II DRIVE MODE [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

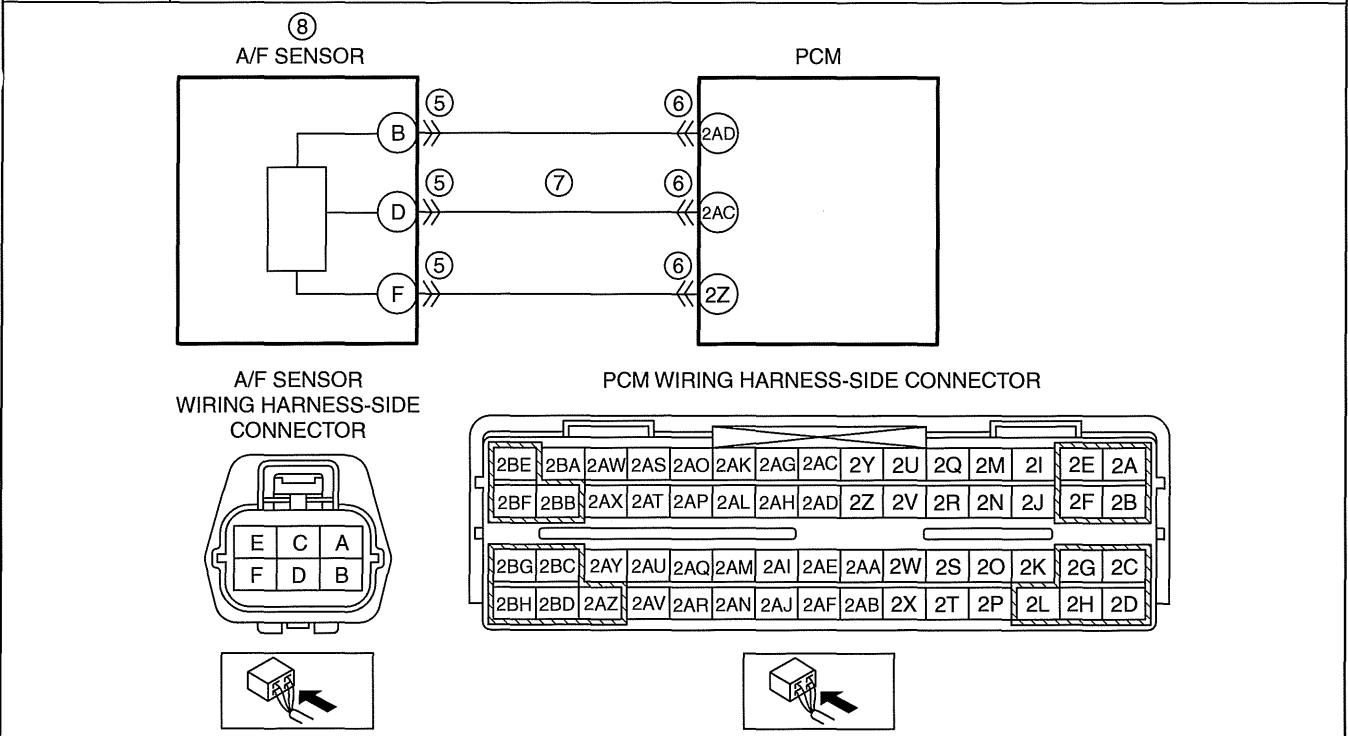
STEP	INSPECTION	ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes
		No

DTC P2251:00 [LF, L5]

id0102c8851300

01-02A

DTC P2251:00	A/F sensor negative current control circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor terminal F voltage. If either of the following conditions are met, the PCM determines that the A/F sensor negative current control circuit is open. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — The A/F sensor element impedance specified or more. — Circuit voltage oscillation or A/F sensor terminal F voltage is below the specified. — The PCM detects the DTC P0134:00 while the pending code P2251:00 is stored. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if PCM detects the above malfunction conditions during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal D and PCM terminal 2AC A/F sensor malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND STORED DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure and Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P0031:00 or P0032:00 also present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-32 DTC P0031:00 [LF, L5].) (See 01-02A-34 DTC P0032:00 [LF, L5].)
		No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the DTC P2251:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02A-17 DTC TABLE [LF, L5].)
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 9.
		No	Go to the next step.
7	INSPECT A/F SENSOR NEGATIVE CURRENT CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal D (wiring harness-side) and PCM terminal 2AC (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect the A/F sensor and PCM connectors. • Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

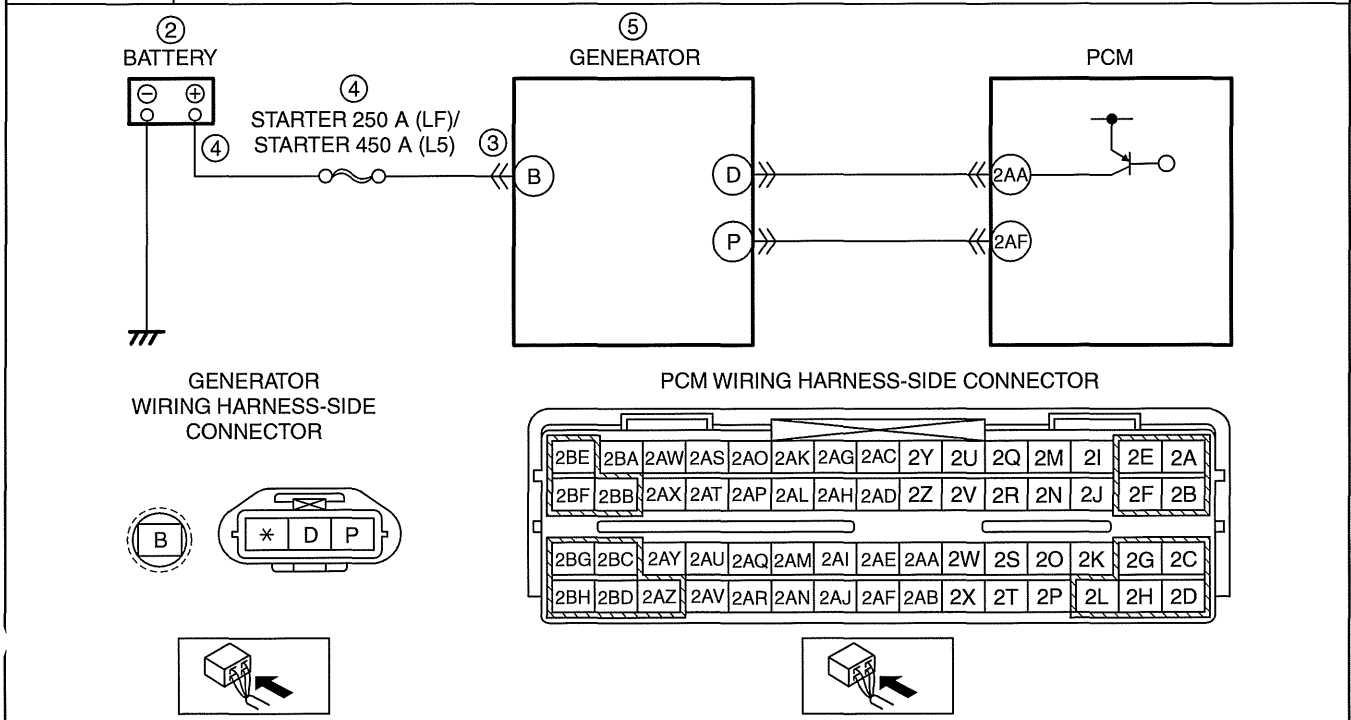
STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02A

DTC P2502:00 [LF, L5]

id0102c8709500

DTC P2502:00	Charging system voltage problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM determines that the generator output voltage is above 17 V or battery voltage is below 11 V while the engine is running. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Battery malfunction Poor installation of generator terminal Short to ground or open circuit in generator power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between generator terminal B and battery positive terminal — STARTER fuse 250 A (LF)/450 A (L5) malfunction — Open circuit in wiring harness between generator terminal B and battery positive terminal Generator malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
3	INSPECT POOR INSTALLATION OF GENERATOR TERMINAL <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the generator connector. • Inspect for looseness of generator terminal B installation nut. • Is the nut loose? 	Yes	Tighten generator terminal B installation nut, then go to Step 6.
		No	Go to the next step.
4	INSPECT BATTERY CHARGING CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Generator connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage between generator terminal B (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the STARTER 250 A (LF)/450 A (L5) fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 6.
5	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

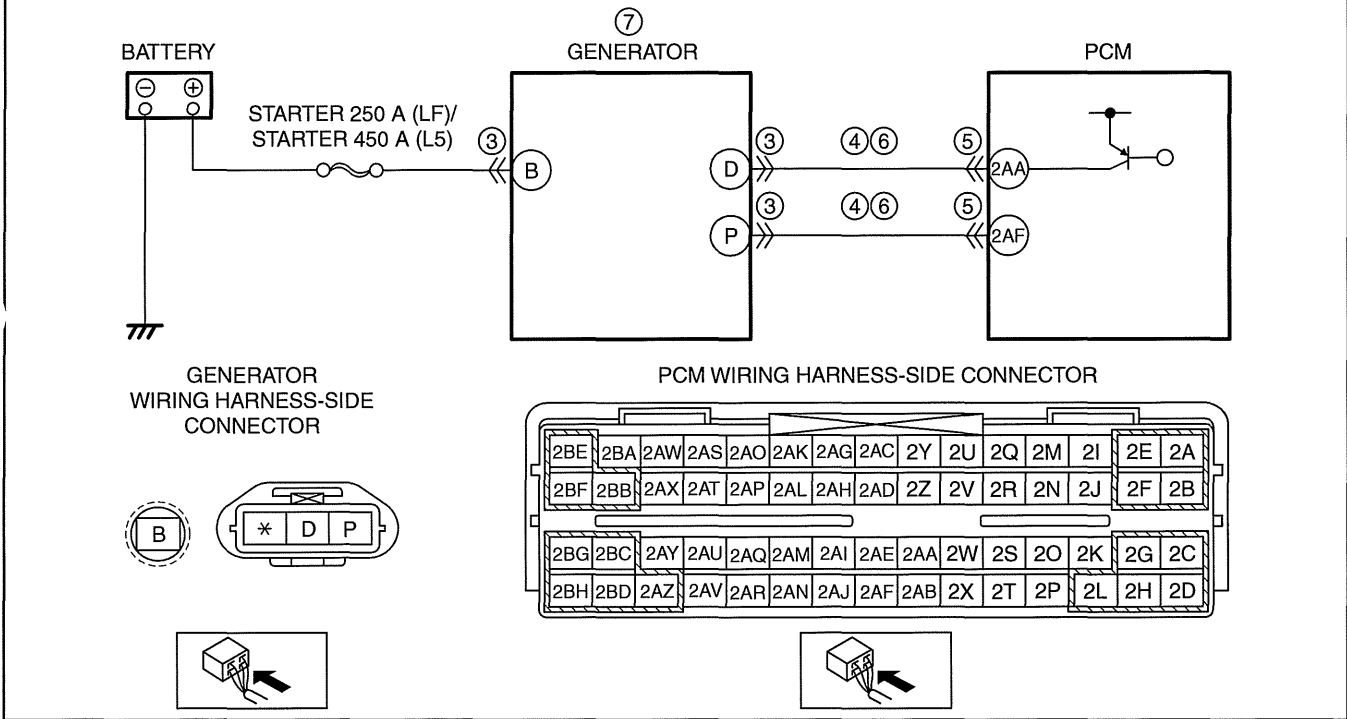
ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2503:00 [LF, L5]

id0102c8709600

01-02A

DTC P2503:00	Charging system voltage low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM needs more than 20 A from the generator, and determines that the generator output voltage is below 8.5 V while the engine running. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Drive belt exceed limit Generator connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Generator terminal D—PCM terminal 2AA — Generator terminal P—PCM terminal 2AF PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Generator terminal D—PCM terminal 2AA — Generator terminal P—PCM terminal 2AF Generator malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> Verify that the drive belt auto tensioner indicator mark does not exceed limit. Is the drive belt normal? 	Yes	Go to the next step.
		No	Replace the drive belt, then go to Step 8. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
3	INSPECT GENERATOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the generator connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [LF, L5]

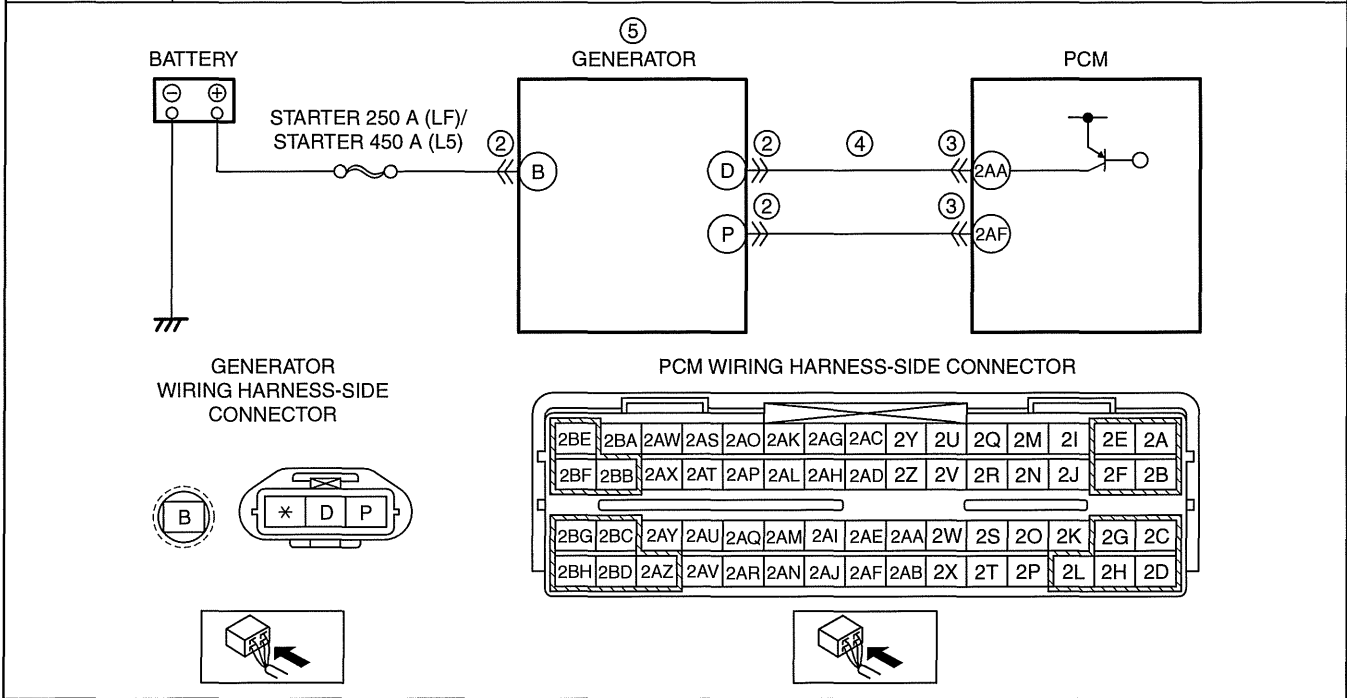
STEP	INSPECTION	ACTION	
4	INSPECT GENERATOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Generator connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Generator terminal D — Generator terminal P • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) Go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 8.
		No	Go to the next step.
6	INSPECT GENERATOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Generator and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Generator terminal D—PCM terminal 2AA — Generator terminal P—PCM terminal 2AF • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2504:00 [LF, L5]

id0102c8709700

DTC P2504:00	Charging system voltage high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM determines that the generator output voltage is above 18.5 V or battery voltage is above 16 V while the engine running. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Generator connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between generator terminal D and PCM terminal 2AA Generator malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT GENERATOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the generator connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
4	INSPECT GENERATOR CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Generator and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage between generator terminal D (wiring harness-side) and body ground. Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.

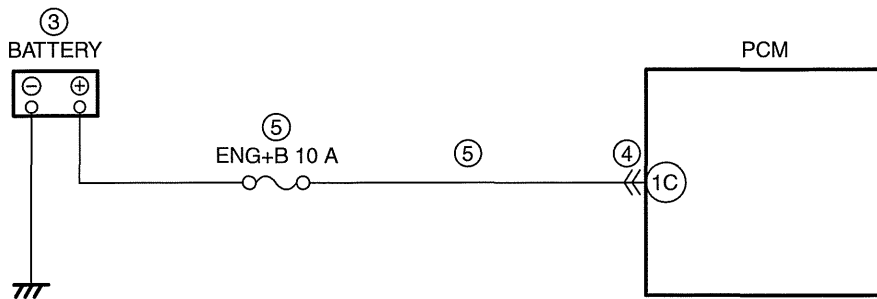
ON-BOARD DIAGNOSTIC [LF, L5]

STEP	INSPECTION	ACTION
5	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) Is there any malfunction? 	Yes Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Perform the KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No DTC troubleshooting completed.

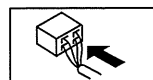
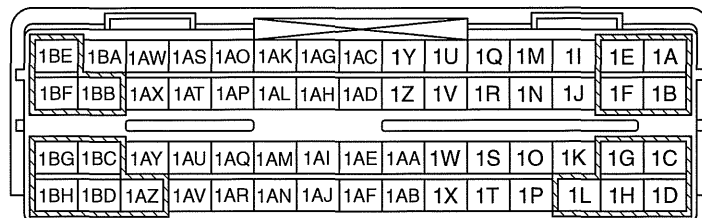
DTC P2507:00 [LF, L5]

id0102c8709800

DTC P2507:00	PCM battery voltage low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the voltage of backup battery positive terminal. If the PCM detects battery positive terminal voltage below 2.5 V for 5 s when the battery voltage is more than 8 V, the PCM determines that the backup voltage circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Battery malfunction PCM connector or terminals malfunction Short to ground or open circuit in PCM power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between battery positive terminal and PCM terminal 1C ENG+B 10 A fuse malfunction Open circuit in wiring harness between battery positive terminal and PCM terminal 1C PCM malfunction



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [LF, L5]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 6.
		No	Go to the next step.
5	INSPECT MONITOR CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • PCM connector is disconnected. • Measure the voltage between PCM terminal 1C (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG+B 10 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO/KOER self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC P2610:00 [LF, L5]

id0102c8303800

DTC P2610:00	PCM internal engine off timer performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM internal engine off timer is damaged. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal engine off timer malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [LF, L5]

DTC U3000:41 [LF, L5]

id0102c8851600

DTC U3000:41	PCM processor error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM internal EEPROM malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Perform the KOEO self test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	DTC troubleshooting completed.

01-02B ON-BOARD DIAGNOSTIC [L3 WITH TC]

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DTC P0053:00 [L3 WITH TC]	01-02B-41
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DTC P0140:00 [L3 WITH TC]	01-02B-110
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DTC P0202:00 [L3 WITH TC]	01-02B-129
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DTC P0453:00 [L3 WITH TC]	01-02B-186

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

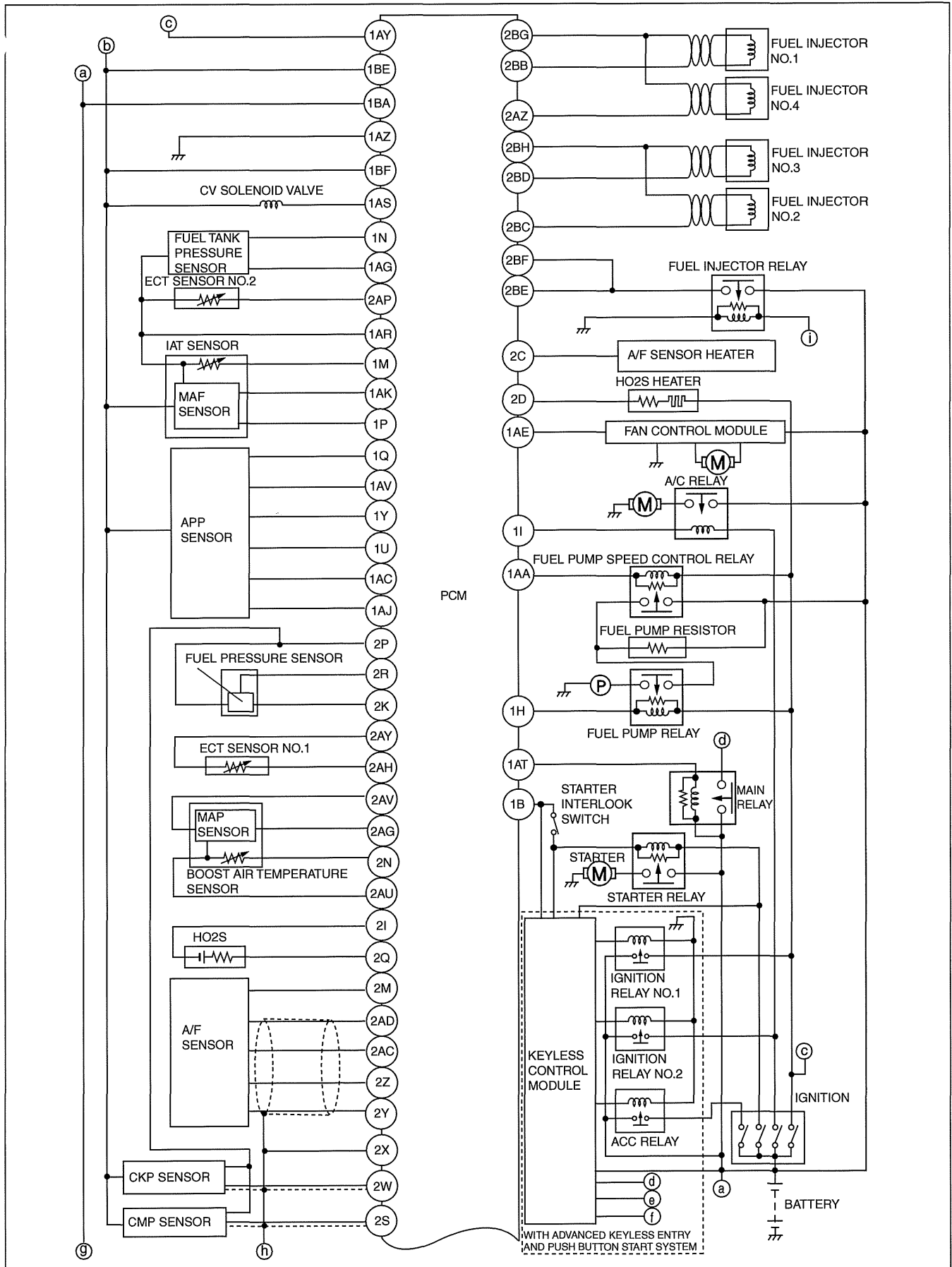
DTC P0454:00 [L3 WITH TC].....	01-02B-188	DTC P2009:00 [L3 WITH TC].....	01-02B-240
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DTC P0685:00 [L3 WITH TC].....	01-02B-221	DTC P2237:00 [L3 WITH TC].....	01-02B-286
DTC P06B8:00 [L3 WITH TC].....	01-02B-222	DTC P2243:00 [L3 WITH TC].....	01-02B-288
DTC P0703:00 [L3 WITH TC].....	01-02B-223	DTC P2245:00 [L3 WITH TC].....	01-02B-290
DTC P0704:00 [L3 WITH TC].....	01-02B-225	DTC P2246:00 [L3 WITH TC].....	01-02B-292
DTC P0850:00 [L3 WITH TC].....	01-02B-227	DTC P2251:00 [L3 WITH TC].....	01-02B-294
DTC P120F:00 [L3 WITH TC].....	01-02B-229	DTC P2502:00 [L3 WITH TC].....	01-02B-296
DTC P1260:00 [L3 WITH TC].....	01-02B-230	DTC P2503:00 [L3 WITH TC].....	01-02B-298
DTC P144A:00 [L3 WITH TC].....	01-02B-231	DTC P2504:00 [L3 WITH TC].....	01-02B-300
DTC P1450:00 [L3 WITH TC].....	01-02B-232	DTC P2507:00 [L3 WITH TC].....	01-02B-302
DTC P2004:00 [L3 WITH TC].....	01-02B-234	DTC P2610:00 [L3 WITH TC].....	01-02B-303
DTC P2006:00 [L3 WITH TC].....	01-02B-237	DTC U3000:41 [L3 WITH TC].....	01-02B-304

ON-BOARD DIAGNOSTIC [L3 WITH TC]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [L3 WITH TC]

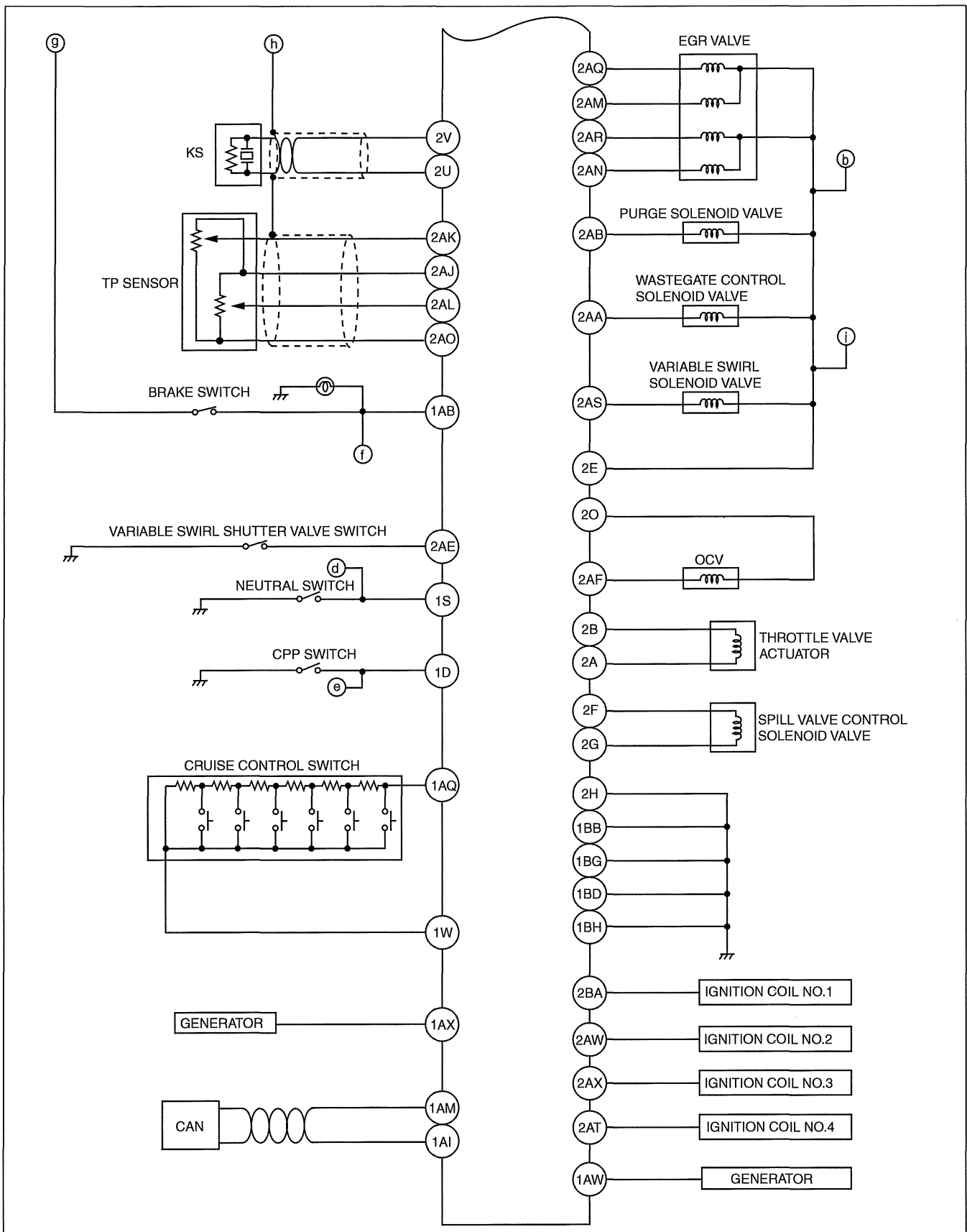
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01-02B



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ON-BOARD DIAGNOSTIC [L3 WITH TC]



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ON-BOARD DIAGNOSTIC [L3 WITH TC]

MONITORING SYSTEM AND CONTROL SYSTEM DEVICE RELATIONSHIP CHART [L3 WITH TC]

id010239800200

X: Applied

Item	MAIN RELAY CONTROL	DRIVE-BY-WIRE CONTROL	VARIABLE SWIRL CONTROL	VARIABLE VALVE TIMING CONTROL	FUEL INJECTION CONTROL	FUEL PUMP CONTROL	FUEL PUMP SPEED CONTROL	ESA CONTROL	HIGH PRESSURE FUEL PUMP CONTROL	WASTEGATE CONTROL	EGR CONTROL	EVAPORATIVE PURGE CONTROL	A/F SENSOR, HO2S HEATER CONTROL	A/C CUT-OFF CONTROL	ELECTRICAL FAN CONTROL	STARTER CUT-OFF CONTROL	GENERATOR CONTROL	CAN
Input device																		
IAT sensor		X			X		X	X		X		X			X		X	
MAF sensor		X	X	X	X		X	X	X	X	X	X	X		X			
TP sensor No.1, No.2		X			X			X		X	X			X				
APP sensor No.1, No.2		X	X	X	X			X			X	X		X	X			
MAP sensor		X			X					X		X						
ECT sensor No.1		X	X	X	X		X	X	X		X	X	X	X	X	X ^{*2}	X	
CMP sensor		X		X	X			X	X									
CKP sensor		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X ^{*2}	X	
KS								X										
A/F sensor					X							X						
HO2S					X							X						
Fuel pressure sensor		X			X	X			X									
Boost air temperature sensor		X						X										
BARO sensor		X			X					X		X			X			
Cruise control switch		X																
Variable swirl shutter valve switch			X															
Neutral switch		X			X			X			X			X				
CPP switch		X			X			X			X			X				
Brake switch		X			X			X										
Battery				X		X	X	X	X	X	X	X	X					X
Generator (Terminal P: stator coil)																		X
Ignition switch ^{*1} / ignition relay ^{*2}	X			X	X	X		X			X		X		X	X		
CAN		X			X	X		X					X	X	X			X
Output device																		
Main relay	X																	
Throttle valve actuator		X																
Variable swirl solenoid valve			X															
OCV				X														
Fuel injector					X													
Fuel pump relay						X												

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

Item	MAIN RELAY CONTROL	DRIVE-BY-WIRE CONTROL	VARIABLE SWIRL CONTROL	VARIABLE VALVE TIMING CONTROL	FUEL INJECTION CONTROL	FUEL PUMP CONTROL	FUEL PUMP SPEED CONTROL	ESA CONTROL	HIGH PRESSURE FUEL PUMP CONTROL	WASTEGATE CONTROL	EGR CONTROL	EVAPORATIVE PURGE CONTROL	A/F SENSOR, HO2S HEATER CONTROL	A/C CUT-OFF CONTROL	ELECTRICAL FAN CONTROL	STARTER CUT-OFF CONTROL	GENERATOR CONTROL	CAN
Fuel pump speed control relay							X											
Ignition coil								X										
Spill valve control solenoid valve									X									
Wastegate control solenoid valve										X								
EGR valve											X							
Purge solenoid valve												X						
A/F sensor heater													X					
HO2S heater													X					
A/C relay														X				
Fan control module															X			
Starter relay																X		
Generator (Terminal D: field coil)																	X	
CAN																		X

*1 : Without advanced keyless entry and push button start system

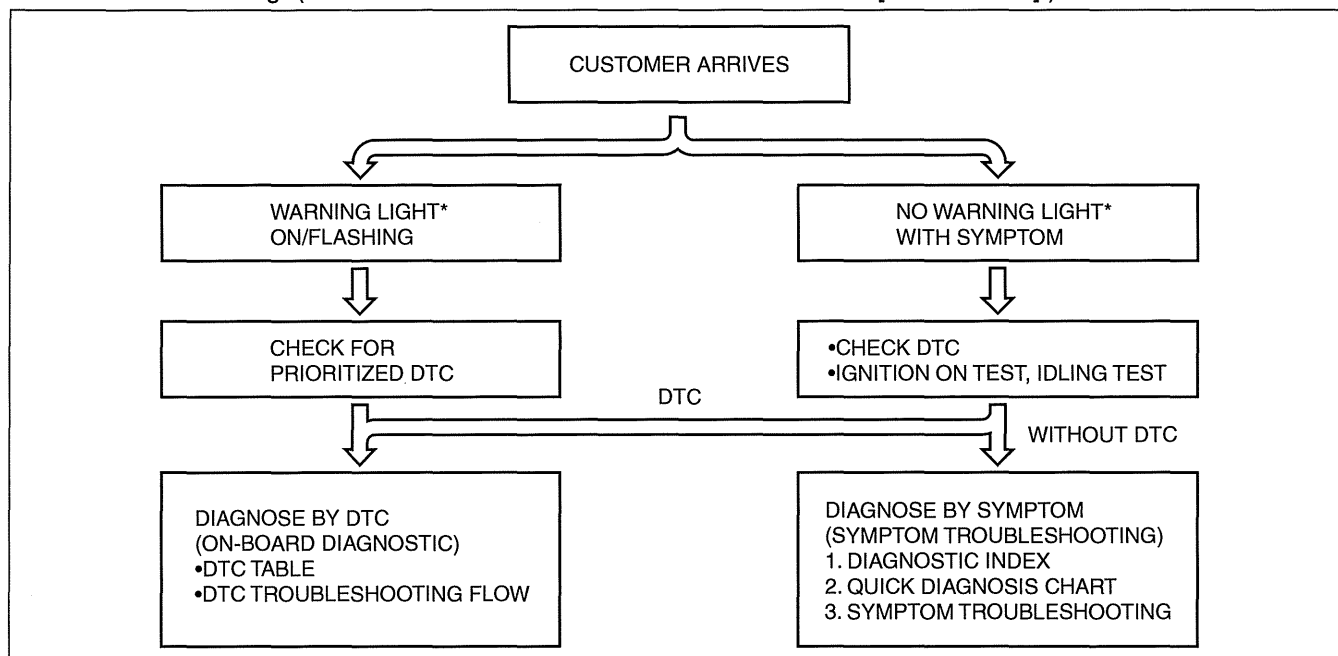
*2 : With advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [L3 WITH TC]

FOREWORD [L3 WITH TC]

id010239800300

- When the customer reports a vehicle malfunction, check the malfunction indicator lamp (MIL) indication and diagnostic trouble code (DTC), then diagnose the malfunction according to the following flowchart.
 - If a DTC exists, diagnose the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
 - If a DTC does not exist and the MIL does not illuminate or flash, diagnose the applicable symptom troubleshooting. (See 01-03B-4 SYMPTOM DIAGNOSTIC INDEX [L3 WITH TC].)



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* : Malfunction Indicator Lamp (MIL), Generator Warning Light, Security Light

OBD-II PENDING TROUBLE CODE [L3 WITH TC]

id010239800400

- These appear when a problem is detected in a monitored system. The code for a failed system is stored in the PCM memory in the first drive cycle. This code is called the pending code. If the PCM determines that the system has returned to normal or the problem was mistakenly detected, it deletes the pending code. If the problem is found in the second drive cycle, too the PCM determines that the system is malfunctioning, and the DTC is stored.

OBD-II FREEZE FRAME DATA [L3 WITH TC]

id010239800500

- This is technical data which indicates the engine condition at the time of the first malfunction. This data will remain in the memory even if another emission-related DTC is stored, with the exception of the Misfire or Fuel System DTCs. Once freeze frame data for the Misfire or Fuel System DTC is stored, it will overwrite any previous data and the freeze frame will not be overwritten again.

OBD-II ON-BOARD SYSTEM READINESS TEST [L3 WITH TC]

id010239800600

- This shows the OBD-II systems operating status. If any monitor function is incomplete, the M-MDS will identify which monitor function has not been completed. Misfires, Fuel System and Comprehensive Components (CCM) are continuous monitoring-type functions. The catalyst, EGR system, EVAP system and A/F sensor, HO2S will be monitored under drive cycles. The OBD-II diagnostic system is initialized by performing the DTC cancellation procedure or disconnecting the negative battery cable.

OBD-II DIAGNOSTIC MONITORING TEST RESULTS [L3 WITH TC]

id010239800700

- These result from the intermittent monitor system technical data, which are used to determine whether the system is normal or not. They also display the system's thresholds and diagnostic results. The intermittent monitor system monitors the A/F sensor, HO2S, EVAP system, catalyst and the EGR system.

OBD-II READ/CLEAR DIAGNOSTIC TEST RESULTS [L3 WITH TC]

id010239800800

- This retrieves all stored DTCs in the PCM and clears the DTC, Freeze Frame Data, On-Board Readiness Test Results, Diagnostic Monitoring Test Results and Pending Trouble Codes.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

OBD-II PARAMETER IDENTIFICATION (PID) ACCESS [L3 WITH TC]

id010239800900

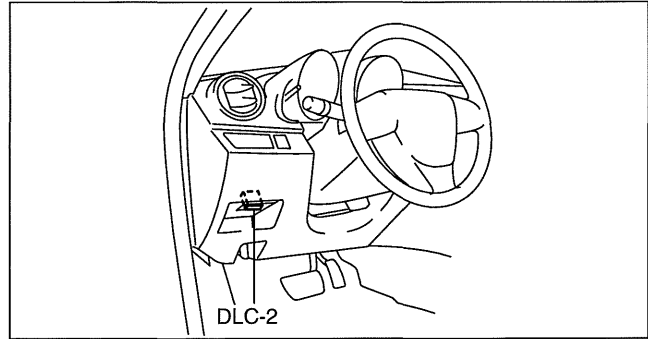
- The PID mode allows access to certain data values, analog and digital inputs and outputs, calculated values and system status information. Since PID values for output devices are PCM internal data values, inspect each device to identify which output devices are malfunctioning.

ON-BOARD DIAGNOSTIC TEST [L3 WITH TC]

id010239801000

DTC Reading Procedure

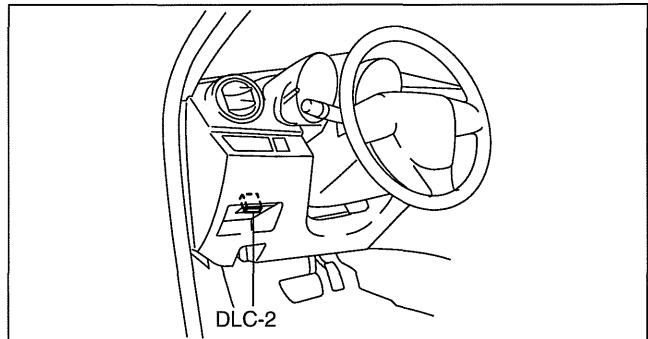
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.
4. Verify the DTC according to the directions on the M-MDS screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
5. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)



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Pending Trouble Code Access Procedure

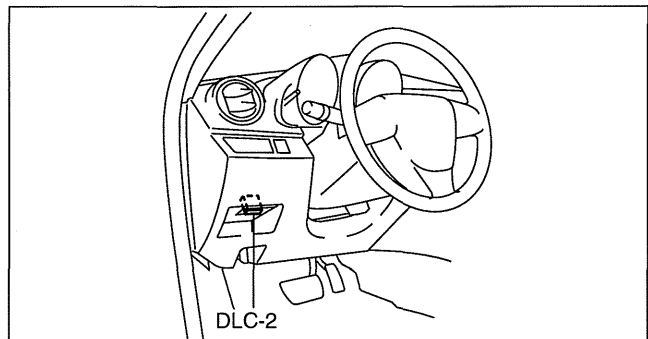
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.
4. Retrieve the pending trouble codes according to the directions on the M-MDS screen.



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Freeze Frame PID Data Access Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.
4. Retrieve the freeze frame PID data according to the directions on the M-MDS screen.



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Note

- Freeze frame data/snapshot data appears at the top of the help screen when the displayed DTC is selected.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

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Freeze frame data

- The freeze frame data consists of data for vehicle and engine control system operation conditions when malfunctions in the engine control system are detected and stored in the PCM.
- Freeze frame data is stored at the instant the malfunction indicator lamp illuminates, and only a part of the DTC data is stored.
- For the freeze frame data, if there are several malfunctions in the engine control system, the data for the malfunction which occurred initially is stored. Thereafter, if a misfire or fuel injection control malfunction occurs, data from the misfire or fuel injection control malfunction is written over the initially stored data. However, if the initially stored freeze frame data is a misfire or fuel injection control malfunction, it is not overwritten.

Snapshot data

- The snap shot data stores the currently detected DTC data.
- The recording timing for the freeze frame data/snap shot data differs depending on the number of DTC drive cycles.
 - For a DTC with a drive cycle number 1, only the malfunction determination data is recorded.
 - For a DTC with a drive cycle number 2, both the malfunction determination and undetermined data is recorded.

Freeze frame data table

Note

- Refer to PID monitor table for confirm the engine control system operation status while the PCM does not store the DTC. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
- Freeze frame data items are not displayed, according to detected DTC.

Freeze frame data item	Unit	Description	Corresponding PID data monitor item
FUELSYS1	Open Loop/Closed Loop/OL-Drive/OL-Fault/CL-Fault	Fuel system status	FUELSYS
LOAD	%	Calculated engine load	—
ECT	°C	Engine coolant temperature	ECT
SFT1	%	Short term fuel trim	SHRTFT1
LFT1	%	Long term fuel trim	LONGFT1
MAP	kPa	Manifold absolute pressure	MAP
RPM	RPM	Engine speed	RPM
VS	KPH	Vehicle speed	VSS
SPARKADV	°	Ignition timing	SPARKADV
IAT	°C	Intake air temperature	IAT
MAF	g/sec	Mass airflow	MAF
TP	%	Throttle valve position No.1	TP1
RUNTM	hh:mm:ss	Time from engine start	—
EGRPCT	%	Target EGR valve position	SEGRP_DSD
FRP	kPa	Fuel pressure	FUEL_PRES
EVAPPCT	%	Purge solenoid valve controlled value	EVAPCP
FLI	%	Fuel level in fuel tank	FLI
WARMUPS	—	Number of warm-up cycle after DTC cleared	—
CLRDIST	Km	Mileage after DTC cleared	—
EVAP_VP	kPa	Fuel tank pressure	FTP
BARO	kPa	Barometric pressure	BARO
CATTEMP11	°C	Estimated catalytic converter temperature	CATT11_DSD
VPWR	V	Module supply voltage	VPWR
ALV	%	Engine load	LOAD
TP_REL	%	Relative throttle position	TP REL
AAT	°C	Ambient air temperature	AAT
TP_B	%	Throttle valve position No.2	TP2
APP_D	%	Accelerator pedal position No.1	APP1
APP_E	%	Accelerator pedal position No.2	APP2
TAC_PCT	%	Target throttle valve position	ETC_DSD

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Snapshot data table

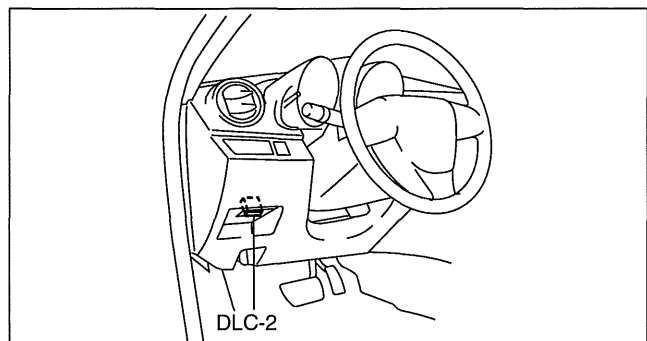
Note

- Refer to PID monitor table for confirm the engine control system operation status while the PCM does not store the DTC. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
- Snapshot data items are not displayed, according to detected DTC.

Snapshot data item	Unit	Definition	Corresponding PID data monitor item
FUELSYS	OL/CL/OL-Drive/OL-Fault/CL-Fault	Fuel system status	FUELSYS
LOAD_C	%	Calculated engine load	—
ECT	°C	Engine coolant temperature	ECT
SHRTFT1	%	Short term fuel trim	SHRTFT1
LONGFT1	%	Long term fuel trim	LONGFT1
MAP	kPa	Manifold absolute pressure	MAP
RPM	RPM	Engine speed	RPM
VSS	KPH	Vehicle speed	VSS
SPARKADV	°	Ignition timing	SPARKADV
IAT	°C	Intake air temperature	IAT
MAF	g/sec	Mass airflow	MAF
TP1	%	Throttle valve position No.1	TP1
EG_RUN_TIME	—	Time from engine start	—
SEGRP_DSD	%	Target EGR valve position	SEGRP DSD
EVAPCP	%	Purge solenoid valve controlled value	EVAPCP
FLI	%	Fuel level in fuel tank	FLI
CLR_CNT	—	Number of warm-up cycle after DTC cleared	—
CLR_DIST	Km	Mileage after DTC cleared	—
FTP	kPa	Fuel tank pressure	FTP
BARO	kPa	Barometric pressure	BARO
CATT11_DSD	°C	Estimated catalytic converter temperature	CATT11_DSD
VPWR	V	Module supply voltage	VPWR
LOAD	%	Engine load	LOAD
EQ_RAT11_DSD	—	Target equivalence ratio (lambda)	EQ_RAT11_DSD
TP REL	%	Relative throttle position	TP REL
AAT	°C	Ambient air temperature	AAT
TP2	%	Throttle valve position No.2	TP2
APP1	%	Accelerator pedal position No.1	APP1
APP2	%	Accelerator pedal position No.2	APP2
ETC_DSD	%	Target throttle valve position	ETC_DSD

On-Board System Readiness Tests Access Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Powertrain".
 2. Select "OBD Test Modes".
 3. Select "Mode 1 Powertrain Data".
 4. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "OBDII Modes".
 2. Select "Mode 1 Powertrain Data".
 3. Select "PCM".
3. Then, select the "****SUP" and "***EVAL" PIDs in the PID selection screen.
4. Monitor those PIDs and check it system monitor is completed.



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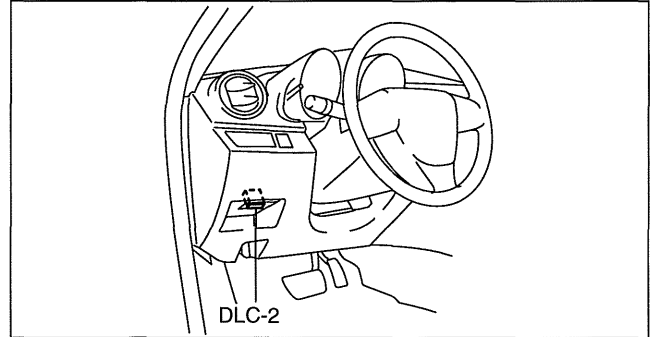
PID/DATA Monitor and Record Procedure

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

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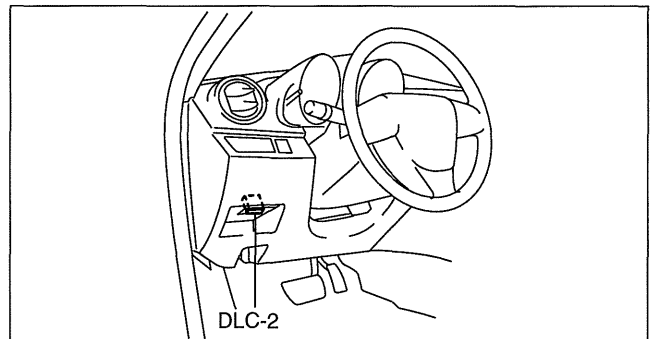
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the detections on the screen.



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Diagnostic Monitoring Test Results Access Procedure

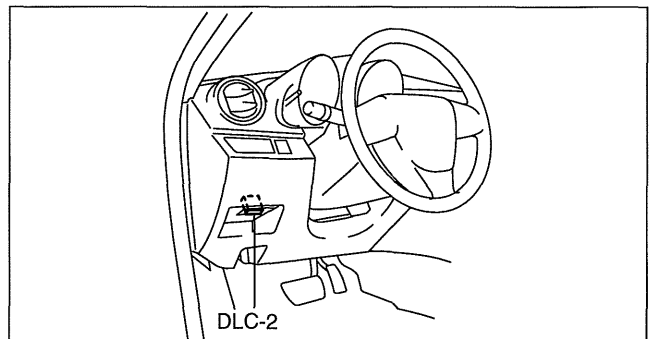
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Powertrain".
 2. Select "OBD Test Modes".
 3. Select "Mode 6 On-Board Test Results".
 - When using the PDS (Pocket PC)
 1. Select "OBDII Modes".
 2. Select "Mode 6 On-Board Test Results".
3. Verify the diagnostic monitoring test result according to the directions on the screen.



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Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "DataLogger".
3. Select the simulation items from the PID table.
4. Perform the simulation function, inspect the operations for each parts.
 - If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.



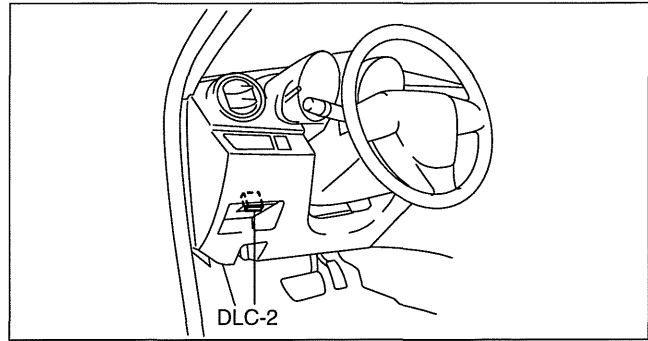
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

AFTER REPAIR PROCEDURE [L3 WITH TC]

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1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 4. Select "Retrieve CMDTCs".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
 4. Select "Retrieve CMDTCs".
3. Verify the DTC according to the directions on the M-MDS screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Verify that no DTCs are displayed.



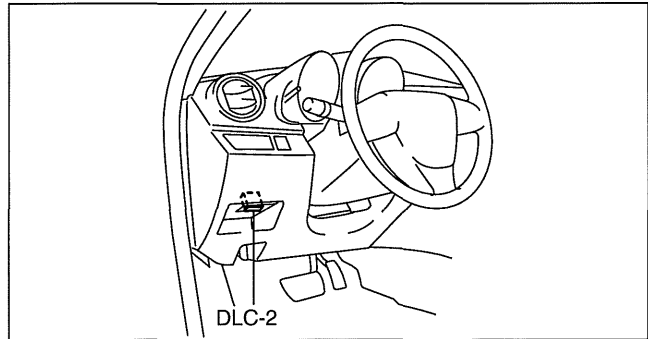
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KOEO/KOER SELF TEST [L3 WITH TC]

id010239801200

KOEO Self Test

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
3. Then, select the "KOEO On Demand Self Test" and perform procedures according to directions on the M-MDS screen.
4. Verify the DTC according to the directions on the M-MDS screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
5. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)



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ON-BOARD DIAGNOSTIC [L3 WITH TC]

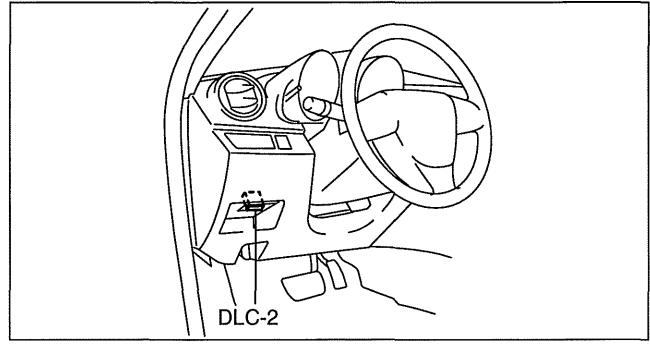
KOER Self Test

Note

- For vehicles with the variable valve timing control, execute a KOER self test after the variable valve timing learning is finished.
 - A KOER self test cannot be executed if the variable timing valve learning is not finished.
 - The variable valve timing learning is cleared if the PCM backup power supply is interrupted (including battery removal), or after reprogramming.
 - To perform variable valve timing learning, the engine speed needs to be increased momentarily to **approx. 2,000 rpm**.

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1. Connect the M-MDS to the DLC-2.
2. Idle the engine.
3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "PCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "PCM".
 3. Select "Self Test".
4. Then, select the "KOER On Demand Self Test" and perform procedures according to directions on the M-MDS screen.
5. Verify the DTC according to the directions on the M-MDS screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
6. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)



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OBD-II DRIVE MODE [L3 WITH TC]

id010239801300

- Using the OBD-II Drive Mode, the monitoring item requested by OBD-II regulations can be easily diagnosed.
- Performing the Drive Mode inspects the OBD-II system for proper operation and must be performed to ensure that no additional DTCs are present.
- The OBD-II Drive Mode is divided into the specific Drive Mode and single Drive Mode.
- For the specific Drive Mode, specified Drive Modes have been set for each individual monitoring item requested by OBD-II regulations, and they can be diagnosed individually. For the single Drive Mode, the entire monitoring item requested by OBD-II regulations can be diagnosed.
- The following modes are in the specific Drive Mode. The applicable system is diagnosed by driving in the following Drive Modes.
 - Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode)
 - Mode 06 (EVAP System Repair Verification Drive Mode)
- The following systems are diagnosed with the single Drive Mode.
 - EGR system
 - Oxygen sensor (A/F sensor, HO2S)
 - Oxygen sensor heater (A/F sensor heater, HO2S heater)
 - Catalytic converter (TWC)
 - Evaporative (EVAP) system

Caution

- While performing the Drive Mode, always operate the vehicle in a safe and lawful manner.
- When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

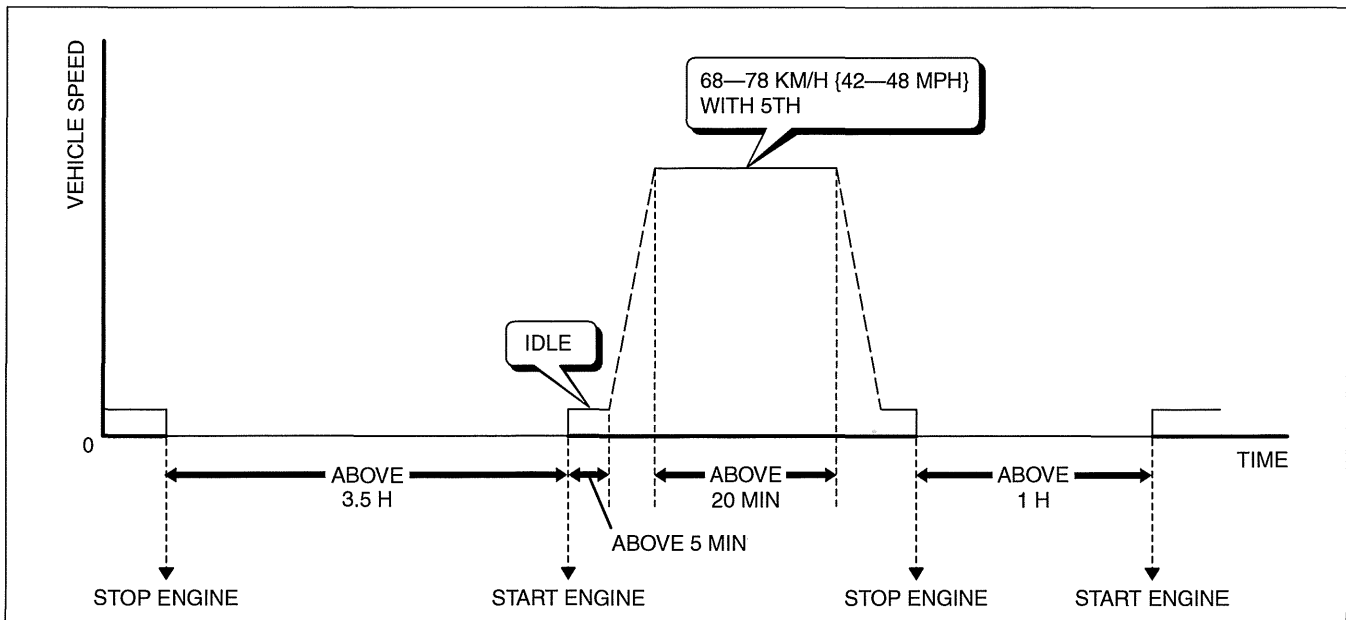
Mode 06 (EVAP System Repair Verification Drive Mode)

Note

- If “EVAP System Repair Verification Drive Mode” cannot be performed (it is impossible to drive the vehicle under this Drive Mode condition), perform evaporative system test procedure as an alternative. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].)

1. Verify that all of the following PIDs are within the following specifications. All PIDs must be within specifications before engine is started to initiate the evaporative system test.
 - BARO: **72.2 kPa {542 mmHg, 21.3 inHg} or higher**
 - FLI: **20—80%**
 - IAT: **5—35 °C {41—95 °F}**
 - VPWR: **above 10.9 V**
2. Start the engine and warm it up completely.
3. Clear the DTC from the PCM memory using the M-MDS (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].).
4. Drive the vehicle as shown in the graph.

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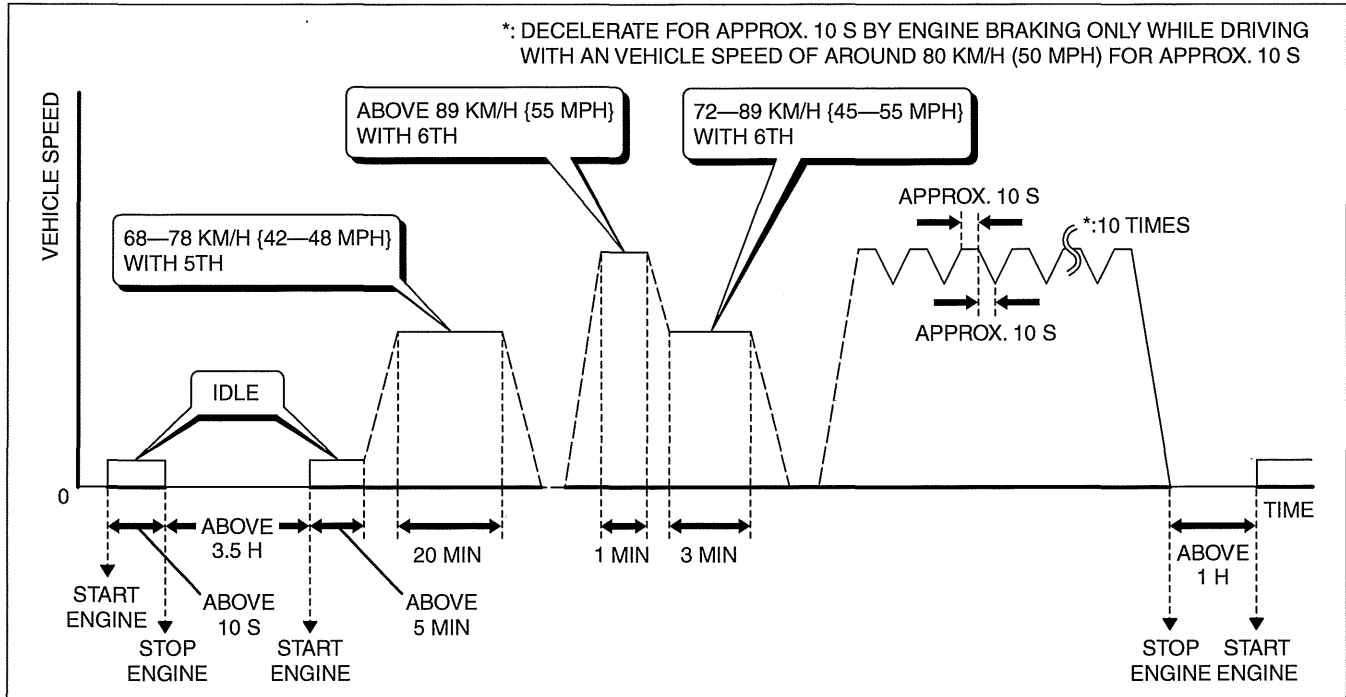


5. Access the ON BOARD SYSTEM READINESS to verify the OBD monitoring status.
 - If completed, the OBD monitoring status items change from non-completed to completed.
 - If not completed, switch the ignition to off then go back to Step 1.
6. Access the DIAGNOSTIC MONITORING TEST RESULTS to verify the monitor results.
 - If detected values are not within specification, repair has not completed.
7. Verify no DTCs are available.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Single Drive Mode

1. Verify all accessory loads (A/C, headlights, blower fan, rear window defroster) are off.
2. Start the engine and warm it up completely.
3. Clear the DTC from the PCM memory using the M-MDS (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].).
4. Verify that all of the following PIDs are within the following specifications. All PIDs must be within specifications from Step 5 to Step 6.
 - BARO: **72.2 kPa {542 mmHg, 21.3 inHg} or higher**
 - FLI: **20—80%**
 - IAT: **5—35 °C {41—95 °F}**
 - VPWR: **above 10.9 V**
5. With the vehicle stopped, race the engine at the engine speed indicated, and then drive the vehicle as shown in the graph. The driving conditions before driving at constant speed are not specified. If possible, monitor RPM PID for engine speed during this procedure.



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6. Switch the ignition to off.
7. Access the ON BOARD SYSTEM READINESS to verify the OBD monitoring status.
 - If completed, all of the OBD monitoring status items change from non-completed to completed.
 - If not completed, switch the ignition to off, then perform the applicable specific Drive Mode for any monitoring item that was not in the detection condition.
8. Access the DIAGNOSTIC MONITORING TEST RESULTS to verify the monitor results.
 - If detected values are not within specification, repair has not been completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DIAGNOSTIC MONITORING TEST RESULTS [L3 WITH TC]

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- The purpose of this test mode is to confirm the result of the OBD-II monitor diagnostic test results. The result values stored when a particular monitor is completed are displayed. If the monitor is not completed, the initial value is displayed.

OBD Monitor ID	Test ID	Description	Related system	Scaling ID	Unit
01	80	A/F sensor lean-to-rich response time (calculated)	A/F sensor, HO2S	20	Ratio
01	81	A/F sensor rich-to-lean response time (calculated)		20	Ratio
01	82	A/F sensor lean-to-rich response time (calculated)		20	Ratio
01	83	A/F sensor rich-to-lean response time (calculated)		20	Ratio
02	03	Low HO2S voltage for switch time calculation (constant)		0A	Voltage
02	04	High HO2S voltage for switch time calculation (constant)		0A	Voltage
02	05	HO2S rich-to-lean response time (calculated)		10	Time
02	80	HO2S response timeout (calculated)		10	Time
21	80	A/F sensor, HO2S switching time ratio	Catalyst	20	Ratio
31	83	EGR pressure variation	EGR	17	Pressure
35	80	Over-retarded	Variable valve timing	9C	deg.CA
35	81	Over-advanced		9C	deg.CA
3A	80	Phase 0 inicial tank vacuum and minimum vacuum limit	EVAP system	FE	Pa
3A	81	Phase 4 vapor generation minimum change in pressure and minimum vacuum limit		FE	Pa
3A	82	Phase 0 inicial tank vacuum and gross leak maximum vacuum limit		FE	Pa
3B	80	Phase 2 0.040" cruise leak check vacuum bleed-up and maximum vacuum limit		FE	Pa
3C	81	EONV positive pressure test result and limits		FE	Pa
3C	82	EONV negative pressure (vacuum) test result and limits		FE	Pa
3C	83	Normalized average of four EONV tests results and limits		03	Raw Value
3D	80	Blocked EVAP system line-screening test		A9	Pa/s
3D	81	Blocked EVAP system line-fault confirmation test	FE	Pa	
41	80	Primary O2 heater test result and limits	EVAP system	14	Ohm
42	80	Secondary O2 heater test result and limits		14	Ohm
A2	0B	EWMA misfire counts for last 10 driving cycles	Misfire	24	Counts
A2	0C	Misfire counts for last/current driving cycles		24	Counts
A3	0B	EWMA misfire counts for last 10 driving cycles		24	Counts
A3	0C	Misfire counts for last/current driving cycles		24	Counts
A4	0B	EWMA misfire counts for last 10 driving cycles		24	Counts
A4	0C	Misfire counts for last/current driving cycles		24	Counts
A5	0B	EWMA misfire counts for last 10 driving cycles		24	Counts
A5	0C	Misfire counts for last/current driving cycles		24	Counts

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC TABLE [L3 WITH TC]

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×: Applicable
—: Not applicable

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0011:00	CMP timing over-advanced	ON	OFF	2	CCM	C, R	×	(See 01-02B-27 DTC P0011:00 [L3 WITH TC].)
P0012:00	CMP timing over-retarded	ON	OFF	2	CCM	C, R	×	(See 01-02B-29 DTC P0012:00 [L3 WITH TC].)
P0016:00	CKP-CMP correlation problem	ON	OFF	2	CCM	C	×	(See 01-02B-31 DTC P0016:00 [L3 WITH TC].)
P0031:00	A/F sensor heater control circuit low input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02B-33 DTC P0031:00 [L3 WITH TC].)
P0032:00	A/F sensor heater control circuit high input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02B-35 DTC P0032:00 [L3 WITH TC].)
P0037:00	HO2S heater control circuit low input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02B-37 DTC P0037:00 [L3 WITH TC].)
P0038:00	HO2S heater control circuit high input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02B-39 DTC P0038:00 [L3 WITH TC].)
P0053:00	A/F sensor heater resistance problem	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02B-41 DTC P0053:00 [L3 WITH TC].)
P0054:00	HO2S heater resistance problem	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See 01-02B-43 DTC P0054:00 [L3 WITH TC].)
P0069:00	Manifold absolute pressure/atmospheric pressure correlation problem	ON	OFF	2	CCM	C	×	(See 01-02B-45 DTC P0069:00 [L3 WITH TC].)
P0089:00	Fuel pressure regulator performance problem	ON	OFF	2	CCM	C, R	×	(See 01-02B-46 DTC P0089:00 [L3 WITH TC].)
P0091:00	Fuel pressure regulator control circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-49 DTC P0091:00 [L3 WITH TC].)
P0092:00	Fuel pressure regulator control circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-51 DTC P0092:00 [L3 WITH TC].)
P0096:00	Boost air temperature sensor circuit range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02B-53 DTC P0096:00 [L3 WITH TC].)
P0097:00	Boost air temperature sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-54 DTC P0097:00 [L3 WITH TC].)
P0098:00	Boost air temperature sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-56 DTC P0098:00 [L3 WITH TC].)
P00B3:00	ECT sensor No.2 circuit low input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02B-58 DTC P00B3:00 [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P00B4:00	ECT sensor No.2 circuit high input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02B-60 DTC P00B4:00 [L3 WITH TC].)
P0101:00	MAF sensor circuit range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02B-62 DTC P0101:00 [L3 WITH TC].)
P0102:00	MAF sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-65 DTC P0102:00 [L3 WITH TC].)
P0103:00	MAF sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-67 DTC P0103:00 [L3 WITH TC].)
P0107:00	MAP sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-69 DTC P0107:00 [L3 WITH TC].)
P0108:00	MAP sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-71 DTC P0108:00 [L3 WITH TC].)
P0111:00	IAT sensor circuit range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02B-73 DTC P0111:00 [L3 WITH TC].)
P0112:00	IAT sensor circuit low input	ON	ON	1	CCM	C, O, R	×	(See 01-02B-74 DTC P0112:00 [L3 WITH TC].)
P0113:00	IAT sensor circuit high input	ON	ON	1	CCM	C, O, R	×	(See 01-02B-76 DTC P0113:00 [L3 WITH TC].)
P0116:00	ECT sensor No.1 circuit range/performance problem	ON	OFF	1	Engine cooling system	C	×	(See 01-02B-78 DTC P0116:00 [L3 WITH TC].)
P0117:00	ECT sensor No.1 circuit low input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02B-79 DTC P0117:00 [L3 WITH TC].)
P0118:00	ECT sensor No.1 circuit high input	ON	OFF	1	Engine cooling system	C, O, R	×	(See 01-02B-81 DTC P0118:00 [L3 WITH TC].)
P0122:00	TP sensor No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-83 DTC P0122:00 [L3 WITH TC].)
P0123:00	TP sensor No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-85 DTC P0123:00 [L3 WITH TC].)
P0125:00	Insufficient coolant temperature for closed loop fuel control	ON	OFF	2	Engine cooling system	C	×	(See 01-02B-87 DTC P0125:00 [L3 WITH TC].)
P0126:00	Coolant thermostat stuck open	ON	OFF	2	Engine cooling system	C	×	(See 01-02B-89 DTC P0126:00, P0128:00 [L3 WITH TC].)
P0128:00	Coolant thermostat stuck open	ON	OFF	2	Engine cooling system	C	×	(See 01-02B-89 DTC P0126:00, P0128:00 [L3 WITH TC].)
P0130:00	A/F sensor circuit problem	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-92 DTC P0130:00 [L3 WITH TC].)
P0131:00	A/F sensor circuit low input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-93 DTC P0131:00 [L3 WITH TC].)
P0132:00	A/F sensor circuit high input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-95 DTC P0132:00 [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0133:00	A/F sensor circuit slow response	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02B-97 DTC P0133:00 [L3 WITH TC].)
P0134:00	A/F sensor circuit no activity detected	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02B-100 DTC P0134:00 [L3 WITH TC].)
P0137:00	HO2S circuit low input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-103 DTC P0137:00 [L3 WITH TC].)
P0138:00	HO2S circuit high input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-105 DTC P0138:00 [L3 WITH TC].)
P0139:00	HO2S circuit slow response	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02B-107 DTC P0139:00 [L3 WITH TC].)
P0140:00	HO2S circuit no activity detected	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02B-110 DTC P0140:00 [L3 WITH TC].)
P0171:00	Fuel trim system too lean	ON	OFF	2	Fuel system	C, R	×	(See 01-02B-113 DTC P0171:00 [L3 WITH TC].)
P0172:00	Fuel trim system too rich	ON	OFF	2	Fuel system	C, R	×	(See 01-02B-117 DTC P0172:00 [L3 WITH TC].)
P0191:00	Fuel pressure sensor circuit range/performance problem	ON	OFF	2	CCM	C, R	×	(See 01-02B-121 DTC P0191:00 [L3 WITH TC].)
P0192:00	Fuel pressure sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-123 DTC P0192:00 [L3 WITH TC].)
P0193:00	Fuel pressure sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-125 DTC P0193:00 [L3 WITH TC].)
P0201:00	Injector circuit/open cylinder No.1	ON	OFF	1	CCM	C, R	×	(See 01-02B-127 DTC P0201:00 [L3 WITH TC].)
P0202:00	Injector circuit/open cylinder No.2	ON	OFF	1	CCM	C, R	×	(See 01-02B-129 DTC P0202:00 [L3 WITH TC].)
P0203:00	Injector circuit/open cylinder No.3	ON	OFF	1	CCM	C, R	×	(See 01-02B-131 DTC P0203:00 [L3 WITH TC].)
P0204:00	Injector circuit/open cylinder No.4	ON	OFF	1	CCM	C, R	×	(See 01-02B-133 DTC P0204:00 [L3 WITH TC].)
P0222:00	TP sensor No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-135 DTC P0222:00 [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0223:00	TP sensor No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-137 DTC P0223:00 [L3 WITH TC].)
P0234:00	Turbo/supercharger overboost condition	OFF	OFF	1	Other	C, R	×	(See 01-02B-139 DTC P0234:00 [L3 WITH TC].)
P0245:00	Wastegate control solenoid valve circuit low input	OFF	OFF	2	Other	C, O, R	×	(See 01-02B-140 DTC P0245:00 [L3 WITH TC].)
P0246:00	Wastegate control solenoid valve circuit high input	OFF	OFF	2	Other	C, O, R	×	(See 01-02B-142 DTC P0246:00 [L3 WITH TC].)
P0300:00	Random misfire detected	Flash / ON	OFF	1 or 2	Misfire	C	×	(See 01-02B-144 DTC P0300:00 [L3 WITH TC].)
P0301:00	Cylinder No.1 misfire detected	Flash / ON	OFF	1 or 2	Misfire	C	×	(See 01-02B-149 DTC P0301:00, P0302:00, P0303:00, P0304:00 [L3 WITH TC].)
P0302:00	Cylinder No.2 misfire detected	Flash / ON	OFF	1 or 2	Misfire	C	×	
P0303:00	Cylinder No.3 misfire detected	Flash / ON	OFF	1 or 2	Misfire	C	×	
P0304:00	Cylinder No.4 misfire detected	Flash / ON	OFF	1 or 2	Misfire	C	×	
P0327:00	KS circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-152 DTC P0327:00 [L3 WITH TC].)
P0328:00	KS circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-154 DTC P0328:00 [L3 WITH TC].)
P0335:00	CKP sensor circuit malfunction	ON	OFF	1	CCM	C, R	×	(See 01-02B-156 DTC P0335:00 [L3 WITH TC].)
P0340:00	CMP sensor circuit malfunction	ON	OFF	1	CCM	C, R	×	(See 01-02B-159 DTC P0340:00 [L3 WITH TC].)
P0401:00	EGR flow insufficient detected	ON	OFF	2	EGR system	C, R	×	(See 01-02B-162 DTC P0401:00 [L3 WITH TC].)
P0403:00	EGR valve (stepper motor) circuit malfunction	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-164 DTC P0403:00 [L3 WITH TC].)
P0421:00	Warm up catalyst system efficiency below threshold	ON	OFF	2	Catalyst	C	×	(See 01-02B-166 DTC P0421:00 [L3 WITH TC].)
P0442:00	EVAP system leak detected (small leak)	ON	OFF	2	EVAP system	C	×	(See 01-02B-168 DTC P0442:00, P0455:00, P0456:00 [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type ^{*1}	Memory function	Page
P0443:00	Purge solenoid valve circuit malfunction	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-178 DTC P0443:00 [L3 WITH TC].)
P0446:00	CV solenoid valve control circuit problem	ON	OFF	2	CCM	C	×	(See 01-02B-180 DTC P0446:00 [L3 WITH TC].)
P0451:00	Fuel tank pressure sensor range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02B-182 DTC P0451:00 [L3 WITH TC].)
P0452:00	Fuel tank pressure sensor circuit low input	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-184 DTC P0452:00 [L3 WITH TC].)
P0453:00	Fuel tank pressure sensor circuit high input	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-186 DTC P0453:00 [L3 WITH TC].)
P0454:00	Fuel tank pressure sensor intermittent	ON	OFF	2	CCM	C, R	×	(See 01-02B-188 DTC P0454:00 [L3 WITH TC].)
P0455:00	EVAP system leak detected (gross leak/no flow)	ON	OFF	2	EVAP system	C	×	(See 01-02B-168 DTC P0442:00, P0455:00, P0456:00 [L3 WITH TC].)
P0456:00 ^{*4}	EVAP system leak detected (very small leak)	ON	OFF	1 or 2	EVAP system	C	×	(See 01-02B-189 DTC P0457:00 [L3 WITH TC].)
P0457:00	EVAP system leak detected (fuel cap loose/off)	ON ^{*2}	OFF	3	EVAP system	C	×	(See 01-02B-190 DTC P0460:00 [L3 WITH TC].)
P0460:00	Fuel level sensor circuit malfunction	ON	OFF	2	CCM	C, R	×	(See 01-02B-192 DTC P0461:00 [L3 WITH TC].)
P0461:00	Fuel gauge sender unit circuit range/performance problem	ON	OFF	2	CCM	C	×	(See 01-02B-193 DTC P0462:00 [L3 WITH TC].)
P0462:00	Fuel gauge sender unit circuit low input	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-194 DTC P0463:00 [L3 WITH TC].)
P0463:00	Fuel gauge sender unit circuit high input	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-195 DTC P0480:00 [L3 WITH TC].)
P0480:00	Cooling fan control circuit problem	OFF	OFF	1	Other	C, O, R	×	(See 01-02B-197 DTC P0500:00 [L3 WITH TC].)
P0500:00	VSS circuit problem	ON	OFF	2	CCM	C	×	(See 01-02B-198 DTC P0505:00 [L3 WITH TC].)
P0505:00 ^{*5}	IAC system malfunction	OFF	OFF	—	Other	R	—	(See 01-02B-198 DTC P0505:00 [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0506:00	IAC system RPM lower than expected	ON	OFF	2	CCM	C	×	(See 01-02B-199 DTC P0506:00 [L3 WITH TC].)
P0507:00	IAC system RPM higher than expected	ON	OFF	2	CCM	C	×	(See 01-02B-201 DTC P0507:00 [L3 WITH TC].)
P050A:00	Cold start IAC system performance problem	ON	OFF	2	Cold start emission reduction strategy monitoring	C, R	×	(See 01-02B-202 DTC P050A:00 [L3 WITH TC].)
P050B:00	Cold start ignition timing performance problem	ON	OFF	2	Cold start emission reduction strategy monitoring	C, R	×	(See 01-02B-204 DTC P050B:00 [L3 WITH TC].)
P0571:00*3	Brake switch circuit malfunction	OFF	OFF	1	Other	C	×	(See 01-02B-206 DTC P0571:00 [L3 WITH TC].)
P0579:00*3	Cruise control multi-function input circuit range/performance problem	OFF	OFF	1	Other	C	×	(See 01-02B-209 DTC P0579:00 [L3 WITH TC].)
P0581:00*3	Cruise control multi-function input circuit high input	OFF	OFF	1	Other	C	×	(See 01-02B-211 DTC P0581:00 [L3 WITH TC].)
P0600:00	Serial communication link	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-213 DTC P0600:00 [L3 WITH TC].)
P0601:00	PCM memory check sum error	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-214 DTC P0601:00 [L3 WITH TC].)
P0602:00	PCM programming error	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-215 DTC P0602:00 [L3 WITH TC].)
P0604:00	PCM RAM error	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-216 DTC P0604:00 [L3 WITH TC].)
P0606:00	PCM processor error	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-217 DTC P0606:00 [L3 WITH TC].)
P0610:00	PCM vehicle configuration error	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-218 DTC P0610:00 [L3 WITH TC].)
P0638:00	Throttle valve actuator control circuit range/performance problem	ON	OFF	1	CCM	C	×	(See 01-02B-219 DTC P0638:00 [L3 WITH TC].)
P064D:00	Internal control module A/F sensor processor performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02B-220 DTC P064D:00 [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P0685:00	Main relay control circuit open	ON	OFF	2	CCM	C	×	(See 01-02B-221 DTC P0685:00 [L3 WITH TC].)
P06B8:00	Internal control module non-volatile RAM error	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-222 DTC P06B8:00 [L3 WITH TC].)
P0703:00	Brake switch input circuit problem	ON	OFF	2	CCM	C	×	(See 01-02B-223 DTC P0703:00 [L3 WITH TC].)
P0704:00	CPP switch input circuit problem	ON	OFF	2	CCM	C	×	(See 01-02B-225 DTC P0704:00 [L3 WITH TC].)
P0850:00	Neutral switch input circuit problem	ON	OFF	2	CCM	C	×	(See 01-02B-227 DTC P0850:00 [L3 WITH TC].)
P120F:00	Fuel pressure regulator excessive variation	OFF	OFF	1	CCM	C	×	(See 01-02B-229 DTC P120F:00 [L3 WITH TC].)
P1260:00	Immobilizer system problem	OFF	OFF	—	Other	C, O	—	(See 01-02B-230 DTC P1260:00 [L3 WITH TC].)
P144A:00	EVAP system purge vapor line restricted/blocked	ON	OFF	2	EVAP system	C	×	(See 01-02B-231 DTC P144A:00 [L3 WITH TC].)
P1450:00	Unable to bleed up fuel tank vacuum	ON	OFF	2	EVAP system	C	×	(See 01-02B-232 DTC P1450:00 [L3 WITH TC].)
P2004:00	Variable swirl shutter valve stuck open	ON	OFF	2	CCM	C, R	×	(See 01-02B-234 DTC P2004:00 [L3 WITH TC].)
P2006:00	Variable swirl shutter valve stuck closed	ON	OFF	2	CCM	C, R	×	(See 01-02B-237 DTC P2006:00 [L3 WITH TC].)
P2009:00	Variable swirl solenoid valve control circuit low input	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-240 DTC P2009:00 [L3 WITH TC].)
P2010:00	Variable swirl solenoid valve control circuit high input	ON	OFF	2	CCM	C, O, R	×	(See 01-02B-242 DTC P2010:00 [L3 WITH TC].)
P2088:00	OCV circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-244 DTC P2088:00 [L3 WITH TC].)
P2089:00	OCV circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-246 DTC P2089:00 [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P2096:00	Target A/F feedback system too lean	ON	OFF	2	Fuel system	C	×	(See 01-02B-248 DTC P2096:00 [L3 WITH TC].)
P2097:00	Target A/F feedback system too rich	ON	OFF	2	Fuel system	C	×	(See 01-02B-252 DTC P2097:00 [L3 WITH TC].)
P2100:00	Throttle valve actuator circuit open	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-255 DTC P2100:00 [L3 WITH TC].)
P2101:00	Throttle valve actuator circuit range/performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02B-258 DTC P2101:00 [L3 WITH TC].)
P2105:00	Throttle valve actuator control system-forced engine shutdown	ON	OFF	1	CCM	C, R	×	(See 01-02B-261 DTC P2105:00 [L3 WITH TC].)
P2107:00	Throttle valve actuator control module processor problem	ON	OFF	1	CCM	C, R	×	(See 01-02B-263 DTC P2107:00 [L3 WITH TC].)
P2108:00	Throttle valve actuator control module performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02B-264 DTC P2108:00 [L3 WITH TC].)
P2119:00	Throttle valve actuator control throttle body range/performance problem	ON	OFF	1	CCM	C, R	×	(See 01-02B-266 DTC P2119:00 [L3 WITH TC].)
P2122:00	APP sensor No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-267 DTC P2122:00 [L3 WITH TC].)
P2123:00	APP sensor No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-269 DTC P2123:00 [L3 WITH TC].)
P2126:00	APP sensor No.2 circuit range/performance problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-271 DTC P2126:00 [L3 WITH TC].)
P2127:00	APP sensor No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-274 DTC P2127:00 [L3 WITH TC].)
P2128:00	APP sensor No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-276 DTC P2128:00 [L3 WITH TC].)
P2135:00	TP sensor No.1/No.2 voltage correlation problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-278 DTC P2135:00 [L3 WITH TC].)
P2138:00	APP sensor No.1/No.2 voltage correlation problem	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-279 DTC P2138:00 [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
P2183:00	ECT sensor No.2 circuit range/performance problem	ON	OFF	2	Engine cooling system	C	×	(See 01-02B-280 DTC P2183:00 [L3 WITH TC].)
P2195:00	A/F sensor signal stuck lean	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02B-281 DTC P2195:00 [L3 WITH TC].)
P2196:00	A/F sensor signal stuck rich	ON	OFF	2	A/F sensor, HO2S	C	×	(See 01-02B-283 DTC P2196:00 [L3 WITH TC].)
P2228:00	BARO sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-284 DTC P2228:00 [L3 WITH TC].)
P2229:00	BARO sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-285 DTC P2229:00 [L3 WITH TC].)
P2237:00	A/F sensor positive current control circuit open	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-286 DTC P2237:00 [L3 WITH TC].)
P2243:00	A/F sensor reference voltage circuit open	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-288 DTC P2243:00 [L3 WITH TC].)
P2245:00	A/F sensor reference voltage circuit low input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-290 DTC P2245:00 [L3 WITH TC].)
P2246:00	A/F sensor reference voltage circuit high input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-292 DTC P2246:00 [L3 WITH TC].)
P2251:00	A/F sensor negative current control circuit open	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See 01-02B-294 DTC P2251:00 [L3 WITH TC].)
P2502:00	Charging system voltage problem	OFF	ON	1	Other	C, R	×	(See 01-02B-296 DTC P2502:00 [L3 WITH TC].)
P2503:00	Charging system voltage low	OFF	ON	1	Other	C, R	×	(See 01-02B-298 DTC P2503:00 [L3 WITH TC].)
P2504:00	Charging system voltage high	OFF	ON	1	Other	C, R	×	(See 01-02B-300 DTC P2504:00 [L3 WITH TC].)
P2507:00	PCM battery voltage low	ON	OFF	1	CCM	C, O, R	×	(See 01-02B-302 DTC P2507:00 [L3 WITH TC].)
P2610:00	PCM internal engine off timer performance problem	ON	OFF	2	CCM	C	×	(See 01-02B-303 DTC P2610:00 [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item	Self test type*1	Memory function	Page
U0073:00	CAN system communication error	OFF	OFF	1	Other	C, O, R	×	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0121:00	Communication error to DSC HU/CM	ON	OFF	1	Other	C, O, R	×	
U0131:00	Lost communication with EHPAS control module	OFF	OFF	1	Other	C, O, R	×	
U0140:00	Lost communication with BCM	OFF	OFF	1	Other	C, O, R	×	
U0155:00	Communication error to instrument cluster	ON	OFF	1	Other	C, O, R	×	
U3000:41	PCM processor error	OFF	OFF	—	Other	C, O	—	(See 01-02B-304 DTC U3000:41 [L3 WITH TC].)

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- *1 : C; CMDTC self test, O; KOEO self test, R; KOER self test
- *2 : The fuel cap warning light illuminates
- *3 : With cruise control system
- *4 : California emission regulation applicable model
- *5 : KOER self test

DTC P0011:00 [L3 WITH TC]

id010239700100

DTC P0011:00	CMP timing over-advanced
DETECTION CONDITION	<ul style="list-style-type: none"> Actual valve timing is over-advanced by 17 ° (when the following conditions are met) from the target valve timing when the OCV is controlled at the maximum valve timing retard condition. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: below 4,000 rpm — Engine coolant temperature: 60—110 °C {140—230 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Loose timing chain or improper valve timing due to timing chain slippage OCV malfunction Spool valve in OCV is stuck in advance position Variable valve timing mechanism not installed correctly Variable valve timing actuator is stuck in advance position PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY TIMING CHAIN INSTALLATION <ul style="list-style-type: none"> • Stop the engine. • Remove the timing chain cover. • Is the camshaft timing mark at the correct point? 	Yes	Go to the next step.
		No	Reinstall the timing chain, then go to Step 7. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
4	INSPECT OCV <ul style="list-style-type: none"> • Inspect the OCV. (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the OCV, then go to Step 7. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT STOPPER PIN MECHANISM <ul style="list-style-type: none"> • Remove the timing chain. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].) • Inspect the stopper pin mechanism. (See 01-10B-13 VARIABLE VALVE TIMING ACTUATOR INSPECTION [L3 WITH TC].) • Is the stopper pin mechanism normal? 	Yes	Go to the next step.
		No	Replace the variable valve timing actuator, then go to Step 7. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT ROTOR POSITION <ul style="list-style-type: none"> • Remove the variable valve timing actuator. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].) • Is the rotor position at the maximum valve timing retard? 	Yes	Variable valve timing mechanism is normal. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed using the cleaning mode of the variable valve timing control function. Go to the next step.
		No	Replace the variable valve timing actuator, then go to the next step. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0012:00 [L3 WITH TC]

id010239700200

DTC P0012:00	CMP timing over-retarded
DETECTION CONDITION	<ul style="list-style-type: none"> • Actual valve timing is over-retarded by 10 ° (when the following conditions are met) from the target valve timing for 5 s when the OCV system control is within the feed-back range. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: below 4,000 rpm — Engine coolant temperature: 60—110 °C {140—230 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Low engine oil pressure • Loose timing chain or improper valve timing due to timing chain slippage • OCV malfunction • Spool valve in OCV is stuck in retard position • Variable valve timing actuator is stuck in retard position • Following oil runners are clogged or have leakage: <ul style="list-style-type: none"> — Between oil pressure switch and OCV — Between OCV and variable valve timing actuator — In variable valve timing actuator • PCM malfunction

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P2088:00 or P2089:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-244 DTC P2088:00 [L3 WITH TC].) (See 01-02B-246 DTC P2089:00 [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY ENGINE OIL PRESSURE <ul style="list-style-type: none"> • Start the engine. • Does the oil pressure warning light illuminate? 	Yes	Inspect the engine oil pressure. (See 01-11B-4 OIL PRESSURE INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.
		No	Go to the next step.
5	VERIFY TIMING CHAIN INSTALLATION <ul style="list-style-type: none"> • Stop the engine. • Remove the timing chain cover. • Is the camshaft timing mark at the correct point? 	Yes	Go to the next step.
		No	Reinstall the timing chain, then go to Step 10. (See 01-10B-23 TIMING CHAIN REMOVAL/ INSTALLATION [L3 WITH TC].)
6	INSPECT OCV <ul style="list-style-type: none"> • Inspect the OCV. (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the OCV, then go to Step 10. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
7	INSPECT STOPPER PIN MECHANISM <ul style="list-style-type: none"> • Remove the timing chain. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].) • Inspect the stopper pin mechanism. (See 01-10B-13 VARIABLE VALVE TIMING ACTUATOR INSPECTION [L3 WITH TC].) • Is the stopper pin mechanism normal? 	Yes	Go to the next step.
		No	Replace the variable valve timing actuator, then go to Step 10. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
8	INSPECT ROTOR POSITION <ul style="list-style-type: none"> • Remove the variable valve timing actuator. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].) • Is the rotor position at the maximum valve timing retard? 	Yes	Replace the variable valve timing actuator, then go to Step 10. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Variable valve timing mechanism is normal. Note <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed using the cleaning mode of the variable valve timing control function. Go to the next step.
9	INSPECT ENGINE OIL RUNNER <ul style="list-style-type: none"> • Inspect the following engine oil runners for clogging or leakage: <ul style="list-style-type: none"> — Between oil pressure switch and OCV — Between OCV and variable valve timing actuator — In the variable valve timing actuator • Is there any clogging or leakage? 	Yes	Repair or replace the suspected runner, then go to the next step.
		No	Variable valve timing mechanism is normal. Note <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed using the cleaning mode of the variable valve timing control function. Go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0016:00 [L3 WITH TC]

id010239145600

01-02B

DTC P0016:00	CKP-CMP correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input pulses from the CKP sensor and CMP sensor. If the input pulse pick-up timing do not match each other, the PCM determines that the camshaft position does not coincide with the crankshaft position. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CMP sensor malfunction <ul style="list-style-type: none"> — Connector or terminals malfunction — Foreign material on CMP sensor — Damaged or scratched CMP sensor pulse wheel CKP sensor malfunction <ul style="list-style-type: none"> — Connector or terminals malfunction — Foreign material on CKP sensor — Damaged or scratched CKP sensor pulse wheel PCM connector or terminals malfunction Improper valve timing PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT CMP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the CMP sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 13.
		No	Go to the next step.
4	INSPECT CMP SENSOR FOR FOREIGN MATERIAL <ul style="list-style-type: none"> Visually inspect the CMP sensor for foreign materials. Is there any foreign material on the CMP sensor? 	Yes	Remove the foreign material from the CMP sensor, then go to Step 13.
		No	Go to the next step.
5	INSPECT CMP SENSOR PULSE WHEEL <ul style="list-style-type: none"> Visually inspect the CMP sensor pulse wheel. Is there any damage or scratching to the CMP sensor pulse wheel? 	Yes	Replace the CMP sensor pulse wheel, then go to Step 13. (See 01-10B-33 CYLINDER HEAD GASKET REPLACEMENT [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT CMP SENSOR <ul style="list-style-type: none"> Inspect the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the CMP sensor, then go to Step 13. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	INSPECT CKP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the CKP sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 13.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
8	INSPECT CKP SENSOR FOR FOREIGN MATERIAL <ul style="list-style-type: none"> • Visually inspect the CKP sensor for foreign materials. • Is there any foreign material on the CKP sensor? 	Yes	Remove the foreign material from the CKP sensor, then go to Step 13.
		No	Go to the next step.
9	INSPECT CKP SENSOR PULSE WHEEL <ul style="list-style-type: none"> • Visually inspect the CKP sensor pulse wheel. • Is there any damage or scratching to the CKP sensor pulse wheel? 	Yes	Replace the CKP sensor pulse wheel, then go to Step 13. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	INSPECT CKP SENSOR <ul style="list-style-type: none"> • Inspect the CKP sensor. (See 01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CKP sensor, then go to Step 13. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 13.
		No	Go to the next step.
12	INSPECT VALVE TIMING <ul style="list-style-type: none"> • Inspect the valve timing. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].) • Is there any malfunction? 	Yes	Adjust the valve timing properly, then go to the next step. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
13	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

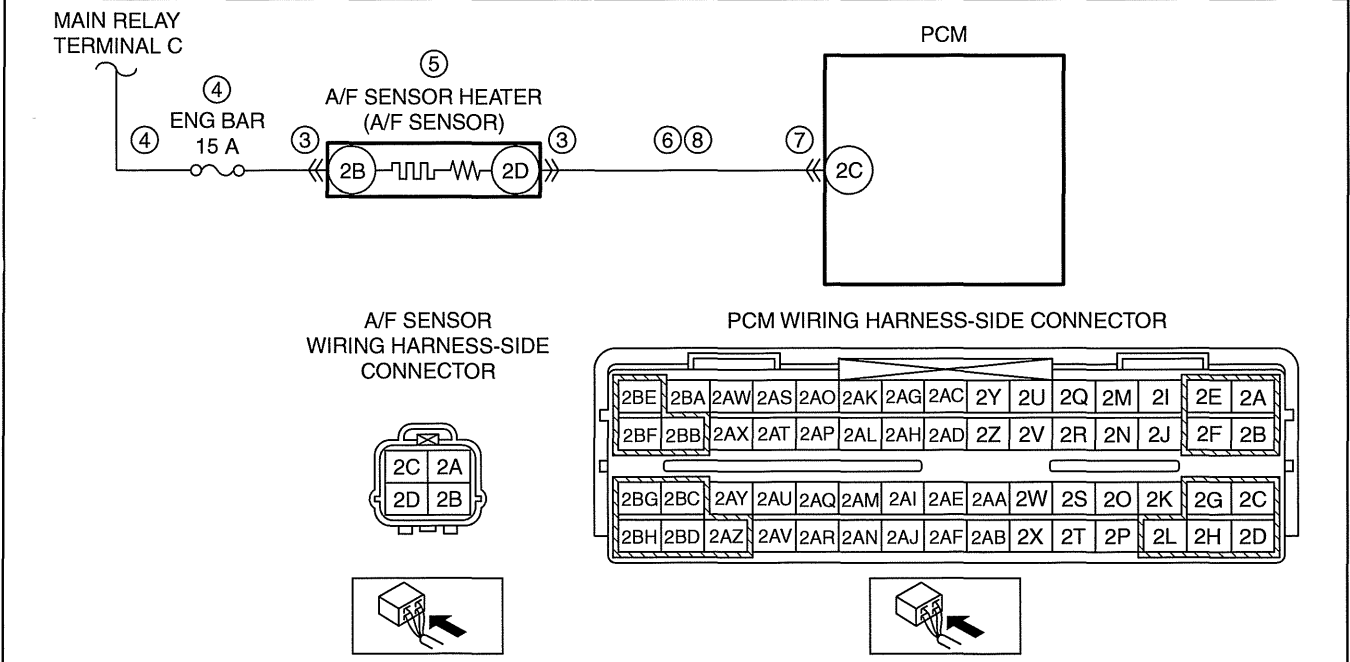
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0031:00 [L3 WITH TC]

id010239700400

01-02B

DTC P0031:00	A/F sensor heater control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor heater output voltage. If the PCM turns the A/F sensor heater off but the A/F sensor heater circuit remains low voltage, the PCM determines that the A/F sensor heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction Short to ground or open circuit in A/F sensor heater power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and A/F sensor terminal 2B — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and A/F sensor terminal 2B A/F sensor heater malfunction Short to ground in wiring harness between A/F sensor terminal 2D and PCM terminal 2C PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal 2D and PCM terminal 2C PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
4	INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the A/F sensor terminal 2B (wiring harness-side). • Is the voltage B+? 	Yes Go to the next step.
		No Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the A/F sensor heater. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 9. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Inspect for continuity between A/F sensor terminal 2D (wiring harness-side) and body ground. • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
8	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal 2D (wiring harness-side) and PCM terminal 2C (wiring harness-side). • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

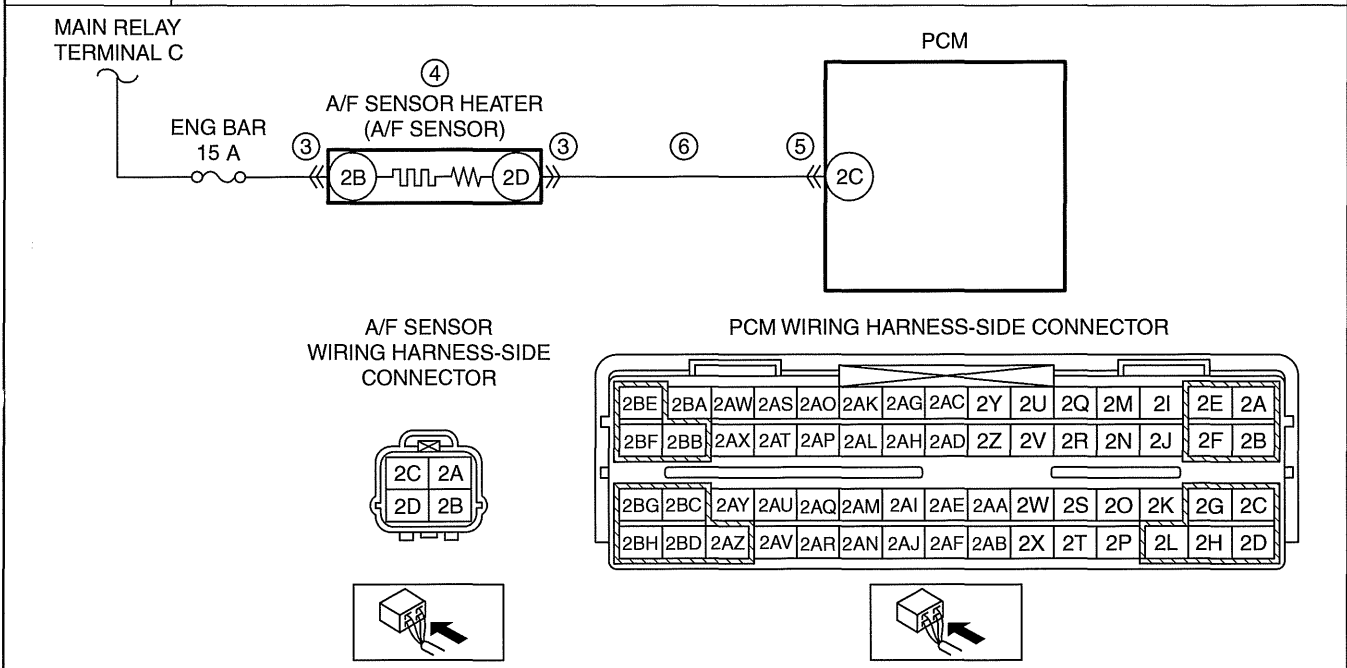
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0032:00 [L3 WITH TC]

id010239700500

01-02B

DTC P0032:00	A/F sensor heater control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor heater output voltage. If the PCM turns the A/F sensor heater on but the A/F sensor heater circuit remains high voltage, the PCM determines that the A/F sensor heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction A/F sensor heater malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between A/F sensor terminal 2D and PCM terminal 2C PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 7. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the A/F sensor terminal 2D (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

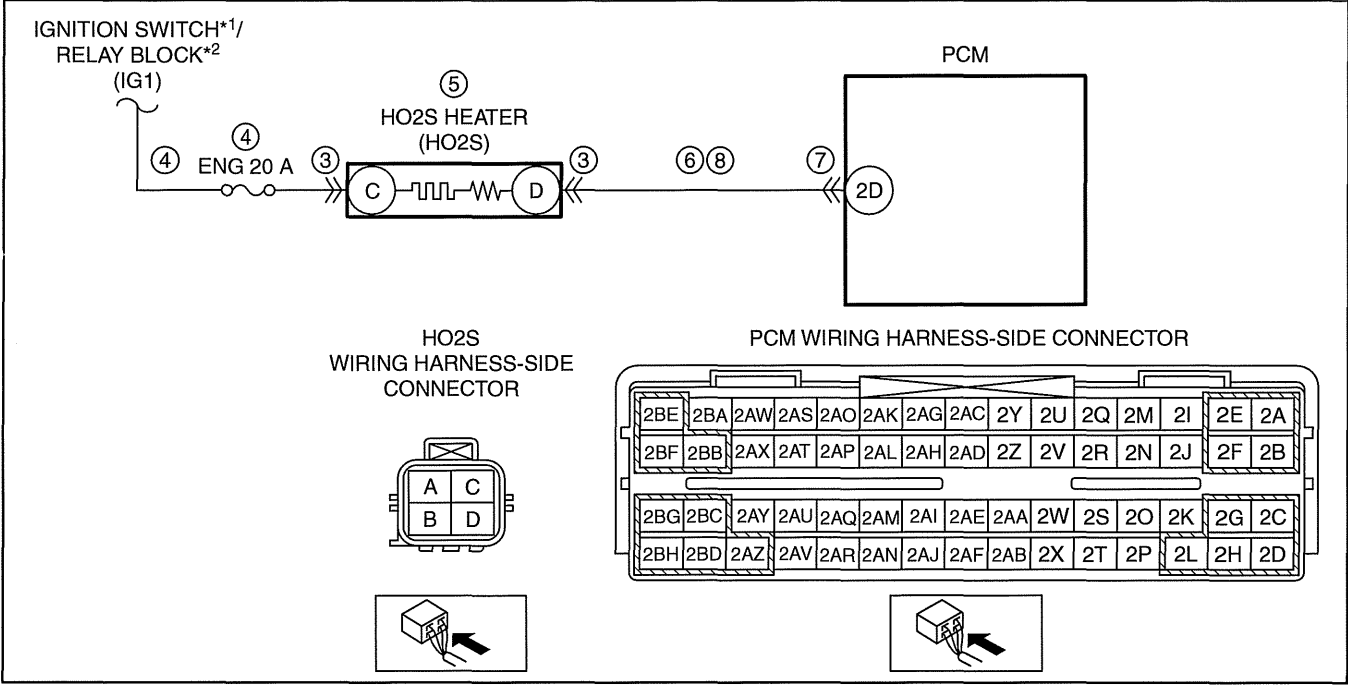
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0037:00 [L3 WITH TC]

id010239700600

01-02B

DTC P0037:00	HO2S heater control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the HO2S heater output voltage. If the PCM turns the HO2S heater on or off but the HO2S heater circuit voltage remains low the PCM determines that the HO2S heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction Short to ground or open circuit in HO2S heater power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between ignition switch (IG1)^{*1}/relay block^{*2} and HO2S terminal C — ENG 20 A fuse malfunction — Open circuit in wiring harness between ignition switch (IG1)^{*1}/relay block^{*2} and HO2S terminal C HO2S heater malfunction Short to ground in wiring harness between HO2S terminal D and PCM terminal 2D PCM connector or terminals malfunction Open circuit in wiring harness between HO2S terminal D and PCM terminal 2D PCM malfunction



*1 : Vehicles without advanced keyless entry and push button start system
 *2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT HO2S HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the HO2S terminal C (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG 20 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT HO2S HEATER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the HO2S heater. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 9. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Inspect for continuity between HO2S terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT HO2S HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Inspect for continuity between HO2S terminal D (wiring harness-side) and PCM terminal 2D (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

01-02B

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0038:00 [L3 WITH TC]

id010239700700

DTC P0038:00	HO2S heater control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the HO2S heater output voltage. If the PCM turns the HO2S heater off but the HO2S heater circuit voltage remains high the PCM determines that the HO2S heater circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction HO2S heater malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between HO2S terminal D and PCM terminal 2D PCM malfunction
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>IGNITION SWITCH*1/ RELAY BLOCK*2 (IG1)</p> </div> <div style="width: 45%; text-align: center;"> <p>PCM</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>HO2S WIRING HARNESS-SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>PCM WIRING HARNESS-SIDE CONNECTOR</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> </div>	

*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT HO2S HEATER <ul style="list-style-type: none"> • Inspect the HO2S heater. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 7. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the HO2S terminal D (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

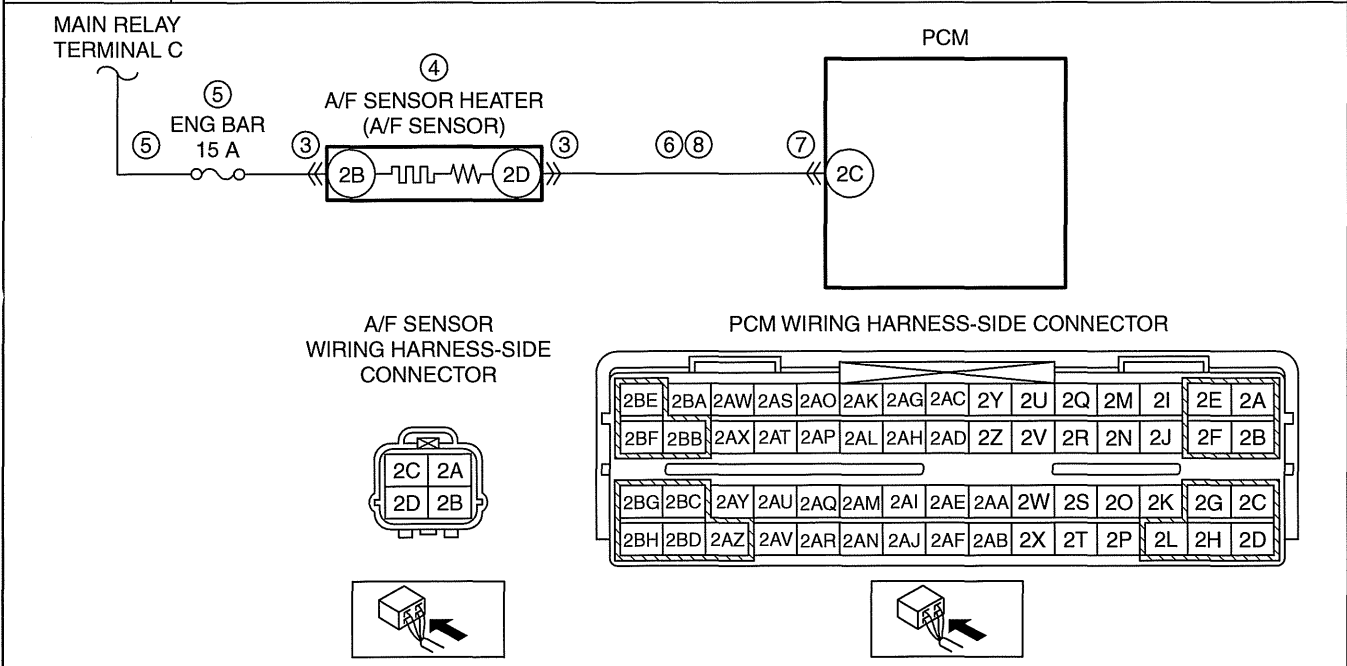
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0053:00 [L3 WITH TC]

id010239933800

01-02B

DTC P0053:00	A/F sensor heater resistance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor heater resistance when under the A/F sensor heater control. If the resistance is more than 30 ohms, the PCM determines that there is a A/F sensor circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction A/F sensor heater malfunction Short to ground or open circuit in A/F sensor heater power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and A/F sensor terminal 2B — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and A/F sensor terminal 2B Short to ground in wiring harness between A/F sensor terminal 2D and PCM terminal 2C PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal 2D and PCM terminal 2C PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 9. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the A/F sensor terminal 2B (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between A/F sensor terminal 2D (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between A/F sensor terminal 2D (wiring harness-side) and PCM terminal 2C (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

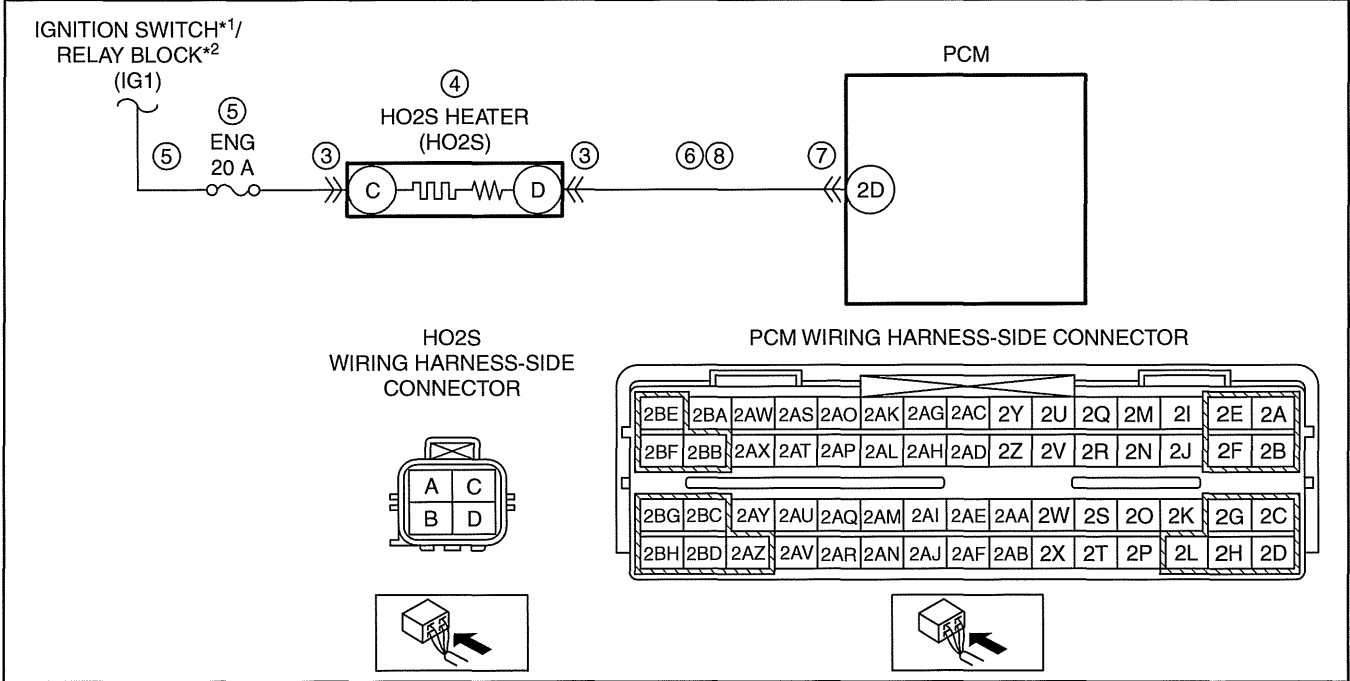
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0054:00 [L3 WITH TC]

id010239933900

01-02B

DTC P0054:00	HO2S heater resistance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the HO2S heater resistance when under the HO2S heater control. If the resistance is more than 51 ohms, the PCM determines that there is a HO2S heater circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction HO2S heater malfunction Short to ground or open circuit in HO2S heater power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between ignition switch^{*1}/relay block^{*2} and HO2S terminal C — ENG 20 A fuse malfunction — Open circuit in wiring harness between ignition switch^{*1}/relay block^{*2} and HO2S terminal C Short to ground in wiring harness between HO2S terminal D and PCM terminal 2D PCM connector or terminals malfunction Open circuit in wiring harness between HO2S terminal D and PCM terminal 2D PCM malfunction



^{*1} : Vehicles without advanced keyless entry and push button start system
^{*2} : Vehicles with advanced keyless entry and push button start system

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT HO2S HEATER <ul style="list-style-type: none"> • Inspect the HO2S heater. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to Step 9. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT HO2S HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the HO2S terminal C (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG 20 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Switch the ignition to off. • Inspect for continuity between HO2S terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT HO2S HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Inspect for continuity between HO2S terminal D (wiring harness-side) and PCM terminal 2D (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0069:00 [L3 WITH TC]

id010239300000

DTC P0069:00	Manifold absolute pressure/atmospheric pressure correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors differences between intake manifold vacuum and atmospheric pressure. If the difference is below -12 kPa {-90 mmHg, -3.5 inHg} or above 12 kPa {90 mmHg, 3.5 inHg} when the following conditions are met, the PCM determines that there is a MAP sensor performance problem. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — 12—15 s from when ignition is turned off. — Intake air temperature: above -10 °C {14 °F} — Engine coolant temperature: above 70 °C {158 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • MAP sensor malfunction • BARO sensor (built-in PCM) malfunction • PCM malfunction

01-02B

Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0069:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P0107:00, P0108:00, P2228:00 or P2229:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-69 DTC P0107:00 [L3 WITH TC].) (See 01-02B-71 DTC P0108:00 [L3 WITH TC].) (See 01-02B-284 DTC P2228:00 [L3 WITH TC].) (See 01-02B-285 DTC P2229:00 [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT MAP SENSOR STUCK OPEN OR CLOSED <ul style="list-style-type: none"> • Inspect the MAP sensor. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to Step 7. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT BARO SENSOR <ul style="list-style-type: none"> • Inspect the BARO sensor. (See 01-40B-27 BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION				
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine and warm it up to the engine coolant temperature above 70 °C {158 °F}. • Switch the ignition to off above 15 s. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; text-align: center; vertical-align: top;">Yes</td> <td>Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)	No	Go to the next step.
Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)					
No	Go to the next step.					
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; text-align: center; vertical-align: top;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)					
No	DTC troubleshooting completed.					

DTC P0089:00 [L3 WITH TC]

id010239008900

DTC P0089:00	Fuel pressure regulator performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the actual fuel pressure (high-pressure side) using the fuel pressure sensor. The PCM compares the fuel pressure of the target that is calculated based on charging efficiency and engine speed and actual fuel pressure. The PCM detects that the difference of fuel pressures is above threshold or below threshold, the PCM determines that the spill valve control solenoid valve has a deterioration. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air suction in fuel line due to fuel runout • Improper operation of fuel pump speed control system • High pressure fuel pump connector or terminals malfunction • Fuel pressure sensor connector or terminals malfunction • PCM connector or terminals malfunction • Fuel pressure sensor malfunction • High pressure fuel pump malfunction • Spill valve control solenoid valve malfunction • Insufficient fuel pressure (low pressure line) • Fuel injector malfunction (fuel leakage) • Fuel pressure limiter malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE/DTC P0091:00, P0092:00, P0201:00, P0202:00, P0203:00, P0204:00 or P120F:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-49 DTC P0091:00 [L3 WITH TC].) (See 01-02B-51 DTC P0092:00 [L3 WITH TC].) (See 01-02B-127 DTC P0201:00 [L3 WITH TC].) (See 01-02B-129 DTC P0202:00 [L3 WITH TC].) (See 01-02B-131 DTC P0203:00 [L3 WITH TC].) (See 01-02B-133 DTC P0204:00 [L3 WITH TC].) (See 01-02B-229 DTC P120F:00 [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY WHETHER MALFUNCTION IS AIR SUCTION IN FUEL LINE BY FUEL RUNOUT OR ELSEWHERE <ul style="list-style-type: none"> Verify the fuel gauge indicator on instrument cluster. Does the fuel gauge indicate empty? 	Yes	Refill the fuel and warm up the engine, then go to the next step.
		No	Go to the next step.
5	VERIFY FUEL PUMP SPEED CONTROL OPERATION <ul style="list-style-type: none"> Perform the Fuel Pump Speed Control Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the fuel pump speed control operate properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
6	INSPECT HIGH PRESSURE FUEL PUMP CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the high pressure fuel pump connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 14.
		No	Go to the next step.
7	INSPECT FUEL PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the fuel pressure sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 14.
		No	Go to the next step.
8	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 14.
		No	Go to the next step.
9	VERIFY WHETHER MALFUNCTION IS IN HIGH PRESSURE FUEL LINE OR ELSEWHERE <ul style="list-style-type: none"> Reconnect all disconnected connectors. Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 13.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
10	VERIFY WHETHER MALFUNCTION IS IN FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> Is the vehicle acceleration performance normally? 	Yes	Go to the next step.
		No	Go to Step 12.
11	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 14. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 13.
12	VERIFY WHETHER MALFUNCTION IS IN HIGH PRESSURE FUEL PUMP OR FUEL PRESSURE LIMITER <ul style="list-style-type: none"> Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 14.
		No	Replace the fuel delivery pipe, then go to Step 14. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
13	INSPECT FUEL LINE PRESSURE (LOW PRESSURE LINE) <ul style="list-style-type: none"> Measure the fuel line pressure (low-pressure). (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification? 	Yes	Remove the fuel injector and visually inspect the fuel injector or leakage. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].) Replace the fuel injector if necessary, then go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

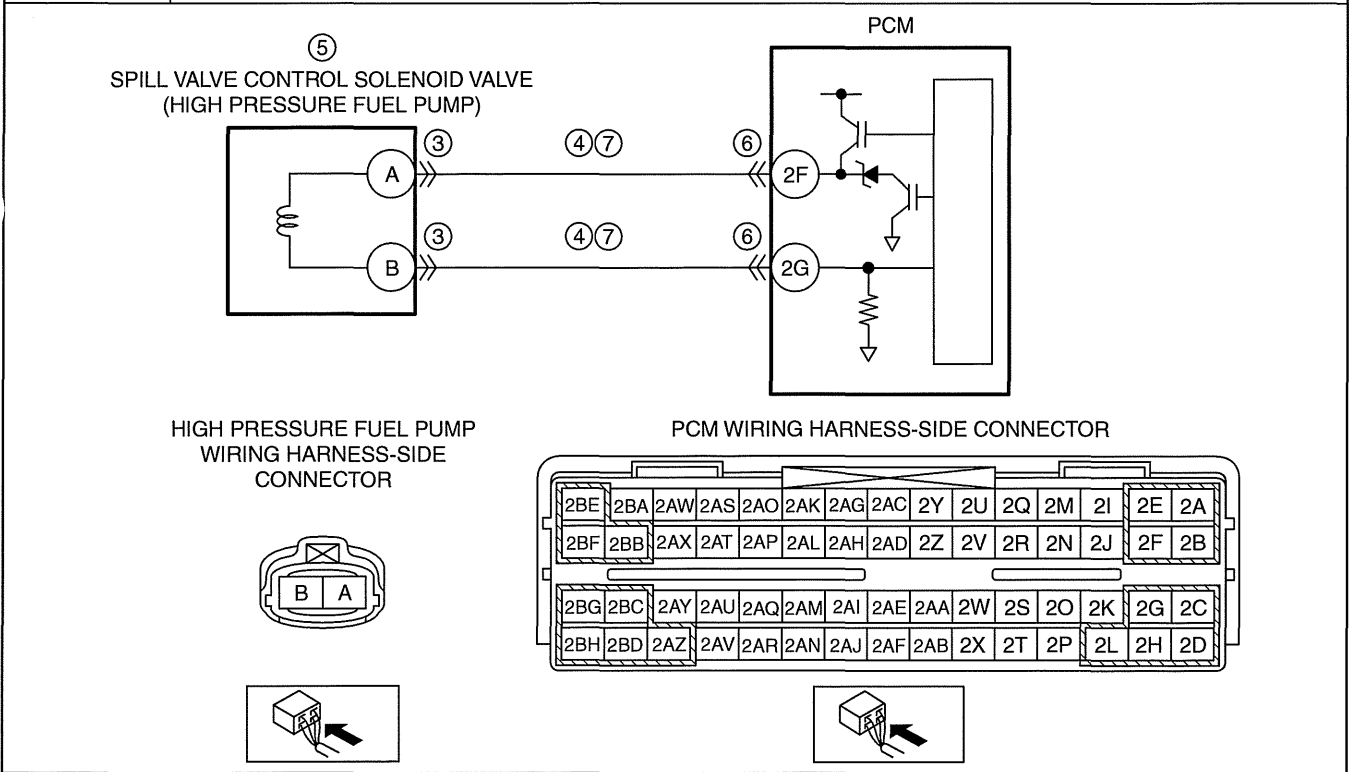
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0091:00 [L3 WITH TC]

id010239009100

01-02B

DTC P0091:00	<p>Fuel pressure regulator control circuit low input</p> <ul style="list-style-type: none"> When the PCM turns the spill valve control solenoid valve off but the spill valve control solenoid valve control circuit voltage is low for 5 s, the PCM determines that the spill valve control solenoid valve control circuit has a malfunction. <p>MONITORING CONDITIONS</p> <p>— The following conditions are met:</p> <ul style="list-style-type: none"> Engine speed: 3,000 rpm or less Battery voltage: 10 V or more <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
DETECTION CONDITION	
POSSIBLE CAUSE	<ul style="list-style-type: none"> High pressure fuel pump connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> High pressure fuel pump terminal A—PCM terminal 2F High pressure fuel pump terminal B—PCM terminal 2G Spill valve control solenoid valve malfunction PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> High pressure fuel pump terminal A—PCM terminal 2F High pressure fuel pump terminal B—PCM terminal 2G PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT HIGH PRESSURE FUEL PUMP CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the high pressure fuel pump connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT SPILL VALVE CONTROL SOLENOID VALVE CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • High pressure fuel pump connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — High pressure fuel pump terminal A — High pressure fuel pump terminal B • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No	Go to the next step.
5	INSPECT SPILL VALVE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the spill valve control solenoid valve. (See 01-14B-20 HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC].) • Is there any malfunction. 	Yes	Replace the high pressure fuel pump, then go to Step 8. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT SPILL VALVE CONTROL SOLENOID VALVE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • High pressure fuel pump and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — High pressure fuel pump terminal A—PCM terminal 2F — High pressure fuel pump terminal B—PCM terminal 2G • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

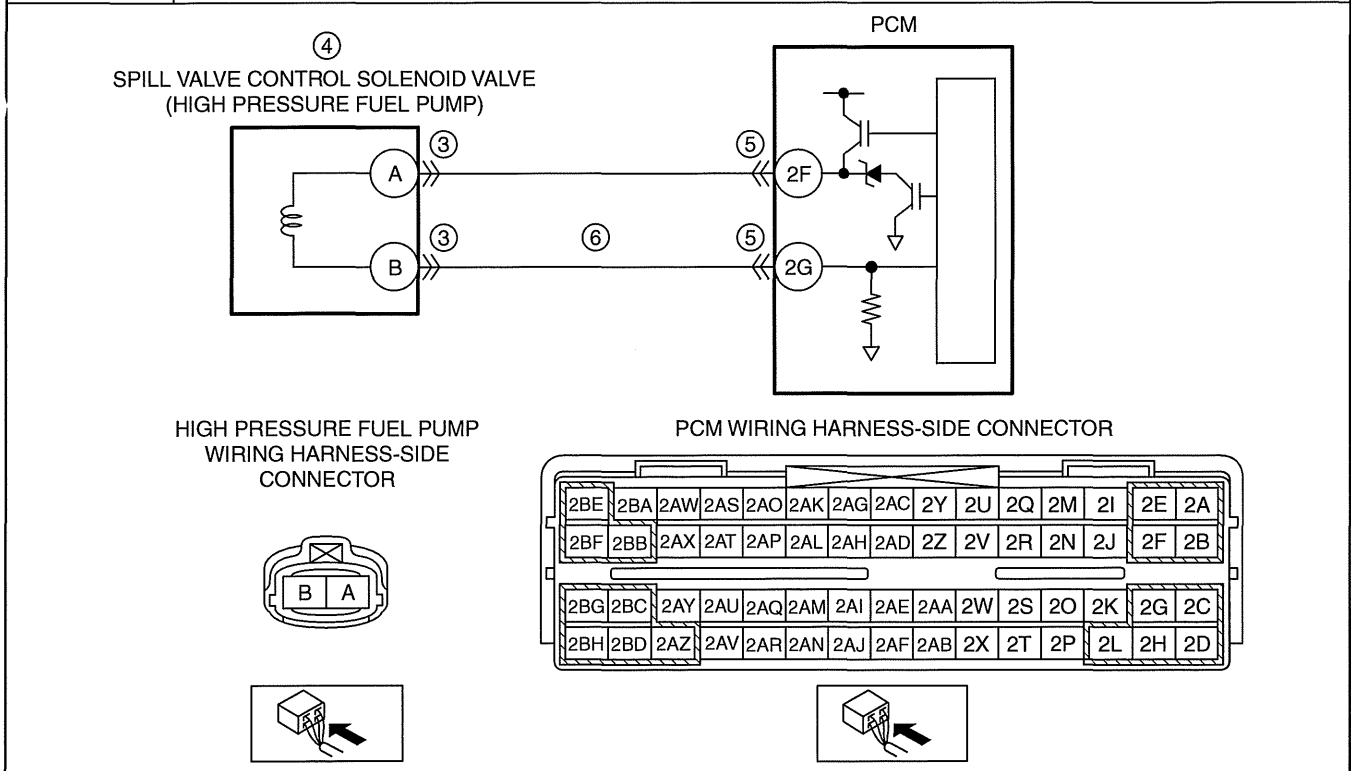
STEP	INSPECTION		ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0092:00 [L3 WITH TC]

id010239009200

01-02B

DTC P0092:00	Fuel pressure regulator control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> When the PCM turns the spill valve control solenoid valve on but the spill valve control solenoid valve circuit voltage is high for 5 s, the PCM determines that the spill valve control solenoid valve control circuit has a malfunction. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — The following conditions are met: <ul style="list-style-type: none"> Engine speed: 3,000 rpm or less Battery voltage: 10 V or more <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> High pressure fuel pump connector or terminals malfunction Spill valve control solenoid valve malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between high pressure fuel pump terminal B and PCM terminal 2G PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT HIGH PRESSURE FUEL PUMP CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the high pressure fuel pump connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT SPILL VALVE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the spill valve control solenoid valve. (See 01-14B-20 HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC].) • Is there any malfunction. 	Yes	Replace the high pressure fuel pump, then go to Step 7. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT SPILL VALVE CONTROL SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • High pressure fuel pump and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the high pressure fuel pump terminal B (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0096:00 [L3 WITH TC]

id010239146300

01-02B

DTC P0096:00	Boost air temperature sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> If the boost air temperature is higher than the engine coolant temperature by 23 °C {41.4 °F} for 1.2 s with the ignition switch is on*, the PCM determines that there is a boost air temperature sensor circuit range/performance problem. <p>*: Ignition switch on when 6 h or more has passed since the ignition was switched to off.</p> <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor/boost air temperature sensor connector or terminals malfunction Boost air temperature sensor malfunction ECT sensor No.1 malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAP SENSOR/BOOST AIR TEMPERATURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAP sensor/boost air temperature sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT BOOST AIR TEMPERATURE SENSOR <ul style="list-style-type: none"> Inspect the boost air temperature sensor. (See 01-40B-28 BOOST AIR TEMPERATURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to Step 7. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to Step 7. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.

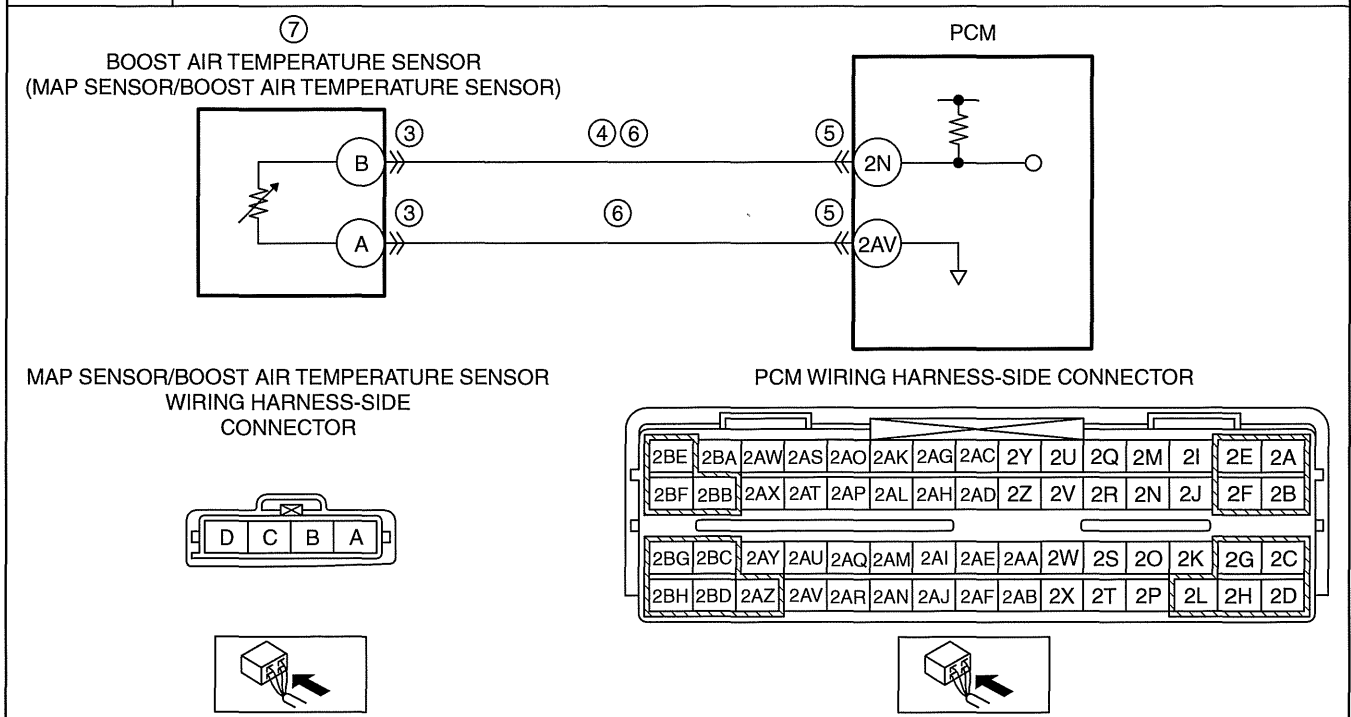
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and run it under the FREEZE FRAME DATA (Mode 2) condition. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0097:00 [L3 WITH TC]

id010239146400

DTC P0097:00	Boost air temperature sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the boost air temperature sensor voltage is 0.1 V or less for 5 s, the PCM determines that the boost air temperature sensor circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor/boost air temperature sensor connector or terminals malfunction Short to ground in wiring harness between MAP sensor/boost air temperature sensor terminal B and PCM terminal 2N Boost air temperature sensor malfunction PCM connector or terminals malfunction Boost air temperature sensor signal circuit and ground circuit are shorted to each other. PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAP SENSOR/BOOST AIR TEMPERATURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor/boost air temperature sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT BOOST AIR TEMPERATURE SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor connector is disconnected. • Inspect for continuity between MAP sensor/boost air temperature sensor terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT BOOST AIR TEMPERATURE SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Inspect for continuity between MAP sensor/boost air temperature sensor terminals B and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 8.
		No	Go to the next step.
7	INSPECT BOOST AIR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the boost air temperature sensor. (See 01-40B-28 BOOST AIR TEMPERATURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to the next step. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

01-02B

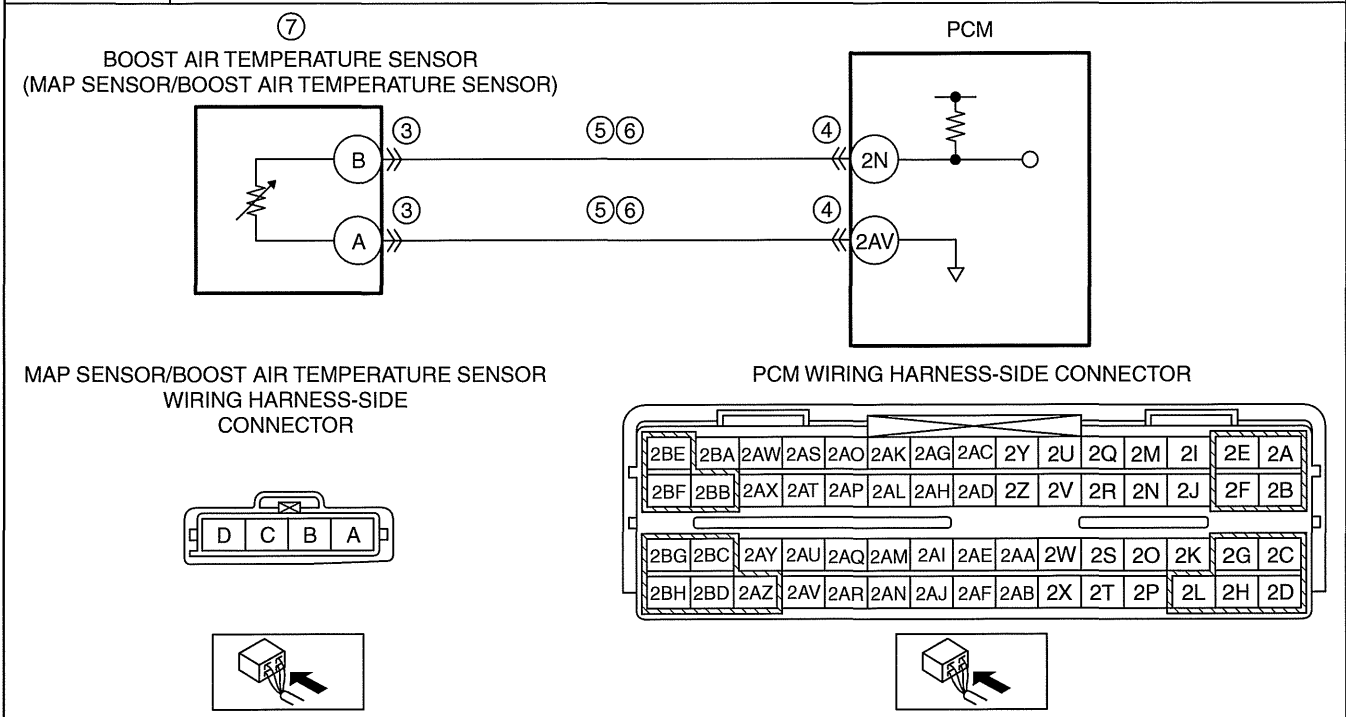
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0098:00 [L3 WITH TC]

id010239146500

DTC P0098:00	Boost air temperature sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the boost air temperature sensor voltage is 4.96 V or more for 5 s, the PCM determines that the boost air temperature sensor circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor/boost air temperature sensor connector or terminals malfunction Boost air temperature sensor malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal B—PCM terminal 2N — MAP sensor/boost air temperature sensor terminal A—PCM terminal 2AV Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal B—PCM terminal 2N — MAP sensor/boost air temperature sensor terminal A—PCM terminal 2AV PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAP SENSOR/BOOST AIR TEMPERATURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor/boost air temperature sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT BOOST AIR TEMPERATURE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal B — MAP sensor/boost air temperature sensor terminal A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT BOOST AIR TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal B—PCM terminal 2N — MAP sensor/boost air temperature sensor terminal A—PCM terminal 2AV • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT BOOST AIR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the boost air temperature sensor. (See 01-40B-28 BOOST AIR TEMPERATURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to the next step. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

01-02B

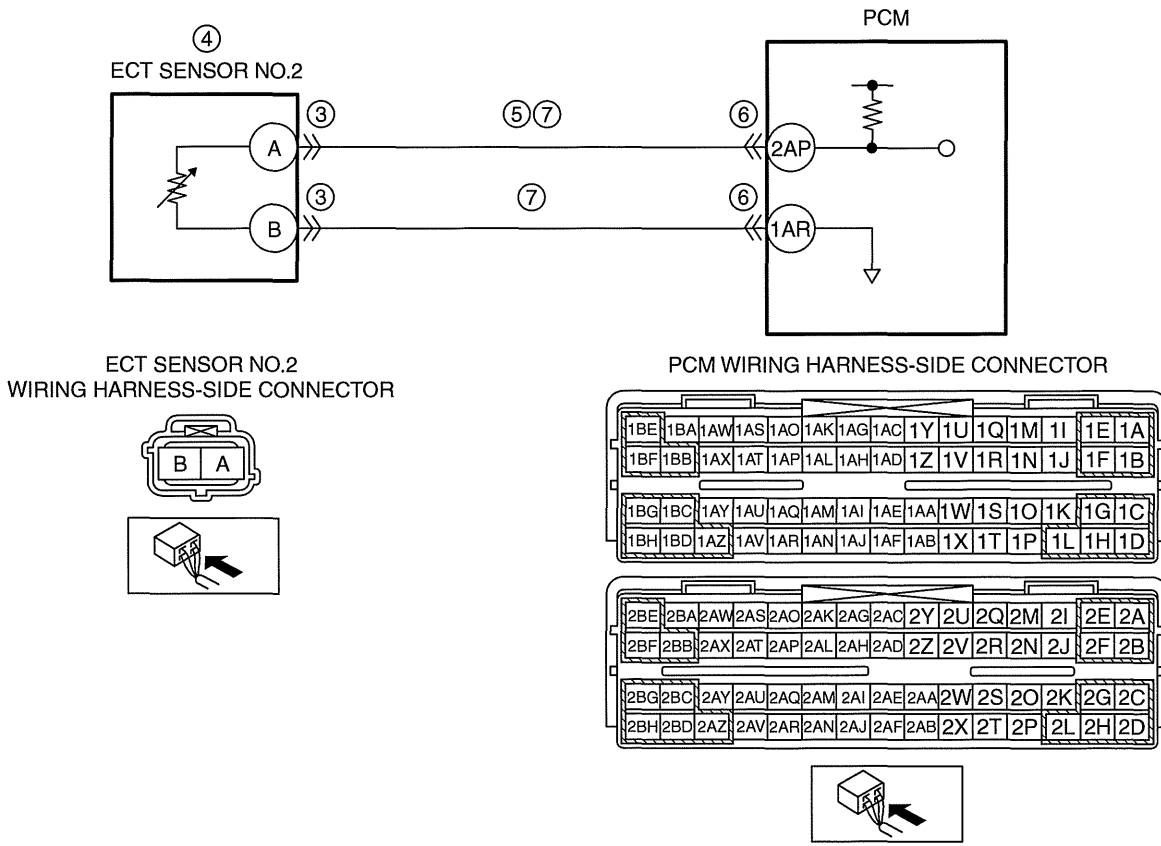
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P00B3:00 [L3 WITH TC]

id010239934000

DTC P00B3:00	ECT sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.2 signal. If the PCM detects that the ECT sensor No.2 voltage is below 0.25 V for 5 s, the PCM determines that the ECT sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.2 connector or terminals malfunction ECT sensor No.2 malfunction Short to ground in wiring harness between ECT sensor No.2 terminal A and PCM terminal 2AP PCM connector or terminals malfunction ECT sensor No.2 signal circuit and ground circuit are shorted to each other. PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.2 connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	CLASSIFY ECT SENSOR NO.2 MALFUNCTION OR WIRING HARNESS MALFUNCTION <ul style="list-style-type: none"> • Reconnect the ECT sensor No.2 connector. • Access the ECT2 PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Verify the ECT2 PID value when disconnecting the ECT sensor No.2 connector. • Is the ECT2 PID value change? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Replace the ECT sensor No.2, then go to Step 8. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT ECT SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Inspect for continuity between ECT sensor No.2 terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT ECT SENSOR NO.2 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Inspect for continuity between ECT sensor No.2 terminals A and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to the next step.
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

01-02B

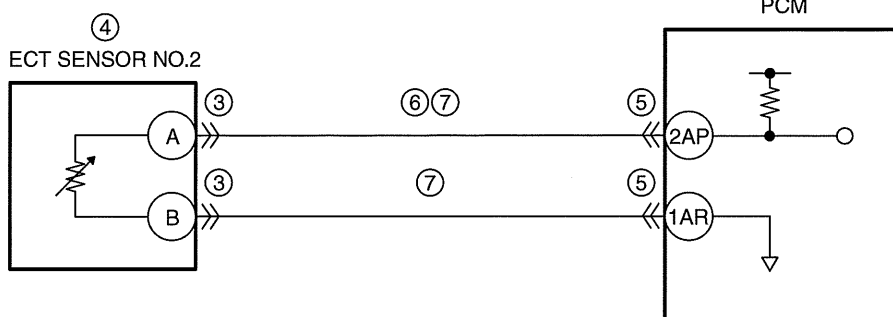
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

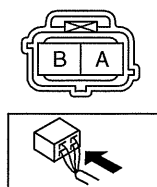
DTC P00B4:00 [L3 WITH TC]

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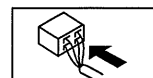
DTC P00B4:00	ECT sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.2 signal. If the PCM detects that the ECT sensor No.2 voltage is above 4.95 V for 5 s, the PCM determines that the ECT sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.2 connector or terminals malfunction ECT sensor No.2 malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between ECT sensor No.2 terminal A and PCM terminal 2AP Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — ECT sensor No.2 terminal A—PCM terminal 2AP — ECT sensor No.2 terminal B—PCM terminal 1AR PCM malfunction



ECT SENSOR NO.2
WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.2 connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	CLASSIFY ECT SENSOR NO.2 MALFUNCTION OR WIRING HARNESS MALFUNCTION <ul style="list-style-type: none"> • ECT sensor No.2 connector is disconnected. • Access the ECT2 PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Connect a jumper wire between ECT sensor No.2 terminals A and B (wiring harness-side). • Is the voltage 4.95 V or below? 	Yes	Replace the ECT sensor No.2, then go to Step 8. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the ECT sensor No.2 terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT ECT SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • ECT sensor No.2 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): — ECT sensor terminal A—PCM terminal 2AP — ECT sensor terminal B—PCM terminal 1AR • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION				
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)					
No	DTC troubleshooting completed.					

DTC P0101:00 [L3 WITH TC]

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DTC P0101:00	MAF sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • When the conditions are as follows, the PCM compares the intake airflow amount with the estimated intake airflow amount (calculated from the manifold absolute pressure, boost air temperature, intake air temperature, EGR position, purge flow rate and variable valve timing). <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: 500—4,500 rpm — Barometric pressure: 0—180 kPa {0—1.83 kgf/cm², 0—26.1 psi} — Throttle position—throttle position before 25 ms: below 1.22% (boost air temperature less than 20 °C {68 °F}), below 10% (boost air temperature more than 20 °C {68 °F}) — Battery voltage: above 8 V <ul style="list-style-type: none"> • If over a period continuing for 5 s, the differential value between the actual intake airflow amount and the estimated intake airflow amount is more than specified value, the PCM determines that the detected mass air flow amount is too high. • If over a period continuing for 5 s, the differential value between the actual intake airflow amount and the estimated intake airflow amount is less than specified value, the PCM determines that the detected mass air flow amount is too low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air restriction or leakage in intake-air system (between MAF sensor and intake manifold) • MAF sensor malfunction • Turbocharger malfunction (turbine wheel/compressor damaged, stuck) • MAF/IAT sensor connector or terminals malfunction • Electrical corrosion in MAF/IAT RETURN circuit • Voltage drops in ground circuit • PCM connector or terminals malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.</td> </tr> </table>	Yes	Go to the next step.	No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
Yes	Go to the next step.					
No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.					
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	No	Go to the next step.
Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 					
No	Go to the next step.					

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> — ECT — MAF — TP — RPM • Warm-up the engine until the ECT PID value is above 70 °C {158 °F}. • Idle the engine for 5 s or more. <ul style="list-style-type: none"> Caution <ul style="list-style-type: none"> • While driving, always operate the vehicle in a safe and lawful manner. • Drive the vehicle under the following two conditions: <ul style="list-style-type: none"> Condition 1 <ul style="list-style-type: none"> — TP PID: 50—87.5% — RPM PID: above 1,000 rpm — 4th gear Condition 2 <ul style="list-style-type: none"> — TP PID: above 80% — RPM PID: below 2,000 rpm — gear in • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the “INTERMITTENT CONCERN TROUBLESHOOTING” procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
4	INSPECT MAF PID <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Race the engine and verify that the MAF PID value changes quickly according to the change in the engine speed. • Is the MAF PID response normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 7.
		No	Go to the next step.
5	INSPECT AIR RESTRICTION OR LEAKAGE AT INTAKE-AIR SYSTEM <ul style="list-style-type: none"> • Inspect for air leakage and restrict between MAF sensor and intake manifold. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
		No	Go to the next step.
6	INSPECT TURBOCHARGER <ul style="list-style-type: none"> • Inspect the turbocharger. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the turbocharger, then go to Step 9. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Replace the MAF/IAT sensor, then go to Step 9. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
7	INSPECT MAF/IAT SENSOR TERMINALS FOR ELECTRICAL CORROSION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Inspect the MAF/IAT RETURN circuit and ground circuit. <ul style="list-style-type: none"> • If the circuit has a malfunction: <ul style="list-style-type: none"> — Repair or replace the suspected wiring harness, then go to Step 9. • If the circuit is normal: <ul style="list-style-type: none"> — Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
8	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine. • Warm-up the engine until the ECT PID value is above 70 °C {158 °F}. • Idle the engine for 5 s or more. Caution <ul style="list-style-type: none"> • While driving, always operate the vehicle in a safe and lawful manner. • Drive the vehicle under the following two conditions: Condition 1 <ul style="list-style-type: none"> — TP PID: 50—87.5% — RPM PID: above 1,000 rpm — 4th gear Condition 2 <ul style="list-style-type: none"> — TP PID: above 80% — RPM PID: below 2,000 rpm — gear in • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

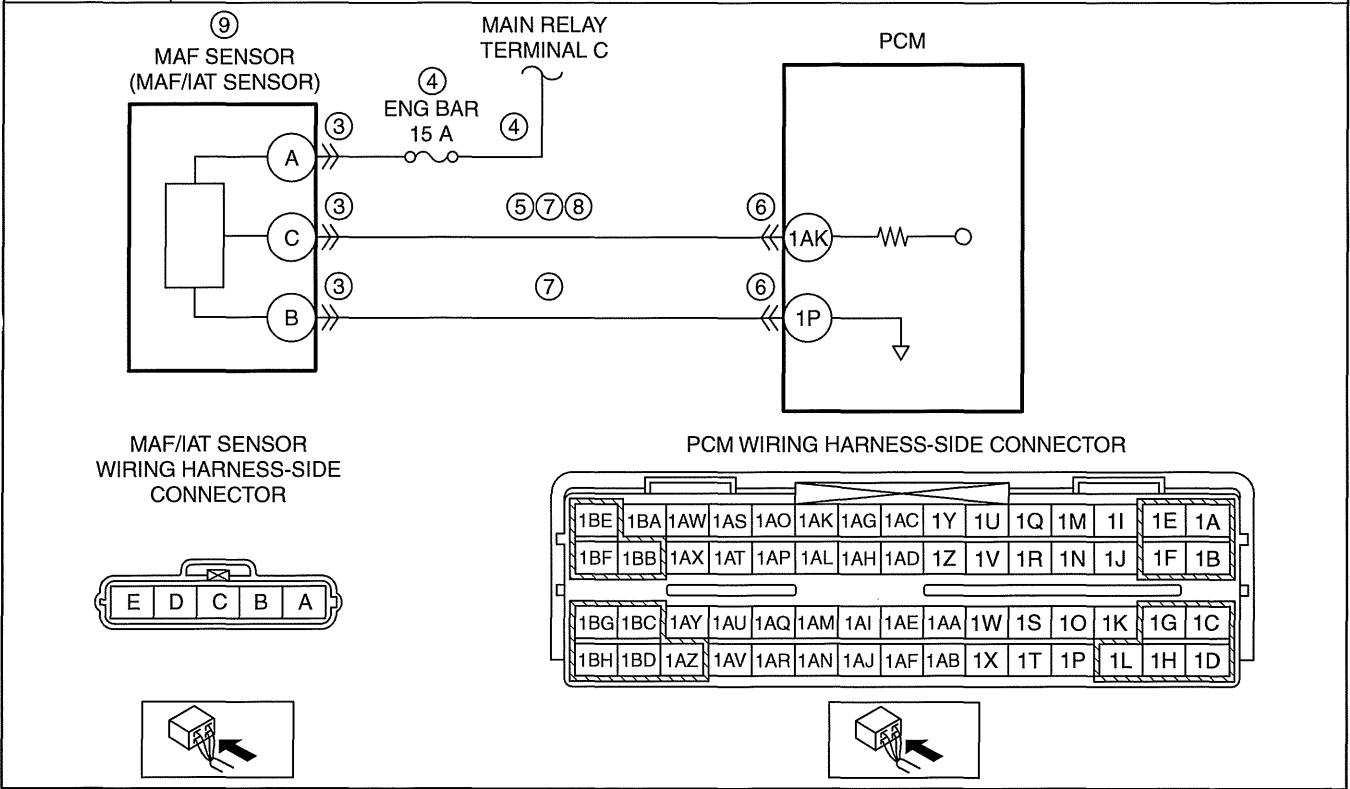
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0102:00 [L3 WITH TC]

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01-02B

DTC P0102:00	MAF sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the MAF sensor when the engine is running. If the input voltage is below 0.21 V for 5 s, the PCM determines that the MAF sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction Short to ground or open circuit in MAF sensor power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and MAF/IAT sensor terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and MAF/IAT sensor terminal A Short to ground in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK PCM connector or terminals malfunction MAF sensor signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK MAF sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
4	INSPECT MAF SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the MAF/IAT sensor terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 10.
5	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between MAF/IAT sensor terminal C (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 10.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
7	INSPECT MAF SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Inspect for continuity between MAF/IAT sensor terminals C and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 10.
		No	Go to the next step.
8	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Inspect for continuity between MAF/IAT sensor terminal C (wiring harness-side) and PCM terminal 1AK (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
9	INSPECT MAF SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the MAF sensor. (See 01-40B-26 MASS AIR FLOW (MAF) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

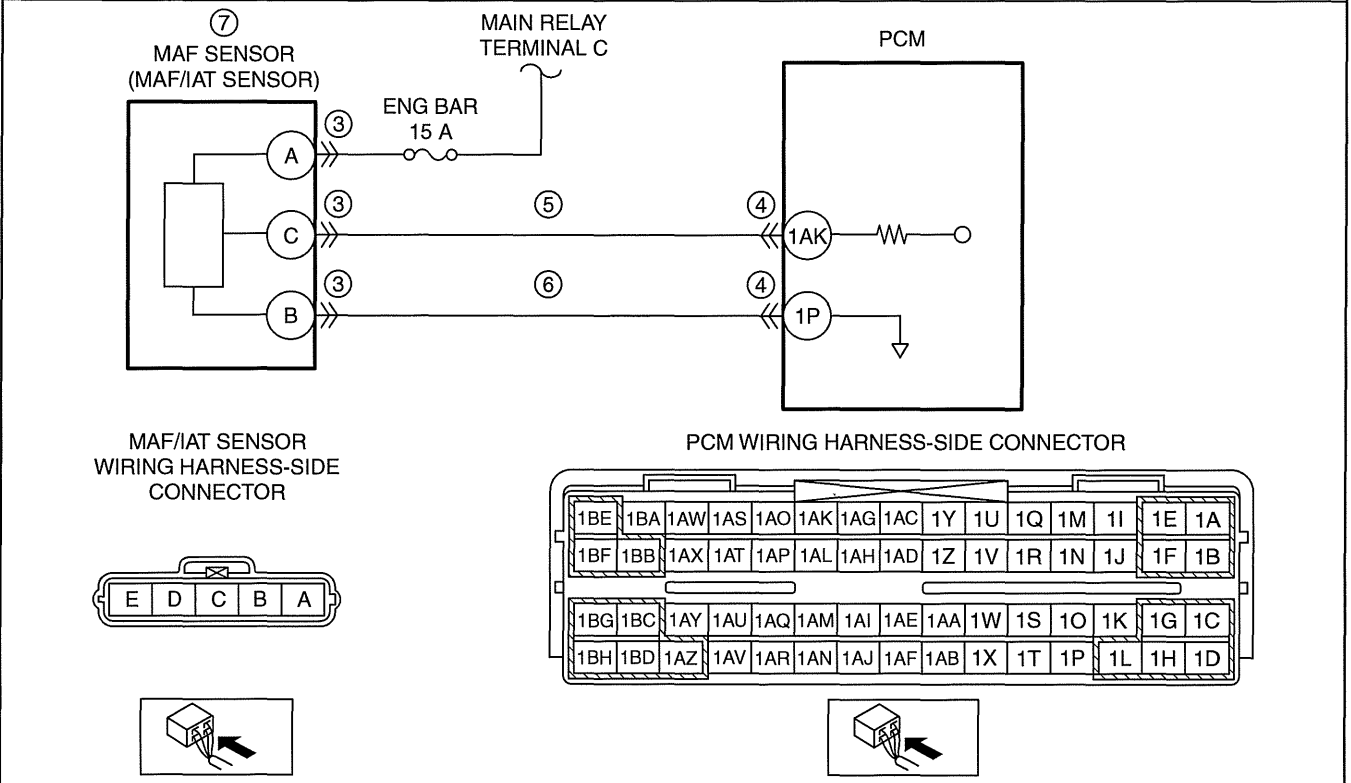
01-02B

STEP	INSPECTION		ACTION
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0103:00 [L3 WITH TC]

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DTC P0103:00	MAF sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the MAF sensor when the engine is running. If the input voltage is above 4.9 V for 5 s, the PCM determines that the MAF sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK Open circuit in wiring harness between MAF/IAT sensor terminal B and PCM terminal 1P MAF sensor malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the MAF/IAT sensor terminal C (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT MAF SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between MAF/IAT sensor terminal B (wiring harness-side) and PCM terminal 1P. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT MAF SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the MAF sensor. (See 01-40B-26 MASS AIR FLOW (MAF) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

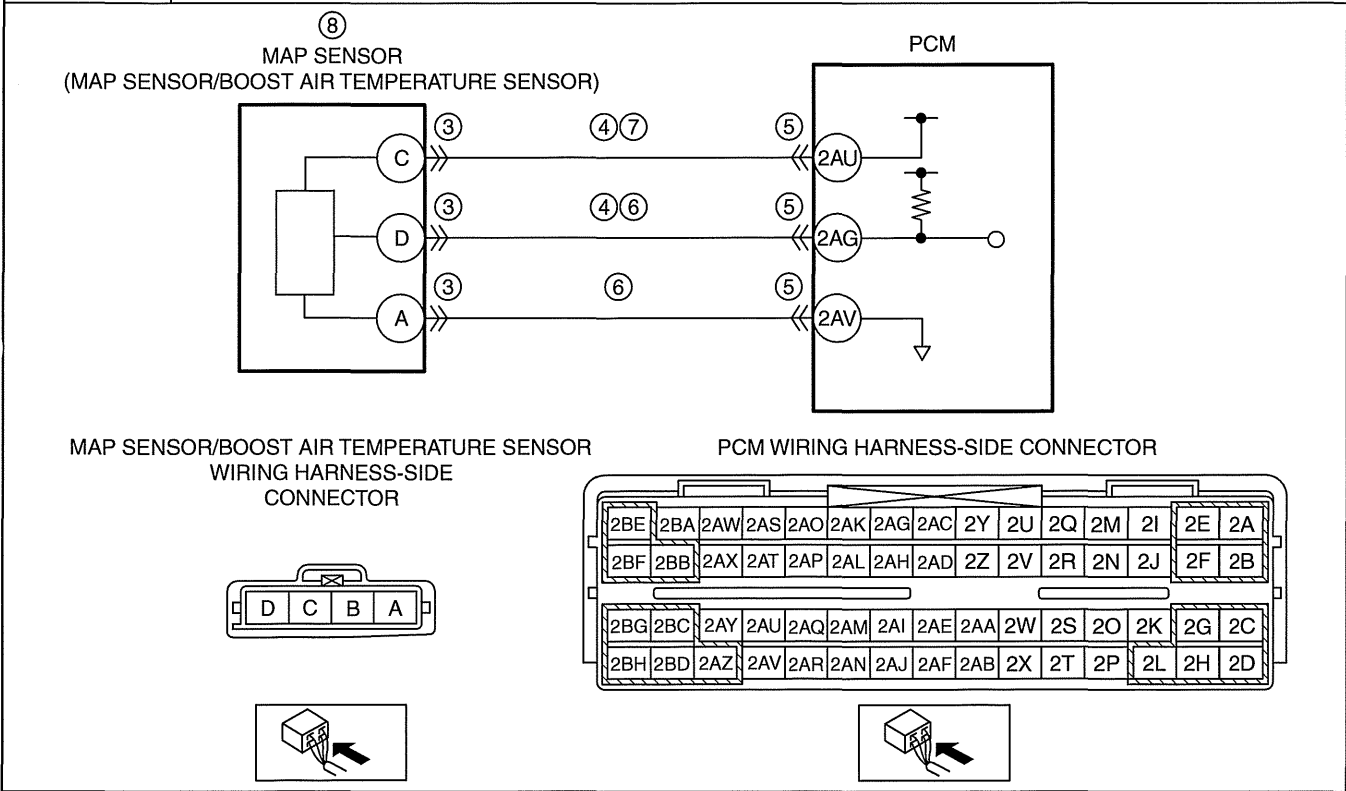
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0107:00 [L3 WITH TC]

id010239701100

01-02B

DTC P0107:00	MAP sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the MAP sensor. If the input voltage is below 0.1 V for 5 s, the PCM determines that the MAP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor/boost air temperature sensor connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal C—PCM terminal 2AU — MAP sensor/boost air temperature sensor terminal D—PCM terminal 2AG PCM connector or terminals malfunction MAP sensor signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between MAP sensor/boost air temperature sensor terminal C and PCM terminal 2AU MAP sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT MAP SENSOR/BOOST AIR TEMPERATURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor/boost air temperature sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT MAP SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal C — MAP sensor/boost air temperature sensor terminal D • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT MAP SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Inspect for continuity between MAP sensor/boost air temperature sensor terminals D and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT MAP SENSOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Inspect for continuity between MAP sensor/boost air temperature sensor terminal C (wiring harness-side) and PCM terminal 2AU (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the MAP sensor. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to the next step. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

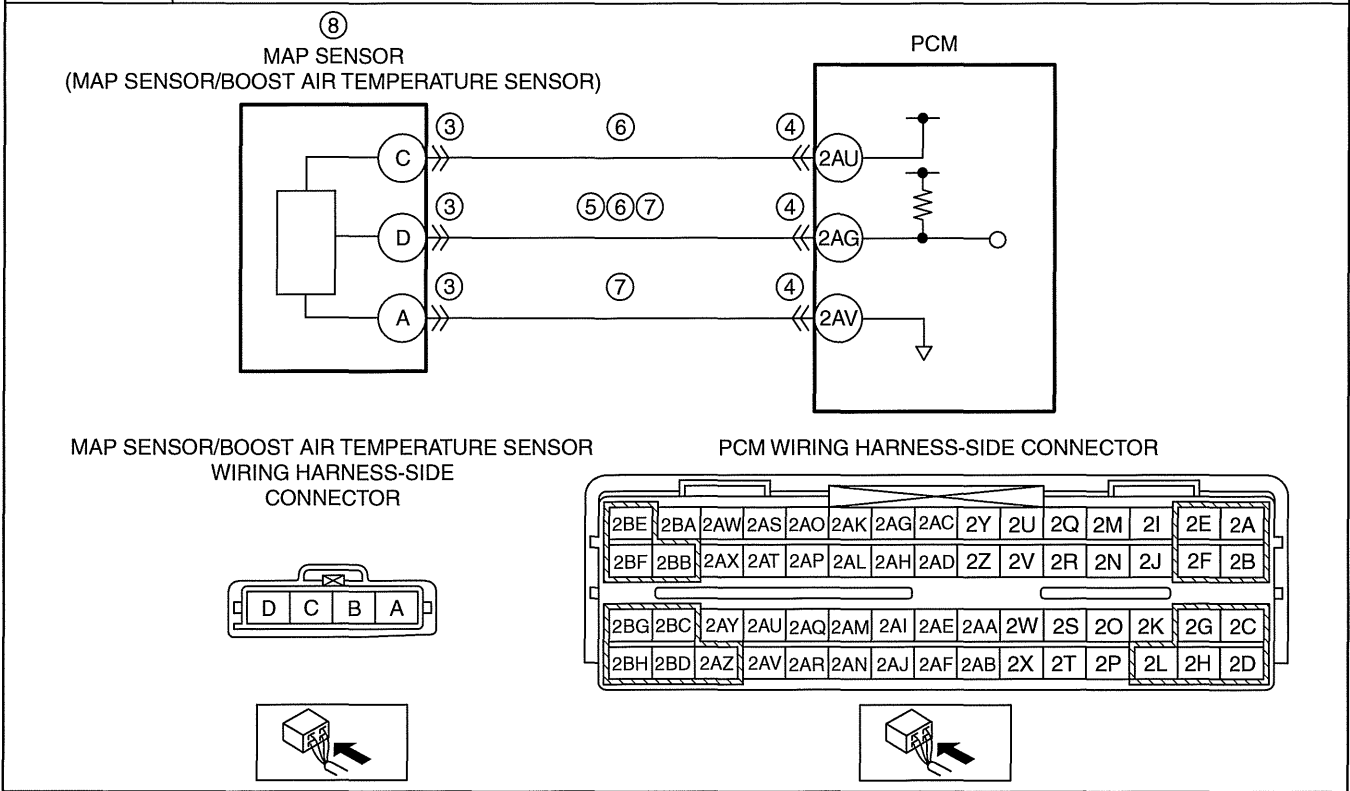
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0108:00 [L3 WITH TC]

id010239701200

01-02B

DTC P0108:00	MAP sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the MAP sensor. If the input voltage is above 4.92 V for 5 s, the PCM determines that the MAP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor/boost air temperature sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between MAP sensor/boost air temperature sensor terminal D and PCM terminal 2AG MAP sensor power supply circuit and signal circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal D—PCM terminal 2AG — MAP sensor/boost air temperature sensor terminal A—PCM terminal 2AV MAP sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT MAP SENSOR/BOOST AIR TEMPERATURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the MAP sensor/boost air temperature sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT MAP SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the MAP sensor/boost air temperature sensor terminal D (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT MAP SENSOR POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between MAP sensor/boost air temperature sensor terminals C and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT MAP SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAP sensor/boost air temperature sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — MAP sensor/boost air temperature sensor terminal D—PCM terminal 2AG — MAP sensor/boost air temperature sensor terminal A—PCM terminal 2AV • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the MAP sensor. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to the next step. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0111:00 [L3 WITH TC]

id010239701300

01-02B

DTC P0111:00	IAT sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> If the intake air temperature is higher than the engine coolant temperature by 18 °C {32 °F} for 1.2 s or the intake air temperature is lower than the engine coolant temperature by -48 °C {-86.4 °F} for 1.2 s with the ignition switch is ON*, the PCM determines that there is a IAT sensor circuit range/performance problem. <p>*: Ignition switch is ON when 6 h or more have passed since the ignition was switched to off.</p> <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction IAT sensor malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT IAT SENSOR <ul style="list-style-type: none"> Inspect the IAT sensor. (See 01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 6. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.

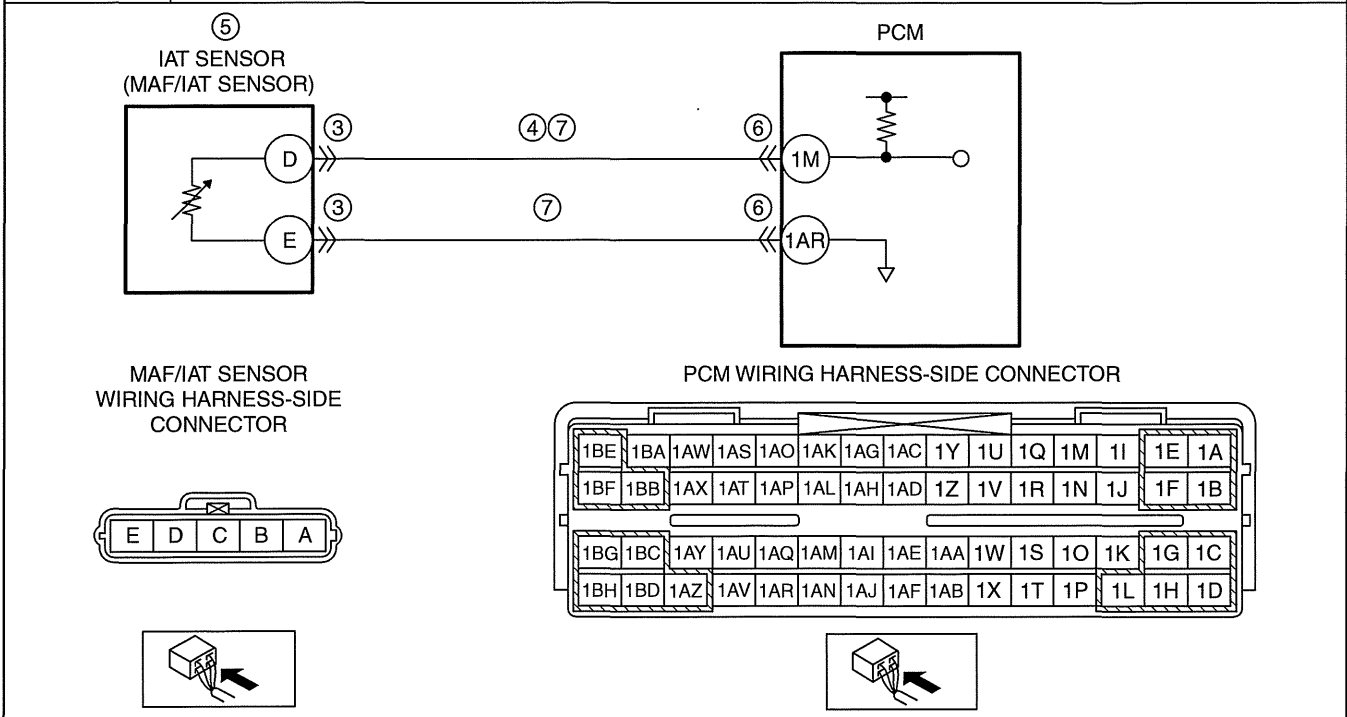
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and run the engine under the FREEZE FRAME DATA (Mode 2) condition. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0112:00 [L3 WITH TC]

id010239701400

DTC P0112:00	IAT sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the IAT sensor signal. If the PCM detects on the IAT sensor voltage is below 0.06 V for 5 s, the PCM determines that the IAT sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction Short to ground in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1M IAT sensor malfunction PCM connector or terminals malfunction IAT sensor signal circuit and ground circuit are shorted to each other. PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT IAT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> MAF/IAT sensor connector is disconnected. Inspect for continuity between MAF/IAT sensor terminal D (wiring harness-side) and body ground. Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No	Go to the next step.
5	INSPECT IAT SENSOR <ul style="list-style-type: none"> Inspect the IAT sensor. (See 01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 8. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT IAT SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> MAF/IAT sensor and PCM connectors are disconnected. Inspect for continuity between MAF/IAT sensor terminals D and E (wiring harness-side). Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to the next step.
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

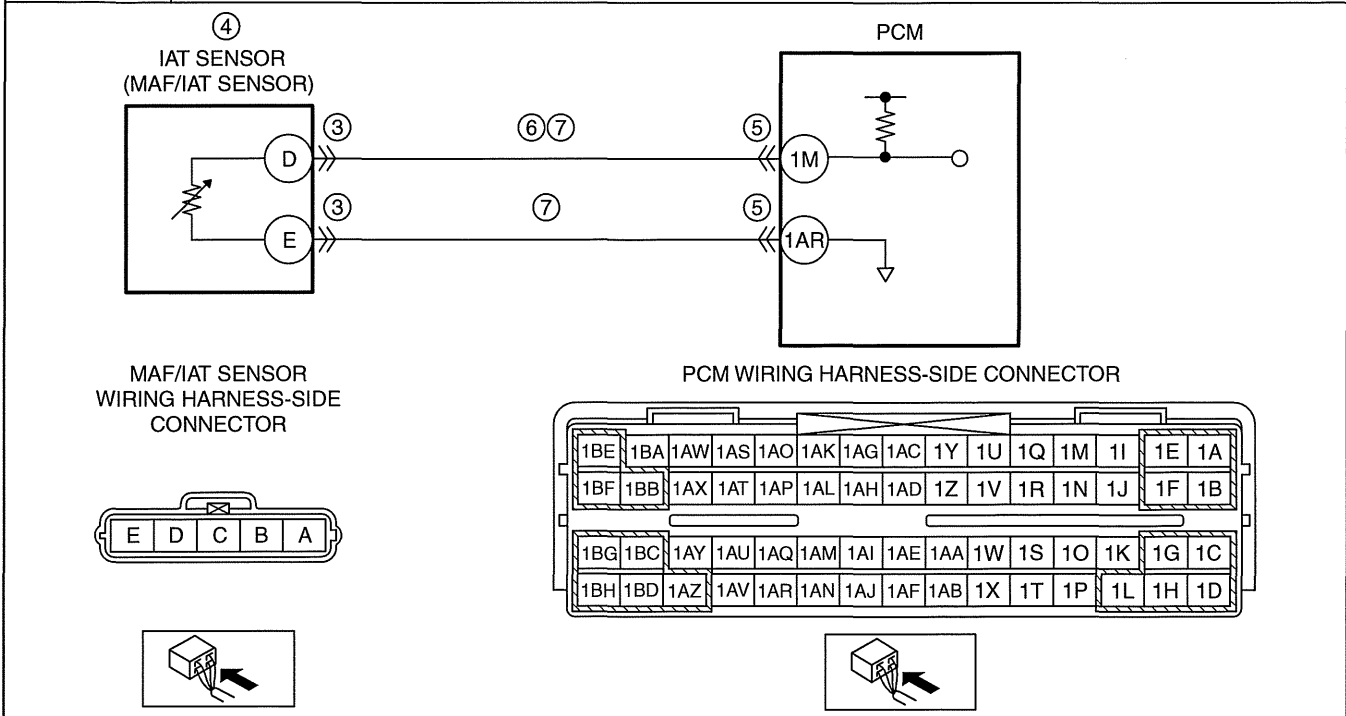
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0113:00 [L3 WITH TC]

id010239701500

DTC P0113:00	IAT sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the IAT sensor signal. If the PCM detected the IAT sensor voltage is above 4.9 V for 5 s, the PCM determines that the IAT sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction IAT sensor malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1M Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — MAF/IAT sensor terminal D—PCM terminal 1M — MAF/IAT sensor terminal E—PCM terminal 1AR PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. (See 01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 8. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT IAT SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the MAF/IAT sensor terminal D (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT IAT SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — MAF/IAT sensor terminal D—PCM terminal 1M — MAF/IAT sensor terminal E—PCM terminal 1AR • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0116:00 [L3 WITH TC]

Id010239146800

DTC P0116:00	ECT sensor No.1 circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the maximum value and the minimum value of the engine coolant temperature when the engine is started and 5 min have been passed after leaving the vehicle 6 h or more. If the difference between the maximum and the minimum values of the engine coolant temperature is below 6 °C {10.8 °F}, the PCM determines that there is an ECT sensor No.1 circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (engine cooling system). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ECT sensor No.1 connector or terminals malfunction • PCM connector or terminals malfunction • ECT sensor No.1 malfunction • Thermostat malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.1 connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
5	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to Step 7. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT THERMOSTAT <ul style="list-style-type: none"> • Cool down the engine. • Inspect the thermostat. (See 01-12B-12 THERMOSTAT INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the thermostat, then go to the next step. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

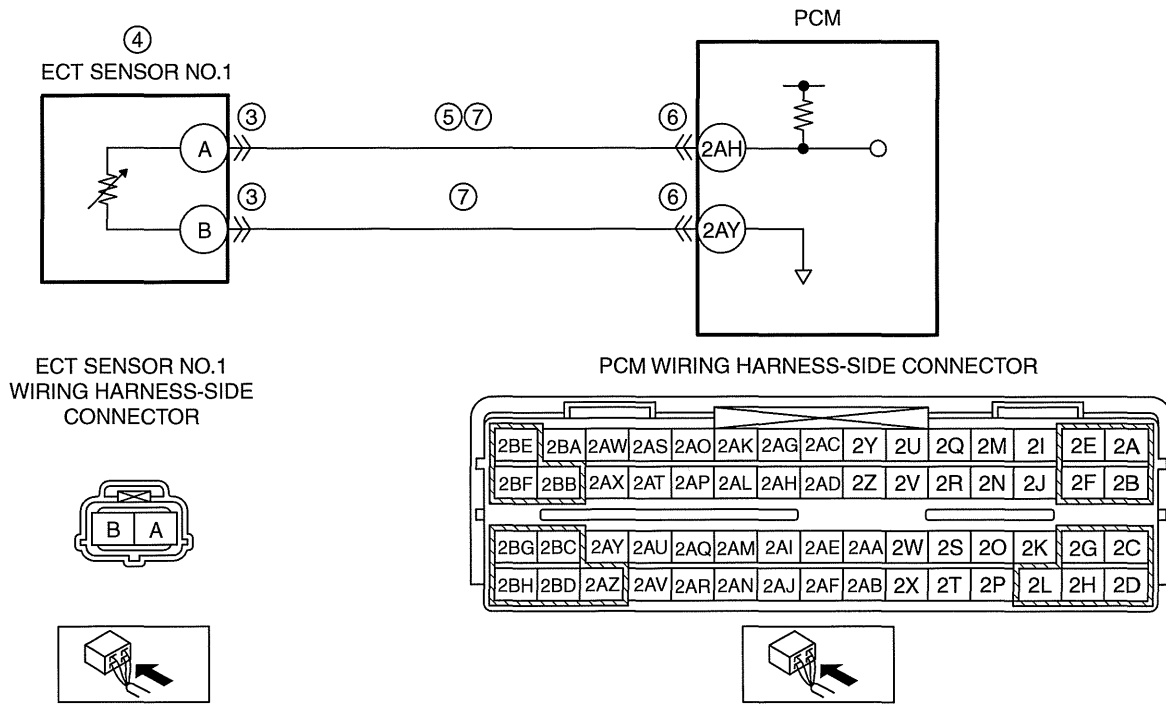
STEP	INSPECTION		ACTION
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Leave the vehicle for 6 h. Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and wait for 5 min. Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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DTC P0117:00 [L3 WITH TC]

id010239701600

DTC P0117:00	ECT sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.1 signal. If the PCM detects the ECT sensor No.1 voltage is below 0.2 V for 5 s, the PCM determines that the ECT sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Engine overheating (Cooling system malfunction) ECT sensor No.1 connector or terminals malfunction ECT sensor No.1 malfunction Short to ground in wiring harness between ECT sensor No.1 terminal A and PCM terminal 2AH PCM connector or terminals malfunction ECT sensor No.1 signal circuit and ground circuit are shorted to each other. PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY ENGINE CONDITION <ul style="list-style-type: none"> • Verify the engine condition. • Is the engine overheating? 	Yes	Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the ECT sensor No.1 connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	CLASSIFY ECT SENSOR NO.1 MALFUNCTION OR WIRING HARNESS MALFUNCTION <ul style="list-style-type: none"> • Reconnect the ECT sensor No.1 connector. • Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Verify the ECT PID value when disconnecting the ECT sensor No.1 connector. • Does the ECT PID value change? 	Yes	Replace the ECT sensor No.1, then go to Step 9. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • ECT sensor No.1 connector is disconnected. • Switch the ignition to off. • Inspect for continuity between ECT sensor No.1 terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT ECT SENSOR NO.1 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • ECT sensor No.1 and PCM connectors are disconnected. • Inspect for continuity between ECT sensor No.1 terminals A and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

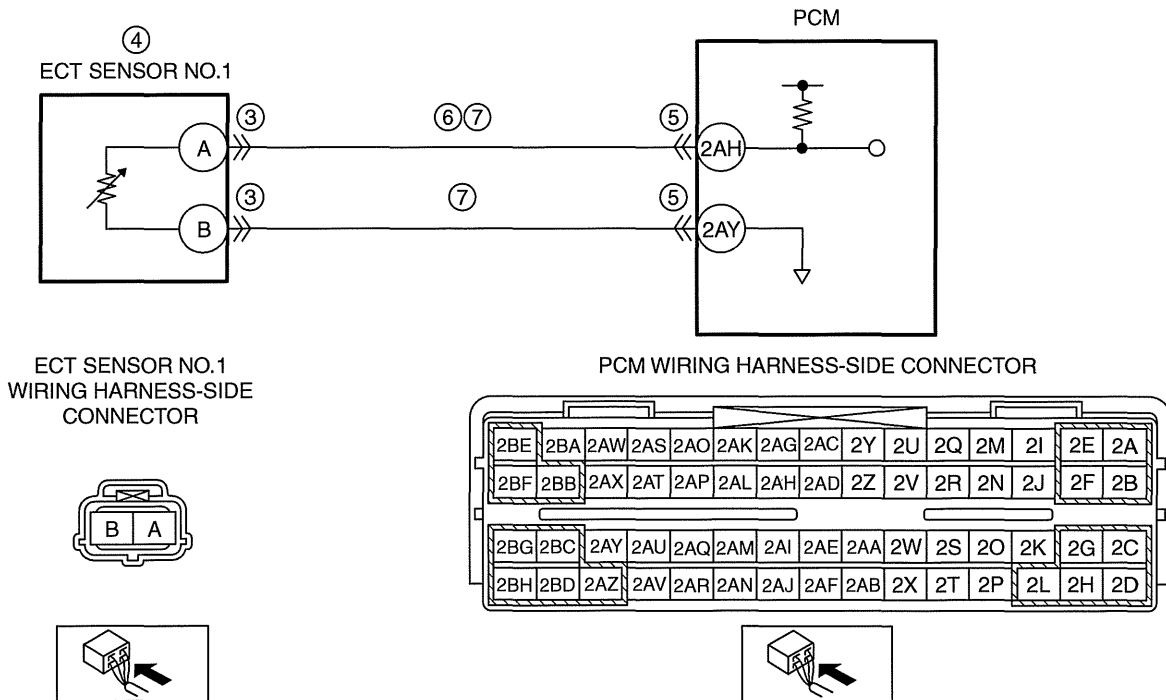
01-02B

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0118:00 [L3 WITH TC]

id010239701700

DTC P0118:00	ECT sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.1 signal. If the PCM detects the ECT sensor No.1 voltage is above 4.59 V for 5 s, the PCM determines that the ECT sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.1 connector or terminals malfunction ECT sensor No.1 malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between ECT sensor No.1 terminal A and PCM terminal 2AH Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — ECT sensor No.1 terminal A—PCM terminal 2AH — ECT sensor No.1 terminal B—PCM terminal 2AY PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.1 connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	CLASSIFY ECT SENSOR NO.1 MALFUNCTION OR WIRING HARNESS MALFUNCTION <ul style="list-style-type: none"> • ECT sensor No.1 connector is disconnected. • Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Connect a jumper wire between ECT sensor No.1 terminals A and B (wiring harness-side). • Is the ECT PID value 4.6 V or below? 	Yes	Replace the ECT sensor No.1, then go to Step 8. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • ECT sensor No.1 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the ECT sensor No.1 terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT ECT SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • ECT sensor No.1 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — ECT sensor No.1 terminal A—PCM terminal 2AH — ECT sensor No.1 terminal B—PCM terminal 2AY • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

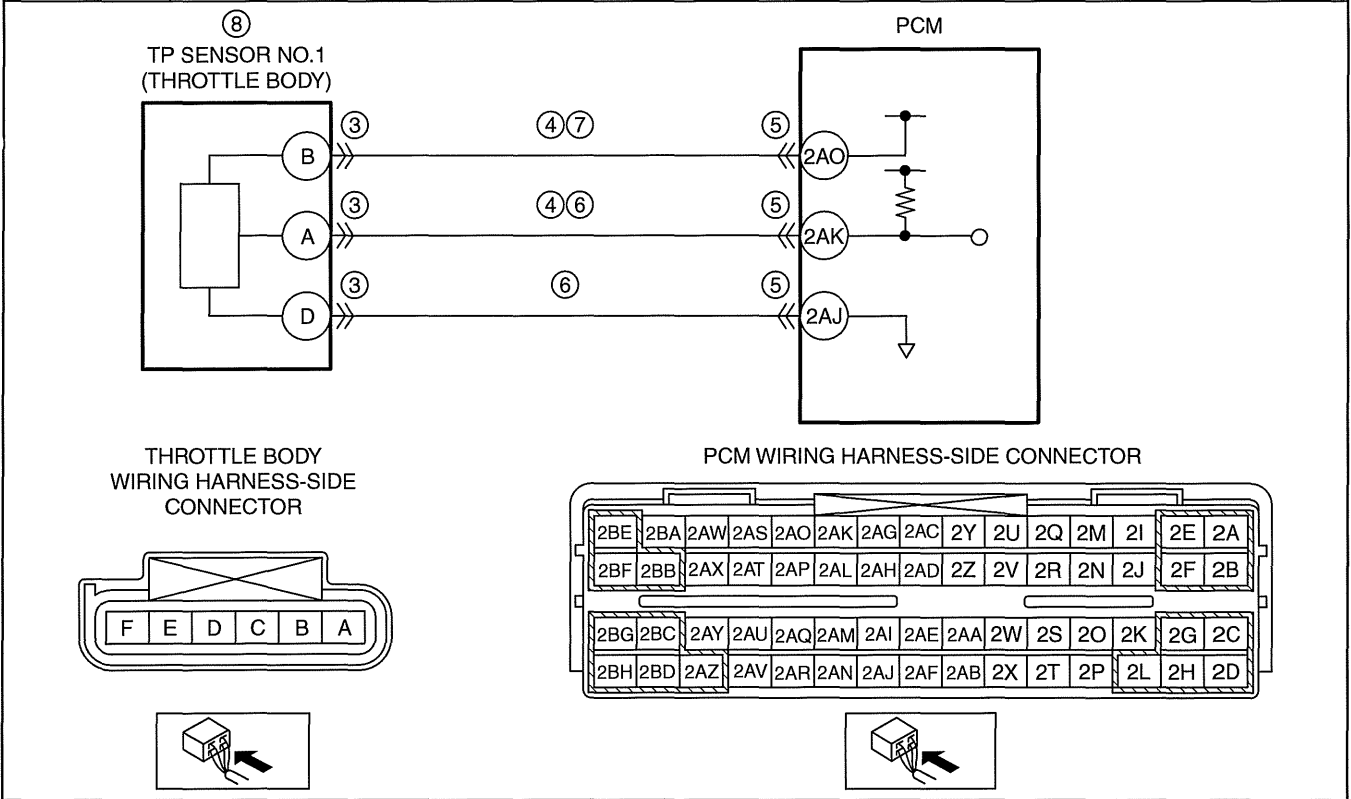
STEP	INSPECTION		ACTION
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes No	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].) DTC troubleshooting completed.

DTC P0122:00 [L3 WITH TC]

id010239701800

01-02B

DTC P0122:00	TP sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the TP sensor No.1 voltage is below 0.2 V after the ignition is switched to ON, the PCM determines that the TP sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AO — Throttle body terminal A—PCM terminal 2AK PCM connector or terminals malfunction Throttle body signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between throttle body terminal B and PCM terminal 2AO TP sensor No.1 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT TP SENSOR NO.1 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Throttle body terminal B — Throttle body terminal A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.1 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminals A and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT TP SENSOR NO.1 POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminal B (wiring harness-side) and PCM terminal 2AO (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT TP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the TP sensor No.1. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

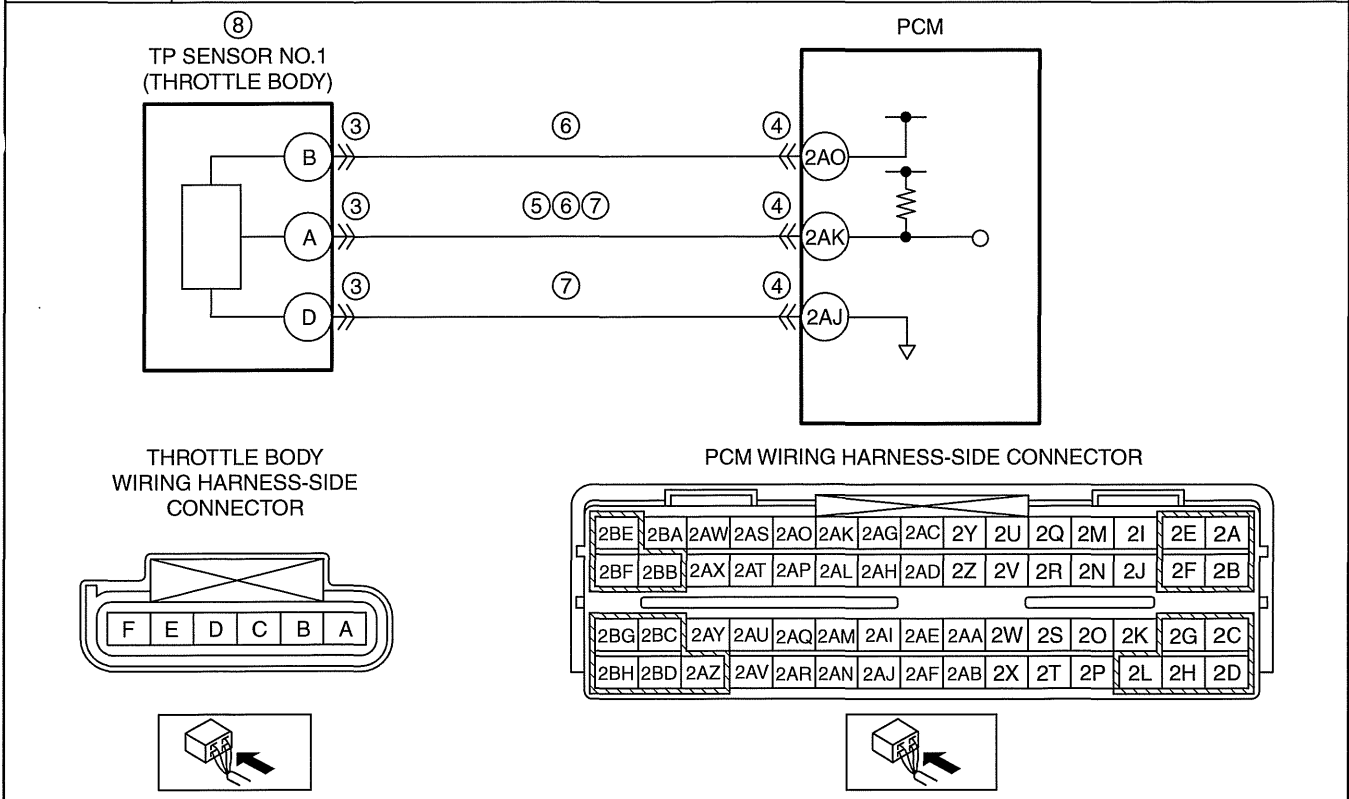
STEP	INSPECTION		ACTION
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0123:00 [L3 WITH TC]

id010239701900

01-02B

DTC P0123:00	TP sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the TP sensor No.1 voltage is above 4.85 V after the ignition is switched to ON, the PCM determines that the TP sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between throttle body terminal A and PCM terminal 2AK TP sensor No.1 power supply circuit and signal circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal A—PCM terminal 2AK — Throttle body terminal D—PCM terminal 2AJ TP sensor No.1 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the throttle body terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.1 POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between throttle body terminals B and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT TP SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Throttle body terminal A—PCM terminal 2AK — Throttle body terminal D—PCM terminal 2AJ • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT TP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the TP sensor No.1. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

DTC P0125:00 [L3 WITH TC]

id010239702000

DTC P0125:00	Insufficient coolant temperature for closed loop fuel control
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT sensor No.1 signal after the engine is started while the engine is cold. If the engine coolant temperature does not reach the expected temperature for a specified period, the PCM determines that it has taken an excessive amount of time for the engine coolant temperature to reach the temperature necessary to start closed-loop fuel control. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.1 connector or terminals malfunction PCM connector or terminals malfunction ECT sensor No.1 malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> Start the engine and warm it up completely. Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the ECT PID value above 60 °C {140 °F}? 	Yes	Intermittent concern exists. <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT ECT SENSOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ECT sensor No.1 connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to the next step. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Switch the ignition to ON (engine off). • Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Cool down the engine until the ECT PID below 8 °C {46 °F}. • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0126:00, P0128:00 [L3 WITH TC]

id010239900800

01-02B

DTC P0126:00	Coolant thermostat stuck open
DTC P0128:00	
DETECTION CONDITION	<p>DTC P0126:00</p> <ul style="list-style-type: none"> If the ECT signal never exceeds the specification (depend on minimum IAT) after engine start for specified period, the PCM determines that the thermostat is stuck open. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> IAT: above -10 °C {14 °F} Vehicle speed: over 9.4 km/h {5.8 mph} Absolute load: above 10% <p>DTC P0128:00</p> <ul style="list-style-type: none"> The PCM monitors detects based on the following calculation with the ECT sensor No.2 and estimated ECT sensor No.2* at the judge timing. When the difference between ECT sensor No.2 and estimated ECT sensor No.2 is at the set value or more, a malfunction is detected. <p>*: Estimated ECT sensor No.2 output value when it is determined that there is a thermostat open malfunction.</p> <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> IAT: above -10 °C {14 °F} ECT at engine start: below 52 °C {126 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Thermostat malfunction ECT sensor No.1 malfunction ECT sensor No.2 malfunction Cooling system malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT THERMOSTAT <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the thermostat. (See 01-12B-12 THERMOSTAT INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the thermostat, then go to Step 7. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].)
		No	DTC P0126:00: <ul style="list-style-type: none"> • Go to Step 6. DTC P0128:00: <ul style="list-style-type: none"> • Go to the next step.
5	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to Step 7. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 7.
6	INSPECT ECT SENSOR NO.2 <ul style="list-style-type: none"> • Inspect the ECT sensor No.2. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.2, then go to the next step. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY MONITORING CONDITION FOR REPAIR VERIFICATION <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Cool down the engine. <p>Note</p> <ul style="list-style-type: none"> • If the workshop inside and outside temperature difference is significant, the PCM might not operate the thermostat monitor. Therefore, it is recommended to cool down the engine out of the workshop. <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Access the ECT and IAT PIDs using the M-MDS under the following conditions: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <p>DTC P0126:00</p> <ul style="list-style-type: none"> — IAT: above -10 °C {14 °F} — Vehicle speed: over 40 km/h {25 mph} — Absolute load: above 14% <p>DTC P0128:00</p> <ul style="list-style-type: none"> — IAT: above -10 °C {14 °F} — ECT at engine start: below 52 °C {126 °F} — Vehicle speed: over 40 km/h {25 mph} <ul style="list-style-type: none"> • Is there any PID that out of the specification? 	Yes	Take corrective action (e.g. cool down engine). <ul style="list-style-type: none"> • Repeat this step.
		No	DTC P0126:00: <ul style="list-style-type: none"> • Go to the next step. DTC P0128:00: <ul style="list-style-type: none"> • Go to Step 9.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0126:00 COMPLETED <ul style="list-style-type: none"> • Start engine and turn off the electrical load and A/C. • Access the THM_2 (Temp unit) and THM_MIN_2 (Temp unit) PIDs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <p>Note</p> <ul style="list-style-type: none"> • This test requires the actual driving. Chassis roller cannot be used for this test. • During the test drive, constant speed should be maintained, although 2 or 3 stops during every 5 min of driving time (e.g. for traffic signals) is acceptable. Stop-and-go (e.g. in case of traffic congestion) is not acceptable during the test period. • Test period depends on the ECT at engine start. (e.g. if ECT is -10 °C {14 °F}, monitoring period is 38 min and ECT is 30 °C {86 °F}, monitoring period is 8 min) <ul style="list-style-type: none"> • Is the THM_2 value above the THM_MIN_2 value? 	Yes	Go to Step 10.
		No	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
9	VERIFY TROUBLESHOOTING OF DTC P0128:00 COMPLETED <ul style="list-style-type: none"> • Start engine and turn off the electrical load and A/C. • Access the THM_1 (Temp and Num units), THM_MAX_1 (Num unit) and THM_MIN_1 (Temp unit) PIDs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <p>Note</p> <ul style="list-style-type: none"> • This test requires the actual driving. Chassis roller cannot be used for this test. • During the test drive, constant speed should be maintained, although 2 or 3 stops during every 5 min of driving time (e.g. for traffic signals) is acceptable. Stop-and-go (e.g. in case of traffic congestion) is not acceptable during the test period. <ul style="list-style-type: none"> • Are the THM_1 value of Num unit below the THM_MAX_1 value and the THM_1 value of Temp unit above the THM_MIN_1 value? 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0130:00 [L3 WITH TC]

id010239702100

DTC P0130:00	A/F sensor circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the voltage between PCM terminal 2AD and 2AC while the A/F sensor active. If the voltage deviate from the specified range, the PCM determines that there is a A/F sensor circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction PCM connector or terminals malfunction A/F sensor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT A/F SENSOR <ul style="list-style-type: none"> Reconnect all disconnected connectors. Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0131:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — A/F sensor terminal 1C — A/F sensor terminal 1B — A/F sensor terminal 1A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

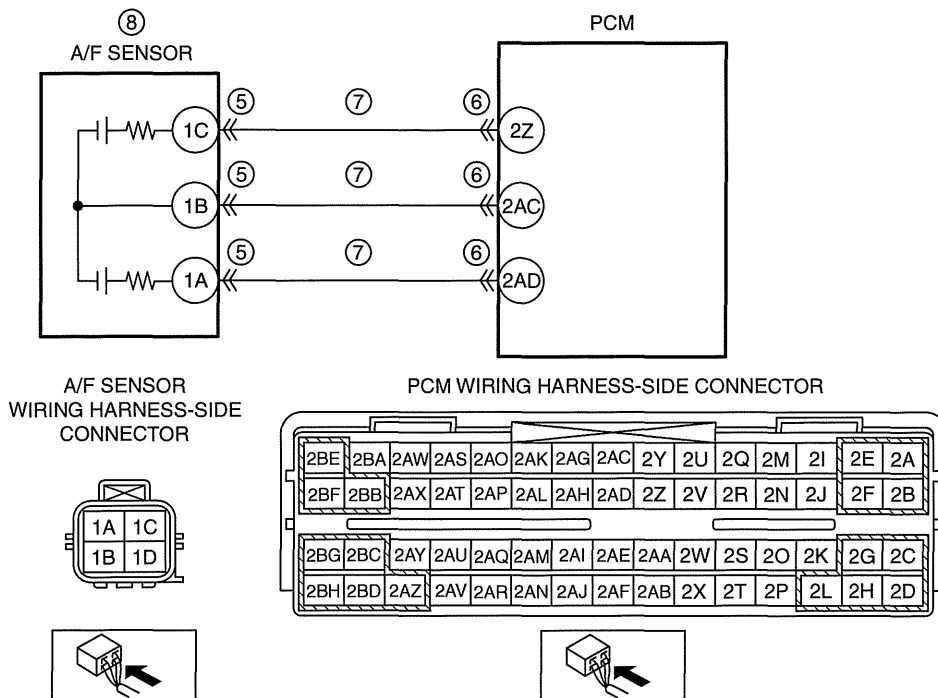
01-02B

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0132:00 [L3 WITH TC]

id010239702300

DTC P0132:00	A/F sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the A/F sensor when the engine is running. If the following PCM terminal voltage is above specified, the PCM determines that the A/F sensor circuit voltage is high. <ul style="list-style-type: none"> — PCM terminal 2Z: battery voltage-1.2 V — PCM terminal 2AC: 6.2 V — PCM terminal 2AD: battery voltage-1.2 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal 1C—PCM terminal 2Z — A/F sensor terminal 1B—PCM terminal 2AC — A/F sensor terminal 1A—PCM terminal 2AD A/F sensor malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0132:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
7	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — A/F sensor terminal 1C — A/F sensor terminal 1B — A/F sensor terminal 1A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Reconnect all disconnected connectors. • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Intermittent concern exists.. <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

DTC P0133:00 [L3 WITH TC]

id010239702400

DTC P0133:00	A/F sensor circuit slow response
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the peak differential value of the A/F sensor signal after the A/F fluctuation being provided when the following conditions are met. If the peak differential value is lower than the threshold value, the PCM determines that the A/F sensor circuit is slow. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode) — The following conditions are met: <ul style="list-style-type: none"> • A/F sensor heater monitor is completed. • Fuel system loop status is closed loop fuel control. — Engine speed: 1,350—3,500 rpm — Absolute load: 21—71% (at engine speed of 2,500 rpm) — Intake air volume: 5—40 g/s — Engine coolant temperature: above 60 °C {140 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor looseness • Exhaust system leakage • A/F sensor malfunction <ul style="list-style-type: none"> — A/F sensor deterioration • Fuel pressure sensor malfunction • Clogged or restricted fuel line • Fuel leakage in the fuel line between the high-pressure fuel pump and the fuel pump unit • Fuel pump unit malfunction • Purge solenoid valve malfunction • Improper connection of purge solenoid hose • Engine internal malfunction <ul style="list-style-type: none"> — Leakage engine coolant to combustion chamber — Insufficient engine compression • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0133:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P0443:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-178 DTC P0443:00 [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 16. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 16. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 12.
		No	Go to the next step.
9	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Is the vehicle accelerate performance normally? 	Yes	Go to the next step.
		No	Go to Step 11.
10	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 16. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
11	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> Go to Step 16.
		No Relief valve malfunction. <ul style="list-style-type: none"> Replace the fuel delivery pipe, then go to Step 16. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
12	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the low side fuel pressure within the specification? 	Yes Go to the next step.
		No Inspect for the following. <ul style="list-style-type: none"> Fuel line restriction Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results. Go to Step 16.
13	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> Inspect the purge solenoid valve and vacuum hose connection. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) (See 01-13B-3 INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No Go to the next step.
14	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No Go to the next step.
15	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No Go to the next step.
16	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
17	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

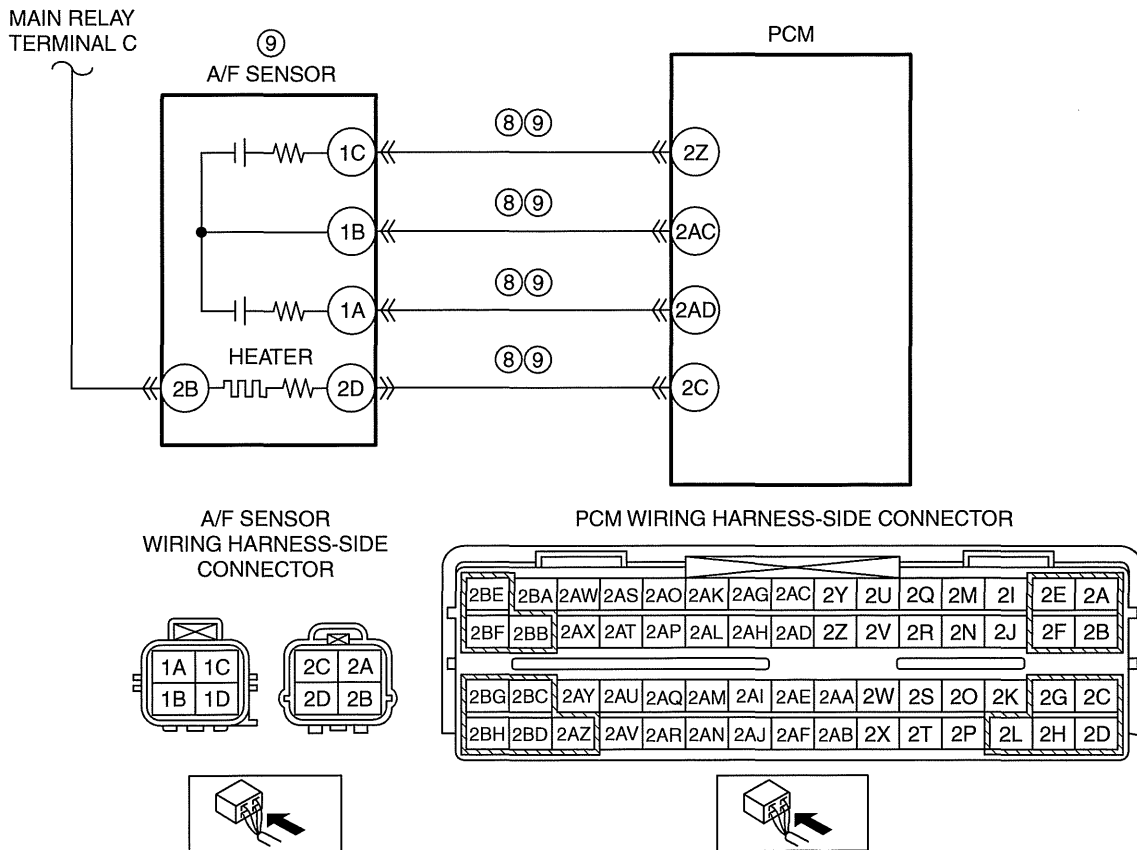
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0134:00 [L3 WITH TC]

id010239702500

DTC P0134:00	A/F sensor circuit no activity detected
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the element impedance A/F sensor when the following conditions are met. Under the following monitoring conditions, if the element impedance is more than the specified value, the PCM determines that the A/F sensor is not activated. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — The following conditions are met: <ul style="list-style-type: none"> • A/F sensor heater is tuned on for 35 s or more • Battery voltage: 10—18 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor looseness • Exhaust system leakage • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal 1C—PCM terminal 2Z — A/F sensor terminal 1B—PCM terminal 2AC — A/F sensor terminal 1A—PCM terminal 2AD — A/F sensor terminal 2D—PCM terminal 2C • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal 1C—PCM terminal 2Z — A/F sensor terminal 1B—PCM terminal 2AC — A/F sensor terminal 1A—PCM terminal 2AD — A/F sensor terminal 2D—PCM terminal 2C • A/F sensor malfunction <ul style="list-style-type: none"> — A/F sensor deterioration • Engine internal malfunction <ul style="list-style-type: none"> — Leakage engine coolant to combustion chamber — Insufficient engine compression • PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0134:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <p>Note</p> <ul style="list-style-type: none"> • If the fuel monitor, the DTC P0132:00 is retrieved, ignore it until the DTC P0134:00 is fixed. • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P2237:00 or P2251:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-286 DTC P2237:00 [L3 WITH TC].) (See 01-02B-294 DTC P2251:00 [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 12. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Go to the next step.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 10.
8	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — A/F sensor terminal 1C — A/F sensor terminal 1B — A/F sensor terminal 1A — A/F sensor terminal 2D • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 12.
		No	Go to the next step.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT A/F SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Disconnect the PCM connector. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — A/F sensor terminal 1C—PCM terminal 2Z — A/F sensor terminal 1B—PCM terminal 2AC — A/F sensor terminal 1A—PCM terminal 2AD — A/F sensor terminal 2D—PCM terminal 2C • Is there continuity? 	Yes	Replace the A/F sensor, then go to Step 12. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
10	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the “ENGINE COOLANT LEAKAGE INSPECTION”. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Go to the next step.
11	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

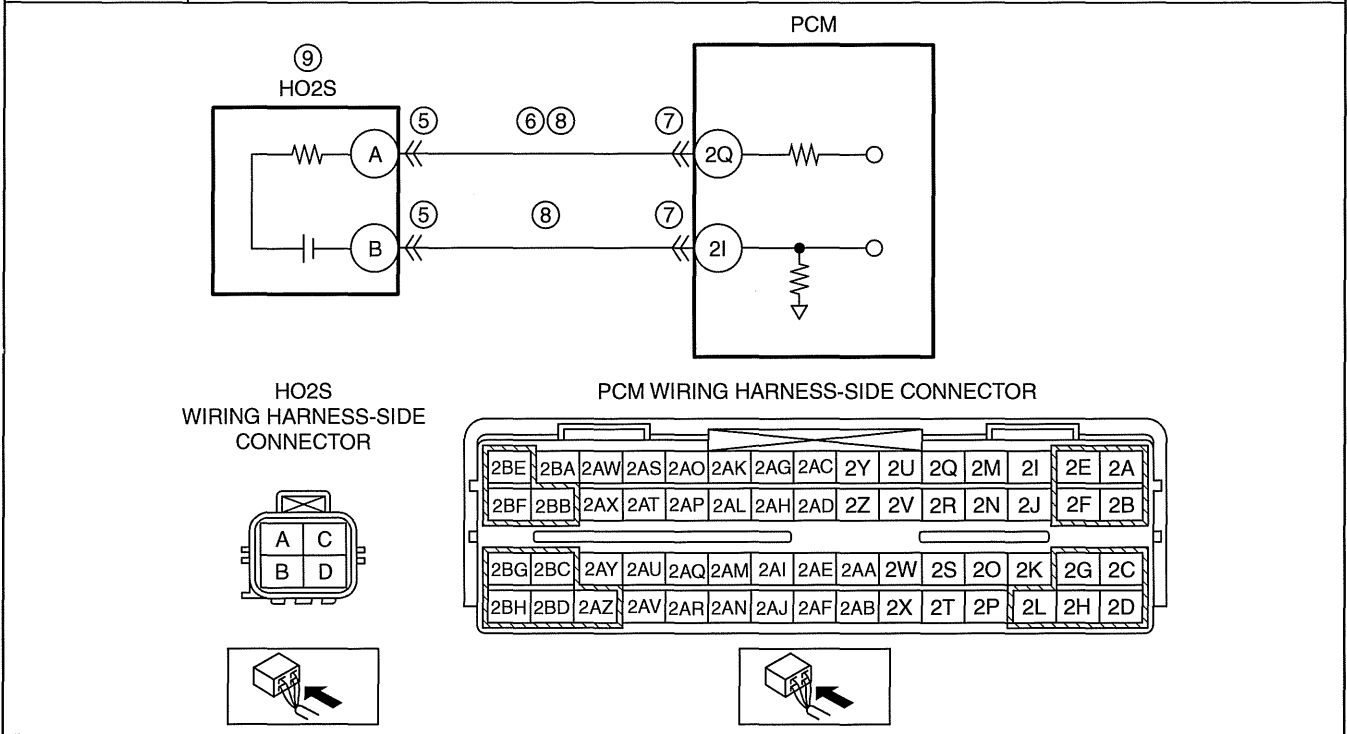
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0137:00 [L3 WITH TC]

id010239300300

01-02B

DTC P0137:00	HO2S circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the HO2S. If the input voltage from the HO2S is below -1.15 V or if HO2S bias voltage is below 1.3 V for 5 s while the HO2S is active, the PCM determines that the circuit input is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> HO2S terminal A—PCM terminal 2Q HO2S terminal B—PCM terminal 2I HO2S malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION				
1	<p>IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2)</p> <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P0137:00 on FREEZE FRAME DATA (Mode 2)? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; vertical-align: top;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="vertical-align: top;">No</td> <td>Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)</td> </tr> </table>	Yes	Go to the next step.	No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
Yes	Go to the next step.					
No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)					
2	<p>VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED</p> <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; vertical-align: top;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="vertical-align: top;">No</td> <td>Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</td> </tr> </table>	Yes	Go to the next step.	No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
Yes	Go to the next step.					
No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.					

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
6	INSPECT HO2S CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • HO2S connector is disconnected. • Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 10.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
8	INSPECT HO2S CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — HO2S terminal A—PCM terminal 2Q — HO2S terminal B—PCM terminal 2I • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
9	INSPECT HO2S <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to the next step. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

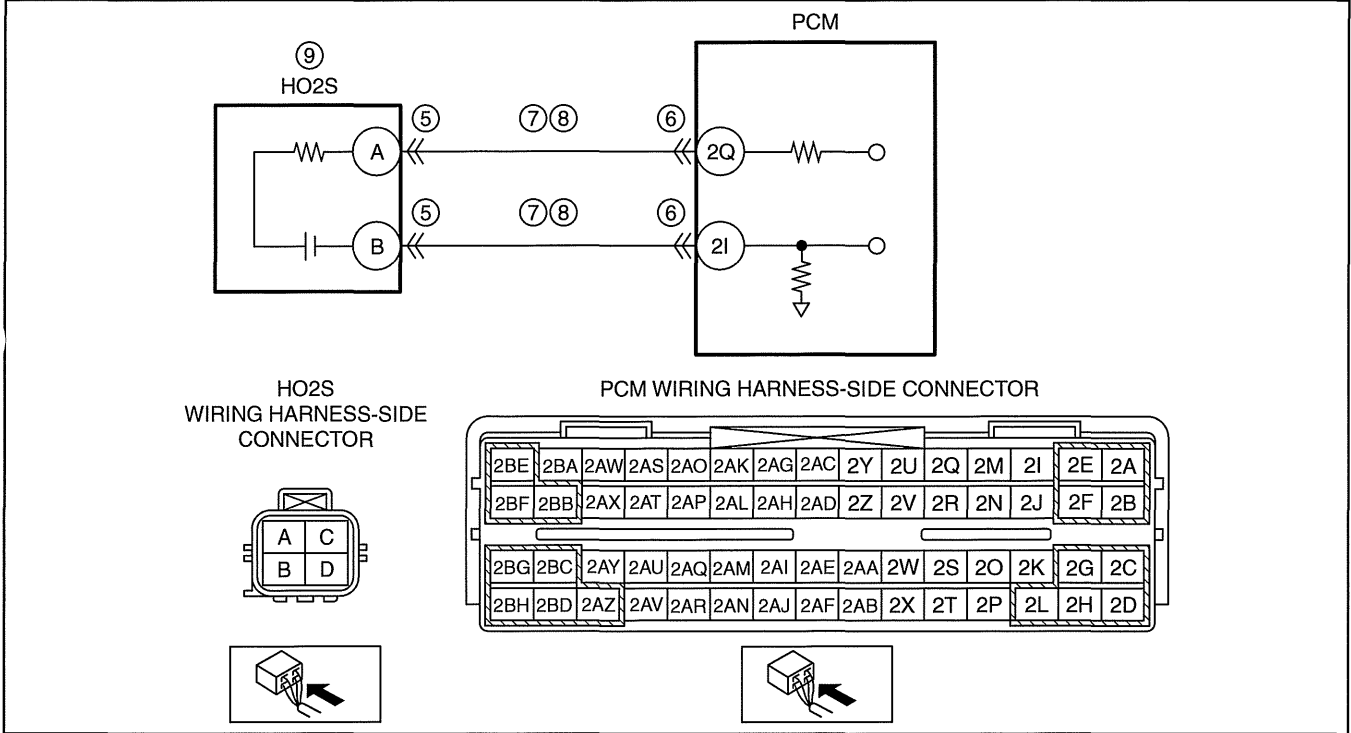
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0138:00 [L3 WITH TC]

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01-02B

DTC P0138:00	HO2S circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the HO2S. If the input voltage from the HO2S is above 1.2 V or if HO2S bias voltage is above 1.7 V for 5 s, the PCM determines that the circuit input is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — HO2S terminal A—PCM terminal 2Q — HO2S terminal B—PCM terminal 2I HO2S signal circuit and ground circuit are shorted to each other. HO2S malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P0138:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT HO2S CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
7	INSPECT HO2S CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — HO2S terminal A — HO2S terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
8	INSPECT HO2S SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between HO2S terminals A and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 10.
		No	Go to the next step.
9	INSPECT HO2S <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to the next step. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0139:00 [L3 WITH TC]

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01-02B

DTC P0139:00	HO2S circuit slow response
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the rich (0.55 V) to lean (0.3 V) response time of the HO2S. The PCM measures the response time when the following conditions are met. The PCM determines a HO2S response deterioration malfunction when the measured response time is more than 0.1 s for 2 of 3 times. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode) — The following conditions are met: <ul style="list-style-type: none"> • During deceleration fuel cut • Estimated temperature of the zirconia element inside the HO2S: above 450 °C {842 °F} <ul style="list-style-type: none"> • The PCM monitors for a time-out malfunction (when the HO2S remains above 0.2 V for longer than a specified period of time during the fuel cut control). The PCM measures the amount of time from when the following conditions are met until the HO2S output voltage drops below 0.2 V. The PCM determines a HO2S time-out malfunction when the detected time is more than 4 s for 2 of 3 times. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode) — The following conditions are met: <ul style="list-style-type: none"> • During deceleration fuel cut • Estimated temperature of the zirconia element inside the HO2S: above 450 °C {842 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • HO2S looseness • Exhaust system leakage • HO2S malfunction <ul style="list-style-type: none"> — HO2S deterioration • High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure sensor (built-in fuel delivery pipe) malfunction — Relief valve (built-in fuel delivery pipe) malfunction — High pressure fuel pump malfunction — Spill valve control solenoid valve (built-in high pressure fuel pump) malfunction • Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure regulator (built-in fuel pump unit) malfunction — Fuel pump unit malfunction — Fuel filter (built-in fuel pump unit) clogged or restricted — Fuel leakage on fuel line from high pressure fuel pump to fuel pump unit • Purge solenoid valve malfunction • Improper connection of purge solenoid hoses • Engine internal malfunction <ul style="list-style-type: none"> — Engine coolant leakage into combustion chamber — Insufficient engine compression • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0139:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P0443:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-178 DTC P0443:00 [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> • Inspect if the HO2S is loosely installed. • Is the HO2S installed securely? 	Yes	Go to the next step.
		No	Retighten the HO2S, then go to Step 16. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and HO2S. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
7	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Inspect the HO2S related wiring harness. <ul style="list-style-type: none"> • If there is no malfunction: <ul style="list-style-type: none"> — Replace the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].) • If there is a malfunction: <ul style="list-style-type: none"> — Repair or replace the suspected wiring harness. Go to Step 16.
		No	Go to the next step.
8	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 13.
		No	Go to the next step.
9	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Is the vehicle accelerate performance normally? 	Yes	Go to the next step.
		No	Go to Step 11.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
10	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 16. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> Go to Step 16.
		No	Go to the next step.
12	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the low side fuel pressure within the specification? 	Yes	Go to the next step.
		No	Inspect for the following. <ul style="list-style-type: none"> Fuel line restriction Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results. Go to Step 16.
13	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> Inspect the purge solenoid valve and vacuum hose connection. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) (See 01-13B-3 INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
14	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 16.
		No	Go to the next step.
15	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
16	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

01-02B

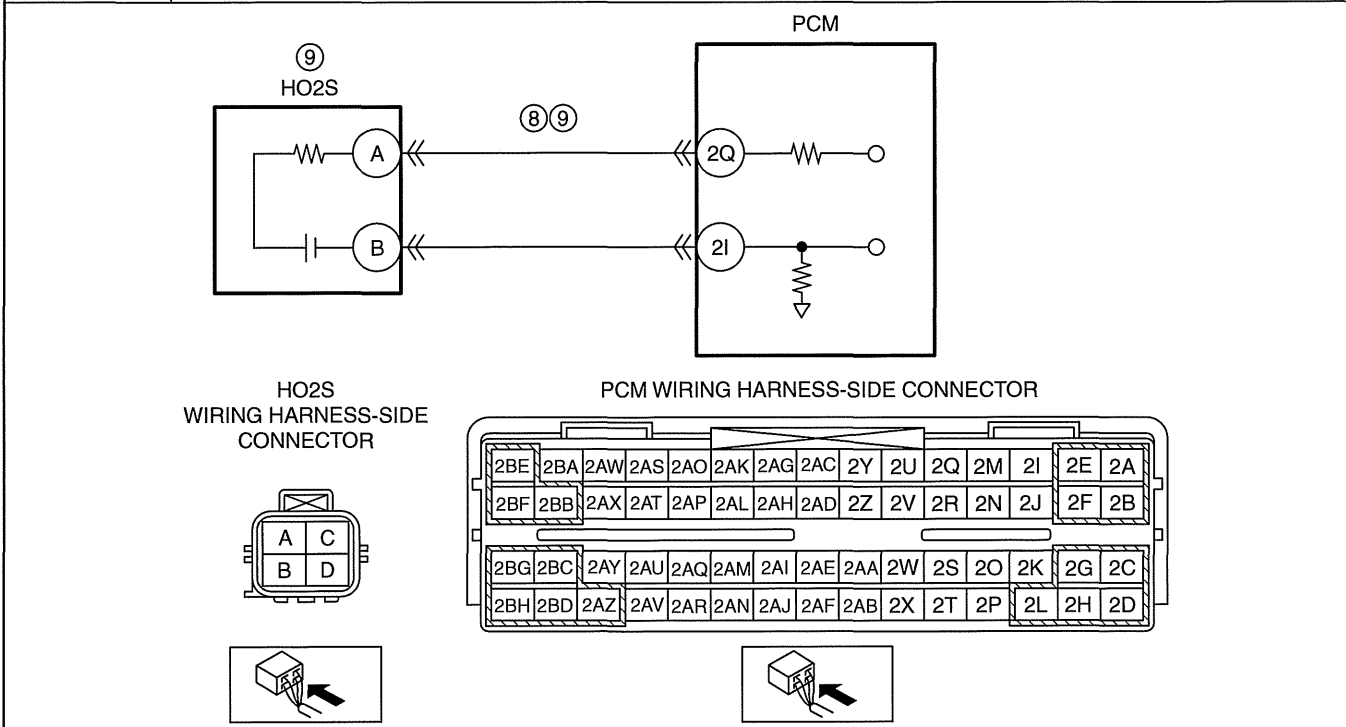
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
17	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0140:00 [L3 WITH TC]

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DTC P0140:00	HO2S circuit no activity detected
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the HO2S when the following conditions are met. Under the following monitoring conditions, if the input voltage from the HO2S does not even exceed 0.6 V though the short term fuel trim is controlled up to 20.5% for 20.8 s, the PCM determines that the HO2S circuit is not activated. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode) — Estimated temperature of the zirconia element inside the HO2S: above 450 °C {842 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> HO2S looseness Exhaust system leakage Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q Open circuit in wiring harness between HO2S terminal A and PCM terminal 2Q HO2S malfunction <ul style="list-style-type: none"> — HO2S deterioration Engine internal malfunction <ul style="list-style-type: none"> — Engine coolant leakage into combustion chamber — Insufficient engine compression PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P0140:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <p>Note</p> <ul style="list-style-type: none"> If the fuel monitor, the DTC P0132:00 is retrieved, ignore it until the DTC P0140:00 is fixed. Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.
5	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> Inspect if the HO2S is loosely installed. Is the HO2S installed securely? 	Yes Go to the next step.
		No Retighten the HO2S, then go to Step 12. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> Visually inspect for the exhaust gas leakage between the exhaust manifold and HO2S. Is there any leakage? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No Go to the next step.
7	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Go to the next step.
		No Go to Step 10.
8	INSPECT HO2S CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the HO2S connector. Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 12.
		No Go to the next step.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT HO2S CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S connector is disconnected. • Disconnect the PCM connector. • Inspect for continuity between HO2S terminal A (wiring harness-side) and PCM terminal 2Q (wiring harness-side). • Is there continuity? 	Yes	Replace the HO2S, then go to Step 12. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
10	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Go to the next step.
11	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0171:00 [L3 WITH TC]

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DTC P0171:00	Fuel trim system too lean
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the short term fuel trim (SHRTFT) and long term fuel trim (LONGFT) values when closed loop fuel control. If the LONGFT and the sum total of these fuel trims or SHRTFT exceed preprogrammed criteria, the PCM determines that the fuel system is too lean. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor No.1 signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction — Related connector or terminals malfunction — Related wiring harness malfunction • A/F sensor heater malfunction • A/F sensor looseness • Exhaust system leakage • A/F sensor deterioration • MAF sensor malfunction • Air suction in intake air system • Improper operation of purge control system <ul style="list-style-type: none"> — Purge solenoid valve malfunction (stuck open) — Improper connection of purge solenoid hoses • Improper operation of variable valve timing control system • High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure sensor (built-in fuel delivery pipe) malfunction — Relief valve (built-in fuel delivery pipe) malfunction — Spill valve control solenoid valve (built-in high pressure fuel pump) malfunction — High pressure fuel pump malfunction • Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure regulator (built-in fuel pump unit) malfunction — Fuel pump unit malfunction — Fuel filter clogging — Fuel leakage on fuel line (between fuel pump unit and high pressure fuel pump) • Ignition system malfunction <ul style="list-style-type: none"> — Spark plug malfunction — Ignition coil malfunction — Ignition coil related wiring harness malfunction • Insufficient engine compression • Improper operation of fuel injector • Misfire • Fuel runout • PCM malfunction

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P0171:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes If misfire DTC is present: <ul style="list-style-type: none"> Go to Step 11. If other DTC is present: <ul style="list-style-type: none"> Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No If drive ability concern is present: <ul style="list-style-type: none"> Go to Step 11. If drive ability concern is not present: <ul style="list-style-type: none"> Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> APP1 APP2 ECT MAF TP REL VSS Is there any signal that is far out of specification when the ignition switch is ON and the engine runs? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes Inspect the suspected circuit. <ul style="list-style-type: none"> If there is any malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER TROUBLE CONDITION <ul style="list-style-type: none"> Access the same PIDs as in Step 5 while simulating the FREEZE FRAME DATA (Mode 2) condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is there any signal which causes drastic changes? 	Yes Inspect the suspected circuit. <ul style="list-style-type: none"> If there is any malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No Go to the next step.
7	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 23. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Go to the next step.
		No Go to Step 11.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
9	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> Inspect if the A/F sensor is loosely installed. Is the A/F sensor installed securely? 	Yes Go to the next step.
		No Retighten the A/F sensor, then go to Step 23. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
10	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. Is there any leakage? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No Replace the A/F sensor, then go to Step 23. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
11	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> Start the engine. Access the MAF PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the MAF PID changes quickly according to the engine speed. Is the MAF PID value normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes Go to Step 13.
		No Go to the next step.
12	INSPECT FOR EXCESSIVE AIR SUCTION OF INTAKE AIR SYSTEM <ul style="list-style-type: none"> Visually inspect for loosen, cracks or damages hoses on the intake air system. <p>Note</p> <ul style="list-style-type: none"> Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No Replace the MAF/IAT sensor, then go to Step 23. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
13	INSPECT PURGE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Purge Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No Go to the next step.
14	INSPECT VARIABLE VALVE TIMING CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No Go to the next step.
15	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes Go to Step 19.
		No Go to the next step.
16	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> Is the vehicle accelerate performance normally? 	Yes Go to the next step.
		No Go to Step 18.
17	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the fuel delivery pipe, then go to Step 23. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to Step 19.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
18	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> • Go to Step 23.
		No	Go to the next step.
19	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> • Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. • Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the low side fuel pressure within the specification? 	Yes	Go to the next step.
		No	Inspect for the following. <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results. Go to Step 23.
20	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is a strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
21	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Go to the next step.
22	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
23	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Stop the vehicle and access the On-Board System Readiness Tests Access Procedure to inspect the Drive Mode completion status. • Verify the FUEL_EVAL PID changes to yes. <ul style="list-style-type: none"> — If not: <ul style="list-style-type: none"> • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) again. (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
24	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0172:00 [L3 WITH TC]

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01-02B

DTC P0172:00	Fuel trim system too rich
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the short fuel trim (SHRTFT) and long fuel trim (LONGFT) values when closed loop fuel control. If the LONGFT and the sum total of these fuel trims or SHRTFT exceed preprogrammed criteria, the PCM determines that the fuel system is too rich. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (fuel system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor No.1 signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction — Related connector or terminals malfunction — Related wiring harness malfunction A/F sensor heater malfunction A/F sensor looseness Exhaust system leakage A/F sensor deterioration MAF sensor malfunction Improper operation of purge control system <ul style="list-style-type: none"> — Purge solenoid valve malfunction (stuck open) — Improper connection of purge solenoid hoses Improper operation of EGR valve system Improper operation of variable swirl control Improper operation of variable valve timing control system High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure sensor (built-in fuel delivery pipe) malfunction — Relief valve (built-in fuel delivery pipe) malfunction — Spill valve control solenoid valve (built-in high pressure fuel pump) malfunction — High pressure fuel pump malfunction Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure regulator (built-in fuel pump unit) malfunction — Fuel pump unit malfunction — Fuel filter clogging — Fuel leakage on fuel line (between fuel pump unit and high pressure fuel pump) Ignition system malfunction <ul style="list-style-type: none"> — Spark plug malfunction — Ignition coil malfunction — Ignition coil related wiring harness malfunction Improper operation of PCV valve Improper operation of fuel injector Misfire PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P0172:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	If misfire DTC is present: <ul style="list-style-type: none"> • Go to Step 11. If other DTC is present: <ul style="list-style-type: none"> • Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	If drive ability concern is present: <ul style="list-style-type: none"> • Go to Step 11. If drive ability concern is not present: <ul style="list-style-type: none"> • Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS (IGNITION SWITCH TO THE ON POSITION/ IDLE) <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) — APP1 — APP2 — ECT — MAF — TP REL — VSS • Is there any signal that is far out of specification when the ignition switch is ON and the engine runs? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Inspect the suspected circuit. <ul style="list-style-type: none"> • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER TROUBLE CONDITION <ul style="list-style-type: none"> • Access the same PIDs as in Step 5 while simulating the FREEZE FRAME DATA (Mode 2) condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is there any signal which causes drastic changes? 	Yes	Inspect the suspected circuit. <ul style="list-style-type: none"> • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Go to the next step.
7	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 24. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 11.
9	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> Inspect if the A/F sensor is loosely installed. Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 24. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
10	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Replace the A/F sensor, then go to Step 24. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
11	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> Start the engine. Access the MAF PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the MAF PID changes quickly according to the engine speed. Is the MAF PID value normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Replace the MAF/IAT sensor, then go to Step 24. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
12	INSPECT PURGE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Purge Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Go to the next step.
13	INSPECT EGR VALVE OPERATION <ul style="list-style-type: none"> Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Go to the next step.
14	INSPECT VARIABLE SWIRL CONTROL OPERATION <ul style="list-style-type: none"> Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Go to the next step.
15	INSPECT VARIABLE VALVE TIMING CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Go to the next step.
16	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 20.
		No	Go to the next step.
17	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> Is the vehicle accelerate performance normally? 	Yes	Go to the next step.
		No	Go to Step 19.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
18	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 24. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
19	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> • Go to Step 24.
		No	Go to the next step.
20	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> • Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. • Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the low side fuel pressure within the specification? 	Yes	Go to the next step.
		No	Inspect for the following. <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results. Go to Step 24.
21	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is a strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the spark test result, then go to Step 24.
22	INSPECT PCV VALVE OPERATION <ul style="list-style-type: none"> • Inspect the PCV valve operation. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the PCV valve, then go to Step 24. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
23	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
24	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Stop the vehicle and access the On-Board System Readiness Tests Access Procedure inspect the Drive Mode completion status. • Verify the FUEL_EVAL PID changes to yes. <ul style="list-style-type: none"> — If not: <ul style="list-style-type: none"> • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) again. (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
25	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

DTC P0191:00 [L3 WITH TC]

id010239147600

DTC P0191:00	Fuel pressure sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • If the fluctuation range of the actual fuel pressure is below the set value when the fluctuation range of the target fuel pressure has exceeded the set value, the PCM determines that there is fuel pressure sensor performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air suction in fuel line due to fuel runout • High pressure fuel pump connector or terminals malfunction • Fuel pressure sensor connector or terminals malfunction • PCM connector or terminals malfunction • Fuel pressure sensor malfunction • Insufficient fuel pressure (low pressure line) • Fuel injector malfunction (fuel leakage) • Fuel pressure limiter malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY WHETHER MALFUNCTION IS AIR SUCTION IN FUEL LINE BY FUEL RUNOUT OR ELSEWHERE <ul style="list-style-type: none"> • Verify the fuel gauge indicator on the instrument cluster. • Does the fuel gauge indicate empty? 	Yes	Refill the fuel and warm up the engine, then go to the next step.
		No	Go to the next step.
4	INSPECT HIGH PRESSURE FUEL PUMP CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the high pressure fuel pump connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT FUEL PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the fuel pressure sensor connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel pressure sensor, then go to Step 9. (See 01-40B-29 FUEL PRESSURE SENSOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT FUEL LINE PRESSURE (LOW PRESSURE LINE) <ul style="list-style-type: none"> • Measure the fuel line pressure (low-pressure). (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the fuel pressure within the specification? 	Yes	Remove the fuel injector and visually inspect fuel injector or leakage. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].) Replace the fuel injector if necessary, then go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine and run the engine under the FREEZE FRAME DATA (Mode 2) condition. • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

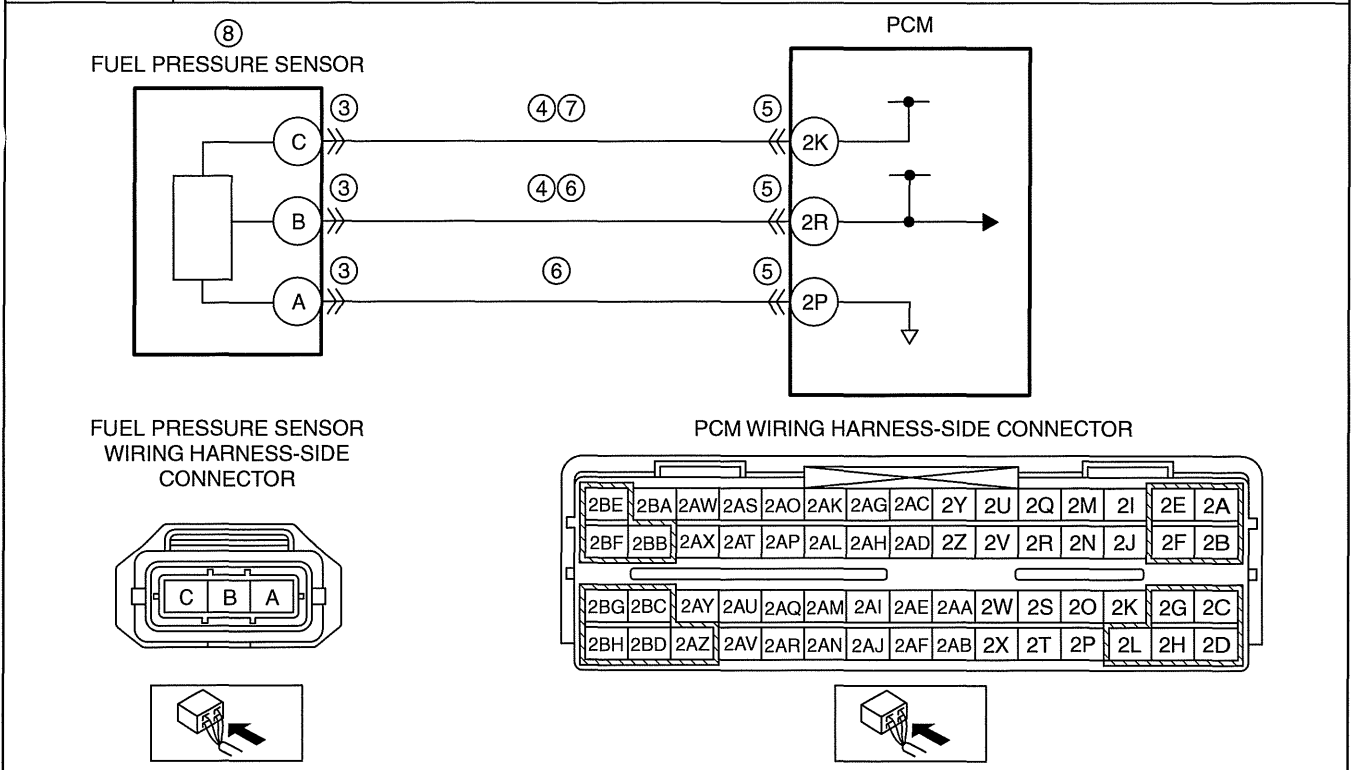
STEP	INSPECTION		ACTION
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0192:00 [L3 WITH TC]

id010239147700

01-02B

DTC P0192:00	Fuel pressure sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> If the input voltage from the fuel pressure sensor is less than 0.19 V for 5.3 s, the PCM determines that the fuel pressure sensor circuit is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel pressure sensor connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel pressure sensor terminal C—PCM terminal 2K — Fuel pressure sensor terminal B—PCM terminal 2R PCM connector or terminals malfunction Fuel pressure sensor signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between fuel pressure sensor terminal C and PCM terminal 2K Fuel pressure sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel pressure sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT FUEL PRESSURE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel pressure sensor connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Fuel pressure sensor terminal C — Fuel pressure sensor terminal B • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL PRESSURE SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Fuel pressure sensor and PCM connectors are disconnected. • Inspect for continuity between fuel pressure sensor terminals B and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL PRESSURE SENSOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel pressure sensor and PCM connectors are disconnected. • Inspect for continuity between fuel pressure sensor terminal C (wiring harness-side) and PCM terminal 2K (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel pressure sensor, then go to the next step. (See 01-40B-29 FUEL PRESSURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

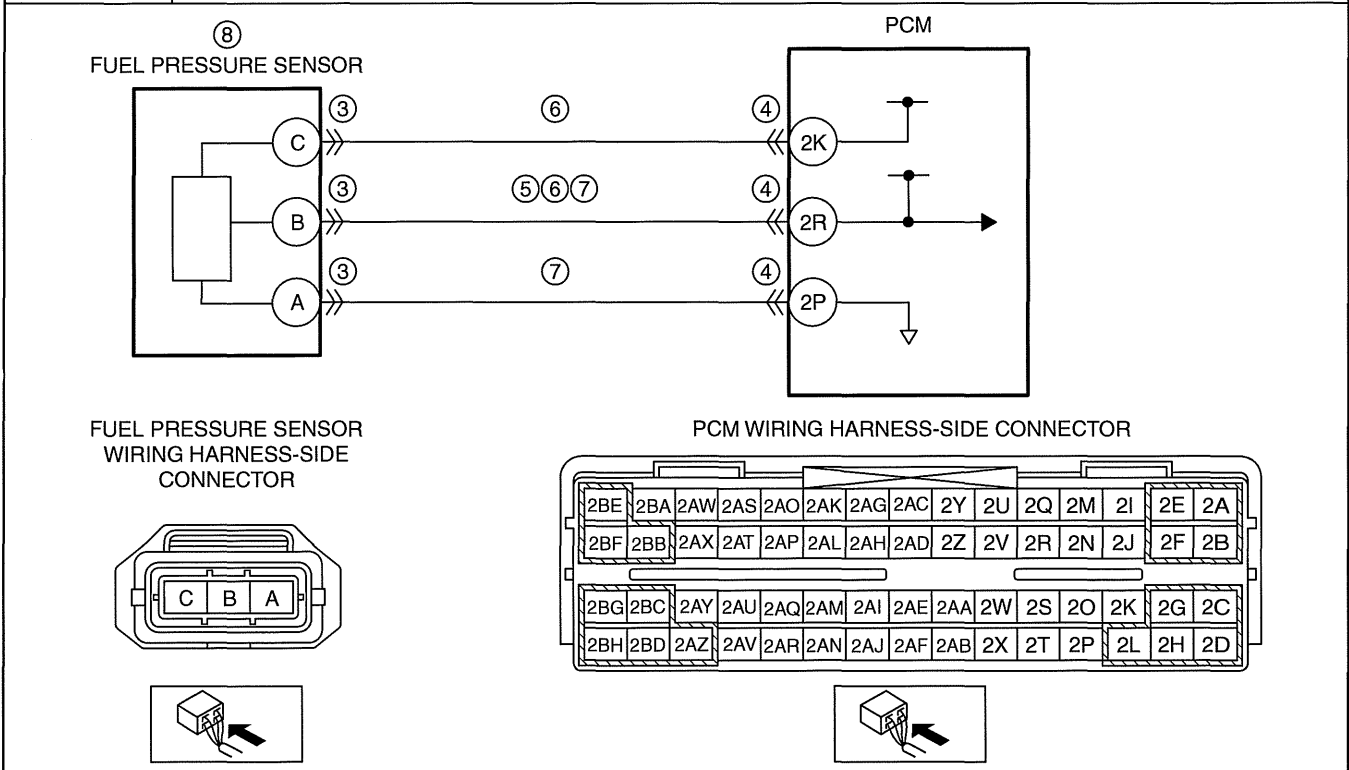
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0193:00 [L3 WITH TC]

id010239147800

01-02B

DTC P0193:00	Fuel pressure sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> If the input voltage from the fuel pressure sensor is more than 4.8 V for 5.3 s, the PCM determines that the fuel pressure sensor circuit is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel pressure sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between fuel pressure sensor terminal B and PCM terminal 2R Fuel pressure sensor power supply circuit and signal circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel pressure sensor terminal B—PCM terminal 2R — Fuel pressure sensor terminal A—PCM terminal 2P Fuel pressure sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the fuel pressure sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT FUEL PRESSURE SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel pressure sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fuel pressure sensor terminal B (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL PRESSURE SENSOR POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Fuel pressure sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between fuel pressure sensor terminals C and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL PRESSURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel pressure sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel pressure sensor terminal B—PCM terminal 2R — Fuel pressure sensor terminal A—PCM terminal 2P • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel pressure sensor, then go to the next step. (See 01-40B-29 FUEL PRESSURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

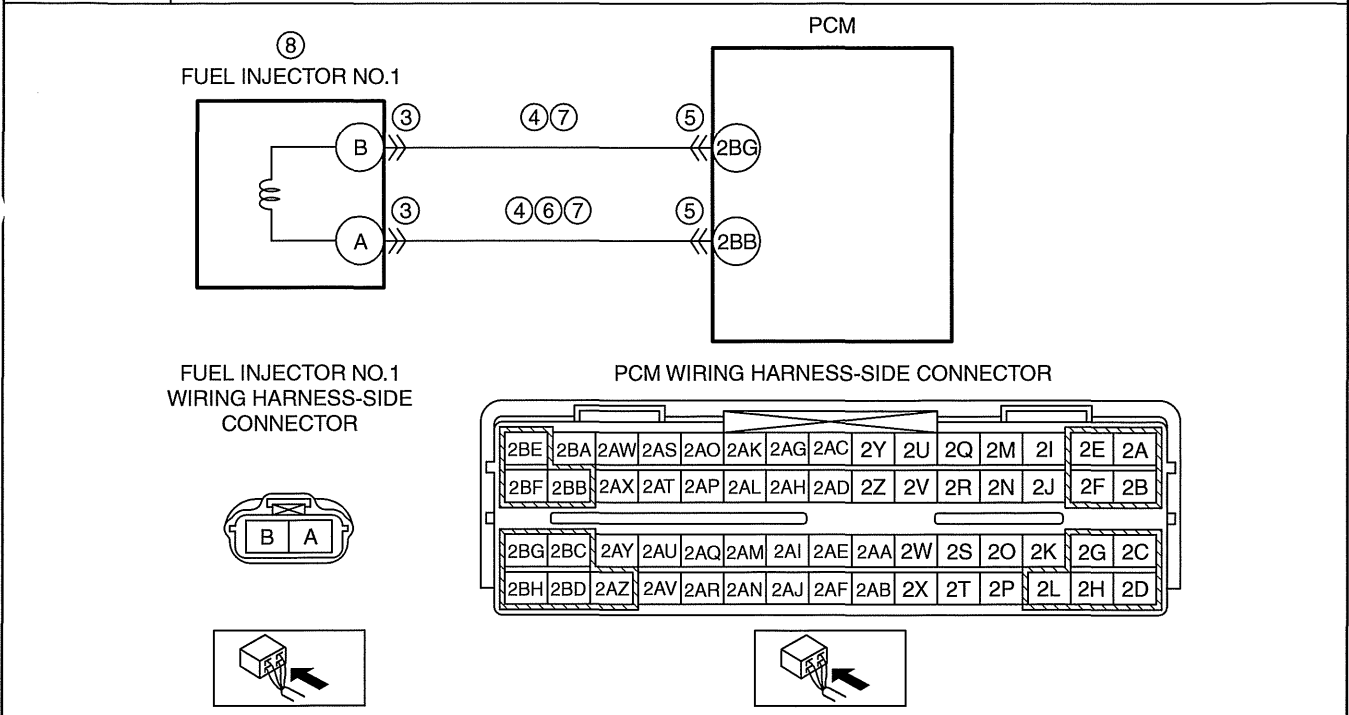
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0201:00 [L3 WITH TC]

id010239147900

01-02B

DTC P0201:00	Injector circuit/open cylinder No.1
DETECTION CONDITION	<ul style="list-style-type: none"> If the fuel injection verification signal is not input at 255 times continuously even though the PCM drives the fuel injector No.1, the PCM determines that there is an open circuit in the fuel injector No.1 control circuit. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: 4,000 rpm or less — Battery voltage: 10.03 V or more — Fuel injection control: except during fuel cut <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel injector No.1 connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.1 terminal B—PCM terminal 2BG — Fuel injector No.1 terminal A—PCM terminal 2BB PCM connector or terminals malfunction Short to power supply in wiring harness between fuel injector No.1 terminal A and PCM terminal 2BB Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.1 terminal B—PCM terminal 2BG — Fuel injector No.1 terminal A—PCM terminal 2BB Fuel injector No.1 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT FUEL INJECTOR NO.1 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel injector No.1 connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT FUEL INJECTOR NO.1 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel injector No.1 connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Fuel injector No.1 terminal B — Fuel injector No.1 terminal A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL INJECTOR NO.1 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel injector No.1 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fuel injector No.1 terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL INJECTOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel injector No.1 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel injector No.1 terminal B—PCM terminal 2BG — Fuel injector No.1 terminal A—PCM terminal 2BB • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL INJECTOR NO.1 <ul style="list-style-type: none"> • Inspect the fuel injector No.1. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel injector No.1, then go to the next step. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

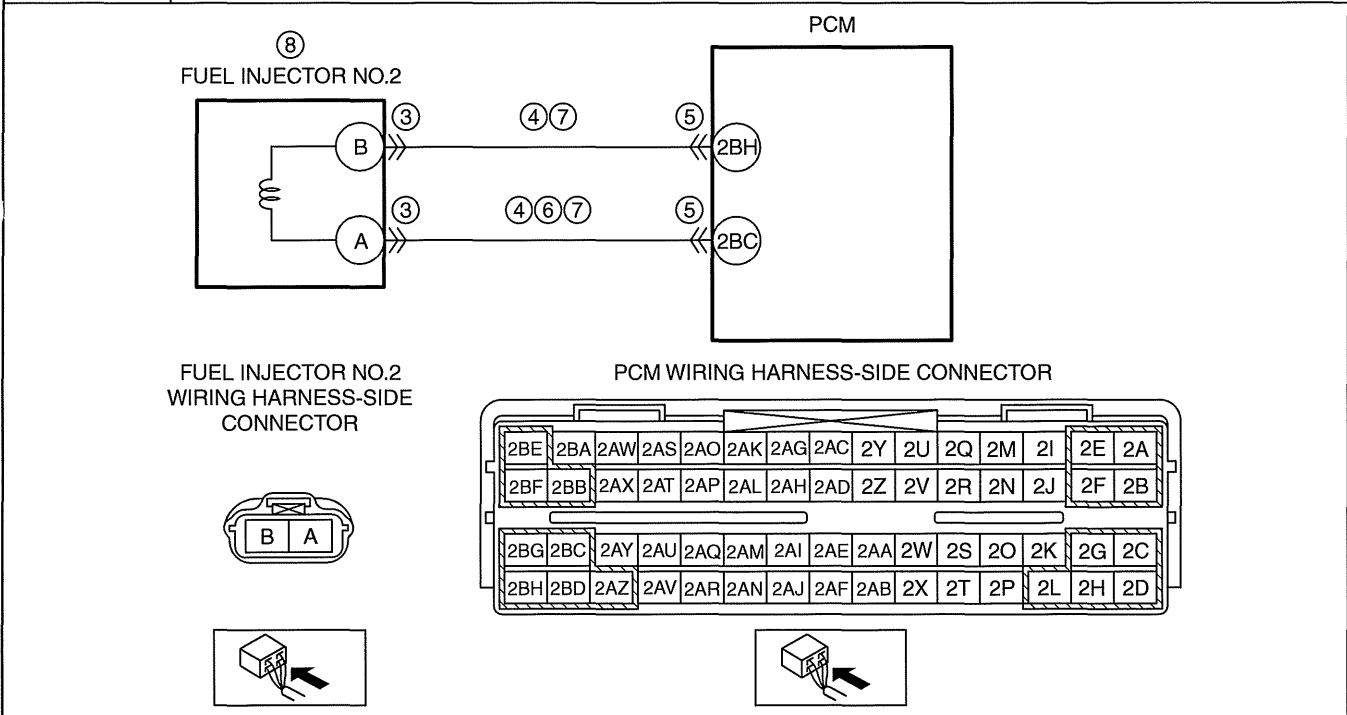
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0202:00 [L3 WITH TC]

id010239148000

01-02B

DTC P0202:00	Injector circuit/open cylinder No.2
DETECTION CONDITION	<ul style="list-style-type: none"> If the fuel injection verification signal is not input at 255 times continuously even though the PCM drives the fuel injector No.2, the PCM determines that there is an open circuit in the fuel injector No.2 control circuit. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: 4,000 rpm or less — Battery voltage: 10.03 V or more — Fuel injection control: except during fuel cut <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel injector No.2 connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.2 terminal B—PCM terminal 2BH — Fuel injector No.2 terminal A—PCM terminal 2BC PCM connector or terminals malfunction Short to power supply in wiring harness between fuel injector No.2 terminal A and PCM terminal 2BC Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.2 terminal B—PCM terminal 2BH — Fuel injector No.2 terminal A—PCM terminal 2BC Fuel injector No.2 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT FUEL INJECTOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel injector No.2 connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT FUEL INJECTOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel injector No.2 connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Fuel injector No.2 terminal B — Fuel injector No.2 terminal A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL INJECTOR NO.2 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel injector No.2 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fuel injector No.2 terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL INJECTOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel injector No.2 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel injector No.2 terminal B—PCM terminal 2BH — Fuel injector No.2 terminal A—PCM terminal 2BC • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL INJECTOR NO.2 <ul style="list-style-type: none"> • Inspect the fuel injector No.2. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel injector No.2, then go to the next step. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

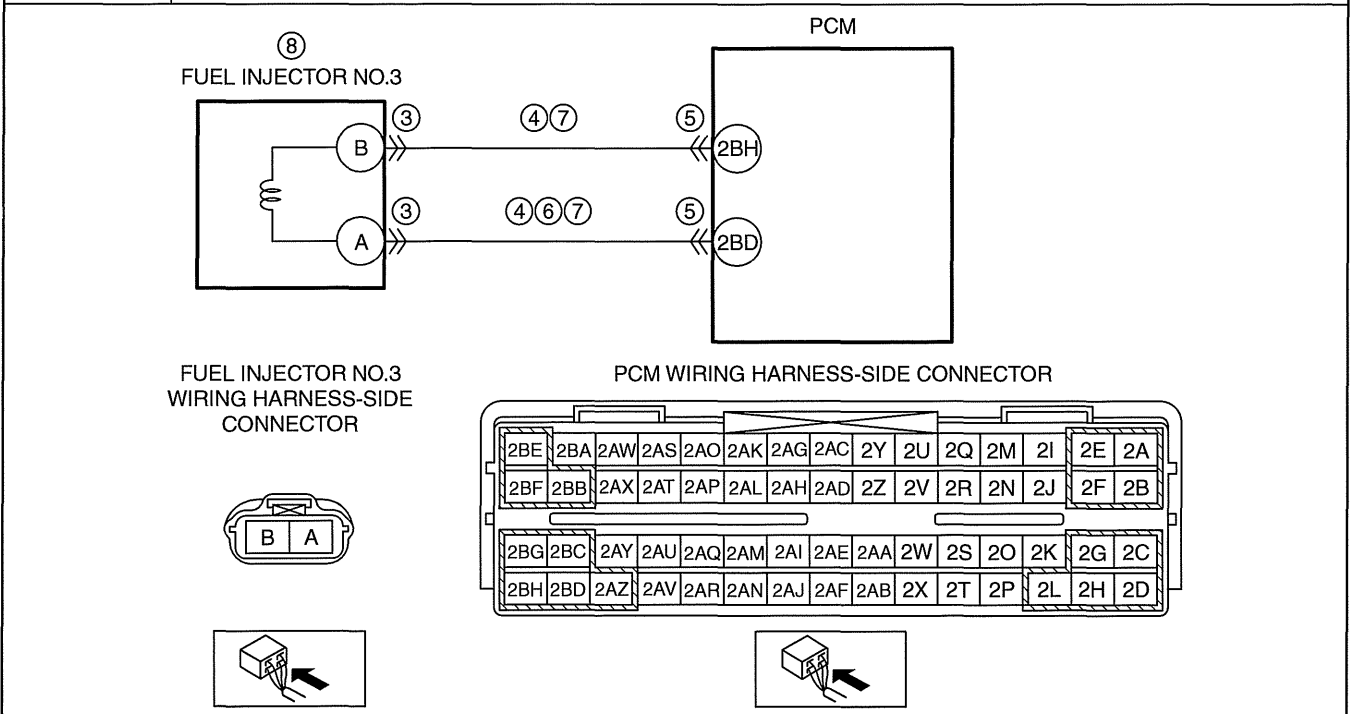
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0203:00 [L3 WITH TC]

id010239148100

01-02B

DTC P0203:00	Injector circuit/open cylinder No.3
DETECTION CONDITION	<ul style="list-style-type: none"> If the fuel injection verification signal is not input at 255 times continuously even though the PCM drives the fuel injector No.3, the PCM determines that there is an open circuit in the fuel injector No.3 control circuit. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: 4,000 rpm or less — Battery voltage: 10.03 V or more — Fuel injection control: except during fuel cut <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel injector No.3 connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.3 terminal B—PCM terminal 2BH — Fuel injector No.3 terminal A—PCM terminal 2BD PCM connector or terminals malfunction Short to power supply in wiring harness between fuel injector No.3 terminal A and PCM terminal 2BD Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.3 terminal B—PCM terminal 2BH — Fuel injector No.3 terminal A—PCM terminal 2BD Fuel injector No.3 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT FUEL INJECTOR NO.3 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel injector No.3 connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT FUEL INJECTOR NO.3 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel injector No.3 connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Fuel injector No.3 terminal B — Fuel injector No.3 terminal A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL INJECTOR NO.3 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel injector No.3 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fuel injector No.3 terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL INJECTOR NO.3 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel injector No.3 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel injector No.3 terminal B—PCM terminal 2BH — Fuel injector No.3 terminal A—PCM terminal 2BD • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL INJECTOR NO.3 <ul style="list-style-type: none"> • Inspect the fuel injector No.3. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel injector No.3, then go to the next step. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

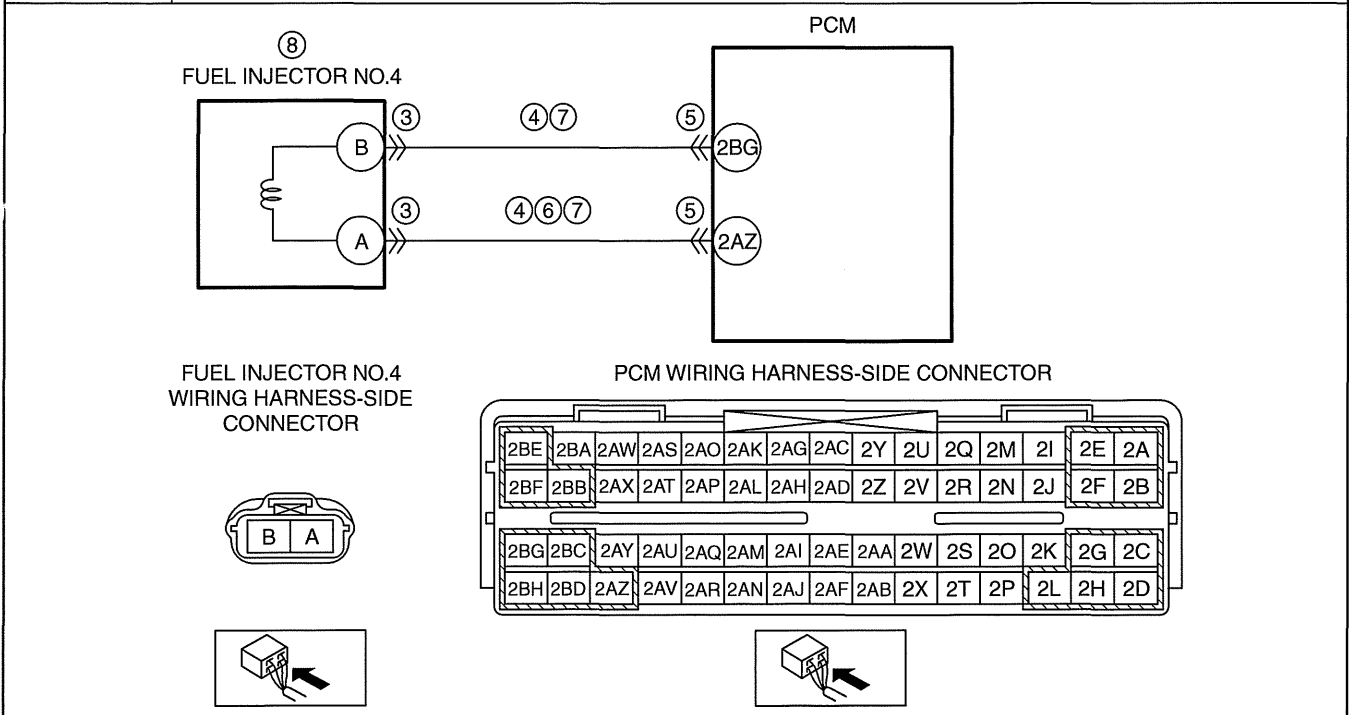
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0204:00 [L3 WITH TC]

id010239148200

01-02B

DTC P0204:00	Injector circuit/open cylinder No.4
DETECTION CONDITION	<ul style="list-style-type: none"> If the fuel injection verification signal is not input at 255 times continuously even though the PCM drives the fuel injector No.4, the PCM determines that there is an open circuit in the fuel injector No.4 control circuit. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Engine speed: 4,000 rpm or less — Battery voltage: 10.03 V or more — Fuel injection control: except during fuel cut <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel injector No.4 connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.4 terminal B—PCM terminal 2BG — Fuel injector No.4 terminal A—PCM terminal 2AZ PCM connector or terminals malfunction Short to power supply in wiring harness between fuel injector No.4 terminal A and PCM terminal 2AZ Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel injector No.4 terminal B—PCM terminal 2BG — Fuel injector No.4 terminal A—PCM terminal 2AZ Fuel injector No.4 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT FUEL INJECTOR NO.4 CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel injector No.4 connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT FUEL INJECTOR NO.4 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel injector No.4 connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Fuel injector No.4 terminal B — Fuel injector No.4 terminal A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL INJECTOR NO.4 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel injector No.4 and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fuel injector No.4 terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL INJECTOR NO.4 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel injector No.4 and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel injector No.4 terminal B—PCM terminal 2BG — Fuel injector No.4 terminal A—PCM terminal 2AZ • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL INJECTOR NO.4 <ul style="list-style-type: none"> • Inspect the fuel injector No.4. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel injector No.4, then go to the next step. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

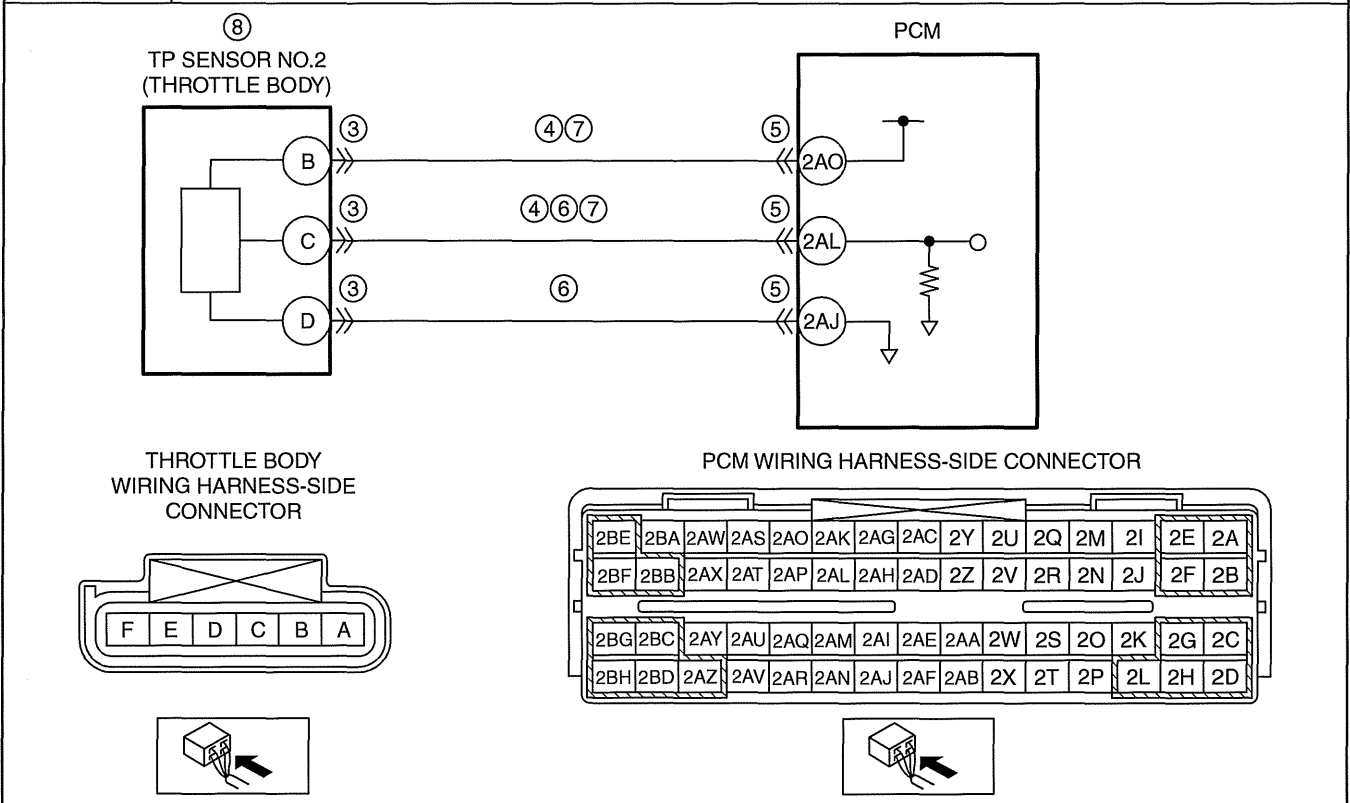
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0222:00 [L3 WITH TC]

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01-02B

DTC P0222:00	TP sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the TP sensor No.2 voltage is below 0.2 V after the ignition is switched to ON, the PCM determines that the TP sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AO — Throttle body terminal C—PCM terminal 2AL PCM connector or terminals malfunction TP sensor No.2 signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AO — Throttle body terminal C—PCM terminal 2AL TP sensor No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT TP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Throttle body terminal B — Throttle body terminal C • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.2 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminals C and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT TP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AO — Throttle body terminal C—PCM terminal 2AL • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT TP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the TP sensor No.2. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

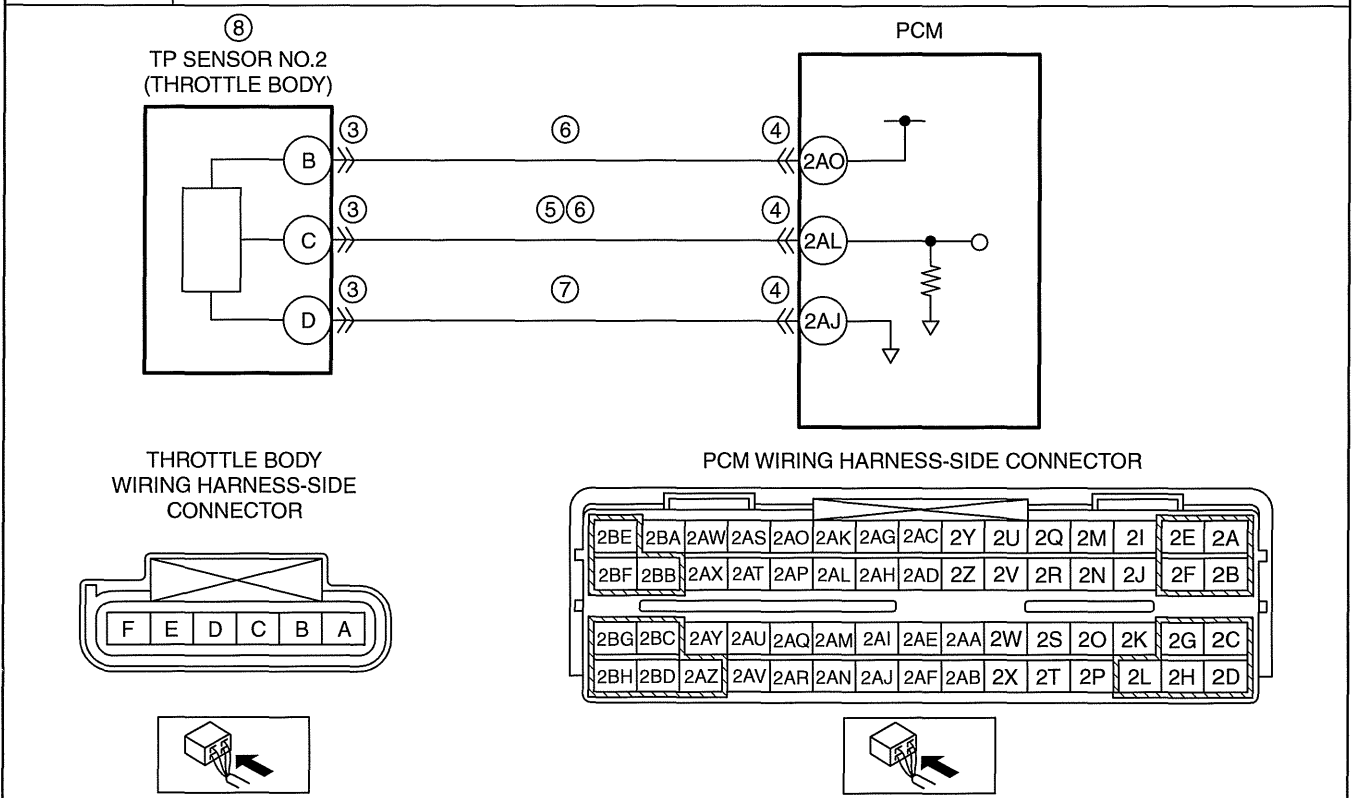
STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

DTC P0223:00 [L3 WITH TC]

id010239702900

DTC P0223:00	TP sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM detects that the TP sensor No.2 voltage is above 4.85 V after the ignition is switched to ON, the PCM determines that the TP sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between throttle body terminal C and PCM terminal 2AL TP sensor No.2 power supply circuit and signal circuit are shorted to each other. Open circuit in wiring harness between throttle body terminal D and PCM terminal 2AJ TP sensor No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the throttle body terminal C (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.2 POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between throttle body terminals B and C (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT TP SENSOR NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between throttle body terminal D (wiring harness-side) and PCM terminal 2AJ (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT TP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the TP sensor No.2. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0234:00 [L3 WITH TC]

id010239148400

01-02B

DTC P0234:00	Turbo/supercharger overboost condition
DETECTION CONDITION	<ul style="list-style-type: none"> If the manifold absolute pressure or charging efficiency are more than the specification for the specified period of time, the PCM determines that the turbocharger is in an over boost condition. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> Engine speed: 2,000 rpm or more <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wastegate control solenoid valve malfunction Vacuum hose malfunction <ul style="list-style-type: none"> Looseness Damage Improper installation PCM malfunction

Diagnostic procedure

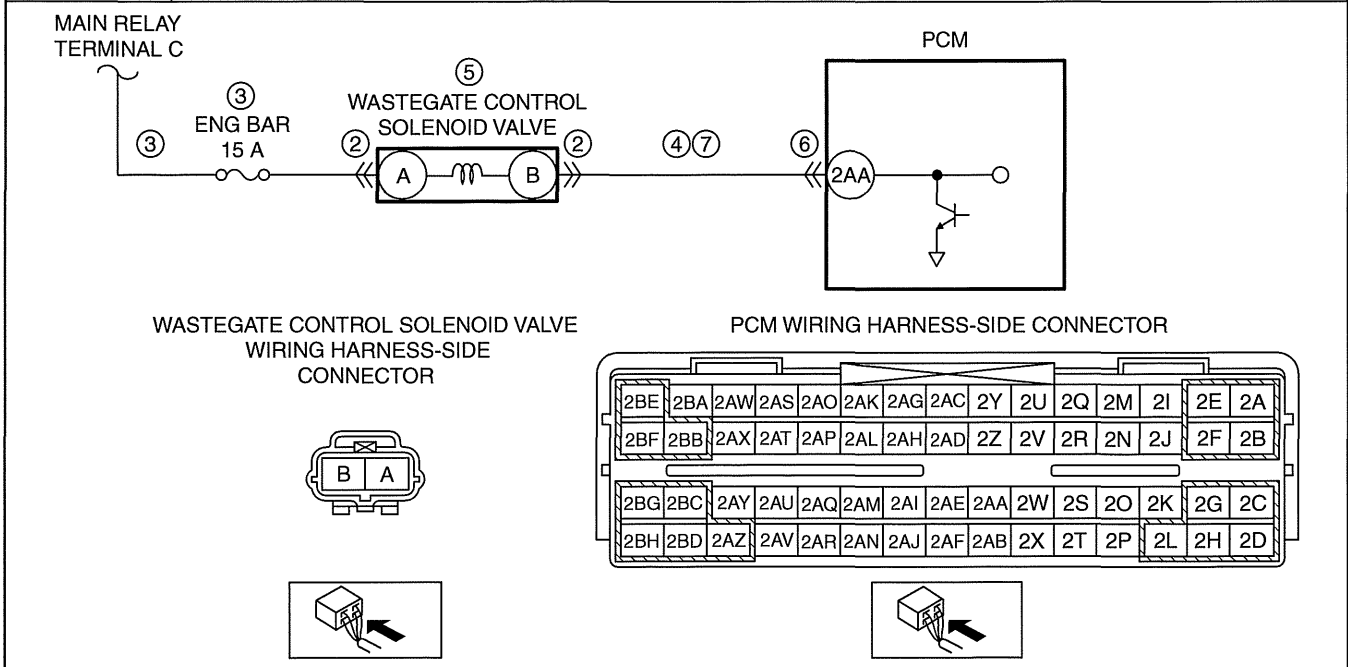
STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT WASTEGATE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> Inspect the wastegate control solenoid valve. (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the wastegate control solenoid valve, then go to Step 4. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT VACUUM HOSE <ul style="list-style-type: none"> Inspect the vacuum hose condition for the following: <ul style="list-style-type: none"> Looseness Damage Improper installation Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOER/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0245:00 [L3 WITH TC]

id01023990000

DTC P0245:00	Wastegate control solenoid valve circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> When the PCM turns the wastegate control solenoid valve off but the wastegate control solenoid valve circuit voltage is low for 5 s, the PCM determines that the wastegate control solenoid valve control circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wastegate control solenoid valve connector or terminals malfunction Short to ground or open circuit in wastegate control solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay and wastegate control solenoid valve terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay and wastegate control solenoid valve terminal A Short to ground in wiring harness between wastegate control solenoid valve terminal B and PCM terminal 2AA Wastegate control solenoid valve malfunction PCM connector or terminals malfunction Open circuit in wiring harness between wastegate control solenoid valve terminal B and PCM terminal 2AA PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT WASTEGATE CONTROL SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the wastegate control solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
3	INSPECT WASTEGATE CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> Wastegate control solenoid valve connector is disconnected. Switch the ignition to ON (engine off). Measure the voltage between wastegate control solenoid valve terminal A (wiring harness-side) and body ground. Is the voltage B+? 	Yes Go to the next step.
		No Inspect the ENG BAR 1 15 A fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 8.
4	INSPECT WASTEGATE CONTROL SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Wastegate control solenoid valve connector is disconnected. Switch the ignition to off. Inspect for continuity between wastegate control solenoid valve terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No Go to the next step.
5	INSPECT WASTEGATE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> Inspect the wastegate control solenoid valve. (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the wastegate control solenoid valve, then go to Step 8. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
7	INSPECT WASTEGATE CONTROL SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Wastegate control solenoid valve and PCM connectors are disconnected. Inspect for continuity between wastegate control solenoid valve terminal B (wiring harness-side) and PCM terminal 2AA (wiring harness-side). Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0246:00 [L3 WITH TC]

id010239900100

DTC P0246:00	Wastegate control solenoid valve circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> When the PCM turns the wastegate control solenoid valve on but the wastegate control solenoid valve circuit voltage is high for 5 s, the PCM determines that the wastegate control solenoid valve control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wastegate control solenoid valve connector or terminals malfunction Wastegate control solenoid valve malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between wastegate control solenoid valve terminal B and PCM terminal 2AA PCM malfunction

MAIN RELAY TERMINAL C

WASTEGATE CONTROL SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR

PCM

PCM WIRING HARNESS-SIDE CONNECTOR

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT WASTEGATE CONTROL SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the wastegate control solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT WASTEGATE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the wastegate control solenoid valve. (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the wastegate control solenoid valve, then go to Step 6. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT WASTEGATE CONTROL SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Wastegate control solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the wastegate control solenoid valve terminal B (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0300:00 [L3 WITH TC]

id010239703200

DTC P0300:00	Random misfire detected
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the CKP sensor input signal interval time. The PCM calculates the change of interval time for each cylinder. If the change of interval time exceeds the preprogrammed criteria, the PCM detects a misfire in the corresponding cylinder. While the engine is running, the PCM counts the number of misfires that occurred at 200 crankshaft revolutions and 1,000 crankshaft revolutions and calculates a misfire ratio for each crankshaft revolution. If the ratio exceeds the preprogrammed criteria, the PCM determines that a misfire, which can damage the catalytic converter or affect emission performance, has occurred. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (misfire). • The MIL illuminates if the PCM detects a misfire which affects emission performance in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • The MIL flashes if the PCM detects a misfire which can damage the catalytic converter during the first drive cycle. • PENDING CODE is available if the PCM detects a misfire which affects emission performance during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor No.1 signal malfunction — IAT sensor signal malfunction — MAF sensor signal malfunction — CKP sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction — Related connector or terminals malfunction — Related wiring harness malfunction • CMP sensor malfunction • CKP sensor looseness • Ignition coil related wiring harness malfunction • Ignition system malfunction <ul style="list-style-type: none"> — Spark plug malfunction — Ignition coil malfunction • Air restriction or leakage in intake air system (between MAF sensor and intake manifold) • MAF sensor contamination • Turbocharger malfunction (turbine wheel/compressor wheel damaged, stuck) • Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pump unit malfunction — Fuel pressure regulator (built-in fuel pump unit) malfunction — Fuel line clogged — Fuel filter clogged — Fuel leakage in fuel line — Fuel runout • Improper operation of variable valve timing control system • Purge solenoid valve malfunction • Vacuum hoses damage or improper connection • Improper operation of fuel pump speed control • Engine internal malfunction <ul style="list-style-type: none"> — Engine coolant leakage into combustion chamber — Insufficient engine compression • High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure sensor (built-in fuel delivery pipe) malfunction — Relief valve (built-in fuel delivery pipe) malfunction — High pressure fuel pump malfunction — Spill valve control solenoid valve (built-in high pressure fuel pump) malfunction • EGR valve malfunction • PCV valve malfunction • Poor quality fuel • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (misfire related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS (KEY TO ON/IDLE) <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> — APP1 — APP2 — ECT — IAT — MAF — RPM — TP REL — VSS • Is there any signal that is far out of specification when the ignition switch is ON and the engine idles? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Inspect the suspected circuit. <ul style="list-style-type: none"> • If the inspection results are normal: <ul style="list-style-type: none"> — Go to the next step. • If the inspection results are not normal: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS UNDER TROUBLE CONDITION <ul style="list-style-type: none"> • Access the same PIDs as in Step 4 while simulating the FREEZE FRAME DATA (Mode 2) condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is there any signal which causes drastic changes? 	Yes	Inspect the suspected circuit. <ul style="list-style-type: none"> • If the inspection results are normal: <ul style="list-style-type: none"> — Go to the next step. • If the inspection results are not normal: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
6	INSPECT CMP SENSOR <ul style="list-style-type: none"> • Inspect the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Inspect the installation condition for damage to the timing chain and gears. <ul style="list-style-type: none"> • If there is no malfunction: <ul style="list-style-type: none"> — Replace the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results. Go to Step 27.
		No	Go to the next step.
7	INSPECT INSTALLATION OF CKP SENSOR <ul style="list-style-type: none"> • Inspect if the CKP sensor is loosely installed. • Is the CKP sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the CKP sensor, then go to Step 27. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
8	INSPECT IGNITION COIL HARNESSSES <ul style="list-style-type: none"> • Inspect the ignition coil related wiring harness condition (intermittent open or short) for all cylinders. • Is there any malfunction? 	Yes	Repair or replace the suspected wiring harnesses, then go to Step 27.
		No	Go to the next step.
9	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is a strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the spark test result, then go to Step 27.
10	INSPECT MAF PID <ul style="list-style-type: none"> • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Face the engine and verify that the MAF PID changes quickly according to the change in the engine speed. • Is the MAF PID value normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 13.
		No	Go to the next step.
11	INSPECT IN INTAKE AIR SYSTEM FOR RESTRICTION OR LEAKAGE <ul style="list-style-type: none"> • Inspect for air leakage at the following: <ul style="list-style-type: none"> — Between MAF sensor and throttle body — Between throttle body and intake manifold <p>Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
12	INSPECT TURBOCHARGER <ul style="list-style-type: none"> • Inspect the turbocharger. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the turbocharger, then go to Step 27. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Replace the MAF/IAT sensor, then go to Step 27. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
13	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> • Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. • Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the low side fuel pressure within the specification? 	Yes	Go to Step 15.
		No	If the fuel line pressure is too low: <ul style="list-style-type: none"> • Go to the next step. If the fuel line pressure is too high: <ul style="list-style-type: none"> • Replace the fuel pump unit, then go to Step 27. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [L3 WITH TC].)
14	INSPECT FUEL LINE FROM FUEL PUMP TO FUEL DELIVERY PIPE <ul style="list-style-type: none"> • Visually inspect the fuel line for fuel leakage. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Inspect the fuel filters for foreign material or stain inside fuel filter (low-pressure side). <ul style="list-style-type: none"> • Perform the following actions depend on the result above. <ul style="list-style-type: none"> — If foreign materials or stain is found inside fuel filter (low-pressure side): <ul style="list-style-type: none"> • Clean the fuel tank and filter (low-pressure side). — If normal: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [L3 WITH TC].) Go to Step 27.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
15	INSPECT VARIABLE VALVE TIMING CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
16	INSPECT OPERATION OF PURGE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the vacuum pump to the purge solenoid valve and apply vacuum to the solenoid. • Verify that the solenoid holds vacuum. • Switch the ignition to ON (engine off). • Access the EVAPCP PID of simulation item using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Set the duty value to 100% for the EVAPCP PID. • Apply the vacuum while turning the solenoid from OFF to ON and simulating the EVAPCP PID with a 100% duty value. • Verify that the solenoid releases vacuum while the solenoid is turned on. • Is the purge control solenoid valve operation normal? 	Yes	Go to the next step.
		No	Replace the purge solenoid valve, then go to Step 27. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
17	VERIFY FUEL PUMP SPEED CONTROL OPERATION <ul style="list-style-type: none"> • Perform the Fuel Pump Speed Control Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
18	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
19	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
20	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 25.
		No	Go to the next step.
21	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Is the vehicle accelerate performance normally? 	Yes	Go to the next step.
		No	Go to Step 24.
22	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 27. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
23	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> • Go to Step 27.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe, then go to Step 27. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
24	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> • Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. • Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the low side fuel pressure within the specification? 	Yes	Go to the next step.
		No	Inspect for the following. <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results. Go to Step 27.
25	INSPECT EGR VALVE OPERATION <ul style="list-style-type: none"> • Remove the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].) • Visually inspect if the EGR valve is stuck open. • Is the EGR valve stuck open? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 27.
		No	Go to the next step.
26	INSPECT PCV VALVE OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].) • Inspect the PCV valve operation. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the PCV valve, then go to the next step. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
27	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
28	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0301:00, P0302:00, P0303:00, P0304:00 [L3 WITH TC]

id010239703300

01-02B

DTC P0301:00	Cylinder No.1 misfire detected
DTC P0302:00	Cylinder No.2 misfire detected
DTC P0303:00	Cylinder No.3 misfire detected
DTC P0304:00	Cylinder No.4 misfire detected
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the CKP sensor input signal interval time, and calculates the change of interval time for each cylinder. If the change of interval time exceeds the preprogrammed criteria, the PCM detects a misfire in the corresponding cylinder. While the engine is running, the PCM counts the number of misfires that occurred at 200 crankshaft revolutions and 1,000 crankshaft revolutions and calculates a misfire ratio for each crankshaft revolution. If the ratio exceeds the preprogrammed criteria, the PCM determines that a misfire, which can damage the catalytic converter or affect emission performance, has occurred. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (misfire). The MIL illuminates if the PCM detects a misfire which affects emission performance in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. The MIL flashes if the PCM detects a misfire which can damage the catalytic converter during the first drive cycle. PENDING CODE is available if the PCM detects a misfire which affects emission performance during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Erratic signal to PCM <ul style="list-style-type: none"> — APP sensor signal malfunction — ECT sensor No.1 signal malfunction — IAT sensor signal malfunction — MAF sensor signal malfunction — CKP sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction — Related connector or terminals malfunction — Related wiring harness malfunction Air suction in intake air system (between dynamic chamber and cylinder head) Engine coolant leakage into combustion chamber Fuel injector related wiring harness malfunction Ignition system malfunction <ul style="list-style-type: none"> — Spark plug malfunction — Ignition coil malfunction — Ignition coil related wiring harness malfunction Inadequate engine compression due to engine internal malfunction Improper operation of fuel injector PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (misfire related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS (KEY TO ON/IDLE) <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> — APP1 — APP2 — ECT — IAT — MAF — RPM — TP REL — VSS • Is there any signal that is far out of specification when the ignition switch is ON and the engine idles? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Inspect the suspected circuit. <ul style="list-style-type: none"> • If the inspection results are normal: <ul style="list-style-type: none"> — Go to the next step. • If the inspection results are not normal: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS UNDER TROUBLE CONDITION <ul style="list-style-type: none"> • Access the same PIDs as in Step 4 while simulating the FREEZE FRAME DATA (Mode 2) condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is there any signal which causes drastic changes? 	Yes	Inspect the suspected circuit. <ul style="list-style-type: none"> • If the inspection results are normal: <ul style="list-style-type: none"> — Go to the next step. • If the inspection results are not normal: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
6	INSPECT INTAKE-AIR SYSTEM FOR AIR SUCTION <ul style="list-style-type: none"> • Inspect for air leakage at the following: <ul style="list-style-type: none"> — Around connection of dynamic chamber and intake manifold — Around connection of intake manifold and cylinder head Note <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
7	INSPECT SEALING OF ENGINE COOLANT PASSAGE <ul style="list-style-type: none"> • Perform the "ENGINE COOLANT LEAKAGE INSPECTION". (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
8	INSPECT WHETHER MALFUNCTION IS IN IGNITION SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> • Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is a strong blue spark visible at the suspected cylinder? 	Yes	Go to Step 11.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT SPARK PLUG <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the suspected spark plug. (See 01-18B-3 SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC].) • Inspect the suspected spark plug. (See 01-18B-3 SPARK PLUG INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the suspected spark plug, then go to Step 14. (See 01-18B-3 SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	INSPECT IGNITION COIL <ul style="list-style-type: none"> • Inspect the suspected ignition coil. (See 01-18B-2 IGNITION COIL INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the suspected ignition coil, then go to Step 14. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Inspect the suspect cylinder ignition coil related wiring harness. <ul style="list-style-type: none"> • Repair or replace the suspected wiring harness, if necessary. Go to Step 14.
11	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
12	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Access the INJ_1, INJ_2, INJ_3, INJ_4 PIDs. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Start the engine and warm it up to the normal operating temperature. • Turn the fuel injector off from on using the PID simulation function. • Does the engine speed decrease while the fuel injectors are turned off? 	Yes	Go to Step 14.
		No	Go to the next step.
13	INSPECT FUEL INJECTOR WIRING HARNESS <ul style="list-style-type: none"> • Remove the intake air system parts. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) • Disconnect the fuel injector connector on suspected cylinder. • Connect the NOID LIGHT to the fuel injector terminals. • Inspect the dim of light during cranking. • Does the light illuminate? 	Yes	Replace the suspect fuel injector, then go to the next step. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Repair or replace the suspected wiring harness, if necessary, then go to the next step.
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

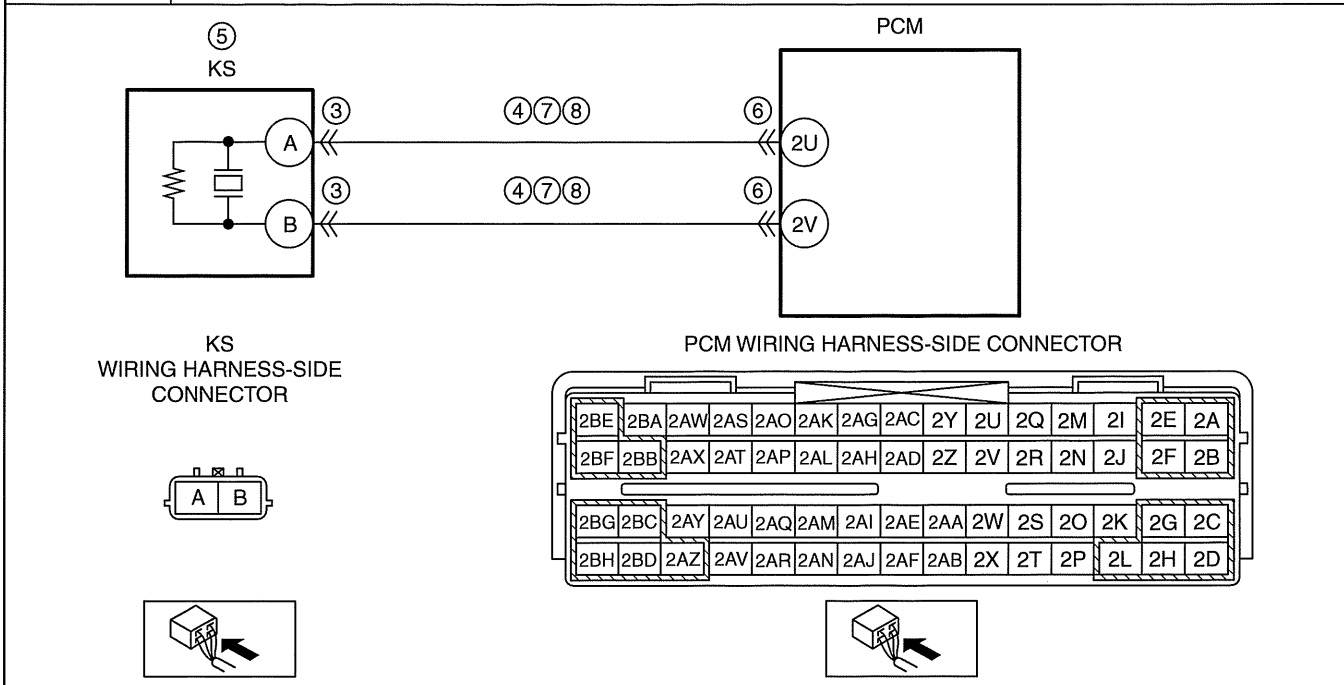
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0327:00 [L3 WITH TC]

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DTC P0327:00	KS circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the KS when the engine is running. If the input voltage at the PCM terminals between 2V and 2U is below 0.2 V for 5 s, the PCM determines that the KS circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> KS connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V KS malfunction PCM connector or terminals malfunction KS circuits are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT KS CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the KS connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
4	INSPECT KS CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • KS connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — KS terminal A — KS terminal B • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No Go to the next step.
5	INSPECT KS <ul style="list-style-type: none"> • Inspect the KS. (See 01-40B-35 KNOCK SENSOR (KS) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes Replace the KS, then go to Step 9. (See 01-40B-34 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
7	INSPECT KS CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • KS and PCM connectors are disconnected. • Inspect for continuity between KS terminals A and B (wiring harness-side). • Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No Go to the next step.
8	INSPECT KS CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • KS and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

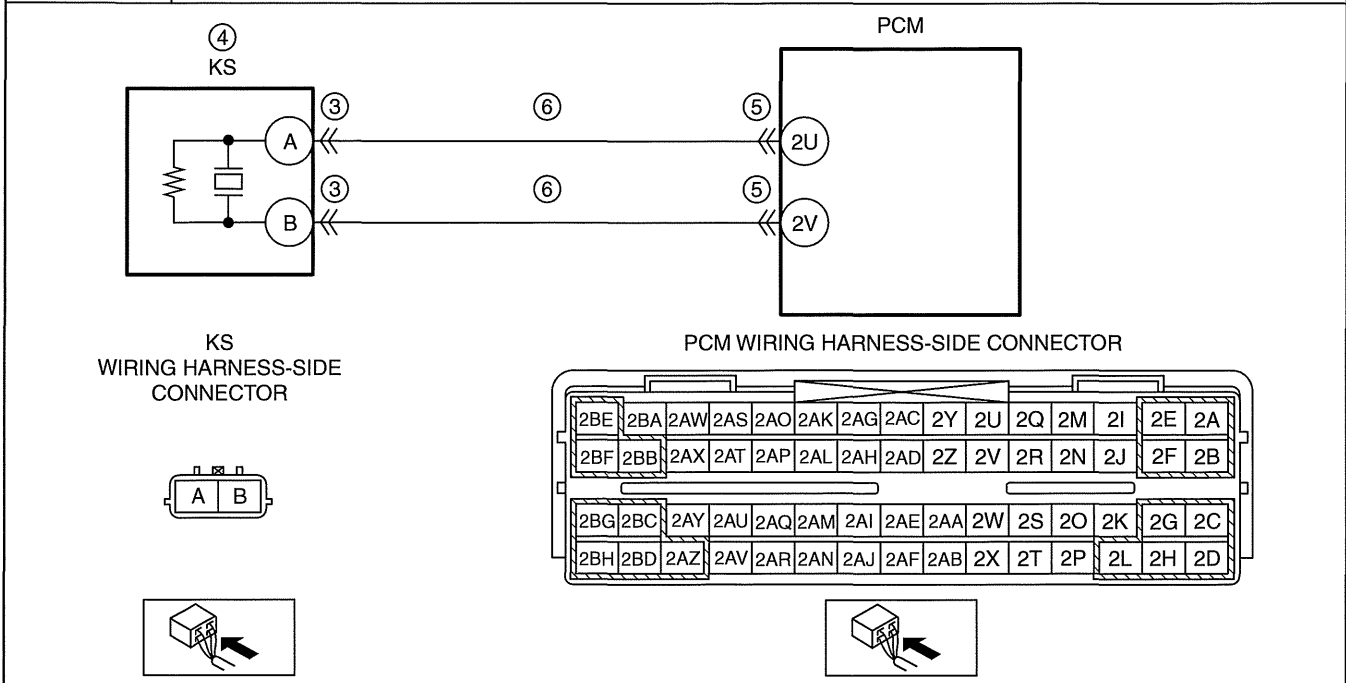
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0328:00 [L3 WITH TC]

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DTC P0328:00	KS circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the KS when the engine is running. If the input voltage at the PCM terminals between 2V and 2U is above 4.8 V for 5 s, the PCM determines that the KS circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> KS connector or terminals malfunction KS malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — KS terminal A—PCM terminal 2U — KS terminal B—PCM terminal 2V PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT KS CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the KS connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT KS <ul style="list-style-type: none"> Inspect the KS. (See 01-40B-35 KNOCK SENSOR (KS) INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the KS, then go to Step 7. (See 01-40B-34 KNOCK SENSOR (KS) REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT KS CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • KS and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — KS terminal A — KS terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

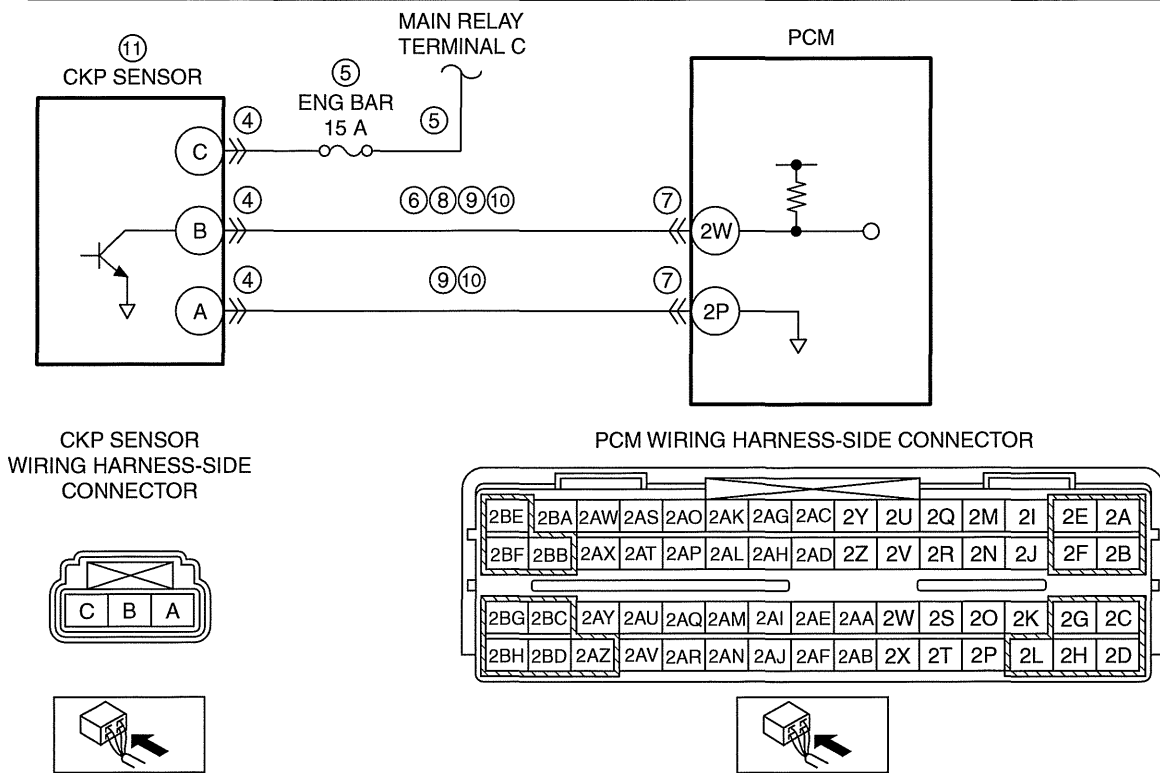
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0335:00 [L3 WITH TC]

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DTC P0335:00	CKP sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> If the PCM does not receive the input voltage from the CKP sensor for 4.2 s while the MAF is 2.0 g/s {0.26 lb/min.} or above, the PCM determines that the CKP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CKP sensor connector or terminals malfunction Short to ground or open circuit in CKP sensor power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and CKP sensor terminal C — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and CKP sensor terminal C Short to ground in wiring harness between CKP sensor terminal B and PCM terminal 2W PCM connector or terminals malfunction Short to power supply in wiring harness between CKP sensor terminal B and PCM terminal 2W CKP sensor signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — CKP sensor terminal B—PCM terminal 2W — CKP sensor terminal A—PCM terminal 2P CKP sensor malfunction <ul style="list-style-type: none"> — CKP sensor pulse wheel malfunction — CKP sensor is dirty PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CKP SENSOR VOLTAGE <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the CKP sensor connector. Connect the voltmeter between the CKP sensor terminals C and B (sensor-side). Measure the voltage in the AC range while cranking the engine. Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 11.
4	INSPECT CKP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> CKP sensor connector is disconnected. Switch the ignition to off. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 12.
		No	Go to the next step.
5	INSPECT CKP SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> CKP sensor connector is disconnected. Switch the ignition to ON (engine off). Measure the voltage at the CKP sensor terminal C (wiring harness-side). Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 12.
6	INSPECT CKP SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> CKP sensor connector is disconnected. Switch the ignition to off. Inspect for continuity between CKP sensor terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 12.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 12.
		No	Go to the next step.
8	INSPECT CKP SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> CKP sensor and PCM connectors are disconnected. Switch the ignition to ON (engine off). Measure the voltage at the CKP sensor terminal B (wiring harness-side). Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 12.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT CKP SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • CKP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between CKP sensor terminals B and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 12.
		No	Go to the next step.
10	INSPECT CKP SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CKP sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — CKP sensor terminal B—PCM terminal 2W — CKP sensor terminal A—PCM terminal 2P • Is there continuity? 	Yes	Go to Step 12.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
11	INSPECT CKP SENSOR <ul style="list-style-type: none"> • Inspect the CKP sensor. (See 01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CKP sensor, then go to the next step. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

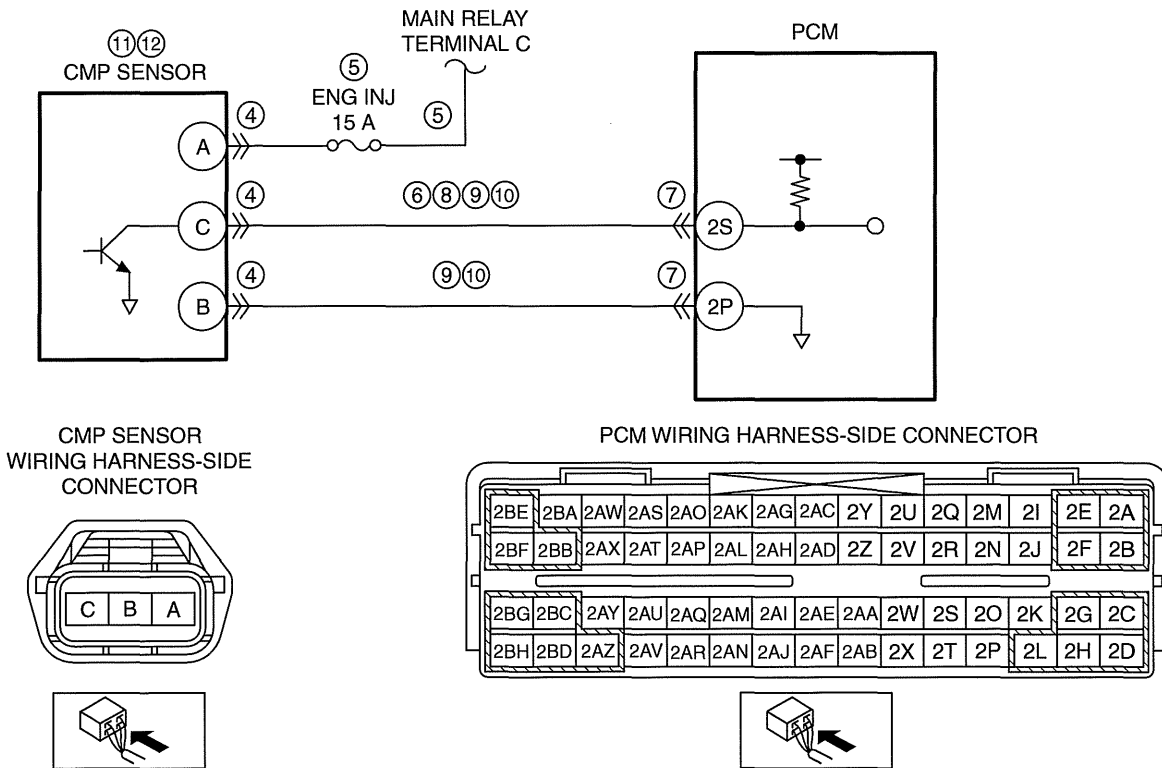
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0340:00 [L3 WITH TC]

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01-02B

DTC P0340:00	CMP sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the CMP sensor when the engine is running. If the PCM does not receive the input voltage from the CMP sensor while the PCM receives the input signal from the CKP sensor, the PCM determines that the CMP sensor circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CMP sensor connector or terminals malfunction Short to ground or open circuit in CMP sensor power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and CMP sensor terminal A — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and CMP sensor terminal A Short to ground in wiring harness between CMP sensor terminal C and PCM terminal 2S PCM connector or terminals malfunction Short to power supply in wiring harness between CMP sensor terminal C and PCM terminal 2S CMP sensor signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — CMP sensor terminal C—PCM terminal 2S — CMP sensor terminal B—PCM terminal 2P CMP sensor malfunction <ul style="list-style-type: none"> — CMP sensor pulse wheel malfunction — CMP sensor is dirty CKP sensor not installed correctly Timing chain not installed correctly <ul style="list-style-type: none"> — Loose timing chain or improper valve timing — Loose camshaft sprocket lock bolt — Loose crankshaft pulley lock bolt PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CMP SENSOR VOLTAGE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CMP sensor connector. • Connect a voltmeter between CMP sensor terminals A and C (sensor-side). • Measure the voltage in AC range while cranking the engine. • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 11.
4	INSPECT CMP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • CMP sensor connector is disconnected. • Switch the ignition to off. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 16.
		No	Go to the next step.
5	INSPECT CMP SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • CMP sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the CMP sensor terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 16.
6	INSPECT CMP SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • CMP sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between CMP sensor terminal C (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 16.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 16.
		No	Go to the next step.
8	INSPECT CMP SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • CMP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the CMP sensor terminal C (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 16.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT CMP SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • CMP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between CMP sensor terminals C and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 16.
		No	Go to the next step.
10	INSPECT CMP SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CMP sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — CMP sensor terminal C—PCM terminal 2S — CMP sensor terminal B—PCM terminal 2P • Is there continuity? 	Yes	Go to Step 12.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 16.
11	INSPECT CMP SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CMP, then go to Step 16. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 16.
12	VERIFY CKP SENSOR INSTALLATION <ul style="list-style-type: none"> • Verify the CKP sensor installation. • Is the CKP sensor installed correctly? 	Yes	Go to the next step.
		No	Reinstall the CKP sensor, then go to Step 16. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
13	VERIFY VALVE TIMING MECHANISM INSTALLATION <ul style="list-style-type: none"> • Verify the valve timing mechanism installation for the following parts: <ul style="list-style-type: none"> — Timing chain misinstallation — Loose camshaft sprocket lock bolt — Loose crankshaft pulley lock bolt • Is the valve timing mechanism installed correctly? 	Yes	Go to the next step.
		No	Reinstall the malfunctioning part, then go to Step 16.
14	INSPECT STOPPER PIN MECHANISM <ul style="list-style-type: none"> • Remove the timing chain. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].) • Inspect the stopper pin mechanism. (See 01-10B-13 VARIABLE VALVE TIMING ACTUATOR INSPECTION [L3 WITH TC].) • Is the stopper pin mechanism normal? 	Yes	Go to the next step.
		No	Replace the variable valve timing actuator, then go to Step 16. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
15	INSPECT ROTOR POSITION <ul style="list-style-type: none"> • Remove the variable valve timing actuator. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].) • Is the rotor position at the maximum valve timing retard? 	Yes	Variable valve timing mechanism is normal. Note <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed by cleaning the variable valve timing mode control function. Go to the next step.
		No	Replace the variable valve timing actuator, then go to the next step. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
16	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
17	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0401:00 [L3 WITH TC]

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DTC P0401:00	EGR flow insufficient detected
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the difference in the intake manifold pressures when the EGR is operated and when it is stopped. If the difference is too small, the PCM determines that the EGR flow is insufficient. Diagnostic support note <ul style="list-style-type: none"> This is an intermittent monitor (EGR system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAP sensor malfunction EGR valve malfunction EGR valve passage malfunction <ul style="list-style-type: none"> Gasket of EGR valve malfunction Clogged EGR valve passage PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EGR system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT MAP SENSOR <ul style="list-style-type: none"> • Inspect the MAP sensor. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAP sensor/boost air temperature sensor, then go to Step 7. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT EGR VALVE OPERATION <ul style="list-style-type: none"> • Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Does the EGR valve operate properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 7.
6	INSPECT EGR VALVE PASSAGE <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].) • Visually inspect the gasket installation of EGR valve and EGR valve passage for clogging. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
7	MONITOR EGR SYSTEM BY DRIVE MODE <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Stop the vehicle and perform the On-Board System Readiness Tests Access Procedure to inspect the Drive Mode completion status. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Do the FUEL_EVAL and EGR_EVAL PIDs change to Yes? 	Yes	Go to the next step.
		No	Retry this step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Perform the Diagnostic Monitoring Test Results Access Procedure using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the TEST 31: 83 (EGR pressure variation) value within the specification? 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

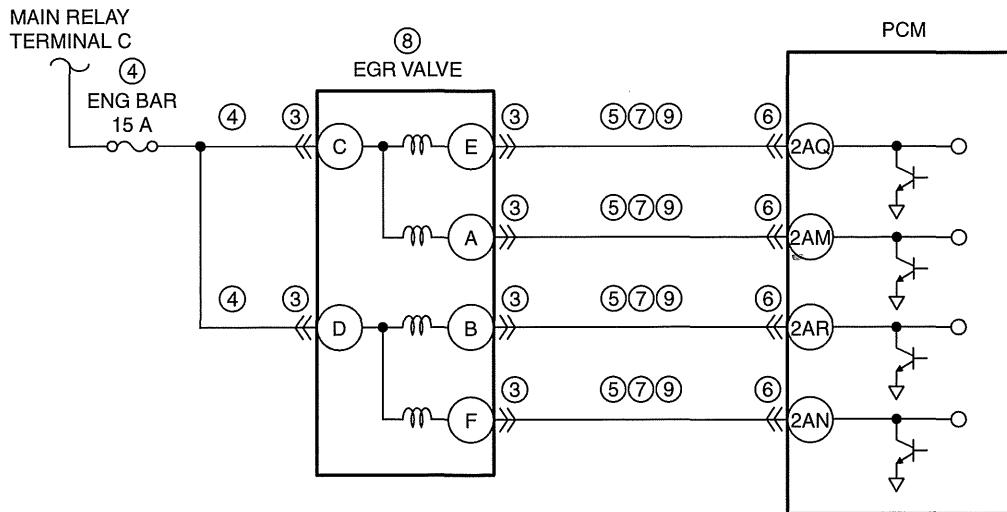
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

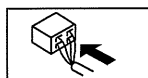
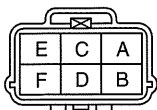
DTC P0403:00 [L3 WITH TC]

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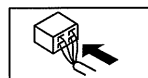
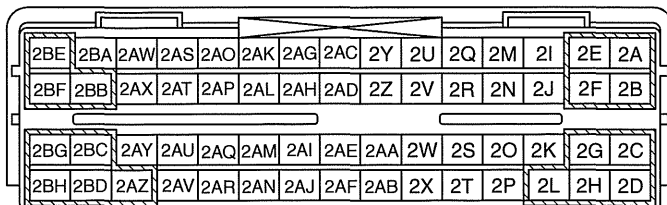
DTC P0403:00	EGR valve (stepper motor) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the input voltage from the EGR valve. If the voltage at the PCM terminals 2AQ, 2AM, 2AR and/or 2AN remain low or high, the PCM determines that the EGR valve circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • EGR valve connector or terminals malfunction • Short to ground or open circuit in EGR valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> • Main relay terminal C—EGR valve terminal C • Main relay terminal C—EGR valve terminal D — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> • Main relay terminal C—EGR valve terminal C • Main relay terminal C—EGR valve terminal D • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AQ — EGR valve terminal A—PCM terminal 2AM — EGR valve terminal B—PCM terminal 2AR — EGR valve terminal F—PCM terminal 2AN • PCM connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AQ — EGR valve terminal A—PCM terminal 2AM — EGR valve terminal B—PCM terminal 2AR — EGR valve terminal F—PCM terminal 2AN • EGR valve malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AQ — EGR valve terminal A—PCM terminal 2AM — EGR valve terminal B—PCM terminal 2AR — EGR valve terminal F—PCM terminal 2AN • PCM malfunction



EGR VALVE
WIRING HARNESS-SIDE
CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT EGR VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the EGR valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
4	INSPECT EGR VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • EGR valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — EGR valve terminal C — EGR valve terminal D • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 10.
5	INSPECT EGR VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • EGR valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — EGR valve terminal E — EGR valve terminal A — EGR valve terminal B — EGR valve terminal F • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 10.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
7	INSPECT EGR VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • EGR valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — EGR valve terminal E — EGR valve terminal A — EGR valve terminal B — EGR valve terminal F • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
8	INSPECT EGR VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the EGR valve. (See 01-16B-9 EGR VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the EGR valve, then go to Step 10. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT EGR VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • EGR valve and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — EGR valve terminal E—PCM terminal 2AQ — EGR valve terminal A—PCM terminal 2AM — EGR valve terminal B—PCM terminal 2AR — EGR valve terminal F—PCM terminal 2AN • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0421:00 [L3 WITH TC]

id010239704400

DTC P0421:00	Warm up catalyst system efficiency below threshold
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM compares the number of A/F sensor and HO₂S inversions for a predetermined time. The PCM monitors the HO₂S inversion ratio when the following conditions are met. The PCM detects the inversion ratio. If the inversion ratio is below threshold, the PCM determine that the catalyst system has deteriorated. <ul style="list-style-type: none"> — The A/F sensor inversion ratio is as prescribed when the following monitoring conditions are met: — The accumulated occurrence time of the following monitoring conditions has exceeded the prescribed time limit: MONITORING CONDITIONS <ul style="list-style-type: none"> — Engine speed: 1,500—3,250 rpm — Calculated TWC temperature: above 400 °C {752 °F} — Absolute load: 20—48% (at engine speed 2,000 rpm) Diagnostic support note <ul style="list-style-type: none"> • This is an intermittent monitor (catalyst). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Exhaust gas leakage • A/F sensor loose • HO₂S loose • TWC deterioration or malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (catalyst related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.
4	INSPECT EXHAUST SYSTEM FOR EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> Visually inspect the exhaust gas leakage in the exhaust system. Is there any leakage? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No Go to the next step.
5	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> Inspect if the A/F sensor is loosely installed. Is the A/F sensor installed securely? 	Yes Go to the next step.
		No Retighten the A/F sensor, then go to Step 8. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> Inspect if the HO2S is loosely installed. Is the HO2S installed securely? 	Yes Go to the next step.
		No Retighten the HO2S, then go to Step 8. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
7	INSPECT TWC <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Switch the ignition to off, then to ON (engine off). Inspect the TWC. Is there any malfunction? 	Yes Replace the TWC, then go to the next step. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION				
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)					
No	DTC troubleshooting completed.					

DTC P0442:00, P0455:00, P0456:00 [L3 WITH TC]

id010239896000

DTC P0442:00	EVAP system leak detected (small leak)
DTC P0455:00	EVAP system leak detected (gross leak/no flow)
DTC P0456:00	EVAP system leak detected (very small leak)
DETECTION CONDITION	<ul style="list-style-type: none"> • The DTC P0442:00 indicates that a leak has been detected as small as 1 mm {0.04 in} in the EVAP vapor management valve solenoid system when there is less than 0.988 kPa {7.41 mmHg, 0.292 inHg} bleed-up over 20 s at 75% fuel fill. Bleed-up and evaluation time vary as a function of fuel fill level. The vapor generation limit is more than 0.286 kPa {2.15 mmHg, 0.085 inHg} over 150 s. • The DTC P0455:00 indicates that a substantial leak or blockage has been detected in the EVAP system when there is -1.94 kPa {-14.6 mmHg, -0.575 inHg} or less vacuum for 20 s evaluation time. • The DTC P0456:00 indicates that a fuel vapor leak from an opening as small as 0.508 mm {0.020 in} has been detected by the EVAP running loss monitor test. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (EVAP system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>DTC P0442:00, P0456:00</p> <ul style="list-style-type: none"> • After-market EVAP hardware (such as fuel filler cap) nonconforming to required specifications • Fuel filler cap loosely installed • Small leaks in components <ul style="list-style-type: none"> — CV solenoid is not seated on the charcoal canister. — Cut or loose connection in the fuel vapor hoses/tubes — Fuel filler pipe damaged • Fuel filler cap and fuel filler pipe damaged • CV solenoid valve malfunction • Leaks in complete EVAP system • Small leaks from EVAP system return tube to charcoal canister • Small leaks between fuel tank vapor tube and fuel tank filler pipe • PCM malfunction <p>DTC P0455:00</p> <ul style="list-style-type: none"> • Purge solenoid valve related part malfunction <ul style="list-style-type: none"> — Blockage or loose vacuum hose between intake manifold and purge solenoid valve — Purge solenoid valve malfunction (blockage) • After-market EVAP hardware (such as fuel filler cap) not conforming to required specifications • Large EVAP system leak <ul style="list-style-type: none"> — Fuel filler cap malfunction (damaged, missing or loosely installed) — Both the input port vacuum hose and EVAP return tube are not attached to the CV solenoid valve — CV solenoid valve is not attached to the charcoal canister. — Fuel vapor hoses/tubes disconnected or cracked — Fuel filler pipe and the fuel tank damaged • Blockage between CV solenoid valve and fuel vapor hose joint • CV solenoid valve malfunction • Fuel tank pressure sensor malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

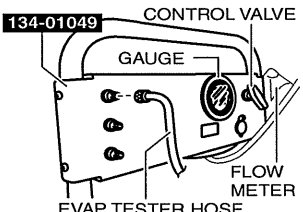
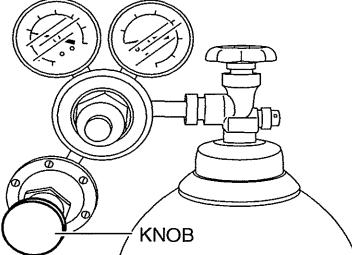
STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY DTC FOR SMALL LEAK <ul style="list-style-type: none"> • Is the DTC P0456:00 stored? 	Yes	Go to Step 9.
		No	Go to the next step.
5	VERIFY DTC FOR LARGE LEAK <ul style="list-style-type: none"> • Is the DTC P0455:00 stored? 	Yes	Verify that the purge solenoid valve is not blocked. <ul style="list-style-type: none"> • If the purge solenoid valve is functioning correctly and receiving engine vacuum: — Go to the next step.
		No	Go to the next step.
6	PRELIMINARY LEAK TEST (DTC P0442:00 OR P0455:00) <ul style="list-style-type: none"> • Perform the EVAP system leak inspection using the M-MDS. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Verify that all PIDs are within the following specifications: Note <ul style="list-style-type: none"> • To successfully perform this procedure, all PIDs must be within the specification before proceeding to the next step. <ul style="list-style-type: none"> — Select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> • “Powertrain” • “Fuel” • “EVAP Test” — Verify that the ECT and IAT are within the specification at the confirmation screen. To successfully perform this procedure, the ECT and IAT must be within the specification before proceeding to the next step. — The fuel level must be maintained within 15%—85%. The PCM will cancel the EVAP test if the fuel level is lower than 15% or higher than 85%. — Allow the M-MDS to run the EVAP test. • Does the M-MDS indicate an EVAP system leak exists? 	Yes	Go to the next step.
		No	Go to Step 9.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
7	<p>PRELIMINARY LEAK TEST (DTC P0442:00 OR P0455:00)</p> <ul style="list-style-type: none"> • Tighten the fuel-filler cap then repeat the EVAP system leak inspection using the M-MDS again. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Verify that all PIDs are within the following specifications: <p>Note</p> <ul style="list-style-type: none"> • To successfully perform this procedure, all PIDs must be within the specification before proceeding to the next step. <ul style="list-style-type: none"> — Select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> • “Powertrain” • “Fuel” • “EVAP Test” — Verify that the ECT and IAT are within the specification at the confirmation screen. To successfully perform this procedure, the ECT and IAT must be within the specification before proceeding to the next step. — The fuel level must be maintained within 15%—85%. The PCM will cancel the EVAP test if the fuel level is lower than 15% or higher than 85%. — Allow the M-MDS to run the EVAP test. • Does the M-MDS still indicate an EVAP system leak exists? 	Yes	Go to the next step.
		No	The fuel cap was not properly tightened. <ul style="list-style-type: none"> • Go to Step 15.
8	<p>VISUALLY INSPECT COMPONENTS FOR LEAKS (EXCEPT P0456:00)</p> <ul style="list-style-type: none"> • Verify that the CV solenoid valve is properly seated on the charcoal canister. • Visually inspect for cut or loose connections to the fuel vapor hoses/tubes in the following locations: <ul style="list-style-type: none"> — Charcoal canister to CV solenoid valve — Charcoal canister to evaporative emission valve component — Evaporative emission valve component to the fuel tank (if applicable) — Check for fuel-filler pipe damage • Is a concern with a hose, tube, connection or valve visually evident? 	Yes	Repair or install a new component if necessary. Afterwards, verify that the leak is repaired by repeating diagnostic Step 6. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to Step 15.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]




STEP	INSPECTION		ACTION
9	<p>CALIBRATE LEAK TESTER FOR DIAGNOSIS</p> <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve.  <ul style="list-style-type: none"> Connect the EVAP Tester Hose (part of the SST) to the SELF-TEST port located on the control panel. Hand tighten the fitting. (Do not overtighten.) Turn the control valve to the TEST position; the gauge should read 331—381 mm {13—15 in} of water. <p>Note</p> <ul style="list-style-type: none"> If the gauge is not reading in this range, adjust the pressure by turning the black knob on the low pressure regulator at the nitrogen bottle.  <ul style="list-style-type: none"> After verifying the regulator is properly calibrated, turn the control valve to the HOLD position. Verify that the gauge holds pressure and that the flow meter reads no flow. Does the gauge hold pressure and the flow meter read no flow? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Refer to the tester operator's manual for tester repair instructions.</p>

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

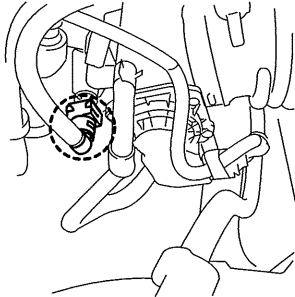
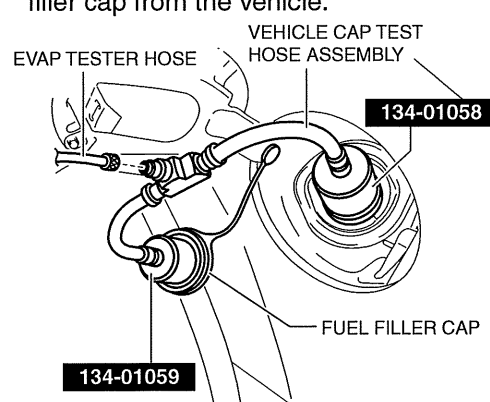
STEP	INSPECTION		ACTION												
10	<p>PRESSURIZE EVAP SYSTEM WITH NITROGEN TO TEST FOR LEAKS</p> <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve. Disconnect the purge solenoid valve hose from the intake manifold and insert SST AKS042808 into the purge solenoid valve hose. <div style="text-align: center;"> </div> <ul style="list-style-type: none"> Connect the EVAP Tester Hose to SST AKS042808. Switch the ignition to ON (engine off). Access the datalogger for the PCM using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Press the eraser icon to deselect the highlighted PIDs. <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="width: 50%;">Icon name</th> <th style="width: 50%;">Screen display</th> </tr> </thead> <tbody> <tr> <td>Eraser icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Tick icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control item activate icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Up icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> Select the EVAPCP and EVAPCV PIDs, then click the tick icon. Command the EVAPCP to 100% duty cycle to open the purge solenoid valve. <ul style="list-style-type: none"> To open the purge solenoid valve, click the control item activate icon. Click the EVAPCP box on the left-hand side of the screen to select it. Click the control icon on the right-hand side of the screen. Click the up icon immediately below the control icon. Each click increases the duty cycle by 10%. Continue clicking until the M-MDS shows the purge solenoid valve is open 100%. 	Icon name	Screen display	Eraser icon		Tick icon		Control item activate icon		Control icon		Up icon		<p>Yes</p> <p>No</p>	<p>Go to Step 12 to locate the leak.</p> <p>DTC P0442:00 or P0455:00:</p> <ul style="list-style-type: none"> Go to the next step. <p>DTC P0456:00:</p> <ul style="list-style-type: none"> Go to Step 12.
Icon name	Screen display														
Eraser icon															
Tick icon															
Control item activate icon															
Control icon															
Up icon															

ON-BOARD DIAGNOSTIC [L3 WITH TC]






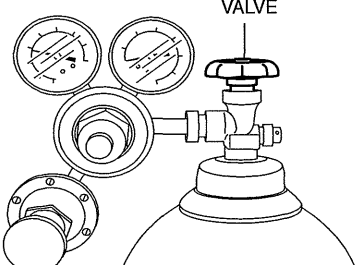










STEP	INSPECTION		ACTION				
	<ul style="list-style-type: none"> • Command EVAPCV to ON to Close the CV solenoid valve. <ul style="list-style-type: none"> — To close the CV solenoid valve, click the control item activate icon. — Click the EVAPCV box in the upper left-hand corner of the screen to select it. — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon (the EVAPCV should now be on). • Turn the control valve to the TEST position and let the system fill. A drop in the gauge pressure should be noted along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses. <p>Note</p> <ul style="list-style-type: none"> • If the gauge and the flow meter do not settle to a measurable level after 2—3 min, then refer to the Mazda Workshop Manual to verify that the canister vent valve is properly closed. If the canister vent valve is properly closed, the EVAP system has a large leak. <ul style="list-style-type: none"> • Does the test indicate that a leak exists? 	<p>Yes</p> <p>No</p>	<p>Go to Step 12 to locate the leak.</p> <p>DTC P0442:00 or P0455:00:</p> <ul style="list-style-type: none"> • Go to the next step. <p>DTC P0456:00:</p> <ul style="list-style-type: none"> • Go to Step 12. 				
11	<p>CHECKING SYSTEM FOR BLOCKAGE</p> <ul style="list-style-type: none"> • Leave the tester in the test position • Using the M-MDS datalogger, command the CV solenoid valve open. <ul style="list-style-type: none"> — To open the CV solenoid valve, click the down icon (the EVAPCV should now be off). <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 50%;">Icon name</th> <th style="width: 50%;">Screen display</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Down icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Does the flow indicator in the flow meter immediately jump to the top? 	Icon name	Screen display	Down icon		<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>System is blocked between CV solenoid valve and fuel tank pressure sensor; locate and remove blockage then perform Step 10.</p>
Icon name	Screen display						
Down icon							

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

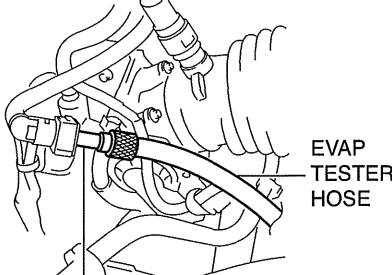
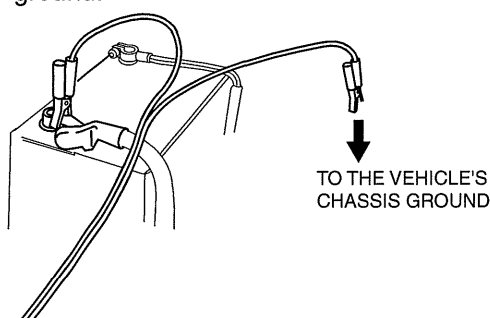















STEP	INSPECTION	ACTION
12	<p>PRESSURIZE EVAP SYSTEM WITH NITROGEN TO TEST PURGE SOLENOID FOR LEAKAGE</p> <ul style="list-style-type: none"> Reconnect the purge solenoid valve hose.  <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position. Remove the fuel-filler cap from the vehicle. <ul style="list-style-type: none"> If the fuel-filler cap is not a MAZDA part or equivalent, replace it. <p>Note</p> <ul style="list-style-type: none"> INSPECT FUEL-FILLER CAP AND FILLER NECK <ul style="list-style-type: none"> — Visually inspect for damage, insufficient sealing, rust, cracks or warps on the filler cap and filler neck. — Repair or replace if necessary. <ul style="list-style-type: none"> Connect the receiver assembly (SST: 134-01059) to the vehicle cap test hose assembly (part of the SST) and the fuel-filler cap from the vehicle.  <ul style="list-style-type: none"> Connect the cap adaptor (SST: 134-01058) to the vehicle cap test hose assembly (part of the SST) and to the fuel-filler neck. Connect the EVAP Tester Hose (part of the SST) to the center fitting of the vehicle cap test hose assembly (part of the SST). Switch the ignition to ON (engine off). Access the datalogger for the PCM using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) 	<p>Yes</p> <p>Replace the purge solenoid valve, then go to the next step. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)</p> <hr/> <p>No</p> <p>Go to the next step.</p>

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION																
	<ul style="list-style-type: none"> Press the eraser icon to deselect the highlighted PIDs. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 50%;">Icon name</th> <th style="width: 50%;">Screen display</th> </tr> </thead> <tbody> <tr> <td>Eraser icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Tick icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control item activate icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Up icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> Select PID EVAPCV, then click the tick icon. Command EVAPCV to ON to close the CV solenoid valve. <ul style="list-style-type: none"> To close the CV solenoid valve, click the control item activate icon. Click the EVAPCV box in the upper left-hand corner of the screen to select it. Click the control icon on the right-hand side of the screen. Click the up icon immediately below the control icon (the EVAPCV should now be on). Verify that the valve on the nitrogen bottle is still open. <div style="text-align: center; margin-bottom: 10px;">  </div> <ul style="list-style-type: none"> Turn the control valve to the TEST position and let the system fill. A drop in the gauge pressure should be noted along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses. Does the test indicate that a leak exists? 	Icon name	Screen display	Eraser icon		Tick icon		Control item activate icon		Control icon		Up icon		<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Replace the purge solenoid valve, then go to the next step. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </tbody> </table>	Yes	Replace the purge solenoid valve, then go to the next step. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)	No	Go to the next step.
Icon name	Screen display																	
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Tick icon																		
Control item activate icon																		
Control icon																		
Up icon																		
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No	Go to the next step.																	


01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION																
13	<p>LOCATE LEAKAGE POINT</p> <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position and the valve on the nitrogen bottle valve is open. Disconnect the purge solenoid valve hose from the intake manifold and insert SST AKS042808 into the purge solenoid valve hose.  <p style="text-align: center;">AKS042808</p> <ul style="list-style-type: none"> Connect the EVAP Tester Hose to SST AKS042808. Connect the 12 volt power connector leads on the smoke generation unit to the vehicle's battery. Make sure to connect the red lead to the positive post (+) or power, and the black lead to the vehicle's chassis ground.  <p style="text-align: center;">↓ TO THE VEHICLE'S CHASSIS GROUND</p> <ul style="list-style-type: none"> Switch the ignition to ON (engine off). Access the datalogger for the PCM using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Press the eraser icon to deselect the highlighted PIDs. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 50%;">Icon name</th> <th style="width: 50%;">Screen display</th> </tr> </thead> <tbody> <tr> <td>Eraser icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Tick icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control item activate icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Control icon</td> <td style="text-align: center;"></td> </tr> <tr> <td>Up icon</td> <td style="text-align: center;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> Select the EVAPCP and EVAPCV PIDs, then click the tick icon. 	Icon name	Screen display	Eraser icon		Tick icon		Control item activate icon		Control icon		Up icon		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Repair or install a new component if necessary, then go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.</td> </tr> </table>	Yes	Repair or install a new component if necessary, then go to the next step.	No	Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.
Icon name	Screen display																	
Eraser icon																		
Tick icon																		
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Up icon																		
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No	Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.																	

ON-BOARD DIAGNOSTIC [L3 WITH TC]

01-02B

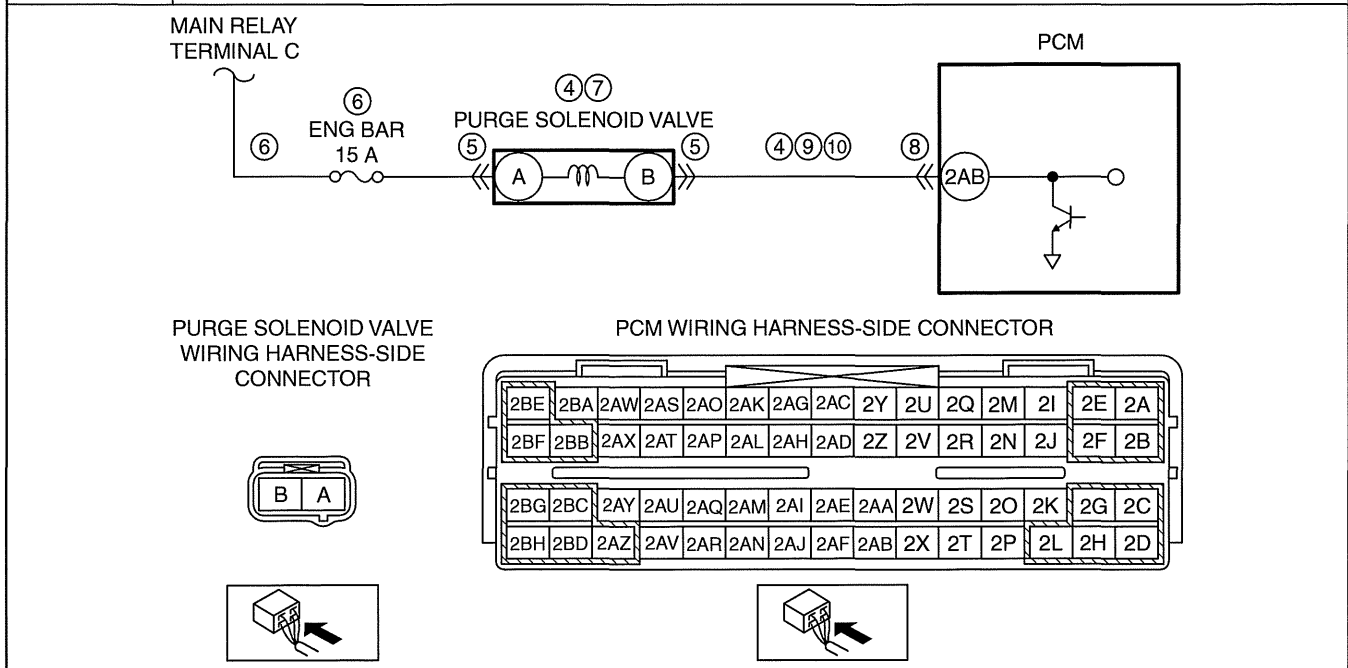
STEP	INSPECTION		ACTION			
	<ul style="list-style-type: none"> • Command the EVAPCP to 100% duty cycle to open the purge solenoid valve. <ul style="list-style-type: none"> — To open the purge solenoid valve, click the control item activate icon. — Click the EVAPCP box on the left-hand side of the screen to select it. — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon. • Each click increases the duty cycle by 10%. • Continue clicking until the M-MDS shows the purge solenoid valve is open 100%. • Command EVAPCV to ON to close the CV solenoid valve. <ul style="list-style-type: none"> — To close the CV solenoid valve, click the control item activate icon. — Click the EVAPCV box in the upper left-hand corner of the screen to select it — Click the control icon on the right-hand side of the screen. — Click the up icon immediately below the control icon (the EVAPCV should now be on). • Turn the control valve to the TEST position. • Press the remote smoke trigger on the smoke generation unit and let the system fill with smoke. <div style="text-align: center; margin: 10px 0;"> <p>REMOTE SMOKE TRIGGER</p>  </div> <p>Note</p> <ul style="list-style-type: none"> • It may be necessary to lift the vehicle to provide sufficient clearance underneath to conduct a proper visual inspection of the fuel and EVAP system. • NEVER depress the remote smoke trigger before opening the nitrogen tank valve and setting the tester control valve to TEST <ul style="list-style-type: none"> • Use a 12 volt 400,000 candle power spot light (part # 4410000-100) or equivalent to help locate the smoke. • Is a leak detected? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Repair or install a new component if necessary, then go to the next step.</td> </tr> <tr> <td style="width: 10%; text-align: center;">No</td> <td>Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.</td> </tr> </table>	Yes	Repair or install a new component if necessary, then go to the next step.	No	Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.
Yes	Repair or install a new component if necessary, then go to the next step.					
No	Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.					
14	<p>VERIFY LEAK IS REPAIRED</p> <ul style="list-style-type: none"> • Were you diagnosing the DTC P0456:00? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Verify that the leak is repaired by repeating diagnostic Step 10. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to the next step. </td> </tr> <tr> <td style="width: 10%; text-align: center;">No</td> <td>Verify that the leak is repaired by repeating diagnostic Step 6. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to the next step. </td> </tr> </table>	Yes	Verify that the leak is repaired by repeating diagnostic Step 10. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to the next step. 	No	Verify that the leak is repaired by repeating diagnostic Step 6. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to the next step.
Yes	Verify that the leak is repaired by repeating diagnostic Step 10. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to the next step. 					
No	Verify that the leak is repaired by repeating diagnostic Step 6. <ul style="list-style-type: none"> • If the leak is repaired: <ul style="list-style-type: none"> — Go to the next step. 					
15	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)</td> </tr> <tr> <td style="width: 10%; text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)					
No	DTC troubleshooting completed.					

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0443:00 [L3 WITH TC]

id010239704500

DTC P0443:00	Purge solenoid valve circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltages from the purge solenoid valve. If the voltage remains low or high for 5 s, the PCM determines that the purge solenoid valve circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Short to ground in wiring harness between purge solenoid valve terminal B and PCM terminal 2AB Purge solenoid valve malfunction Purge solenoid valve connector or terminals malfunction Short to ground or open circuit in purge solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and purge solenoid valve terminal A — ENG BAR 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and purge solenoid valve terminal A PCM connector or terminals malfunction Short to power supply in wiring harness between purge solenoid valve terminal B and PCM terminal 2AB Open circuit in wiring harness between purge solenoid valve terminal B and PCM terminal 2AB PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	CLASSIFY OPEN CIRCUIT OR SHORT TO GROUND MALFUNCTION <ul style="list-style-type: none"> Disconnect the purge solenoid valve tube that is connected to the intake manifold. Connect the vacuum pump to the purge solenoid valve. Pump the vacuum pump several times and stop and wait a few seconds. Is the vacuum maintained? 	Yes	Go to Step 5.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT PASSAGE CONTROL OF PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the purge solenoid valve connector. • Pump the vacuum pump several times and wait a few seconds. • Is the vacuum maintained? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 11.
		No	Replace the purge solenoid valve, then go to Step 11. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
5	INSPECT PURGE SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the purge solenoid valve connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
6	INSPECT PURGE SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Purge solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the purge solenoid valve terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG BAR 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 11.
7	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the purge solenoid valve. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 11. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
9	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Purge solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the purge solenoid valve terminal B (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
10	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Purge solenoid valve and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between purge solenoid valve terminal B (wiring harness-side) and PCM terminal 2AB (wiring harness-side) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

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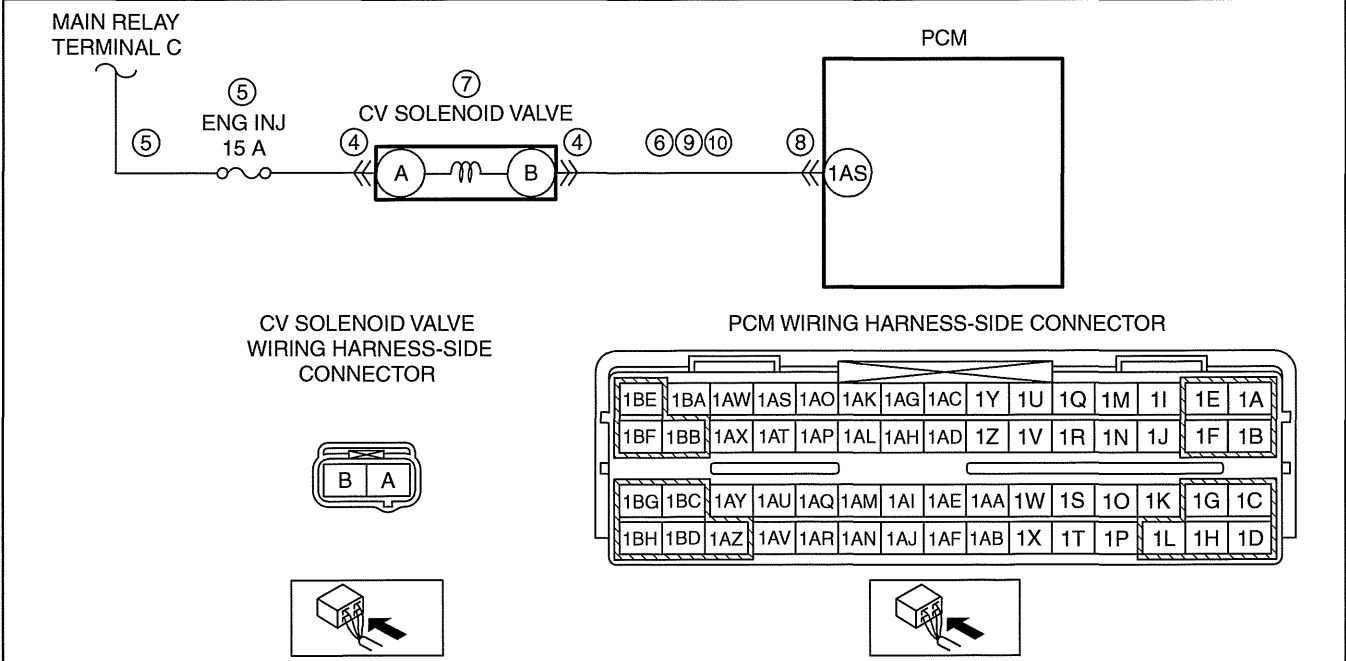
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0446:00 [L3 WITH TC]

id010239300600

DTC P0446:00	CV solenoid valve control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the CV solenoid valve circuit for an electrical failure. The test fails when the signal moves outside the minimum or maximum allowable calibrated parameters for a specified canister vent duty cycle by the PCM command. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CV solenoid valve connector or terminals malfunction Short to ground or open circuit in CV solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and CV solenoid valve terminal A — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and CV solenoid valve terminal A Short to ground in wiring harness between CV solenoid valve terminal B and PCM terminal 1AS PCM connector or terminals malfunction Short to power supply in wiring harness between CV solenoid valve terminal B and PCM terminal 1AS CV solenoid valve malfunction Open circuit in wiring harness between CV solenoid valve terminal B and PCM terminal 1AS PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT CV SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the CV solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
5	INSPECT CV SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • CV solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the CV solenoid valve terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 11.
6	INSPECT CV SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • CV solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between CV solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 11.
		No	Go to the next step.
7	INSPECT CV SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the CV solenoid valve. (See 01-16B-16 CANISTER VENT (CV) SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CV solenoid valve, then go to Step 11. (See 01-16B-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT CV SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • CV solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the CV solenoid valve terminal B (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
10	INSPECT CV SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CV solenoid valve and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between CV solenoid valve terminal B (wiring harness-side) and PCM terminal 1AS (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0451:00 [L3 WITH TC]

id010239300700

DTC P0451:00	Fuel tank pressure sensor range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The fuel tank pressure sensor output is offset by +/- 424 Pa {43.2 kgf/m², 0.0615 psi} or more. <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • The DTC P0451:00 is set for a fuel tank pressure sensor range (offset) concern. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Fuel tank pressure sensor connector or terminals malfunction • Fuel tank pressure sensor malfunction • PCM connector or terminals malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.
4	INSPECT FUEL TANK PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the fuel tank pressure sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the fuel tank pressure sensor. (See 01-40B-35 FUEL TANK PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the evaporative hose component, then go to Step 8. (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to the next step.
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and warm it up completely. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

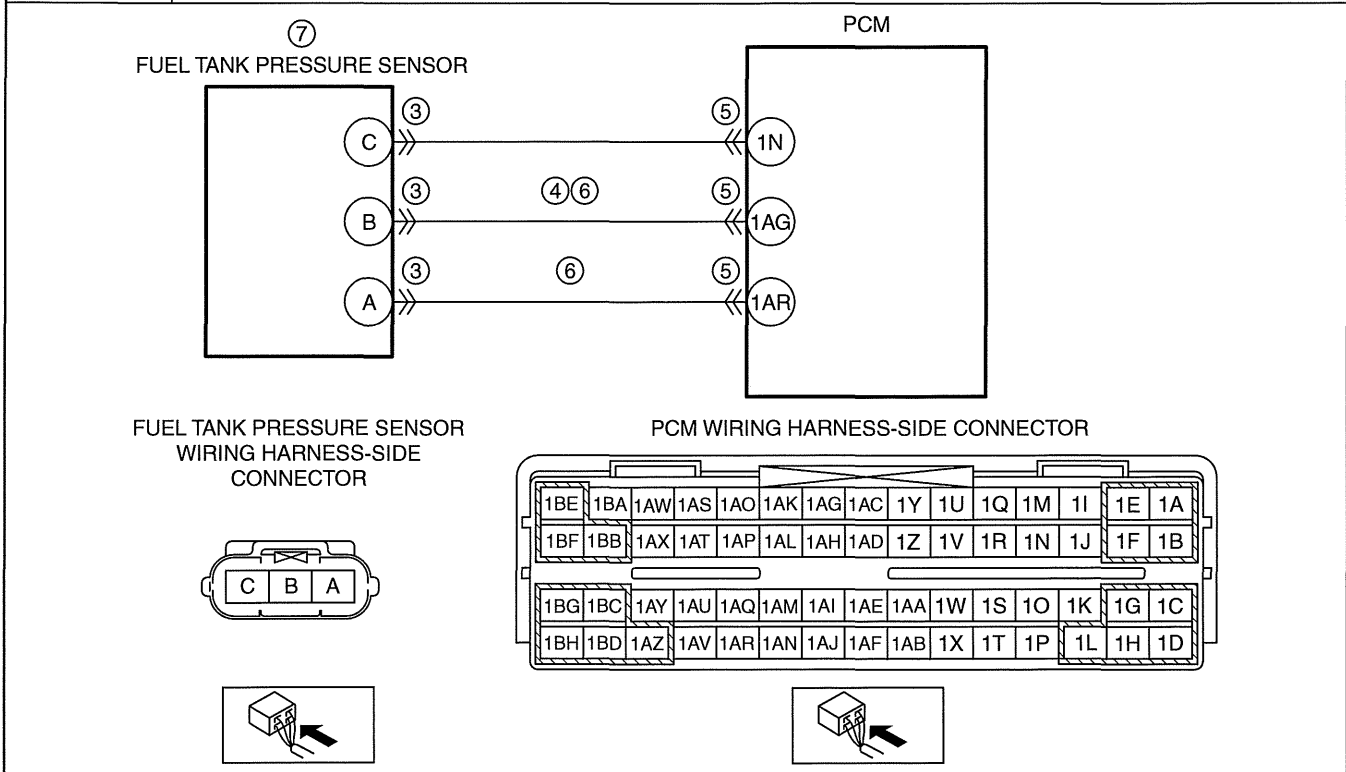
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0452:00 [L3 WITH TC]

id010239300800

DTC P0452:00	Fuel tank pressure sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the EVAP control system fuel tank pressure sensor input signal to the PCM. The test fails when the signal average drops below a minimum allowable calibrated parameter. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel tank pressure sensor connector or terminals malfunction Short to ground in wiring harness between fuel tank pressure sensor terminal B and PCM terminal 1AG PCM connector or terminals malfunction Fuel tank pressure sensor signal circuit and ground circuit are shorted to each other. Fuel tank pressure sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FUEL TANK PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the fuel tank pressure sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
4	INSPECT FUEL TANK PRESSURE SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fuel tank pressure sensor connector is disconnected. • Inspect for continuity between fuel tank pressure sensor terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT FUEL TANK PRESSURE SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connectors are disconnected. • Inspect for continuity between fuel tank pressure sensor terminals B and A (wiring harness-side). • Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to each other, then go to Step 8.
		No Go to the next step.
7	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel tank pressure sensor. (See 01-40B-35 FUEL TANK PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes Replace the evaporative hose component, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

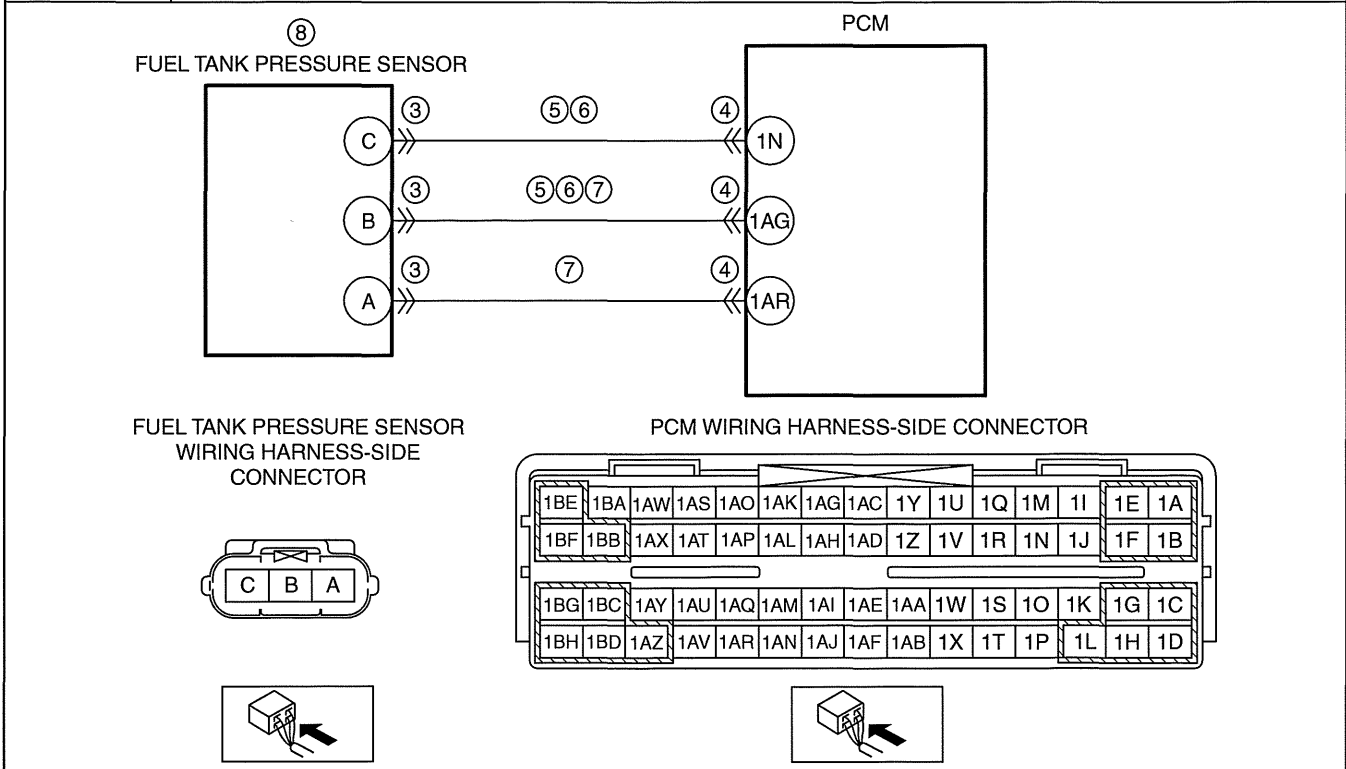
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0453:00 [L3 WITH TC]

id010239300900

DTC P0453:00	Fuel tank pressure sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the EVAP control system fuel tank pressure sensor input signal to the PCM. The test fails when the signal average jumps above a minimum allowable calibrated parameter. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel tank pressure sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal C—PCM terminal 1N — Fuel tank pressure sensor terminal B—PCM terminal 1AG Fuel tank pressure sensor power supply circuit and signal circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal B—PCM terminal 1AG — Fuel tank pressure sensor terminal A—PCM terminal 1AR Fuel tank pressure sensor malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT FUEL TANK PRESSURE SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the fuel tank pressure sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT FUEL TANK PRESSURE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal C — Fuel tank pressure sensor terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT FUEL TANK PRESSURE SENSOR POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between fuel tank pressure sensor terminals C and B (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT FUEL TANK PRESSURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fuel tank pressure sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Fuel tank pressure sensor terminal B—PCM terminal 1AG — Fuel tank pressure sensor terminal A—PCM terminal 1AR • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel tank pressure sensor. (See 01-40B-35 FUEL TANK PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the evaporative hose component, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0454:00 [L3 WITH TC]

id010239301000

DTC P0454:00	Fuel tank pressure sensor intermittent
DETECTION CONDITION	<ul style="list-style-type: none"> The fuel tank pressure changes more than 1,993 Pa {8.0 in} of the water in 0.1 s. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel tank pressure sensor malfunction <ul style="list-style-type: none"> Intermittent open or short in fuel tank pressure sensor or fuel tank pressure sensor signal PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the fuel tank pressure sensor. (See 01-40B-35 FUEL TANK PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the evaporative hose component, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Intermittent concern exists. <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0457:00 [L3 WITH TC]

id010239301300

DTC P0457:00	EVAP system leak detected (fuel cap loose/off)
DETECTION CONDITION	<ul style="list-style-type: none"> The DTC P0457:00 indicates that the initial vacuum could not be achieved after a refueling event and the purge vapor flow is excessive (gross leak). <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (EVAP system). A check cap light will be illuminated after a malfunction has been detected on one driving cycle. The check cap light will be extinguished after the monitor has run without a malfunction (same or subsequent drive cycle). The MIL will be illuminated after a malfunction has been detected on three consecutive driving cycles. The MIL will be extinguished after three consecutive driving cycles where the monitor was run without a malfunction. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Missing or loose fuel filler cap PCM malfunction

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? <p>Note</p> <ul style="list-style-type: none"> If the DTC P0455:00 is present, diagnose the DTC P0455:00 first. 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-168 DTC P0442:00, P0455:00, P0456:00 [L3 WITH TC].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT FUEL FILLER CAP FOR MISSING OR LOOSENESS <ul style="list-style-type: none"> Visually inspect the fuel filler cap for missing or looseness. Is there any malfunction? 	Yes	Repair or replace the fuel filler cap, then go to the next step.
		No	Go to the next step.
5	EVAP SYSTEM LEAK INSPECTION <ul style="list-style-type: none"> Perform the EVAP system leak inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Leakage still exists. <ul style="list-style-type: none"> Perform the DTC P0455:00 inspection. (See 01-02B-168 DTC P0442:00, P0455:00, P0456:00 [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 06 (EVAP System Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0460:00 [L3 WITH TC]

id010239301400

DTC P0460:00	Fuel level sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the fuel level input communications network message for a concern. The test fails when the PCM determines that the value of the fuel level input signal is stuck. The PCM calculates the amount of the fuel used during the operation. If the fuel level input signal does not change or does not correspond with the calculated fuel usage, the DTC P0460:00 is set. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Instrument cluster malfunction <ul style="list-style-type: none"> — Incorrectly installed fuel gauge — Fuel level input signal circuit malfunction • Amount of fuel is empty or overfilled • Fuel gauge sender unit malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	VERIFY STORED DTC IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present? 	Yes	Go to the appropriate DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
5	INSPECT AMOUNT OF FUEL <ul style="list-style-type: none"> • Visually inspect the amount of the fuel. • Is the amount of the fuel normal? 	Yes	Go to the next step.
		No	Do the amount of the fuel to a proper level, then go to Step 7.
6	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) • Is there any malfunction? 	Yes	Replace the fuel gauge sender unit, then go to the next step. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0461:00 [L3 WITH TC]

id010239301500

DTC P0461:00	Fuel gauge sender unit circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel level voltage difference before and after the PCM-calculated fuel consumption has reached 25 L {26.4 US qt., 22 Imp qt.}. If the difference is 5% less than the PCM-calculated fuel consumption, the PCM determines that the fuel gauge sender unit range/performance is in error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel gauge sender unit malfunction or substandard performance Instrument cluster malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) Is there any malfunction? 	Yes Replace the fuel gauge sender unit, then go to Step 5. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No Go to the next step.
4	VERIFY STORED DTC IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs present? 	Yes Go to the appropriate DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No Go to the next step.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and warm it up completely. Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0462:00 [L3 WITH TC]

id010239301600

DTC P0462:00	Fuel gauge sender unit circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the signals of the fuel level and fuel gauge sender unit output voltage from the instrument cluster. If the PCM detects that the fuel level or fuel gauge sender unit output voltage is too low, the PCM determines that the fuel gauge sender unit circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel gauge sender unit malfunction Instrument cluster malfunction PCM malfunction

01-02B

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY STORED DTC IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs present? 	Yes	Go to the appropriate DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
4	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) Is there any malfunction? 	Yes	Replace the fuel gauge sender unit, then go to the next step. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No	Perform the instrument cluster symptom troubleshooting "NO. 1 FUEL GAUGE INDICATOR LIGHT INDICATION IS INCORRECT". (See 09-03C-3 NO. 1 FUEL GAUGE INDICATOR LIGHT INDICATION IS INCORRECT [INSTRUMENT CLUSTER].)
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0463:00 [L3 WITH TC]

id010239301700

DTC P0463:00	Fuel gauge sender unit circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the signals of the fuel level and fuel gauge sender unit output voltage from the instrument cluster. If the PCM detects that the fuel level or fuel gauge sender unit output voltage is too high, the PCM determines that the fuel gauge sender unit circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel gauge sender unit malfunction Instrument cluster malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY STORED DTC IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs present? 	Yes	Go to the appropriate DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
4	INSPECT FUEL GAUGE SENDER UNIT <ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuel gauge sender unit. (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.) Is there any malfunction? 	Yes	Replace the fuel gauge sender unit, then go to the next step. (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
		No	Perform the instrument cluster symptom troubleshooting "NO. 1 FUEL GAUGE INDICATOR LIGHT INDICATION IS INCORRECT". (See 09-03C-3 NO. 1 FUEL GAUGE INDICATOR LIGHT INDICATION IS INCORRECT [INSTRUMENT CLUSTER].)
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

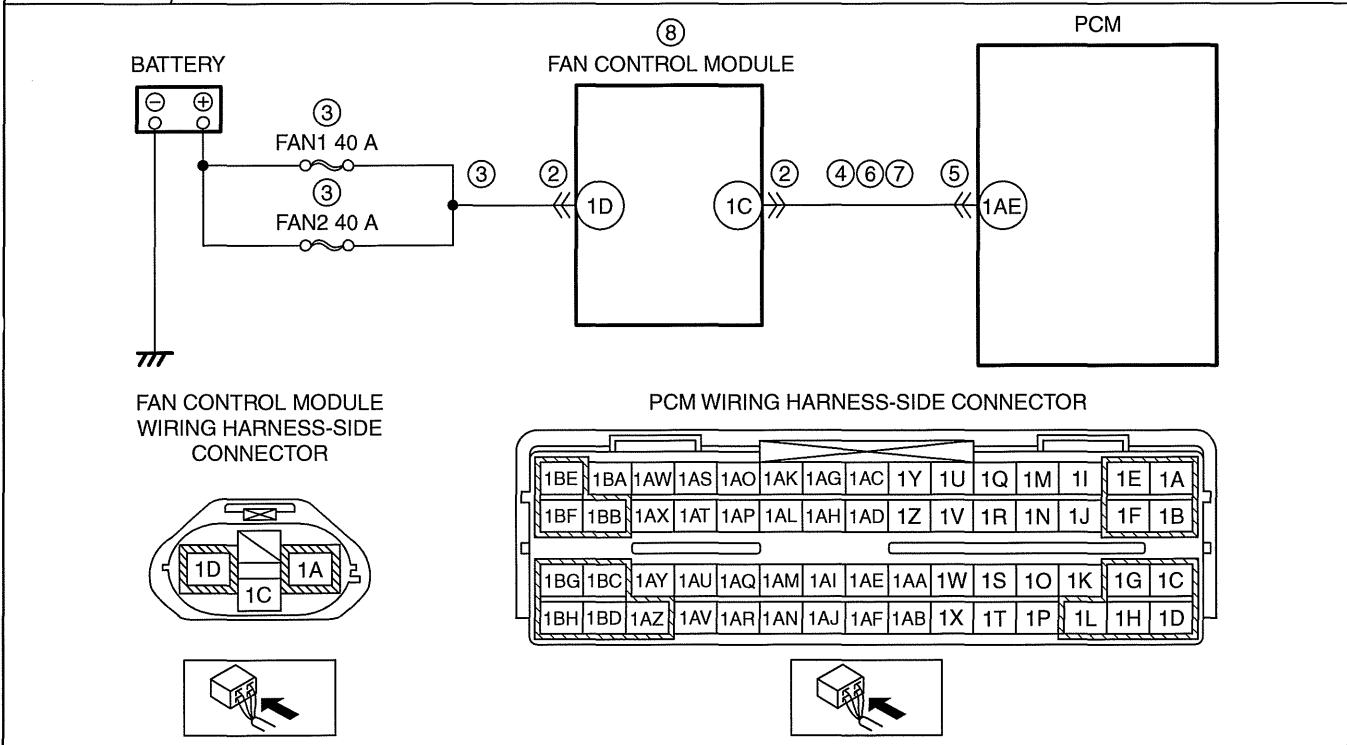
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0480:00 [L3 WITH TC]

id010239704600

01-02B

DTC P0480:00	Cooling fan control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the fan control module. If the voltage remains low or high, the PCM determines that the fan control circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fan control module connector or terminals malfunction Short to ground or open circuit in fan control module power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and fan control module terminal 1D — FAN1 40 A fuse and/or FAN2 40 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and fan control module terminal 1D Short to ground in wiring harness between fan control module terminal 1C and PCM terminal 1AE PCM connector or terminals malfunction Short to power supply in wiring harness between fan control module terminal 1C and PCM terminal 1AE Open circuit in wiring harness between fan control module terminal 1C and PCM terminal 1AE Fan control module malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT FAN CONTROL MODULE CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the fan control module connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT FAN CONTROL MODULE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Fan control module connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fan control module terminal 1D (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the FAN1 40 A fuse and FAN2 40 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the malfunctioning fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the malfunctioning fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
4	INSPECT FAN CONTROL MODULE SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Fan control module connector is disconnected. • Switch the ignition to off. • Inspect for continuity between fan control module terminal 1C (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT FAN CONTROL MODULE SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Fan control module and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the fan control module terminal 1C (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
7	INSPECT FAN CONTROL MODULE SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Fan control module and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between fan control module terminal 1C (wiring harness-side) and PCM terminal 1AE (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT FAN CONTROL MODULE <ul style="list-style-type: none"> • Perform the Cooling Fan Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0500:00 [L3 WITH TC]

id010239704800

01-02B

DTC P0500:00	VSS circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> • If an error in the wheel speed signal from the ABS HU/CM or DSC HU/CM is detected by the can when the following conditions are met: <ul style="list-style-type: none"> — Neutral switch and CPP switch: off — Absolute load: above 40% — Engine speed: 2,000 rpm or above — Brake switch: off <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Front ABS wheel-speed sensor malfunction • ABS HU/CM or DSC HU/CM connector or terminals malfunction • PCM connector or terminals malfunction • ABS HU/CM or DSC HU/CM malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY STORED DTC IN DSC HU/CM <ul style="list-style-type: none"> • Retrieve the ABS HU/CM or DSC HU/CM DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the appropriate DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine and warm it up completely. • Access the RPM and LOAD PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Drive the vehicle under the following conditions for 18 s. <ul style="list-style-type: none"> — Neutral switch and CPP switch: off — Absolute load: above 40% — Engine speed: 2,000 rpm or above — Brake switch: off • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

DTC P0505:00 [L3 WITH TC]

id010239704900

DTC P0505:00	IAC system malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM cannot control idle speed toward the target idle speed during the KOER self test. Diagnostic support note <ul style="list-style-type: none"> The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Improper operation of electronic throttle control system A/C relay control circuit malfunction Generator control circuit malfunction Air cleaner element clogged. Air intake passage clogged. Low engine compression (Over capacity of blow-by gas) PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE/DTC P0506:00, P0507:00, P0638:00, P2100:00, P2101:00, P2108:00 or P2119:00 also present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-199 DTC P0506:00 [L3 WITH TC].) (See 01-02B-201 DTC P0507:00 [L3 WITH TC].) (See 01-02B-219 DTC P0638:00 [L3 WITH TC].) (See 01-02B-255 DTC P2100:00 [L3 WITH TC].) (See 01-02B-258 DTC P2101:00 [L3 WITH TC].) (See 01-02B-264 DTC P2108:00 [L3 WITH TC].) (See 01-02B-266 DTC P2119:00 [L3 WITH TC].)
		No Go to the next step.
3	VERIFY ELECTRONIC THROTTLE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the throttle position (TP) sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly? 	Yes Go to the next step.
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
4	INSPECT A/C MAGNETIC CLUTCH OPERATION <ul style="list-style-type: none"> Turn the fan switch off. Is the magnetic clutch still on? 	Yes Perform the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].)
		No Go to the next step.
5	INSPECT GENERATOR CONTROL CIRCUIT MALFUNCTION <ul style="list-style-type: none"> Apply the electrical load. Does the engine speed increase? 	Yes Go to the next step.
		No Repair or replace the generator control circuit for a possible short to power supply, then go to Step 9.
6	INSPECT AIR CLEANER ELEMENT <ul style="list-style-type: none"> Remove the air cleaner element with the engine running. Does the engine speed increase? 	Yes Clean or replace the air cleaner element, then go to Step 9.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
7	INSPECT THROTTLE BODY PASSAGE <ul style="list-style-type: none"> Visually inspect the throttle body passage. Is the throttle body clogged? 	Yes Clean or replace the throttle body passage, then go to Step 9.
		No Go to the next step.
8	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

01-02B

DTC P0506:00 [L3 WITH TC]

id010239705000

DTC P0506:00	IAC system RPM lower than expected
DETECTION CONDITION	<ul style="list-style-type: none"> Actual idle speed is lower than expected by 100 rpm for 14 s when the brake pedal is depressed (brake switch is on). <p>Note</p> <ul style="list-style-type: none"> If the atmospheric pressure is less than 72.3 kPa {542 mmHg, 21.3 inHg} or the intake air temperature is below -10 °C {14 °F}, the PCM cancels the diagnosis of the DTC P0506:00. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C relay control circuit malfunction Electronic throttle control system malfunction Purge solenoid valve malfunction Air cleaner element clogged Air intake passage clogged Generator malfunction Low engine compression (over capacity of blow-by gas) PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT A/C MAGNET CLUTCH OPERATION <ul style="list-style-type: none"> • Turn the blower motor switch off. • Is the magnet clutch still on? 	Yes	Perform the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT ELECTRONIC THROTTLE CONTROL SYSTEM RELATED SENSOR <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — APP sensor (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) — TP sensor (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/ INSTALLATION [L3 WITH TC].) (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the purge solenoid valve. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 11. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	INSPECT AIR CLEANER ELEMENT <ul style="list-style-type: none"> • Remove the air cleaner element with the engine running. • Does the engine speed increase? 	Yes	Clean or replace the air cleaner element, then go to Step 11.
		No	Go to the next step.
8	INSPECT THROTTLE BODY PASSAGE <ul style="list-style-type: none"> • Visually inspect the throttle body passage. • Is the throttle body passage clogged? 	Yes	Clean or replace the throttle body passage, then go to Step 11.
		No	Go to the next step.
9	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
		No	Go to the next step.
10	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Start the engine. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Depress the brake pedal for 14 s or more. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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DTC P0507:00 [L3 WITH TC]

id010239705100

DTC P0507:00	IAC system RPM higher than expected
DETECTION CONDITION	<ul style="list-style-type: none"> Actual idle speed is higher than expected by 200 rpm for 14 s when the brake pedal is depressed (brake switch is on). <p>Note</p> <ul style="list-style-type: none"> If the atmospheric pressure is less than 72.3 kPa {542 mmHg, 21.3 inHg} or the intake air temperature is below -10 °C {14 °F}, the PCM cancels the diagnosis of the DTC P0507:00. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Vacuum hose not connected correctly Electronic throttle control system malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT VACUUM HOSE CONNECTION <ul style="list-style-type: none"> • Visually inspect the vacuum hoses for connecting. • Are the vacuum hoses connecting accurately? (See 01-13B-3 INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC].) 	Yes	Go to the next step.
		No	Reconnect the vacuum hoses correctly, then go to Step 6. (See 01-13B-3 INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC].)
5	INSPECT ELECTRONIC THROTTLE CONTROL SYSTEM RELATED SENSOR <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — APP sensor (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) — TP sensor (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Start the engine. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Depress the brake pedal for 14 s or more. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P050A:00 [L3 WITH TC]

id010239301800

DTC P050A:00	Cold start IAC system performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • Actual idle speed is lower than expected by 100 rpm for 8.4 s when target idle speed is above 0 rpm at the cold start or ignition retard value is above 6 °. <p>Note</p> <ul style="list-style-type: none"> • If the atmospheric pressure is less than 72.3 kPa {542 mmHg, 21.3 inHg} or intake air temperature is below -10 °C {14 °F}, the PCM cancels the diagnosis of the DTC P050A:00. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (cold start emission reduction strategy monitoring). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air into fuel line by exchange or re-installation • Air suction in intake-air system • Electronic throttle control system malfunction • Throttle valve stuck or blockage • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P050A:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (cold start emission reduction strategy monitoring related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	INSPECT FUEL SYSTEM <ul style="list-style-type: none"> • Were any exchange or re-installation of the fuel system performed just before the DTC P050A:00 stored? 	Yes	Perform the air bleeding of fuel system. <ul style="list-style-type: none"> • Start the engine and warm it up until the engine speed is stable, then go to the next step.
		No	Go to Step 6.
5	CONFIRM PENDING CODE <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Cool down the engine still the ECT PID value below 30 °C {86 °F}. • Perform the cold start. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Go to Step 10.
6	INSPECT INTAKE AIR SYSTEM FOR AIR SUCTION <ul style="list-style-type: none"> • Start the engine. • Inspect for air suction between MAF sensor and intake manifold. • Is there any air suction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
		No	Go to the next step.
7	VERIFY ELECTRONIC THROTTLE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Electronic Throttle Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
8	VERIFY THROTTLE VALVE OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the throttle valve with connector connected. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) • Access the ETC_DSD PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Switch the ignition to ON (engine off). • Operate the throttle valve using the ETC_DSD PID of the active command function. • Dose the throttle valve move smoothly? 	Yes	Go to the next step.
		No	Clean or replace the throttle valve and retest. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> • If the problem does not resolve: <ul style="list-style-type: none"> — Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) • If the problem resolve: <ul style="list-style-type: none"> — Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P050B:00 [L3 WITH TC]

id010239301900

DTC P050B:00	Cold start ignition timing performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the actual ignition timing using the CKP sensor while the electronic spark advance control fast idle correction operating. If the ignition timing is out of the specified range, the PCM determines that the ignition timing at the cold condition has a performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (cold start emission reduction strategy monitoring). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air into fuel line by exchange or re-installation • Damaged or chipped CKP sensor pulse wheel • CKP sensor malfunction • Damaged or chipped CMP sensor pulse wheel • CMP sensor malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P050B:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (cold start emission reduction strategy monitoring related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	INSPECT FUEL SYSTEM <ul style="list-style-type: none"> • Were any exchange or re-installation of the fuel system performed just before the DTC P050B:00 stored? 	Yes	Perform the air bleeding of fuel system. <ul style="list-style-type: none"> • Start the engine and warm it up until the engine speed is stable, then go to the next step.
		No	Go to Step 6.
5	CONFIRM PENDING CODE <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Cool down the engine still the ECT PID value below 30 °C {86 °F}. • Perform the cold start. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Go to Step 11.
6	INSPECT CKP SENSOR PULSE WHEEL <ul style="list-style-type: none"> • Visually inspect the CKP sensor pulse wheel. • Is there any damage or chip on the CKP sensor pulse wheel? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.
		No	Go to the next step.
7	INSPECT CKP SENSOR <ul style="list-style-type: none"> • Inspect the CKP sensor. (See 01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CKP sensor, then go to Step 10. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT CMP SENSOR AND PULSE WHEEL <ul style="list-style-type: none"> • Visually inspect the CMP sensor and pulse wheel. • Is there any damage or chip on the CMP sensor and pulse wheel? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.
		No	Go to the next step.
9	INSPECT CMP SENSOR <ul style="list-style-type: none"> • Inspect the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CMP sensor, then go to the next step. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

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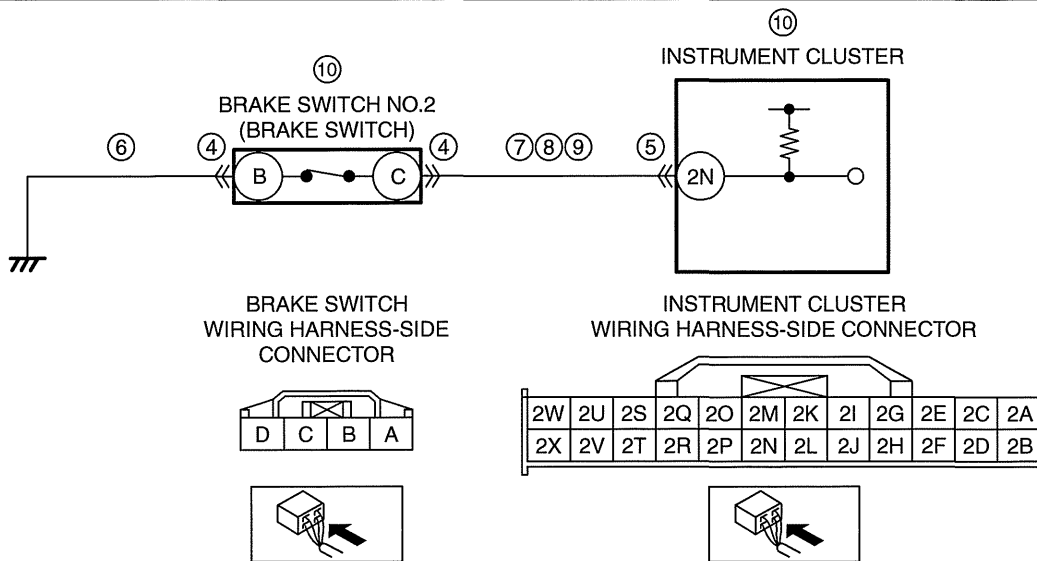
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0571:00 [L3 WITH TC]

id010239705500

DTC P0571:00	Brake switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the changes in input voltage for the brake switch No.1 and No.2 (signal from the instrument cluster). If the PCM detects that both brake switches No.1 and No.2 remain on or off for 15 s, it determines that the brake switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>Caution</p> <ul style="list-style-type: none"> Inspect the brake switch with it installed to the brake pedal, otherwise the brake switch may not operate normally. If the brake switch is removed from the brake pedal, replace the brake switch with a new one. <ul style="list-style-type: none"> Brake switch connector or terminals malfunction Open circuit in wiring harness between brake switch terminal B and body ground Instrument cluster connector or terminals malfunction Short to ground in wiring harness between brake switch terminal C and instrument cluster terminal 2N Short to power supply in wiring harness between brake switch terminal C and instrument cluster terminal 2N Open circuit in wiring harness between brake switch terminal C and instrument cluster terminal 2N Brake switch No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY DTC FOR MODULE COMMUNICATION <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC U0155:00 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P0703:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-223 DTC P0703:00 [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT BRAKE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the brake switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
5	INSPECT INSTRUMENT CLUSTER CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
6	INSPECT BRAKE SWITCH NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Inspect for continuity between brake switch terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
7	INSPECT BRAKE SWITCH NO.2 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Inspect for continuity between brake switch terminal C (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 11.
		No	Go to the next step.
8	INSPECT BRAKE SWITCH NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the brake switch terminal C (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT BRAKE SWITCH NO.2 SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch and instrument cluster connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between brake switch terminal C (wiring harness-side) and instrument cluster terminal 2N (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
10	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) • Is there any malfunction? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Replace the brake switch, then go to the next step. (See 04-11-12 MASTER CYLINDER REMOVAL/INSTALLATION [L3 WITH TC].)
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Switch the ignition to ON (engine off). • Depress the brake pedal above 15 s more than 5 times. • Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0579:00 [L3 WITH TC]

id010239087000

01-02B

DTC P0579:00	Cruise control multi-function input circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the cruise control switch. If the input signal does not change for 120 s, the PCM determines that the cruise control switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clock spring connector or terminals malfunction Clock spring malfunction Cruise control switch malfunction Short to ground in wiring harness between clock spring terminal 2L and PCM terminal 1AQ PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Clock spring terminal 2L—PCM terminal 1AQ — Clock spring terminal 2N—PCM terminal 1W Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Clock spring terminal 2L—PCM terminal 1AQ — Clock spring terminal 2N—PCM terminal 1W PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
2	INSPECT CLOCK SPRING CONNECTOR CONDITION Warning <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the clock spring connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
3	INSPECT CLOCK SPRING <ul style="list-style-type: none"> • Inspect the clock spring. (See 08-10-23 CLOCK SPRING INSPECTION.) • Is there any malfunction? 	Yes	Replace the clock spring, then go to Step 9. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	INSPECT CRUISE CONTROL SWITCH <ul style="list-style-type: none"> • Inspect the cruise control switch. (See 01-20B-1 CRUISE CONTROL SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the steering switch, then go to Step 9. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Clock spring connector is disconnected. • Inspect for continuity between clock spring terminal 2L (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
7	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Clock spring and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Clock spring terminal 2L — Clock spring terminal 2N • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Clock spring and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Clock spring terminal 2L—PCM terminal 1AQ — Clock spring terminal 2N—PCM terminal 1W • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

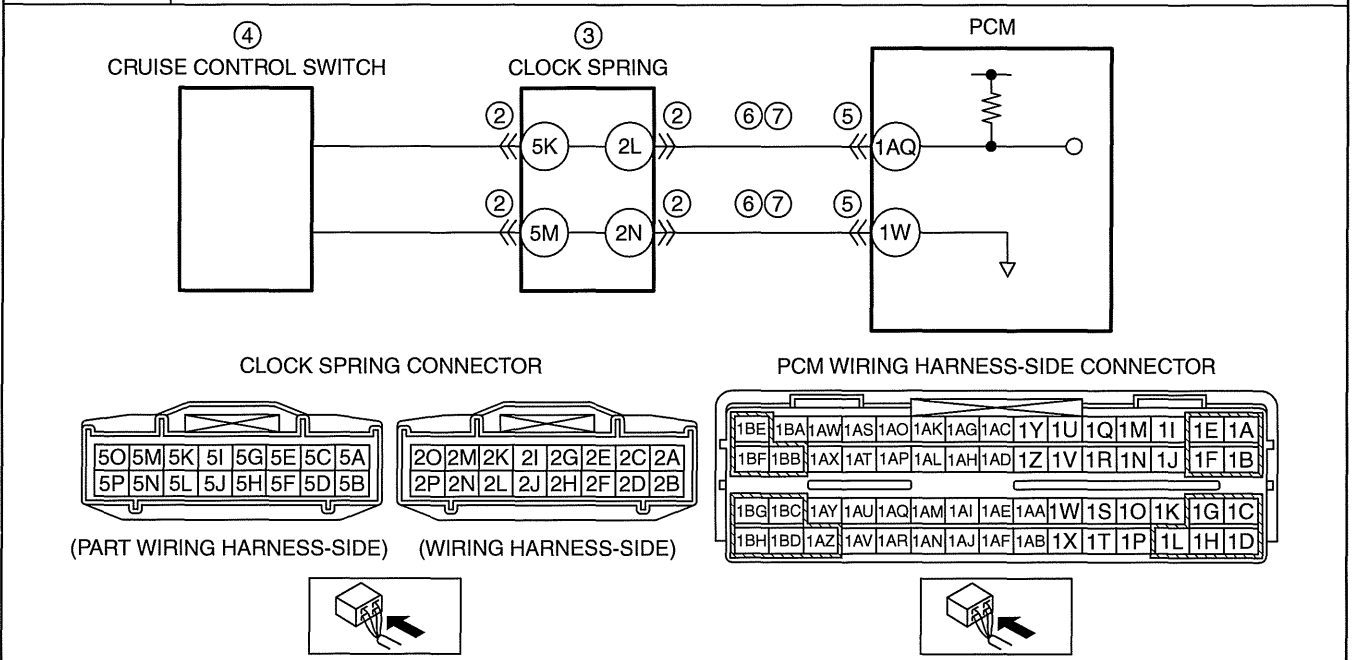
01-02B

STEP	INSPECTION		ACTION
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Drive the vehicle using the cruise control for 2 min or more. Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P0581:00 [L3 WITH TC]

id010239879900

DTC P0581:00	Cruise control multi-function input circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the cruise control switch. If the PCM detects that the cruise control switch voltage is above 4.75 V, the PCM determines that the cruise control switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clock spring connector or terminals malfunction Clock spring malfunction Cruise control switch malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Clock spring terminal 2L—PCM terminal 1AQ — Clock spring terminal 2N—PCM terminal 1W Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Clock spring terminal 2L—PCM terminal 1AQ — Clock spring terminal 2N—PCM terminal 1W PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT CLOCK SPRING CONNECTOR CONDITION <p>Warning</p> <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the clock spring connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
3	INSPECT CLOCK SPRING <ul style="list-style-type: none"> • Inspect the clock spring. (See 08-10-23 CLOCK SPRING INSPECTION.) • Is there any malfunction? 	Yes Replace the clock spring, then go to Step 8. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No Go to the next step.
4	INSPECT CRUISE CONTROL SWITCH <ul style="list-style-type: none"> • Inspect the cruise control switch. (See 01-20B-1 CRUISE CONTROL SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes Replace the steering switch, then go to Step 8. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Clock spring and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Clock spring terminal 2L — Clock spring terminal 2N • Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No Go to the next step.
7	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Clock spring and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Clock spring terminal 2L—PCM terminal 1AQ — Clock spring terminal 2N—PCM terminal 1W • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and warm it up completely. Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

01-02B

DTC P0600:00 [L3 WITH TC]

id010239850400

DTC P0600:00	Serial communication link
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal malfunction. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the terminal and/or connector, then go to the next step.
		No Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0601:00 [L3 WITH TC]

id010239705600

DTC P0601:00	PCM memory check sum error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM internal memory check sum error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal memory malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.</td> </tr> </table>	Yes	Go to the next step.	No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
Yes	Go to the next step.					
No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.					
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	No	Go to the next step.
Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 					
No	Go to the next step.					
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)	No	Go to the next step.
Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)					
No	Go to the next step.					
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)					
No	DTC troubleshooting completed.					

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0602:00 [L3 WITH TC]

id010239705700

01-02B

DTC P0602:00	PCM programming error
DETECTION CONDITION	<ul style="list-style-type: none"> No configuration data in the PCM. <p>Note</p> <ul style="list-style-type: none"> If the “PCM CONFIGURATION” is successful, the PCM stores the DTC P0602:00 and illuminates the MIL (The system is normal). Clear the DTC P0602:00 using the M-MDS after the “PCM CONFIGURATION”. The MIL turns off after three drive cycles with no failure (The DTCs remain in the PCM). <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Configuration has not been completed PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> Perform the PCM configuration. (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].) Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Perform the PCM configuration again, then go to the next step. (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].)
		No	Go to Step 5.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the “AFTER REPAIR PROCEDURE”. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0604:00 [L3 WITH TC]

id010239705800

DTC P0604:00	PCM RAM error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM internal RAM malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal RAM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0606:00 [L3 WITH TC]

id010239705900

DTC P0606:00	PCM processor error
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal CPU malfunction. The abnormal voltage applied to the PCM ignition switch terminal. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Voltage of 1.0 V or more is applied to PCM ignition switch terminal even though ignition switch is off PCM internal CPU malfunction

01-02B

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY VOLTAGE AROUND PCM IGNITION SWITCH TERMINAL <ul style="list-style-type: none"> Measure the voltage around the PCM ignition switch terminal when the ignition switch is off. <p>Note</p> <ul style="list-style-type: none"> If the measured value fluctuates above and below 1.0 V, place the measurement position close to the PCM and measure several times. <ul style="list-style-type: none"> Is the voltage less than 1.0 V? 	Yes	Go to the next step.
		No	Inspect the power supply circuit for short or open circuit. Repair or replace the suspected wiring harness, then go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0610:00 [L3 WITH TC]

id010239706000

DTC P0610:00	PCM vehicle configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM data configuration error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Configuration procedure has not been completed • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> • Perform the PCM configuration. (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].) • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Perform the PCM configuration again, then go to the next step. (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].)
		No	Go to Step 5.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0638:00 [L3 WITH TC]

id010239706100

DTC P0638:00	Throttle valve actuator control circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the actual TP with the target TP when the engine is running. If the difference is more than the specification, the PCM determines that there is a throttle valve actuator control circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle valve actuator malfunction PCM malfunction

01-02B

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.
4	INSPECT THROTTLE VALVE ACTUATOR <ul style="list-style-type: none"> Switch the ignition to off. Inspect the throttle valve actuator. (See 01-13B-12 THROTTLE BODY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No Go to the next step.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Switch the ignition to off. Start the engine and idle it. Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P064D:00 [L3 WITH TC]

id010239302700

DTC P064D:00	Internal control module A/F sensor processor performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The A/F sensor IC integrated in the PCM converts to voltage value for fuel control and for diagnosis based on the A/F sensor signal current and sends to the CPU (integrated in the PCM). If there is a transmission format error from the A/F sensor IC to the PCM, the PCM will detect a transmission error. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • Engine is running or ignition switch is ON • A/F sensor signal voltage: 1.2 V—battery voltage—1.2 V (PCM terminals 2Z, 2AC, 2AD) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal malfunction (between CPU and A/F sensor control IC communication line)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0685:00 [L3 WITH TC]

id010239302800

DTC P0685:00	Main relay control circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> This DTC sets when the ignition switch position run circuit indicates the key is in the off, ACC, or LOCK position, and the amount of time the PCM remains powered through the PCM power relay exceeds a predetermined amount of time. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Main relay malfunction PCM malfunction

01-02B

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT MAIN RELAY <ul style="list-style-type: none"> Switch the ignition to off. Remove the main relay. Inspect the main relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction? 	Yes Replace the main relay, then go to the next step.
		No Install the main relay, then go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine and warm it up completely. Switch the ignition to off. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P06B8:00 [L3 WITH TC]

id010239316200

DTC P06B8:00	Internal control module non-volatile RAM error
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM internal EEPROM malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM internal EEPROM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT BRAKE SWITCH NO.1 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Measure the voltage at the brake switch terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the STOP 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT BRAKE SWITCH NO.1 SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Switch the ignition to off. • Inspect for continuity between brake switch terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
7	INSPECT BRAKE SWITCH NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Brake switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the brake switch terminal D (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT BRAKE SWITCH NO.1 SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between brake switch terminal D (wiring harness-side) and PCM terminal 1AB (wiring harness-side). • Is there continuity? 	Yes	Replace the brake switch, then go to the next step. (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Drive vehicle at 30 km/h {19 mph} or more. • Depress and release the brake pedal more than 8 times while driving the vehicle. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

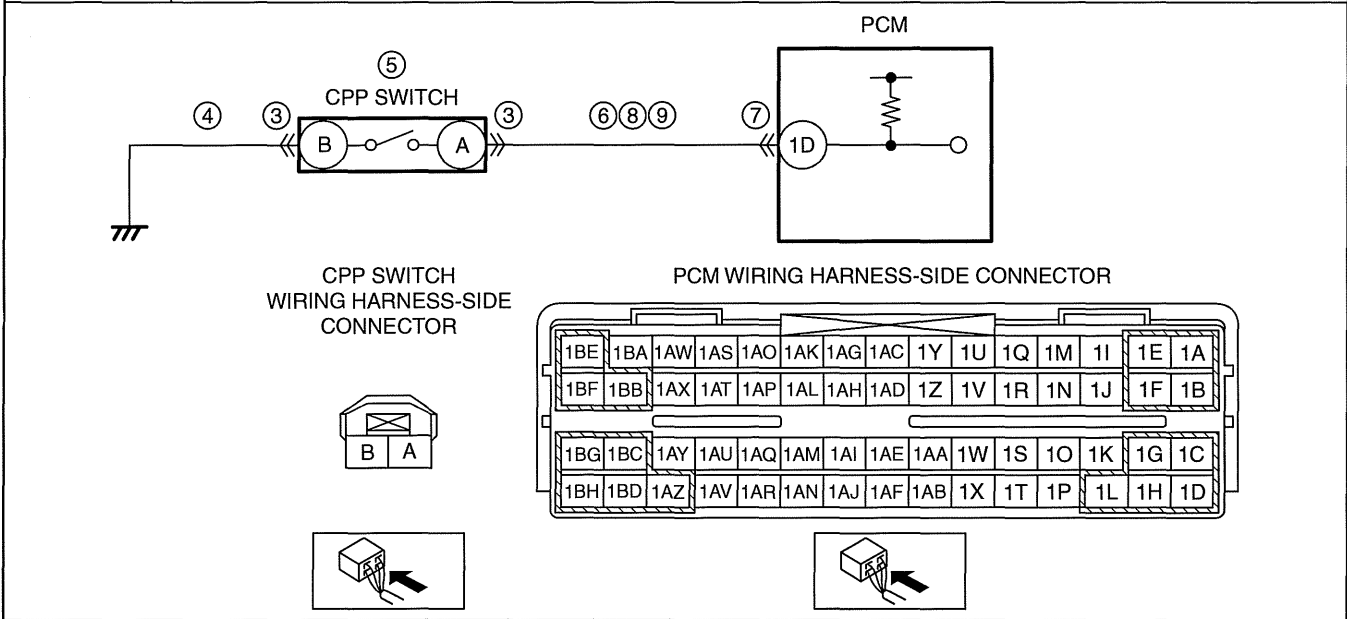
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0704:00 [L3 WITH TC]

id010239706600

01-02B

DTC P0704:00	CPP switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the changes in input voltage from the CPP switch. If the PCM does not detect the voltage changes while the vehicle runs with the vehicle speed above 30 km/h {19 mph} and stops 8 times alternately, the PCM determines that the CPP switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> CPP switch connector or terminal malfunction Open circuit in wiring harness between CPP switch terminal B and body ground CPP switch malfunction Short to ground in wiring harness between CPP switch terminal A and PCM terminal 1D PCM connector or terminal malfunction Short to power supply in wiring harness between CPP switch terminal A and PCM terminal 1D Open circuit in wiring harness between CPP switch terminal A and PCM terminal 1D PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT CPP SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the CPP switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT CPP SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CPP switch connector is disconnected. • Inspect for continuity between CPP switch terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
5	INSPECT CPP SWITCH <ul style="list-style-type: none"> • Inspect the CPP switch. (See 01-40B-23 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CPP switch, then go to Step 10. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • CPP switch connector is disconnected. • Inspect for continuity between CPP switch terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 10.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
8	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • CPP switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the CPP switch terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
9	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • CPP switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between CPP switch terminal A (wiring harness-side) and PCM terminal 1D (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Start the engine. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Operate the clutch pedal while the vehicle runs and stops 8 times alternately. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

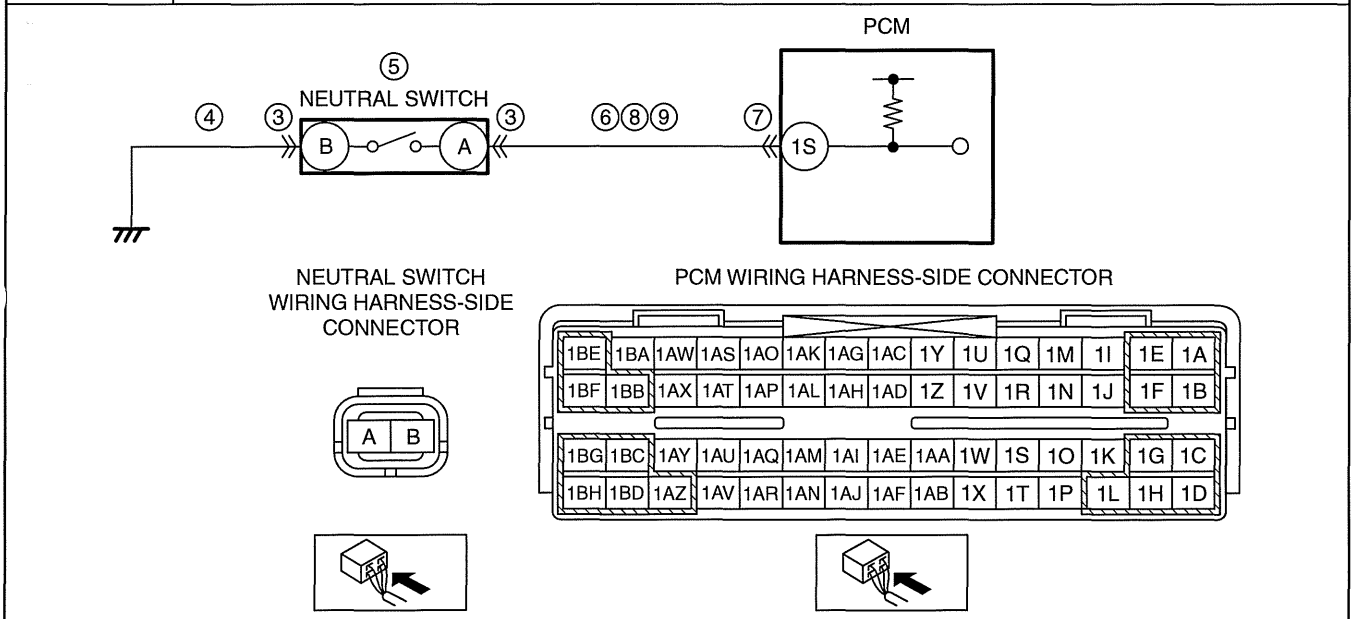
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P0850:00 [L3 WITH TC]

id010239706700

01-02B

DTC P0850:00	Neutral switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the changes in the input voltage from the neutral switch. If the PCM does not detect the voltage changes while driving the vehicle at a vehicle speed above 30 km/h {19 mph} and the clutch pedal is pressed and depressed 10 times repeatedly, the PCM determines that the neutral switch circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Neutral switch connector or terminal malfunction Open circuit in wiring harness between neutral switch terminal B and body ground Neutral switch malfunction Short to ground in wiring harness between neutral switch terminal A and PCM terminal 1S PCM connector or terminal malfunction Short to power supply in wiring harness between neutral switch terminal A and PCM terminal 1S Open circuit in wiring harness between neutral switch terminal A and PCM terminal 1S PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT NEUTRAL SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the neutral switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT NEUTRAL SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Neutral switch connector is disconnected. • Inspect for continuity between neutral switch terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
5	INSPECT NEUTRAL SWITCH <ul style="list-style-type: none"> • Inspect the neutral switch. (See 01-40B-23 NEUTRAL SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the neutral switch, then go to Step 10. (See 05-15C-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [A26M-R].)
		No	Go to the next step.
6	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Neutral switch connector is disconnected. • Inspect for continuity between neutral switch terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 10.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
8	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Neutral switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the neutral switch terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
9	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Neutral switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between neutral switch terminal A (wiring harness-side) and PCM terminal 1S (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Start the engine. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Drive the vehicle above 30 km/h {19 mph} and stop the vehicle. • Depress and release the clutch pedal more than 10 times during a drive cycle. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P120F:00 [L3 WITH TC]

id010239120500

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DTC P120F:00	Fuel pressure regulator excessive variation
DETECTION CONDITION	<ul style="list-style-type: none"> • If the fuel pressure average value measured by the PCM exceeds the specification when the camshaft is rotating at a specified rate, the PCM determines that there is a fuel pressure regulator performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • High pressure fuel pump connector or terminals malfunction • PCM connector or terminals malfunction • Spill valve control solenoid valve malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT HIGH PRESSURE FUEL PUMP CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the high pressure fuel pump connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 5.
		No	Go to the next step.
4	INSPECT SPILL VALVE CONTROL SOLENOID VALVE <ul style="list-style-type: none"> • Reconnect the high pressure fuel pump and PCM connectors. • Inspect the spill valve control solenoid valve. (See 01-14B-20 HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the high pressure fuel pump, then go to the next step. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine. • Perform the DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P1260:00 [L3 WITH TC]

id010239856800

DTC P1260:00	Immobilizer system problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The instrument cluster detects an immobilizer system malfunction. (Vehicles without advanced keyless entry and push button start system) • The keyless control module detects an immobilizer system malfunction. (Vehicles with advanced keyless entry and push button start system) Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Immobilizer system malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY STORED DTC IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Retrieve the immobilizer system DTC using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P144A:00 [L3 WITH TC]

id010239303000

DTC P144A:00	EVAP system purge vapor line restricted/blocked
DETECTION CONDITION	<ul style="list-style-type: none"> The DTC P144A:00 indicates that the DTC P144A:00 blocked line diagnostic is designed to detect a full blockage in the vapor lines between fuel tank pressure sensor and fuel tank. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (EVAP system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Blockage(s) between fuel tank pressure sensor and fuel tank PCM malfunction

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Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE/DTC P0451:00, P0452:00, P0453:00 or P0454:00 also present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-182 DTC P0451:00 [L3 WITH TC].) (See 01-02B-184 DTC P0452:00 [L3 WITH TC].) (See 01-02B-186 DTC P0453:00 [L3 WITH TC].) (See 01-02B-188 DTC P0454:00 [L3 WITH TC].)
		No Go to the next step.
4	INSPECT FOR BLOCKED FUEL VAPOR TUBE BETWEEN FUEL TANK PRESSURE SENSOR AND FUEL TANK <ul style="list-style-type: none"> Switch the ignition to off. Remove the fuel vapor tube assembly. Visually inspect the following: <ul style="list-style-type: none"> Fuel vapor tube for a blockage between fuel tank pressure sensor and connection to fuel tank Connection at the fuel tank for a blockage Attempt to manually remove the blockage. Is the blockage visible and can be removed? 	Yes Remove the blockage, then go to the next step.
		No Replace the fuel vapor tube assembly, then go to the next step.
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the Drive Mode 06 (EVAP System Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P1450:00 [L3 WITH TC]

id010239303100

DTC P1450:00	Unable to bleed up fuel tank vacuum
DETECTION CONDITION	<ul style="list-style-type: none"> • The DTC P1450:00 indicates the Self Test has detected that the EVAP system is unable to bleed up fuel tank vacuum. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (EVAP system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Excessive fuel tank vacuum <ul style="list-style-type: none"> — Kinks or bends in the fuel vapor hoses and tubes — Charcoal canister inlet port, CV solenoid valve, EVAP dust separator or outlet hose for contamination or foreign material • CV solenoid valve malfunction <ul style="list-style-type: none"> — Stuck open or close • Fuel tank pressure sensor malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT FUEL TANK VACUUM <ul style="list-style-type: none"> • Verify kinks or bends in the fuel vapor hoses and tubes. • Visually inspect the charcoal canister inlet port, CV solenoid valve, EVAP dust separator or outlet hose for contamination or foreign material. • Is a concern evident? 	Yes	Remove any contamination or foreign material around fuel vapor hoses and tubes. Repair the hoses, tubes or components if necessary, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
5	PERFORM EVAP SYSTEM LEAK INSPECTION <ul style="list-style-type: none"> • Connect the leak tester to the fuel filler pipe. • Switch the ignition to ON (engine off). • Access the EVAPCV PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Close the CV solenoid valve. • Does the EVAP system pressure reach 3.48 kPa {26.1 mmHg, 1.03 inHg}? 	Yes	Go to the next step.
		No	Replace the CV solenoid valve, then go to Step 9. (See 01-16B-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT CV SOLENOID VALVE <ul style="list-style-type: none"> • Switch the ignition to ON (engine off). • Access the EVAPCV PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Open the CV solenoid valve. • Does the pressure drop immediately? 	Yes	Go to the next step.
		No	Replace the CV solenoid valve, then go to Step 9. (See 01-16B-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
7	INSPECT FUEL TANK PRESSURE SENSOR <ul style="list-style-type: none"> • Disconnect the charcoal canister outlet tube at the charcoal canister. • Switch the ignition to ON (engine off). • Access the FTP PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FTP PID value between 2.4 and 2.8 V? 	Yes	Go to the next step.
		No	Replace the evaporative hose component, then go to Step 9. (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
8	PERFORM EVAP SYSTEM LEAK INSPECTION <ul style="list-style-type: none"> • Reconnect all disconnected connectors and hoses. • Perform the EVAP system leak inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Leakage still exists. <ul style="list-style-type: none"> • Locate the leak point and repair. • Repeat this step.
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 06 (EVAP System Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

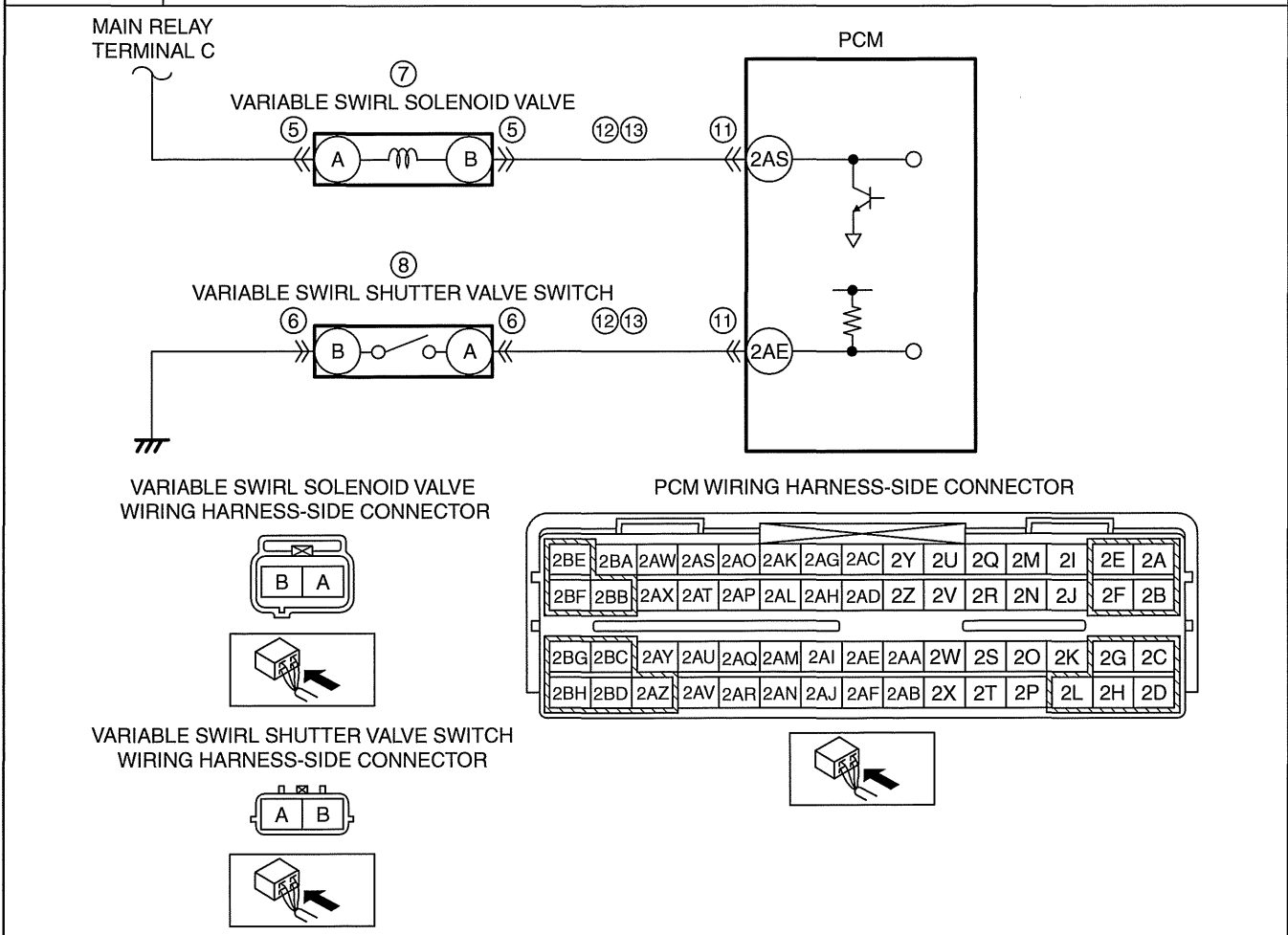
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2004:00 [L3 WITH TC]

id010239303300

DTC P2004:00	Variable swirl shutter valve stuck open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the mass variable swirl shutter valve position using the variable swirl shutter valve switch. If the PCM turns the variable swirl solenoid valve on but the variable swirl shutter valve position still remains open (variable swirl shutter valve switch is on), the PCM determines that the variable swirl shutter valve is stuck open. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable swirl solenoid valve connector or terminals malfunction Variable swirl shutter valve switch connector or terminals malfunction Variable swirl solenoid valve malfunction Variable swirl shutter valve switch malfunction Variable swirl shutter valve actuator malfunction (stuck open) Vacuum hose not connected correctly PCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Variable swirl solenoid valve terminal B—PCM terminal 2AS — Variable swirl shutter valve switch terminal A—PCM terminal 2AE Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Variable swirl solenoid valve terminal B—PCM terminal 2AS — Variable swirl shutter valve switch terminal A—PCM terminal 2AE PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	CLASSIFY INTERMITTENT CONCERN OR CONTINUOUS CONCERN <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Drive the vehicle under the following conditions: <ul style="list-style-type: none"> ECT: below 63 °C {145 °F} Engine speed: below 3,750 rpm Throttle opening angle is as follows: <ul style="list-style-type: none"> Engine speed below 1,500 rpm: above 35% Engine speed between 1,500—2,500 rpm: between 25—35% Engine speed above 2,500 rpm: below 25% Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Go to the next step.
		No Intermittent concern exists. <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE/DTC P2088:00 or P2089:00 also present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-244 DTC P2088:00 [L3 WITH TC].) (See 01-02B-246 DTC P2089:00 [L3 WITH TC].)
		No Go to the next step.
5	INSPECT VARIABLE SWIRL SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the variable swirl solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 14.
		No Go to the next step.
6	INSPECT VARIABLE SWIRL SHUTTER VALVE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the variable swirl shutter valve switch connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 14.
		No Go to the next step.
7	INSPECT VARIABLE SWIRL SOLENOID VALVE <ul style="list-style-type: none"> Inspect the variable swirl solenoid valve. (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the variable swirl solenoid valve, then go to Step 14. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No Go to the next step.
8	INSPECT VARIABLE SWIRL SHUTTER VALVE SWITCH <ul style="list-style-type: none"> Inspect the variable swirl shutter valve switch. (See 01-40B-24 VARIABLE SWIRL SHUTTER VALVE SWITCH INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the variable swirl shutter valve switch, then go to Step 14. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT VARIABLE SWIRL SHUTTER VALVE ACTUATOR <ul style="list-style-type: none"> • Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Does the variable swirl shutter valve actuator operate properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
10	VERIFY CONNECTION OF VACUUM HOSE ROUTING <ul style="list-style-type: none"> • Verify that the vacuum hoses are connected properly. • Are the vacuum hoses connected properly? 	Yes	Go to the next step.
		No	Reconnect the vacuum hoses properly, then go to Step 14. (See 01-13B-3 INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC].)
11	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 14.
		No	Go to the next step.
12	INSPECT VARIABLE SWIRL SOLENOID VALVE CIRCUIT AND VARIABLE SWIRL SHUTTER VALVE SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Variable swirl solenoid valve, variable swirl shutter valve switch and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Variable swirl solenoid valve terminal B — Variable swirl shutter valve switch terminal A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 14.
		No	Go to the next step.
13	INSPECT VARIABLE SWIRL SOLENOID VALVE CIRCUIT AND VARIABLE SWIRL SHUTTER VALVE SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable swirl solenoid valve, variable swirl shutter valve switch and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Variable swirl solenoid valve terminal B—PCM terminal 2AS — Variable swirl shutter valve switch terminal A—PCM terminal 2AE • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
14	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine. • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> — ECT: below 63 °C {145 °F} — Engine speed: below 3,750 rpm — Throttle opening angle is as follows: <ul style="list-style-type: none"> • Engine speed below 1,500 rpm: above 35% • Engine speed between 1,500—2,500 rpm: between 25—35% • Engine speed above 2,500 rpm: below 25% • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

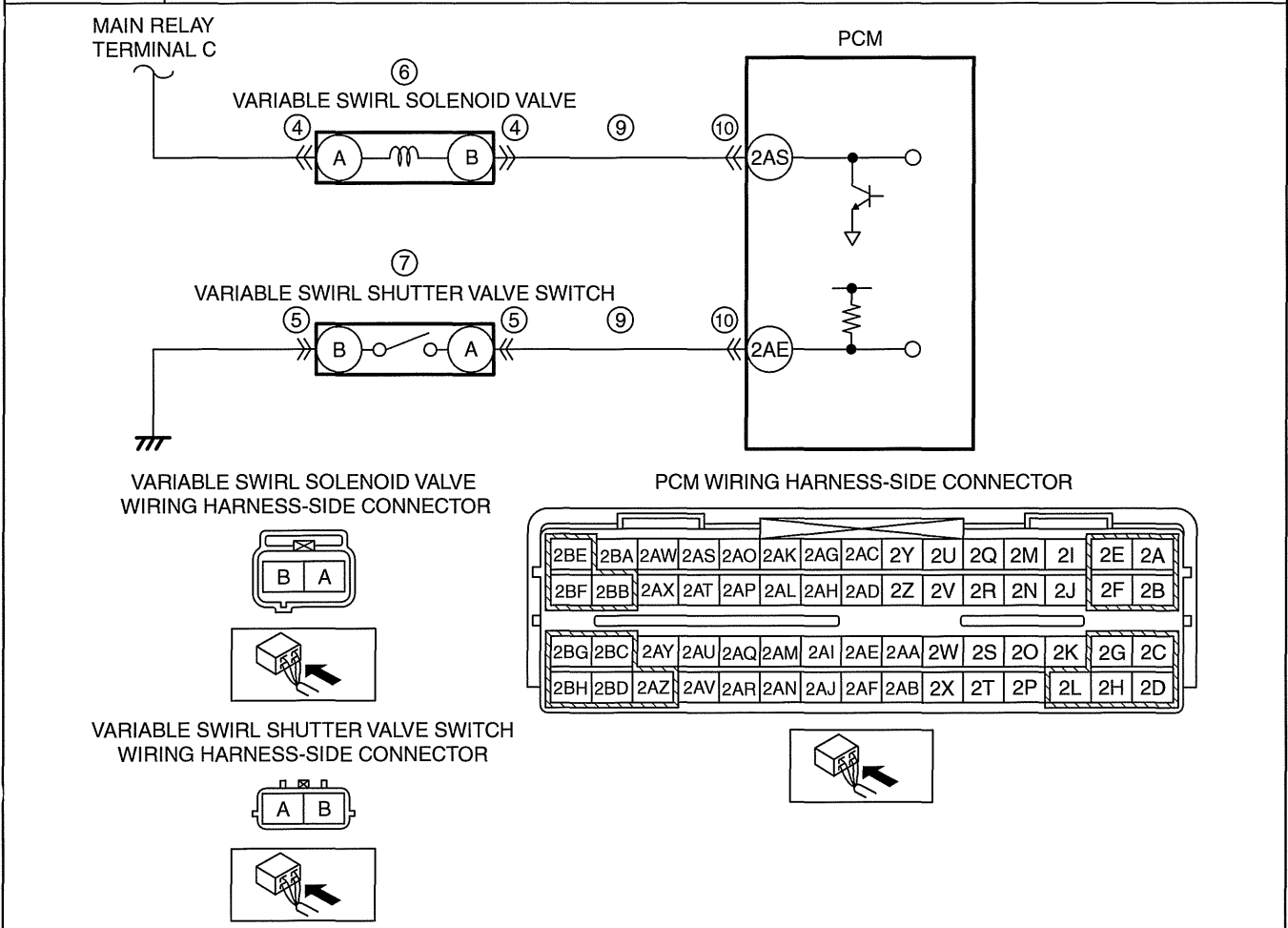
STEP	INSPECTION		ACTION
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2006:00 [L3 WITH TC]

id010239303400

01-02B

DTC P2006:00	Variable swirl shutter valve stuck closed
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the mass variable swirl shutter valve position using the variable swirl shutter valve switch. If the PCM turns the variable swirl solenoid valve off but the variable swirl position still remains closed (variable swirl shutter valve switch is off), the PCM determines that the variable swirl shutter valve is stuck closed. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Variable swirl solenoid valve connector or terminals malfunction • Variable swirl shutter valve switch connector or terminals malfunction • Variable swirl solenoid valve malfunction • Variable swirl shutter valve switch malfunction • Variable swirl shutter valve actuator malfunction (stuck closed) • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Variable swirl solenoid valve terminal B—PCM terminal 2AS — Variable swirl shutter valve switch terminal A—PCM terminal 2AE • PCM connector or terminals malfunction • PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	CLASSIFY INTERMITTENT CONCERN OR CONTINUOUS CONCERN <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> — ECT: above 63 °C {145 °F} — Engine speed: below 3,750 rpm — Throttle opening angle is as follows: <ul style="list-style-type: none"> • Engine speed below 1,500 rpm: above 35% • Engine speed between 1,500—2,500 rpm: between 25—35% • Engine speed above 2,500 rpm: below 25% • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the “INTERMITTENT CONCERN TROUBLESHOOTING” procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
4	INSPECT VARIABLE SWIRL SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable swirl solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
5	INSPECT VARIABLE SWIRL SHUTTER VALVE SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the variable swirl shutter valve switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
6	INSPECT VARIABLE SWIRL SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the variable swirl solenoid valve. (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the variable swirl solenoid valve, then go to Step 11. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	INSPECT VARIABLE SWIRL SHUTTER VALVE SWITCH <ul style="list-style-type: none"> • Inspect the variable swirl shutter valve switch. (See 01-40B-24 VARIABLE SWIRL SHUTTER VALVE SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the variable swirl shutter valve switch, then go to Step 11. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT VARIABLE SWIRL SHUTTER VALVE ACTUATOR <ul style="list-style-type: none"> • Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
9	INSPECT VARIABLE SWIRL SOLENOID VALVE CIRCUIT AND VARIABLE SWIRL SHUTTER VALVE SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Variable swirl solenoid valve and variable swirl shutter valve switch connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Variable swirl solenoid valve terminal B — Variable swirl shutter valve switch terminal A • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 11.
		No Go to the next step.
10	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to the next step.
		No Go to the next step.
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Start the engine. • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> — ECT: above 63 °C {145 °F} — Engine speed: below 3,750 rpm — Throttle opening angle is as follows: <ul style="list-style-type: none"> • Engine speed below 1,500 rpm: above 35% • Engine speed between 1,500—2,500 rpm: between 25—35% • Engine speed above 2,500 rpm: below 25% • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

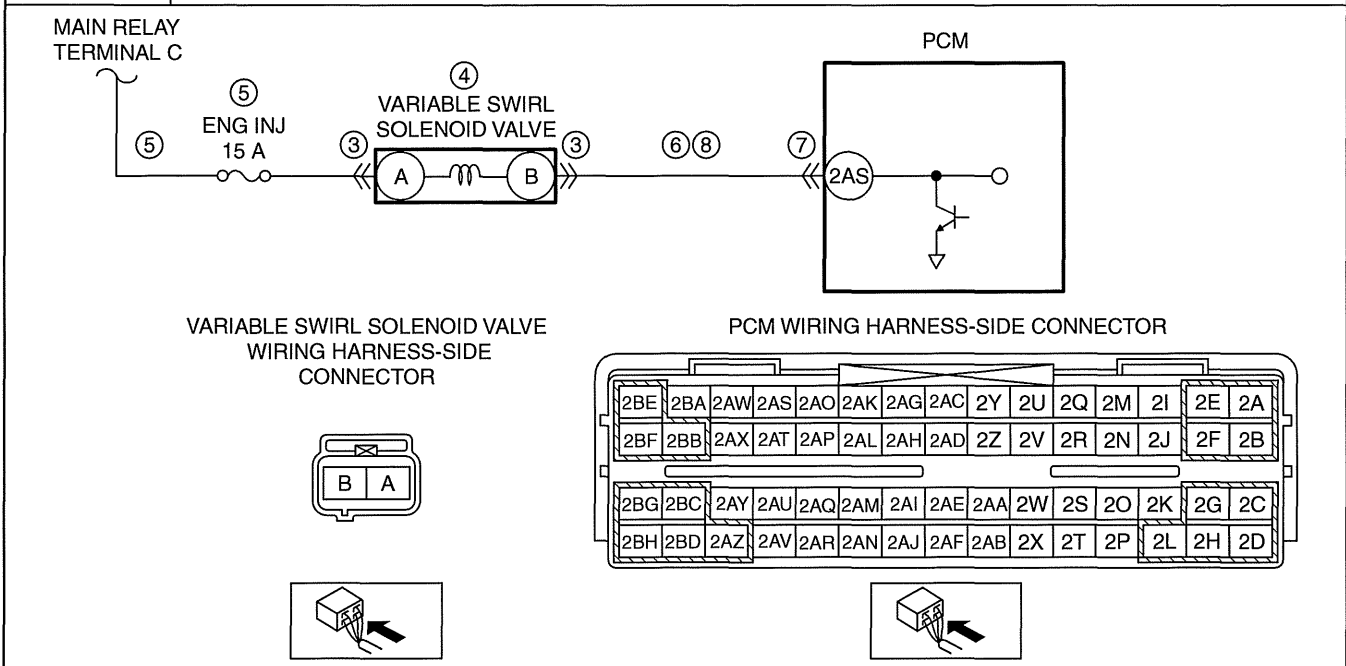
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2009:00 [L3 WITH TC]

id010239850800

DTC P2009:00	Variable swirl solenoid valve control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the variable swirl solenoid valve control signal. If the PCM turns the variable swirl solenoid valve off but the voltage still remains low for 5 s, the PCM determines that the variable swirl solenoid valve control circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable swirl solenoid valve connector or terminals malfunction Variable swirl solenoid valve malfunction Short to ground or open circuit in variable swirl solenoid valve power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and variable swirl solenoid valve terminal A — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and variable swirl solenoid valve terminal A Short to ground in wiring harness between variable swirl solenoid valve terminal B and PCM terminal 2AS PCM connector or terminals malfunction Open circuit in wiring harness between variable swirl solenoid valve terminal B and PCM terminal 2AS PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VARIABLE SWIRL SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable swirl solenoid valve connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT VARIABLE SWIRL SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the variable swirl solenoid valve. (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the variable swirl solenoid valve, then go to Step 9. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT VARIABLE SWIRL SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable swirl solenoid valve connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the variable swirl solenoid valve terminal A (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
6	INSPECT VARIABLE SWIRL SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Variable swirl solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between variable swirl solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT VARIABLE SWIRL SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Variable swirl solenoid valve and PCM connectors are disconnected. • Inspect for continuity between variable swirl solenoid valve terminal B (wiring harness-side) and PCM terminal 2AS (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2010:00 [L3 WITH TC]

id010239850900

DTC P2010:00	Variable swirl solenoid valve control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the variable swirl solenoid valve control signal. If the PCM turns the variable swirl solenoid valve on but the voltage still remains high for 5 s, the PCM determines that the variable swirl solenoid valve control circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Variable swirl solenoid valve connector or terminals malfunction Variable swirl solenoid valve malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between variable swirl solenoid valve terminal B and PCM terminal 2AS PCM malfunction
<p style="text-align: center;">MAIN RELAY TERMINAL C</p> <p style="text-align: center;">ENG INJ 15 A</p> <p style="text-align: center;">VARIABLE SWIRL SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR</p> <p style="text-align: center;">PCM WIRING HARNESS-SIDE CONNECTOR</p>	

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VARIABLE SWIRL SOLENOID VALVE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the variable swirl solenoid valve connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT VARIABLE SWIRL SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the variable swirl solenoid valve. (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the variable swirl solenoid valve, then go to Step 7. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT VARIABLE SWIRL SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Variable swirl solenoid valve and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the variable swirl solenoid valve terminal B (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

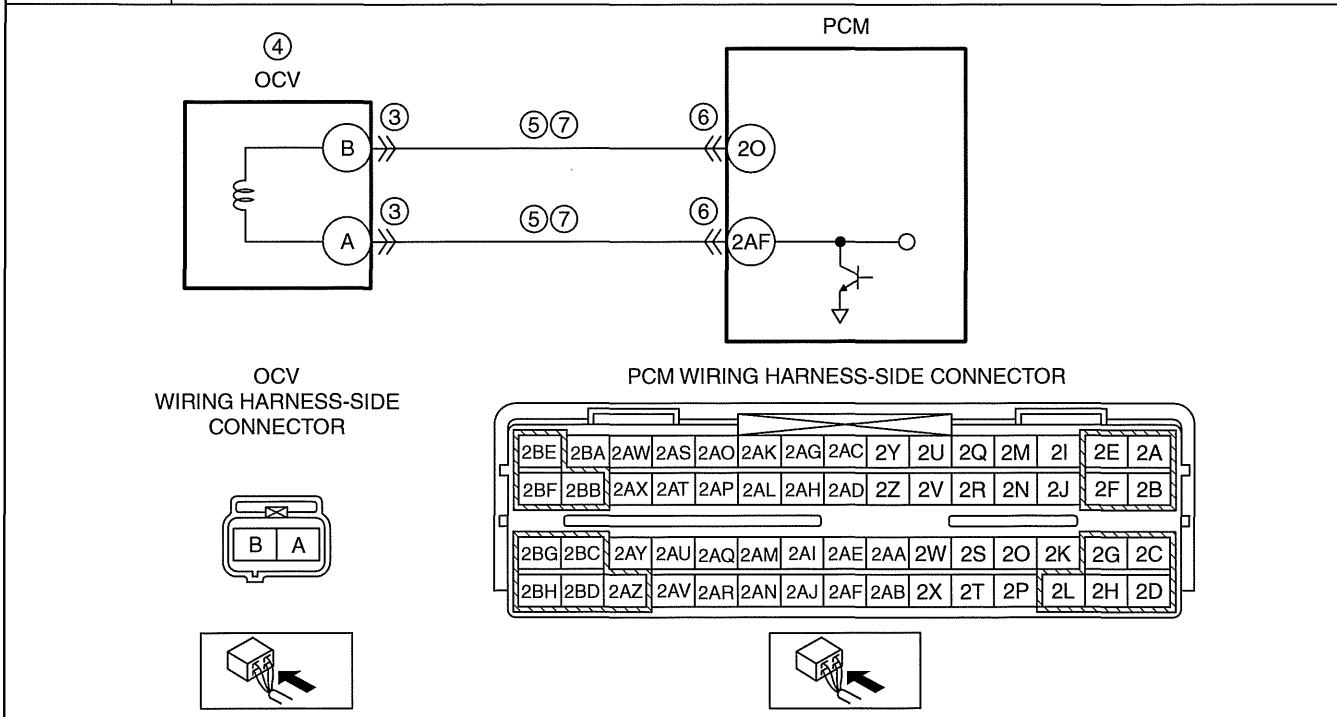
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2088:00 [L3 WITH TC]

id010239900200

DTC P2088:00	OCV circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the OCV voltage. If the PCM detects that the OCV control voltage (calculated from the OCV) is below the threshold voltage, the PCM determines that the OCV circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> OCV connector or terminals malfunction OCV malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2O — OCV terminal A—PCM terminal 2AF PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2O — OCV terminal A—PCM terminal 2AF PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT OCV CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the OCV connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT OCV <ul style="list-style-type: none"> • Inspect the OCV. (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the OCV, then go to Step 8. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT OCV CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • OCV connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — OCV terminal B — OCV terminal A • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT OCV CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • OCV and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — OCV terminal B—PCM terminal 2O — OCV terminal A—PCM terminal 2AF • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

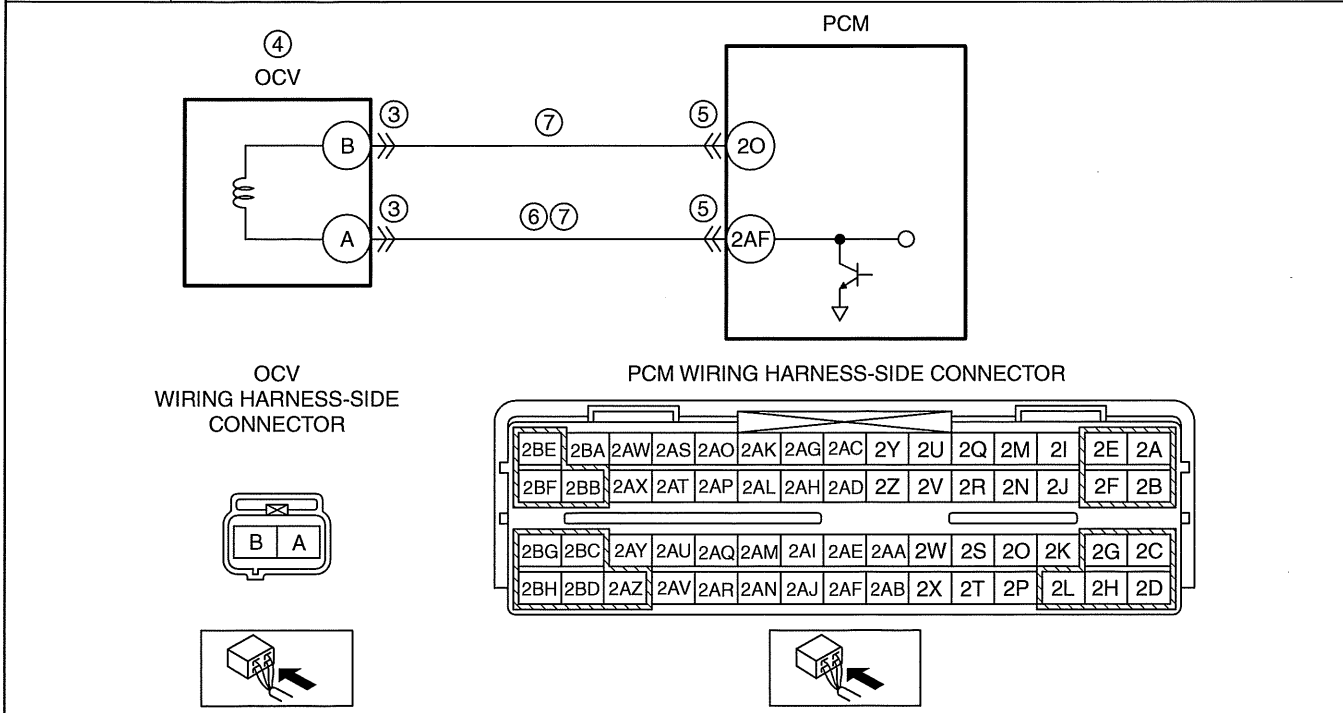
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2089:00 [L3 WITH TC]

id010239900300

DTC P2089:00	OCV circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the OCV voltage. If the PCM detects that the OCV control voltage (calculated from the OCV) is above the threshold voltage, the PCM determines that the OCV circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> OCV connector or terminals malfunction OCV malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between OCV terminal A and PCM terminal 2AF OCV circuits are shorted to each other. PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT OCV CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the OCV connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT OCV <ul style="list-style-type: none"> Inspect the OCV. (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the OCV, then go to Step 8. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT OCV CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • OCV and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the OCV terminal A (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT OCV CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • OCV and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between OCV terminals B and A (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to the next step.
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2096:00 [L3 WITH TC]

id010239900400

DTC P2096:00	Target A/F feedback system too lean
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the target A/F fuel trim while under the target A/F feedback control. If the fuel trim is more than the specification, the PCM determines that the target A/F feedback system is too lean. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Exhaust gas leakage • HO2S malfunction • IAT sensor malfunction • Erratic signal to PCM <ul style="list-style-type: none"> — ECT sensor No.1 signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction — Related connector or terminals malfunction — Related wiring harness malfunction • A/F sensor malfunction • Air suction in intake-air system • MAF sensor malfunction • Improper operation of ignition system • Spark plug malfunction • Ignition coil malfunction • Insufficient engine compression • High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure sensor (built-in fuel delivery pipe) malfunction — Relief valve (built-in fuel delivery pipe) malfunction — Spill valve control solenoid valve (built-in high pressure fuel pump) malfunction — High pressure fuel pump malfunction • Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pump unit malfunction — Fuel pressure regulator (built-in fuel pump unit) malfunction — Fuel leakage in low-pressure side fuel line (between fuel pump unit and high pressure fuel pump) • Improper operation of fuel injector • ECT sensor No.1 malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P2096:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 7.
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the TWC and HO2S. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Replace the HO2S, then go to Step 23. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
7	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. (See 01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 23. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> — ECT — MAF — TP REL — VSS • Are all PIDs normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Inspect the malfunctioning part. <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
9	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA CONDITION <ul style="list-style-type: none"> • Access the same PIDs as in Step 8 while simulating the FREEZE FRAME DATA (Mode 2) condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are all PIDs normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Inspect the malfunctioning part. <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
10	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 12.
11	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Replace the A/F sensor, then go to Step 23. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
12	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Start the engine. • Access the MAF PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Verify that the MAF PID changes quickly according to engine speed. • Is the MAF PID value normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 14.
		No	Go to the next step.
13	INSPECT INTAKE-AIR SYSTEM FOR EXCESSIVE AIR SUCTION <ul style="list-style-type: none"> • Visually inspect the hose in intake-air system for looseness, cracks or damages. <p>Note</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Replace the MAF/IAT sensor, then go to Step 23. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
14	INSPECT IGNITION SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Is a strong blue spark visible at each cylinder? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the spark test result, then go to Step 23.
15	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Go to the next step.
16	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 20.
		No	Go to the next step.
17	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Is the vehicle accelerate performance normally? 	Yes	Go to the next step.
		No	Go to Step 19.
18	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 23. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 20.
19	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> • Go to Step 23.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe, then go to Step 23. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
20	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> • Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. • Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the low side fuel pressure within the specification? 	Yes	Go to the next step.
		No	Inspect for the following. <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results. Go to Step 23.
21	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Do the fuel injectors operate properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
22	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to the next step. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
23	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • After warming up the engine, maintain the idle status for 1 min or more. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
24	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2097:00 [L3 WITH TC]

id010239707600

DTC P2097:00	Target A/F feedback system too rich
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the target A/F fuel trim while under the target A/F feedback control. If the fuel trim is less than the specification, the PCM determines that the target A/F feedback system is too rich. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (fuel system). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Exhaust gas leakage • HO2S malfunction • IAT sensor malfunction • Erratic signal to PCM <ul style="list-style-type: none"> — ECT sensor No.1 signal malfunction — MAF sensor signal malfunction — TP sensor signal malfunction — VSS signal malfunction — Related connector or terminals malfunction — Related wiring harness malfunction • Exhaust gas leakage • A/F sensor malfunction • High-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Fuel pressure sensor (built-in fuel delivery pipe) malfunction — Relief valve (built-in fuel delivery pipe) malfunction — Spill valve control solenoid valve (built-in high pressure fuel pump) malfunction — High pressure fuel pump malfunction • Low-pressure side fuel delivery system malfunction <ul style="list-style-type: none"> — Low pressure side fuel line restriction (between fuel pump unit and high pressure fuel pump) — Fuel filter clogging — Fuel pump unit malfunction — Fuel pressure regulator (built-in fuel pump unit) malfunction • Purge solenoid valve malfunction • Insufficient engine compression • Improper operation of fuel injector • ECT sensor No.1 malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P2097:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 7.
6	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the TWC and HO2S. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.
		No	Replace the HO2S, then go to Step 21. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
7	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. (See 01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 21. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> — ECT — MAF — TP REL — VSS • Are all PID values normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Inspect the malfunctioning part. <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.
9	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA CONDITION <ul style="list-style-type: none"> • Access the same PIDs as in Step 8 while simulating the FREEZE FRAME DATA (Mode 2) condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are all PID values normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Inspect the malfunctioning part. <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.
10	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 12.
11	INSPECT EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect for the exhaust gas leakage between the exhaust manifold and A/F sensor. • Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.
		No	Replace the A/F sensor, then go to Step 21. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
12	INSPECT FUEL PRESSURE (HIGH-SIDE) <ul style="list-style-type: none"> • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 17.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
13	IDENTIFY CAUSE BY FUEL PRESSURE SENSOR OR HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Is the vehicle accelerate performance normally? 	Yes	Go to the next step.
		No	Go to Step 15.
14	INSPECT FUEL PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the fuel delivery pipe, then go to Step 21. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 16.
15	INSPECT HIGH PRESSURE FUEL PUMP <ul style="list-style-type: none"> • Replace the high pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) • Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> • Go to Step 21.
		No	Go to the next step.
16	INSPECT FUEL PRESSURE (LOW-SIDE) <ul style="list-style-type: none"> • Connect the fuel pressure gauge between fuel pump and high pressure fuel pump. • Measure the low side fuel pressure. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) • Is the low side fuel pressure within the specification? 	Yes	Go to the next step.
		No	Inspect for the following. <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If there is any malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results. Go to Step 21.
17	INSPECT LONG TERM FUEL TRIM <ul style="list-style-type: none"> • Access the LONGFT1 PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Compare the LONGFT1 PID with recorded FREEZE FRAME DATA (Mode 2) at Step 2. • Is the LONGFT1 PID above FREEZE FRAME DATA (Mode 2)? 	Yes	Inspect the purge solenoid valve. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Replace the purge solenoid valve. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 21.
		No	Go to the next step.
18	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.
		No	Go to the next step.
19	INSPECT FUEL INJECTOR OPERATION <ul style="list-style-type: none"> • Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Do the fuel injectors operate properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.
20	INSPECT ECT SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.1, then go to the next step. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
21	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • After warming up the engine, maintain the idle status for 1 min or more. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
22	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

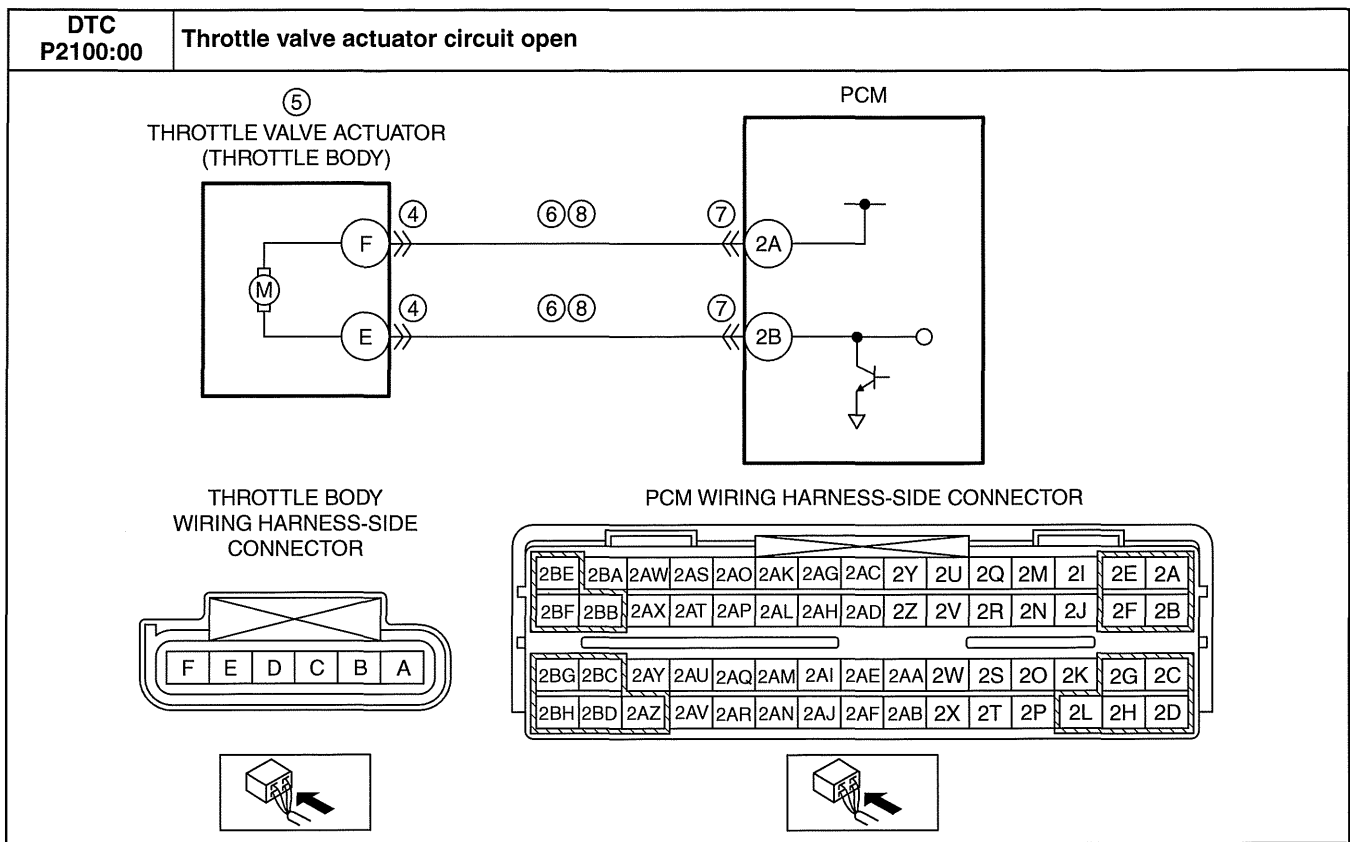
01-02B

DTC P2100:00 [L3 WITH TC]

id010239851000

DTC P2100:00	Throttle valve actuator circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the electronic throttle valve actuator current. If the PCM detects the electronic throttle valve actuator current is below the specification current, the PCM determines that the electronic throttle valve actuator circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Throttle body connector or terminals malfunction • Throttle valve electrical malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal F—PCM terminal 2A — Throttle body terminal E—PCM terminal 2B • PCM connector or terminals malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal F—PCM terminal 2A — Throttle body terminal E—PCM terminal 2B • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	CLASSIFY INTERMITTENT CONCERN OR CONTINUOUS CONCERN <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Intermittent concern exists. <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].)
4	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT THROTTLE VALVE ELECTRICAL MALFUNCTION <ul style="list-style-type: none"> • Measure the resistance between throttle body terminal F and E (part-side). • Is the resistance approx.1.3 ohms? 	Yes	Go to the next step.
		No	Replace the throttle body, then go to Step 9. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
6	INSPECT THROTTLE VALVE ACTUATOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Throttle body terminal F — Throttle body terminal E • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT THROTTLE VALVE ACTUATOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Throttle body terminal F—PCM terminal 2A — Throttle body terminal E—PCM terminal 2B • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

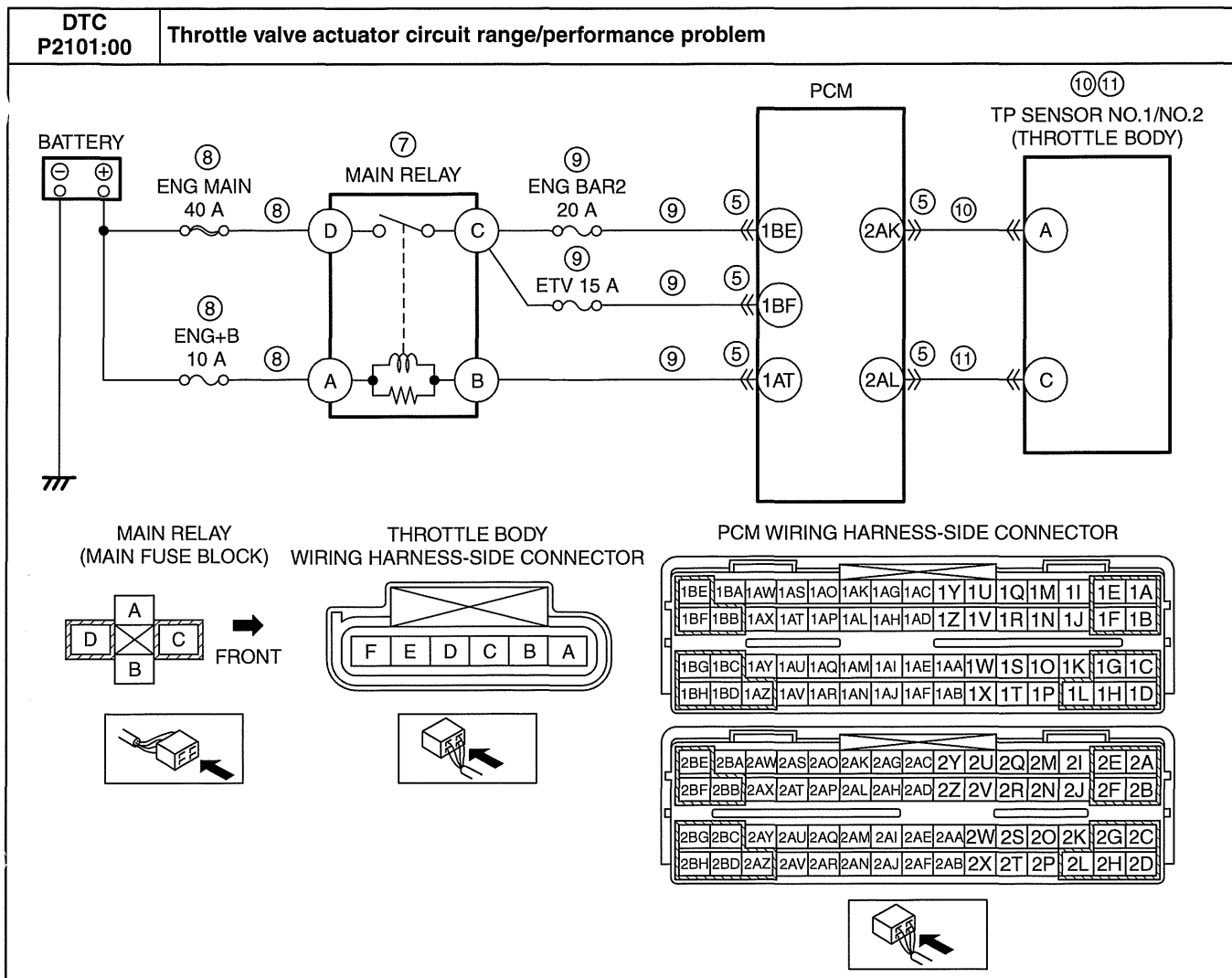
STEP	INSPECTION	ACTION	
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2101:00 [L3 WITH TC]

id010239707700

DTC P2101:00	Throttle valve actuator circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM turns the main relay on but the input voltage is 4 V or less, the PCM determines that the main relay control circuit voltage is low. • The PCM monitors the input voltage from the main relay. The PCM turns the main relay off but the input voltage is 4 V or more, the PCM determines that the main relay control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM connector or terminals malfunction • Main relay malfunction • Short to ground or open circuit in main relay power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> • Battery positive terminal—Main relay terminal D • Battery positive terminal—Main relay terminal A — ENG MAIN 40 A fuse and/or ENG+B 10 A fuse malfunction — Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> • Battery positive terminal—Main relay terminal D • Battery positive terminal—Main relay terminal A • Short to ground or open circuit in main relay control circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> • Main relay terminal C—PCM terminal 1BE • Main relay terminal C—PCM terminal 1BF • Main relay terminal B—PCM terminal 1AT — ENG BAR2 20 A fuse and/or ETV 15 A fuse malfunction — Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> • Main relay terminal C—PCM terminal 1BE • Main relay terminal C—PCM terminal 1BF • Main relay terminal B—PCM terminal 1AT • TP sensor No.1 and related circuit malfunction • TP sensor No.2 and related circuit malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]



01-02B

Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P2101:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 12.
		No	Go to the next step.
6	INSPECT MAIN RELAY OUTPUT VOLTAGE <ul style="list-style-type: none"> • PCM connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — PCM terminal 1BE — PCM terminal 1BF • Is the voltage B+? 	Yes	Go to Step 10.
		No	Go to the next step.
7	INSPECT MAIN RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Remove the main relay. • Inspect the main relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the main relay, then go to Step 12.
		No	Go to the next step.
8	INSPECT MAIN RELAY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Main relay is removed. • PCM connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Main relay terminal D — Main relay terminal A • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG MAIN 40 A fuse and ENG+B 10 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 12.
9	INSPECT MAIN RELAY CONTROL CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Reconnect all disconnected connectors. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — PCM terminal 1BE — PCM terminal 1BF — PCM terminal 1AT • Is the voltage normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to Step 12.
		No	If the PCM terminal 1BE or 1BF voltage is not normal: <ul style="list-style-type: none"> • Inspect the ENG BAR2 20 A fuse and ETV 15 A fuse. <ul style="list-style-type: none"> — If the fuse is melt: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. • Replace the fuse. — If the fuse is deterioration: <ul style="list-style-type: none"> • Replace the fuse. — If the fuse is normal: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible open circuit. If the PCM terminal 1AT voltage is not normal: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short or open circuit. Go to Step 12.
10	INSPECT TP SENSOR NO.1 OUTPUT VOLTAGE <ul style="list-style-type: none"> • PCM connector is disconnected. • Measure the voltage at the PCM terminal 2AK (wiring harness-side). • Is the voltage normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Inspect the TP sensor No.1 and related circuits, connectors and terminals. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
11	INSPECT TP SENSOR NO.2 OUTPUT VOLTAGE <ul style="list-style-type: none"> PCM connector is disconnected. Measure the voltage at the PCM terminal 2AL (wiring harness-side). Is the voltage normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes Go to the next step.
		No Inspect the TP sensor No.2 and related circuits, connectors and terminals. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
12	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

01-02B

DTC P2105:00 [L3 WITH TC]

id010239851100

DTC P2105:00	Throttle valve actuator control system-forced engine shutdown
DETECTION CONDITION	<ul style="list-style-type: none"> The throttle valve actuator control system is in the failure mode effects management mode. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Damaged throttle body and/or PCM Throttle valve actuator control module internal processor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> Switch the ignition to off, then to ON (engine off). Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any other PENDING CODEs and/or DTCs present? 	Yes Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT THROTTLE VALVE ACTUATOR AND PCM <ul style="list-style-type: none"> • Switch the ignition to off. • Visually inspect the following for obvious signs of damage: <ul style="list-style-type: none"> — Throttle body — PCM • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 6.
		No	Go to the next step.
5	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> • Perform the PCM configuration. (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].) • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Perform the PCM configuration again, then go to the next step. (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].)
		No	Go to Step 7.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2107:00 [L3 WITH TC]

id010239707800

DTC P2107:00	Throttle valve actuator control module processor problem
DETECTION CONDITION	<ul style="list-style-type: none"> • Throttle valve actuator control module internal processor error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM malfunction <ul style="list-style-type: none"> — Throttle valve actuator control module internal processor error

01-02B

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2108:00 [L3 WITH TC]

id010239707900

DTC P2108:00	Throttle valve actuator control module performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> • If the PCM detects either of the following conditions, the PCM determines that the throttle valve actuator control system has a malfunction. <ul style="list-style-type: none"> — TP sensor power supply voltage: below 4.40 V — TP sensor No.1 output voltage: below 0.20 V or above 4.85 V (DTC P0122:00 or P0123:00) — TP sensor No.2 output voltage: below 0.20 V or above 4.85 V (DTC P0222:00 or P0223:00) — PCM internal circuit for TP sensor No.1 input circuit malfunction — PCM internal malfunction <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Throttle body connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AO — Throttle body terminal A—PCM terminal 2AK — Throttle body terminal C—PCM terminal 2AL • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal A—PCM terminal 2AK — Throttle body terminal C—PCM terminal 2AL • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Throttle body terminal B—PCM terminal 2AO — Throttle body terminal A—PCM terminal 2AK — Throttle body terminal D—PCM terminal 2AJ • TP sensor No.1 and/or No.2 malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.</td> </tr> </table>	Yes	Go to the next step.	No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
Yes	Go to the next step.					
No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.					
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	No	Go to the next step.
Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 					
No	Go to the next step.					
3	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P0122:00, P0123:00, P0222:00 or P0223:00 also present? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the applicable DTC inspection. (See 01-02B-83 DTC P0122:00 [L3 WITH TC].) (See 01-02B-85 DTC P0123:00 [L3 WITH TC].) (See 01-02B-135 DTC P0222:00 [L3 WITH TC].) (See 01-02B-137 DTC P0223:00 [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 01-02B-83 DTC P0122:00 [L3 WITH TC].) (See 01-02B-85 DTC P0123:00 [L3 WITH TC].) (See 01-02B-135 DTC P0222:00 [L3 WITH TC].) (See 01-02B-137 DTC P0223:00 [L3 WITH TC].)	No	Go to the next step.
Yes	Go to the applicable DTC inspection. (See 01-02B-83 DTC P0122:00 [L3 WITH TC].) (See 01-02B-85 DTC P0123:00 [L3 WITH TC].) (See 01-02B-135 DTC P0222:00 [L3 WITH TC].) (See 01-02B-137 DTC P0223:00 [L3 WITH TC].)					
No	Go to the next step.					
4	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Repair or replace the connector and/or terminals, then go to Step 8.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Repair or replace the connector and/or terminals, then go to Step 8.	No	Go to the next step.
Yes	Repair or replace the connector and/or terminals, then go to Step 8.					
No	Go to the next step.					

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
5	VERIFY INTERMITTENT MALFUNCTION AT TP SENSOR NO.1 CIRCUIT <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure to the TP sensor No.1 related harnesses and connectors. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
6	VERIFY INTERMITTENT MALFUNCTION AT TP SENSOR NO.2 CIRCUIT <ul style="list-style-type: none"> • Perform the "INTERMITTENT CONCERN TROUBLESHOOTING" procedure to the TP sensor No.2 related harnesses and connectors. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
7	INSPECT TP SENSOR NO.1 AND NO.2 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the TP sensor No.1 and No.2. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2119:00 [L3 WITH TC]

id010239708200

DTC P2119:00	Throttle valve actuator control throttle body range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the TP with the default TP when the ignition switch is off. If the TP is higher than the default TP, the PCM determines that there is a throttle valve actuator control throttle body range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle valve actuator malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE VALVE ACTUATOR <ul style="list-style-type: none"> Switch the ignition to off. Inspect the throttle valve actuator. (See 01-13B-12 THROTTLE BODY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

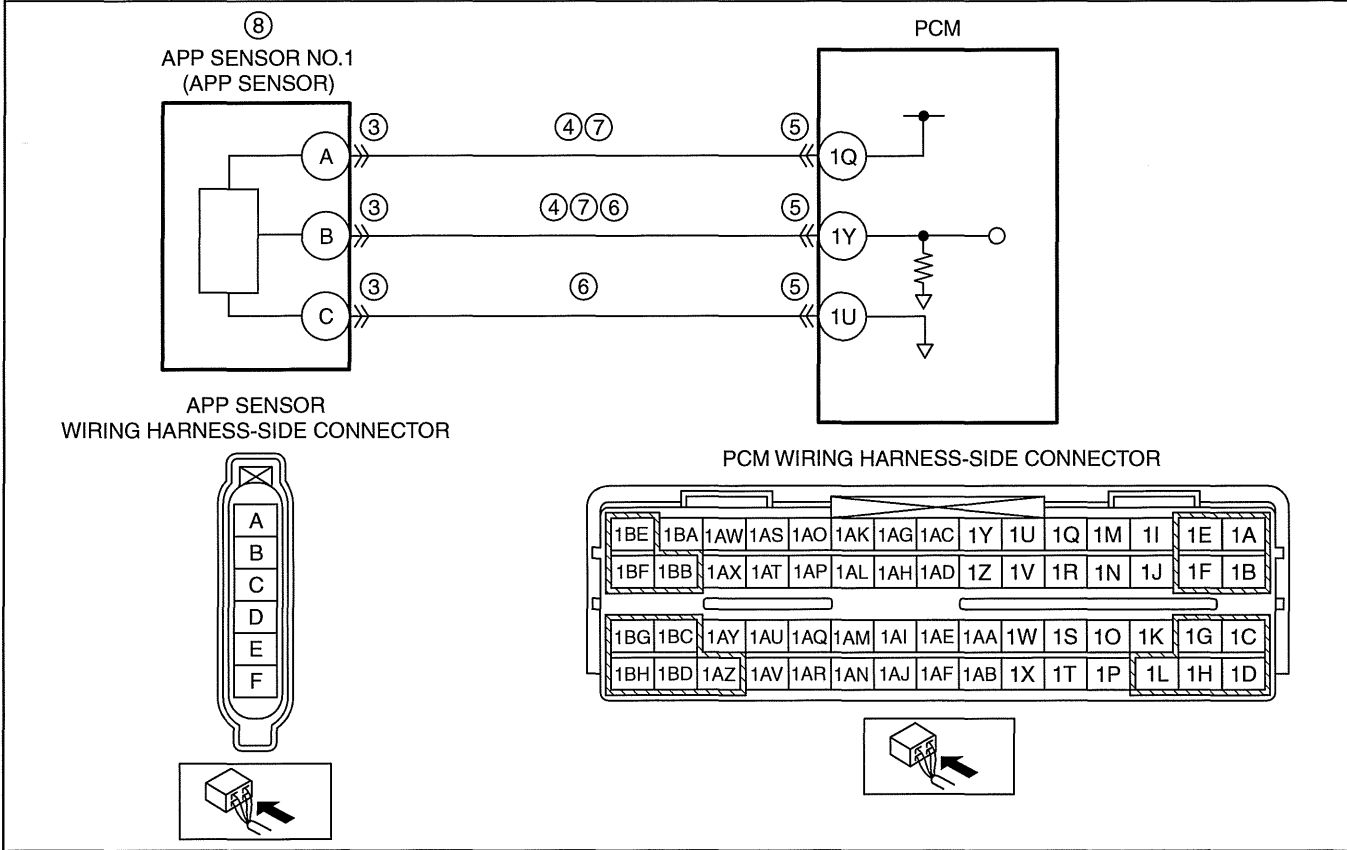
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2122:00 [L3 WITH TC]

id010239326500

01-02B

DTC P2122:00	APP sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the APP sensor No.1 signal. If the PCM detects that the APP sensor No.1 voltage is below 0.12 V, the PCM determines that the APP sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1Q — APP sensor terminal B—PCM terminal 1Y PCM connector or terminals malfunction APP sensor No.1 signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1Q — APP sensor terminal B—PCM terminal 1Y APP sensor No.1 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT APP SENSOR NO.1 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — APP sensor terminal A — APP sensor terminal B • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 9.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.1 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminals B and C (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No	Go to the next step.
7	INSPECT APP SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1Q — APP sensor terminal B—PCM terminal 1Y • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT APP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the APP sensor No.1. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

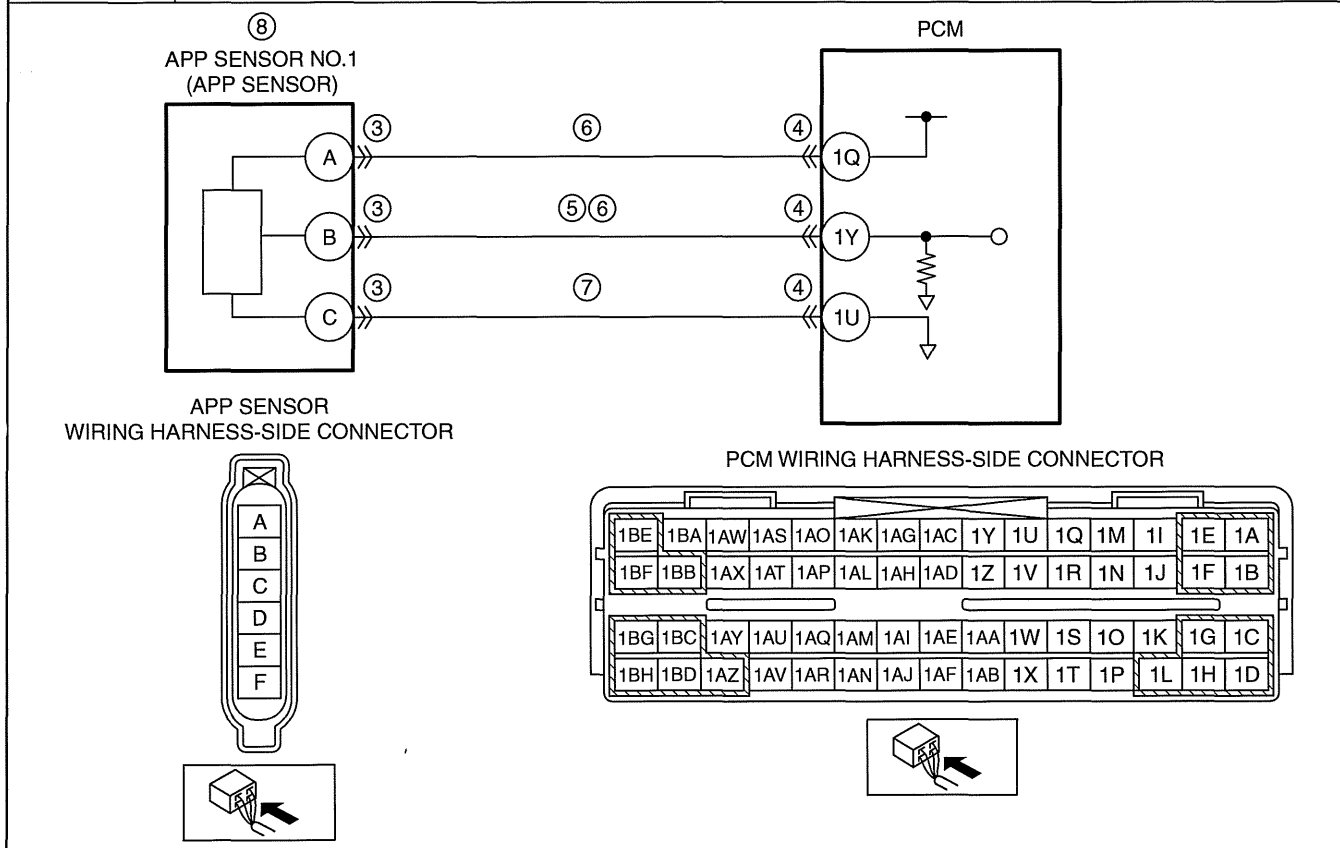
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2123:00 [L3 WITH TC]

id010239708400

01-02B

DTC P2123:00	APP sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the APP sensor No.1 signal. If the PCM detects that the APP sensor No.1 voltage is above 4.8 V, the PCM determines that the APP sensor No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between APP sensor terminal B and PCM terminal 1Y APP sensor No.1 power supply circuit and signal circuit are shorted to each other. Open circuit in wiring harness between APP sensor terminal C and PCM terminal 1U APP sensor No.1 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
5	INSPECT APP SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the APP sensor terminal B (wiring harness-side). • Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No Go to the next step.
6	INSPECT APP SENSOR NO.1 POWER SUPPLY CIRCUIT AND SIGNAL CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminals A and B (wiring harness-side). • Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to each other, then go to Step 9.
		No Go to the next step.
7	INSPECT APP SENSOR NO.1 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminal C (wiring harness-side) and PCM terminal 1U (wiring harness-side). • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT APP SENSOR NO.1 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the APP sensor No.1. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes Replace the accelerator pedal, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

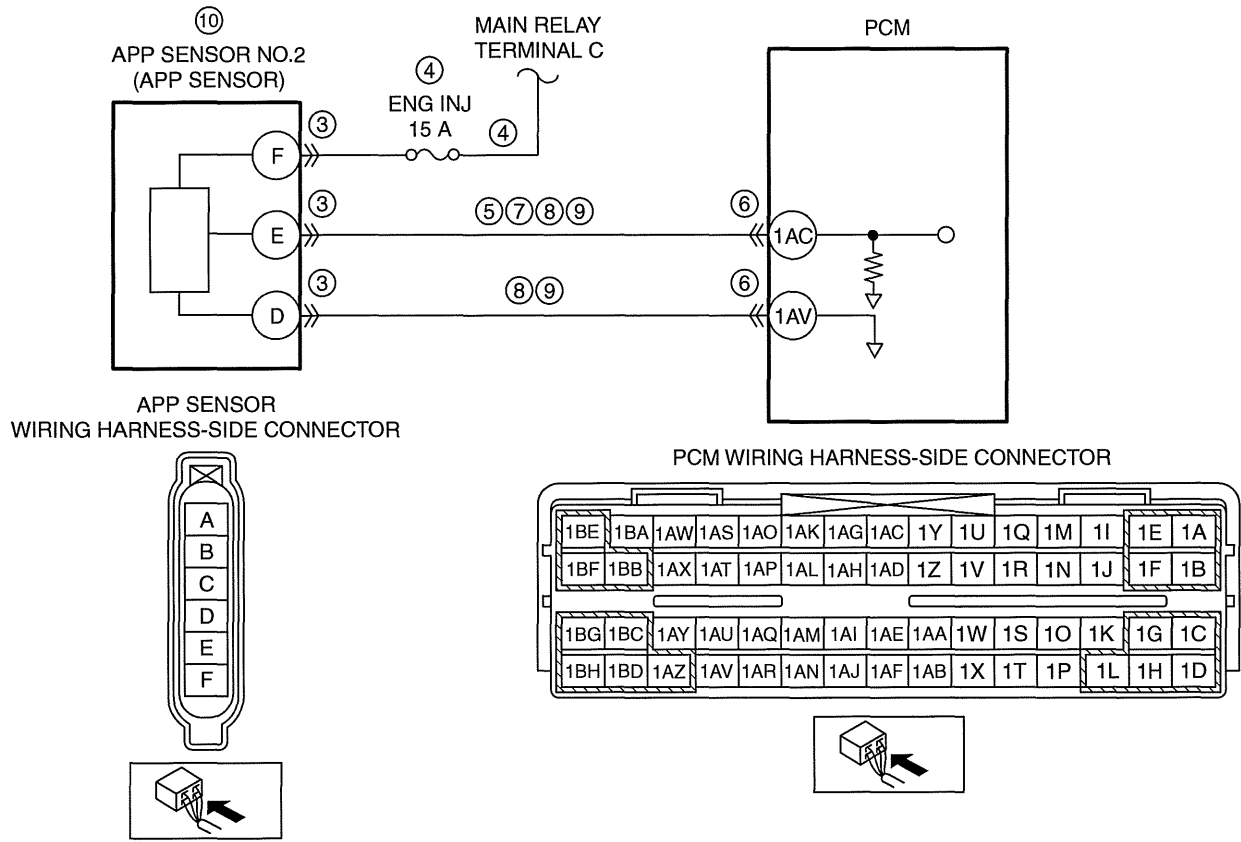
ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2126:00 [L3 WITH TC]

id010239934400

01-02B

DTC P2126:00	APP sensor No.2 circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the APP sensor duty signal. If the input signal (duty signal) is too high or too low than the set value, or the input signal intervals are too short or too long, the PCM determines that the APP sensor No.2 has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Short to ground or open circuit in APP sensor No.2 power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and APP sensor terminal F — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and APP sensor terminal F Short to ground in wiring harness between APP sensor terminal E and PCM terminal 1AC PCM connector or terminals malfunction Short to power supply in wiring harness between APP sensor terminal E and PCM terminal 1AC APP sensor No.2 signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — APP sensor terminal E—PCM terminal 1AC — APP sensor terminal D—PCM terminal 1AV APP sensor No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 11.
		No	Go to the next step.
4	INSPECT APP SENSOR NO.2 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the APP sensor terminal F (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 11.
5	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 11.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal and/or connector, then go to Step 11.
		No	Go to the next step.
7	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the APP sensor terminal E (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
8	INSPECT APP SENSOR NO.2 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminals E and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 11.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
9	INSPECT APP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — APP sensor terminal E—PCM terminal 1AC — APP sensor terminal D—PCM terminal 1AV • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
10	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the APP sensor No.2. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

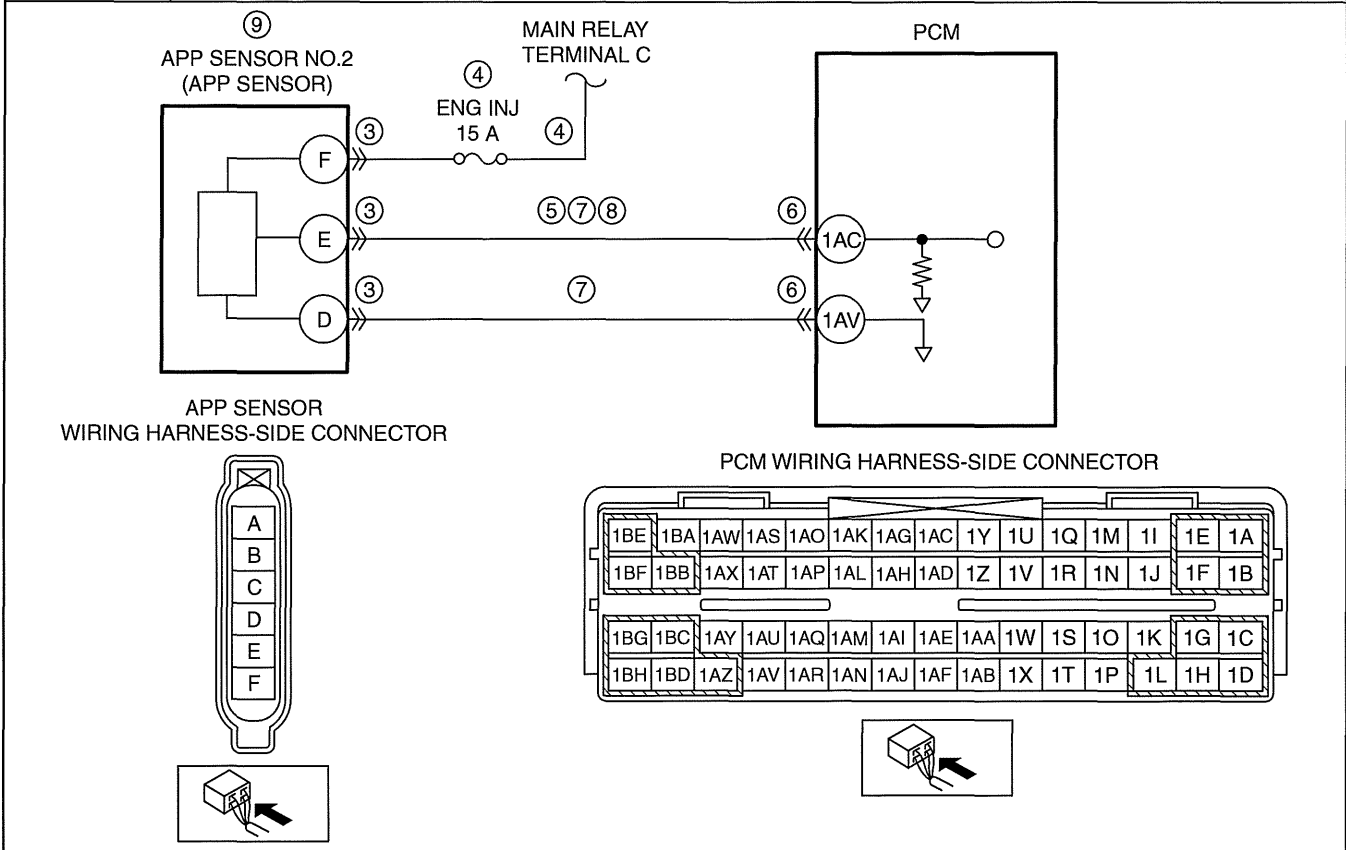
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2127:00 [L3 WITH TC]

id010239708500

DTC P2127:00	APP sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from APP sensor No.2 when the engine is running. If the input voltage is less than 0.2 V, the PCM determines that the APP sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction Short to ground or open circuit in APP sensor No.2 power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between main relay terminal C and APP sensor terminal F — ENG INJ 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and APP sensor terminal F Short to ground in wiring harness between APP sensor terminal E and PCM terminal 1AC PCM connector or terminals malfunction APP sensor No.2 signal circuit and ground circuit are shorted to each other. Open circuit in wiring harness between APP sensor terminal E and PCM terminal 1AC APP sensor No.2 malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
4	INSPECT APP SENSOR NO.2 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the APP sensor terminal E (wiring harness-side). • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG INJ 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 10.
5	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Switch the ignition to off. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and body ground. • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 10.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
7	INSPECT APP SENSOR NO.2 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminals E and D (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to each other, then go to Step 10.
		No	Go to the next step.
8	INSPECT APP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and PCM terminal 1AC (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
9	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the APP sensor No.2. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

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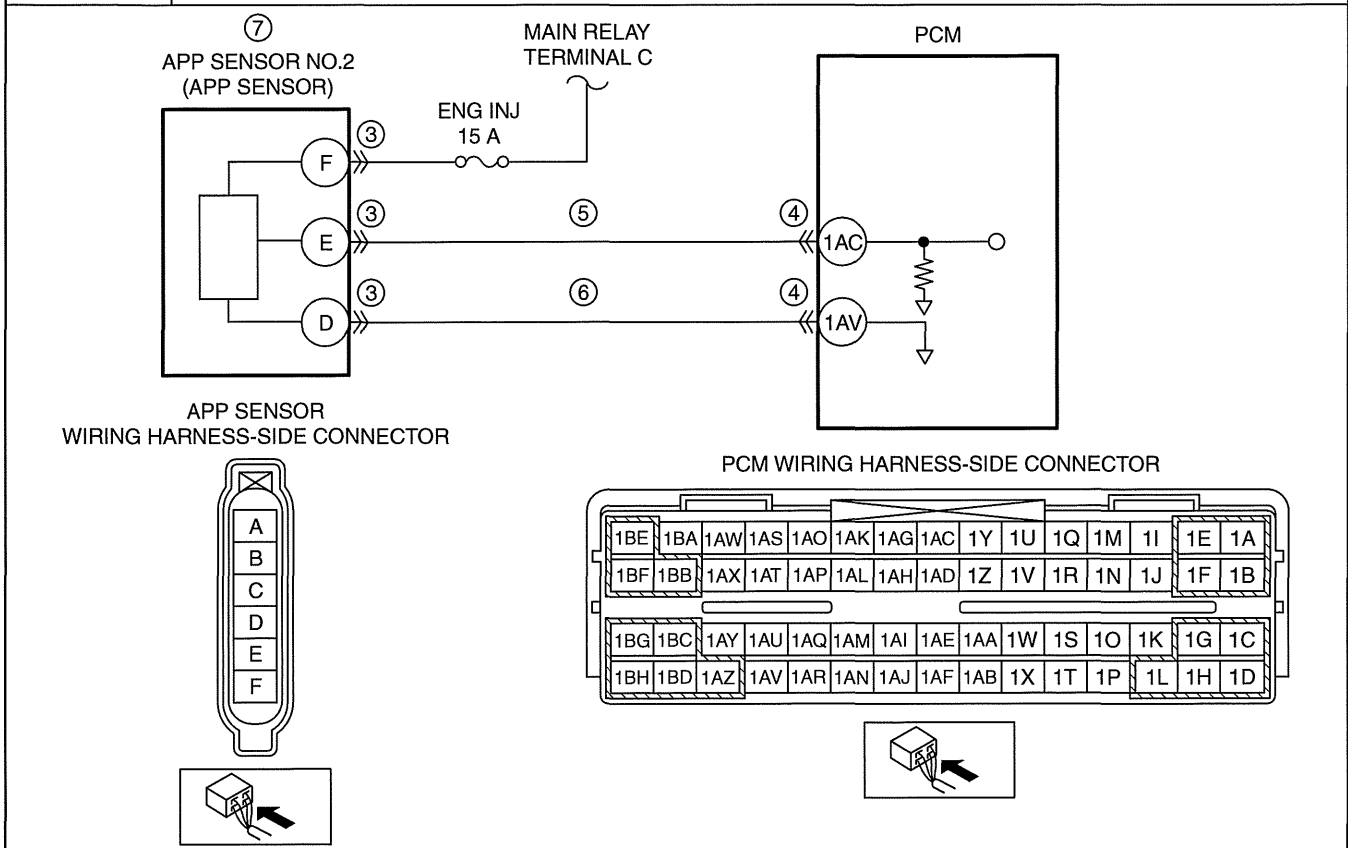
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
10	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2128:00 [L3 WITH TC]

id010239708600

DTC P2128:00	APP sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from APP sensor No.2 when the engine is running. If the input voltage is more than 3 V, the PCM determines that the APP sensor No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between APP sensor terminal E and PCM terminal 1AC Open circuit in wiring harness between APP sensor terminal D and PCM terminal 1AV APP sensor No.2 malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT APP SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the APP sensor terminal E (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminal D (wiring harness-side) and PCM terminal 1AV (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the APP sensor No.2. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2135:00 [L3 WITH TC]

id010239708700

DTC P2135:00	TP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the input voltage from TP sensor No.1 with the input voltage from the TP sensor No.2 when the engine is running. If the difference is more than the specification, the PCM determines that there is a TP sensor No.1/No.2 voltage correlation problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction TP sensor No.1 and/or No.2 malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the throttle body connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.1 AND NO.2 <ul style="list-style-type: none"> Reconnect all disconnected connectors. Inspect the TP sensor No.1 and No.2. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2138:00 [L3 WITH TC]

id010239708800

DTC P2138:00	APP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the input voltage from the APP sensor No.1 with the input voltage from the APP sensor No.2 when the engine is running. If the difference is more than the specification, the PCM determines that there is an APP sensor No.1/No.2 angle correlation problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction PCM connector or terminals malfunction APP sensor No.1 and/or No.2 malfunction PCM malfunction

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Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT APP SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the APP sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT APP SENSOR NO.1 AND NO.2 <ul style="list-style-type: none"> Reconnect all disconnected connectors. Inspect the APP sensor No.1 and No.2. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2183:00 [L3 WITH TC]

id010239940000

DTC P2183:00	ECT sensor No.2 circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> When the ECT sensor No.2 detected temperature is approx. 8.8 °C {15.8 °F} higher than the IAT, or the ECT sensor No.2 detected temperature is approx. 22.6 °C {40.7 °F} less than the IAT for 1.2 s with the ignition switch is ON*. *: Ignition switch is ON when 6 h or more have passed since the ignition was switched to off. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor No.2 connector or terminals malfunction MAF/IAT sensor connector or terminals malfunction PCM connector or terminals malfunction IAT sensor malfunction ECT sensor No.2 malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P2183:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	INSPECT ECT SENSOR NO.2 CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the ECT sensor No.2 connector. Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
5	INSPECT MAF/IAT SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
7	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. (See 01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 9. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	INSPECT ECT SENSOR NO.2 <ul style="list-style-type: none"> • Inspect the ECT sensor No.2. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the ECT sensor No.2, then go to the next step. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Switch the ignition to off. • Start the engine and warm it up completely. • Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

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DTC P2195:00 [L3 WITH TC]

id010239709300

DTC P2195:00	A/F sensor signal stuck lean
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the A/F sensor output when the following conditions are met. If the output is more than 1.15 for 25 s, the PCM determines that the A/F sensor has a malfunction. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — ECT: more than 60 °C {140 °F} — Engine speed: 1,000—3,200 rpm — Absolute load: 20—115% — Output voltage from the HO2S: 0.7 V or above <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor malfunction • PCM malfunction

ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P2195:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2196:00 [L3 WITH TC]

id010239709400

01-02B

DTC P2196:00	A/F sensor signal stuck rich
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the A/F sensor output when the following conditions are met. If the output is less than 0.85 for 25 s, the PCM determines that the A/F sensor has a malfunction. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — ECT: more than 60 °C {140 °F} — Engine speed: 1,000—3,200 rpm — Absolute load: 20—115% — Output voltage from the HO2S: 0.2 V or less <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P2196:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any other PENDING CODEs and/or DTCs present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). (See 01-02B-13 OBD-II DRIVE MODE [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2228:00 [L3 WITH TC]

id010239153200

DTC P2228:00	BARO sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the input voltage from the BARO sensor. If the input voltage at the PCM is below 1.95 V for 5 s, the PCM determines that the BARO sensor circuit has a malfunction. Diagnostic support note <ul style="list-style-type: none"> • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • BARO sensor (built-in PCM) malfunction • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT BARO SENSOR MALFUNCTION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Start the engine. • Access the BARO PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the BARO PID value normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

01-02B

DTC P2229:00 [L3 WITH TC]

id010239153300

DTC P2229:00	BARO sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the BARO sensor. If the input voltage at the PCM is above 4.45 V for 5 s, the PCM determines that the BARO sensor circuit has a malfunction. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BARO sensor (built-in PCM) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT BARO SENSOR MALFUNCTION <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Start the engine. Access the BARO PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the BARO PID value normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes Go to the next step.
		No Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.

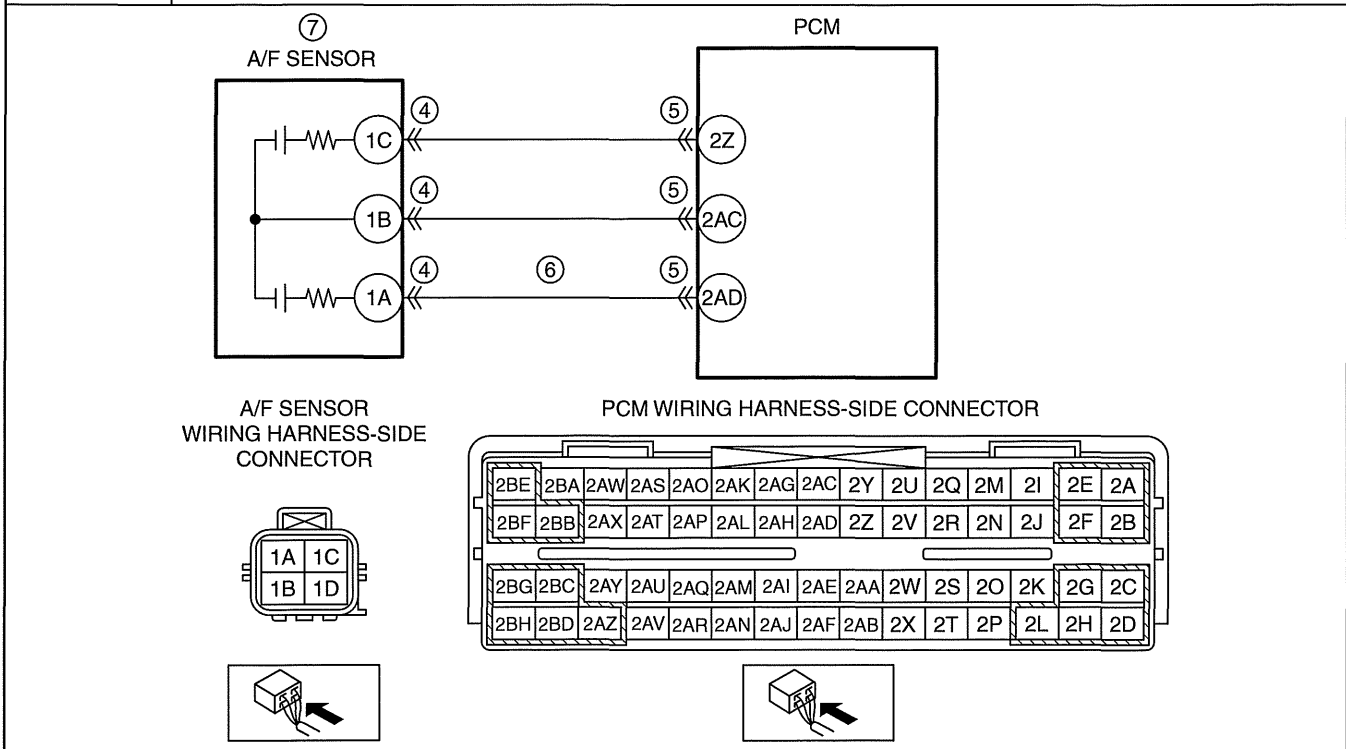
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION		ACTION
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2237:00 [L3 WITH TC]

id010239851200

DTC P2237:00	A/F sensor positive current control circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor terminal 1B current. If the current approx. 0 A while the A/F sensor active, the PCM determines that the A/F sensor positive current control circuit is open. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal 1A and PCM terminal 2AD A/F sensor malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P2237:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT A/F SENSOR POSITIVE CURRENT CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal 1A (wiring harness-side) and PCM terminal 2AD (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

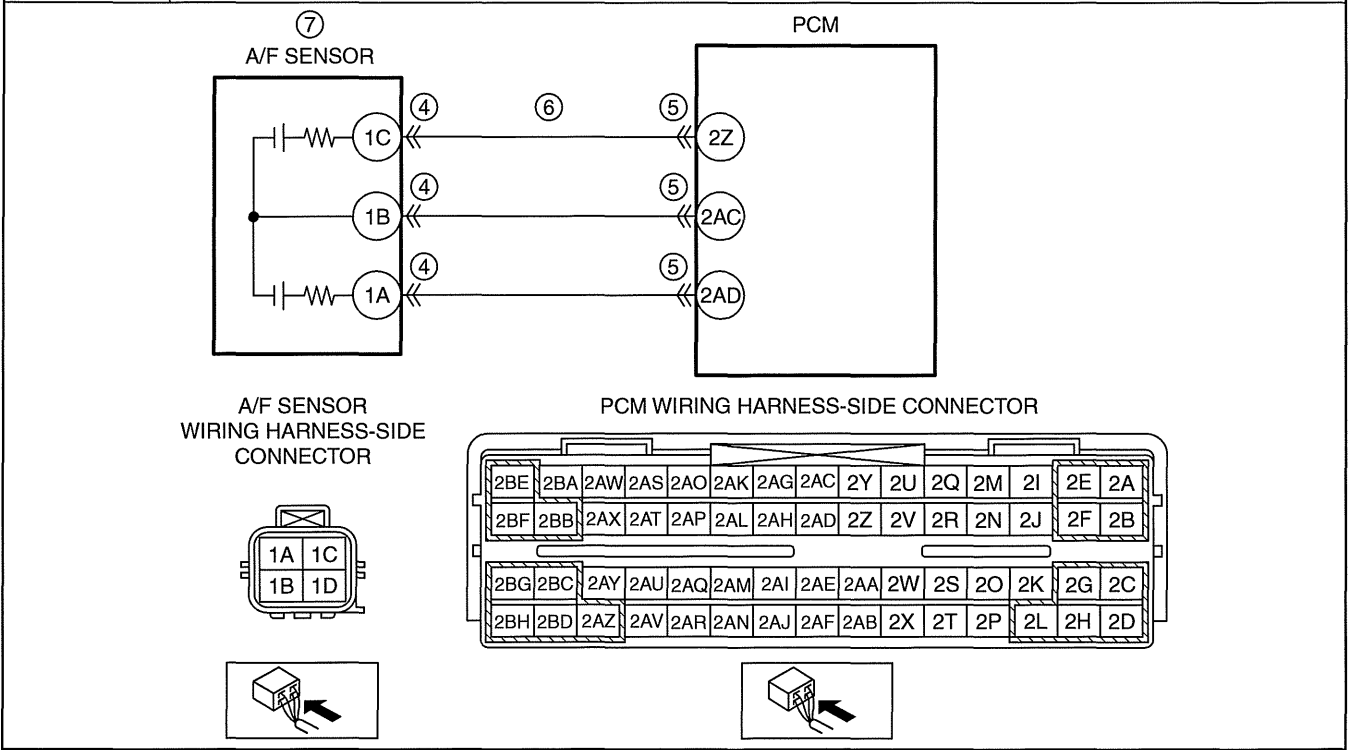
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2243:00 [L3 WITH TC]

id010239303600

DTC P2243:00	A/F sensor reference voltage circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the A/F sensor terminal 1C voltage. If the either of the following condition is met, the PCM determines that the A/F sensor reference voltage circuit is open. <ul style="list-style-type: none"> — The A/F sensor terminal 1C voltage is specified voltage or more for 30 s. — The PCM detects the DTC P0134:00 while the pending code P2243:00 is stored. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — Drive Mode 03 (EGR System, A/F sensor heater, HO2S heater, A/F sensor, HO2S and TWC Repair Verification Drive Mode) — Following conditions are met: <ul style="list-style-type: none"> • Engine is running. • Battery voltage: 11—18 V • A/F sensor element impedance specified or more <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • PCM connector or terminals malfunction • Open circuit in wiring harness between A/F sensor terminal 1C and PCM terminal 2Z • A/F sensor malfunction • PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P2243:00 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/ pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT A/F SENSOR REFERENCE VOLTAGE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> A/F sensor and PCM connectors are disconnected. Inspect for continuity between A/F sensor terminal 1C (wiring harness-side) and PCM terminal 2Z (wiring harness-side). Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> Reconnect all disconnected connectors. Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

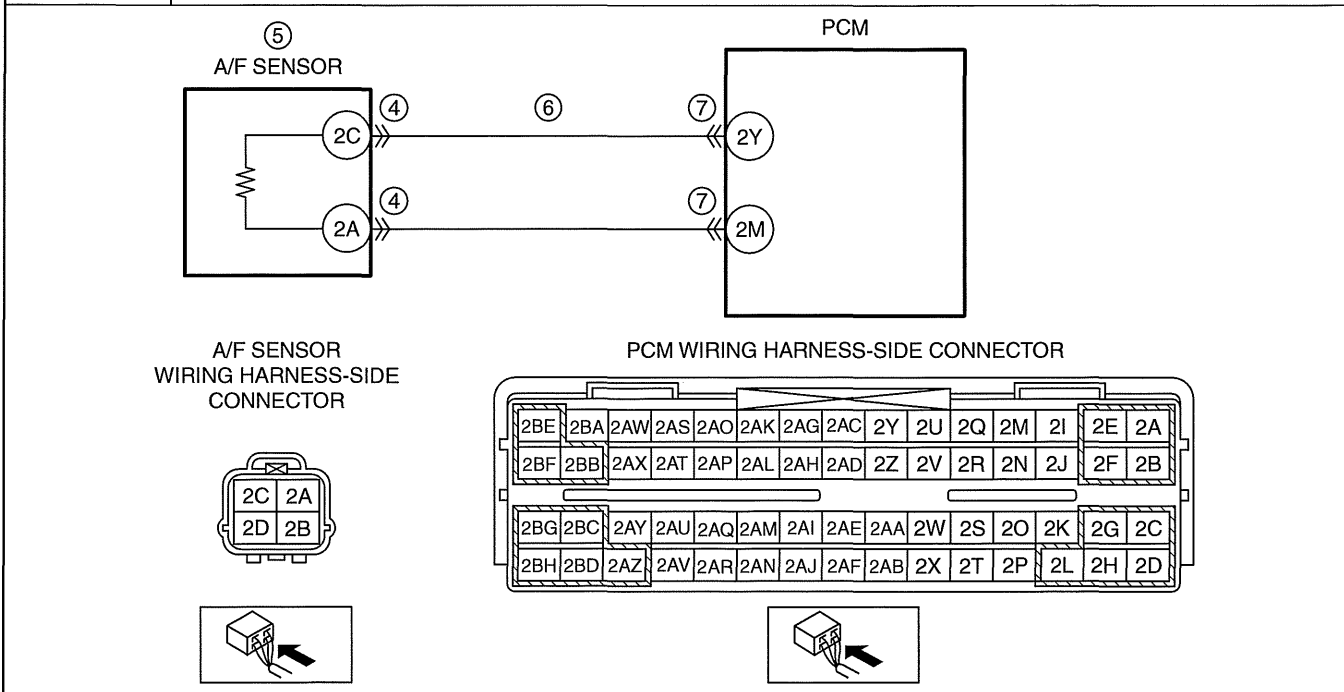
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2245:00 [L3 WITH TC]

id010239900500

DTC P2245:00	A/F sensor reference voltage circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor reference voltage circuit voltage. If the voltage below the threshold value while the engine is running, the PCM determines that the A/F sensor reference voltage circuit is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction A/F sensor malfunction <ul style="list-style-type: none"> — Short to ground in reference voltage circuit at A/F sensor Short to ground in wiring harness between A/F sensor terminal 2C and PCM terminal 2Y PCM connector or terminals malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P2245:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
5	INSPECT A/F SENSOR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND AT A/F SENSOR <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Inspect for continuity between A/F sensor terminal 2C (part-side) and body ground. • Is there continuity? 	Yes Replace the A/F sensor, then go to Step 8. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	INSPECT A/F SENSOR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND AT WIRING HARNESS <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Inspect for continuity between A/F sensor terminal 2C (wiring harness-side) and body ground. • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No Go to the next step.
7	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to the next step.
		No Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

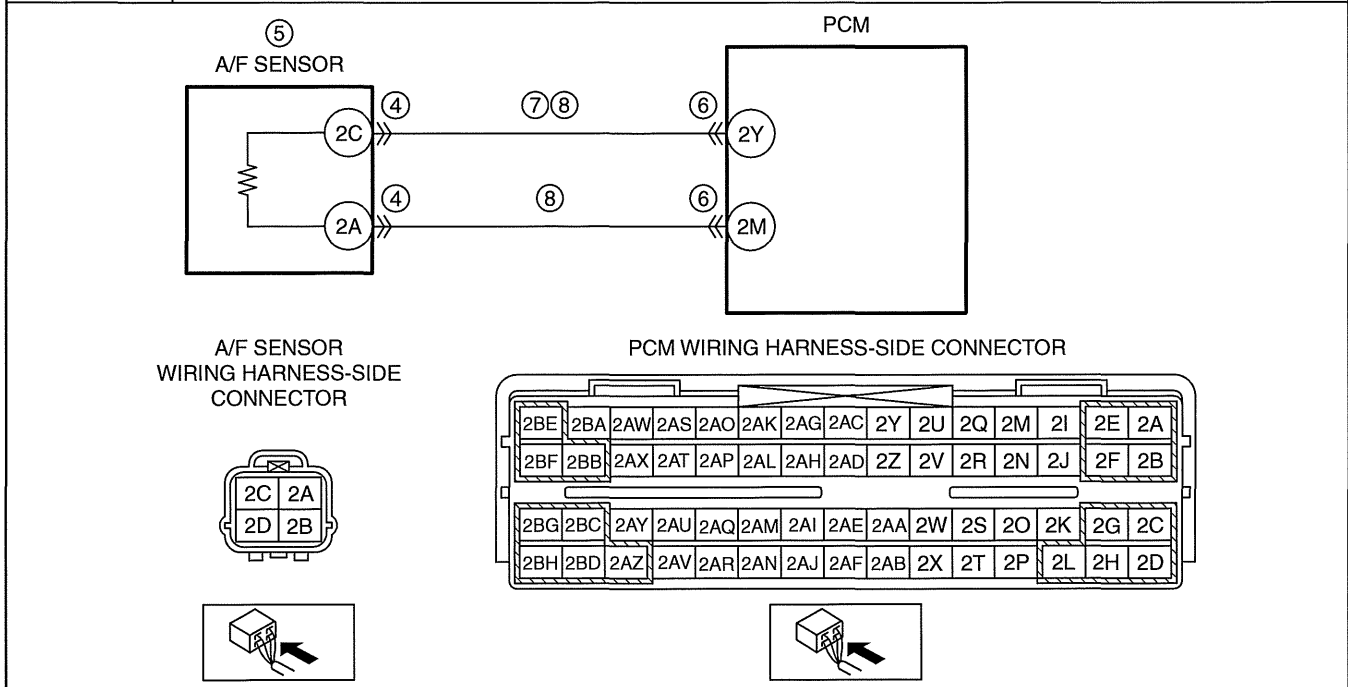
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2246:00 [L3 WITH TC]

id010239900600

DTC P2246:00	A/F sensor reference voltage circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the A/F sensor reference voltage circuit voltage. If the voltage is above the threshold value while the engine is running, the PCM determines that the A/F sensor reference voltage circuit is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • A/F sensor malfunction <ul style="list-style-type: none"> — Short to power supply in reference voltage circuit at A/F sensor • PCM connector or terminals malfunction • Short to power supply in wiring harness between A/F sensor terminal 2C and PCM terminal 2Y • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — A/F sensor terminal 2C—PCM terminal 2Y — A/F sensor terminal 2A—PCM terminal 2M • PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the DTC P2246:00 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)
2	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
5	INSPECT A/F SENSOR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO POWER SUPPLY AT A/F SENSOR <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the A/F sensor terminal 2C (part-side). • Is the voltage above 5.0 V? 	Yes Replace the A/F sensor, then go to Step 9. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.
7	INSPECT A/F SENSOR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO POWER SUPPLY AT WIRING HARNESS <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the A/F sensor terminal 2C (wiring harness-side). • Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No Go to the next step.
8	INSPECT A/F SENSOR REFERENCE VOLTAGE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — A/F sensor terminal 2C—PCM terminal 2Y — A/F sensor terminal 2A—PCM terminal 2M • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

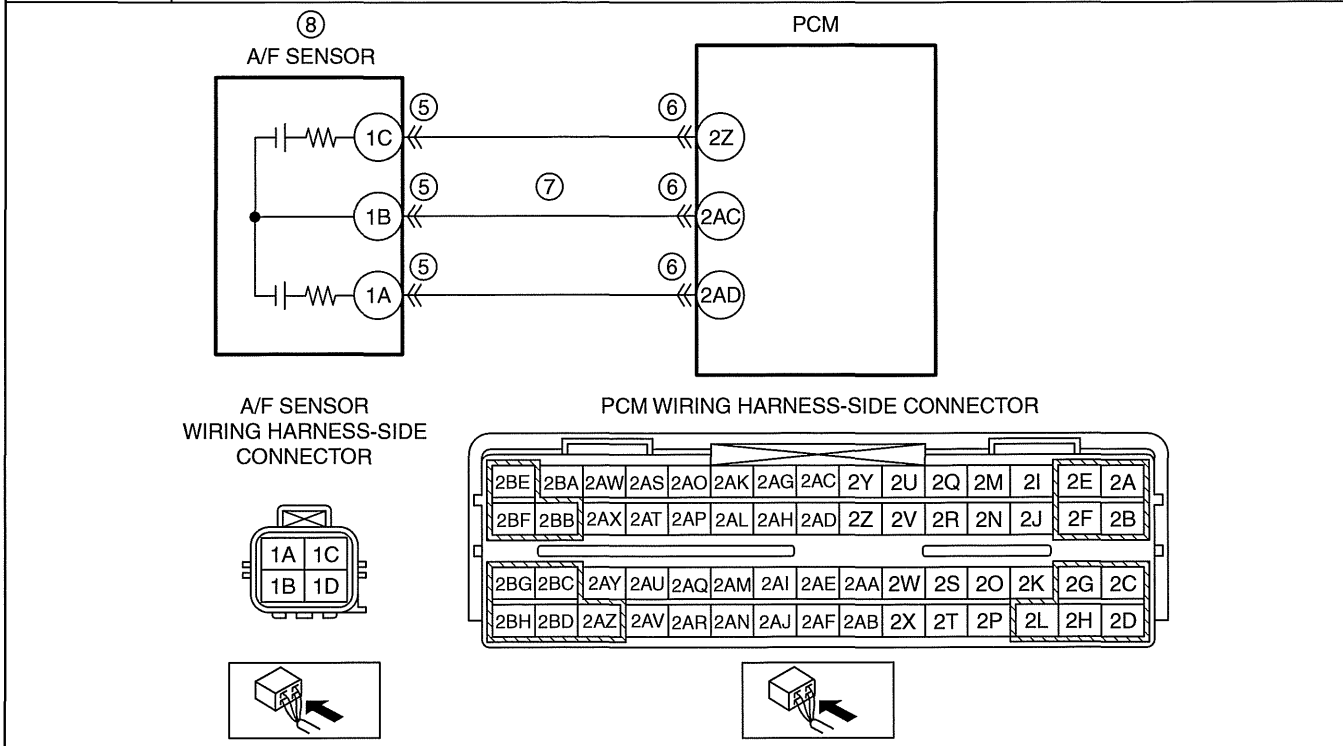
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2251:00 [L3 WITH TC]

id010239851300

DTC P2251:00	A/F sensor negative current control circuit open
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor terminal 1C voltage. If either of the following conditions are met, the PCM determines that the A/F sensor negative current control circuit is open. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> — The A/F sensor element impedance specified or more. — Circuit voltage oscillation or A/F sensor terminal 1C voltage is below the specified. — The PCM detects the DTC P0134:00 while the pending code P2251:00 is stored. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction PCM connector or terminals malfunction Open circuit in wiring harness between A/F sensor terminal 1B and PCM terminal 2AC A/F sensor malfunction <ul style="list-style-type: none"> — A/F sensor heater cannot be controlled. PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Perform the Freeze Frame PID Data Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC P2251:00 on FREEZE FRAME DATA (Mode 2)? 	Yes No	Go to the next step. Go to the troubleshooting procedures for DTC on FREEZE FRAME DATA (Mode 2). (See 01-02B-18 DTC TABLE [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
2	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE AND/OR DTC <ul style="list-style-type: none"> • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Is the PENDING CODE/DTC P0031:00 or P0032:00 also present? 	Yes	Go to the applicable PENDING CODE or DTC inspection. (See 01-02B-33 DTC P0031:00 [L3 WITH TC].) (See 01-02B-35 DTC P0032:00 [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT A/F SENSOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
7	INSPECT A/F SENSOR NEGATIVE CURRENT CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Inspect for continuity between A/F sensor terminal 1B (wiring harness-side) and PCM terminal 2AC (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Inspect the A/F sensor. (See 01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

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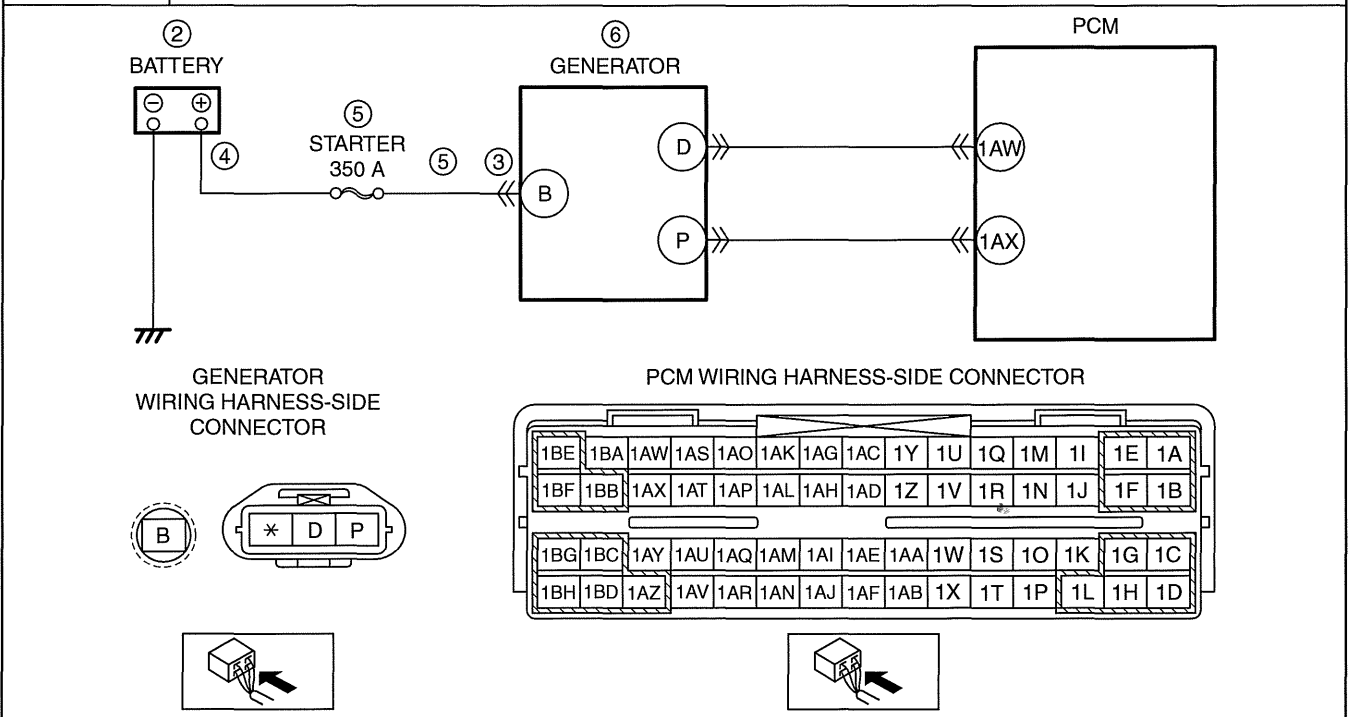
ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No DTC troubleshooting completed.

DTC P2502:00 [L3 WITH TC]

id010239709500

DTC P2502:00	Charging system voltage problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM determines that the generator output voltage is above 17 V or the battery voltage is below 11 V for 5 s while the engine is running. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Battery malfunction Loose generator terminal installation nut Battery positive terminal poorly connected Short to ground or open circuit in generator power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between battery positive terminal and generator terminal B STARTER 350 A fuse malfunction Open circuit in wiring harness between battery positive terminal and generator terminal B Generator malfunction PCM malfunction



ON-BOARD DIAGNOSTIC [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 7. (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT POOR INSTALLATION OF GENERATOR TERMINAL <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect for looseness of generator terminal B installation nut. • Is the nut loose? 	Yes	Tighten the generator terminal B installation nut, then go to Step 7.
		No	Go to the next step.
4	INSPECT POOR INSTALLATION OF BATTERY POSITIVE TERMINAL <ul style="list-style-type: none"> • Inspect for looseness of battery positive terminal. • Is the terminal loose? 	Yes	Connect the battery positive terminal correctly, then go to Step 7.
		No	Go to the next step.
5	INSPECT BATTERY CHARGING CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the generator terminal B. • Measure the voltage between generator terminal B (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the STARTER 350 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 7.
6	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

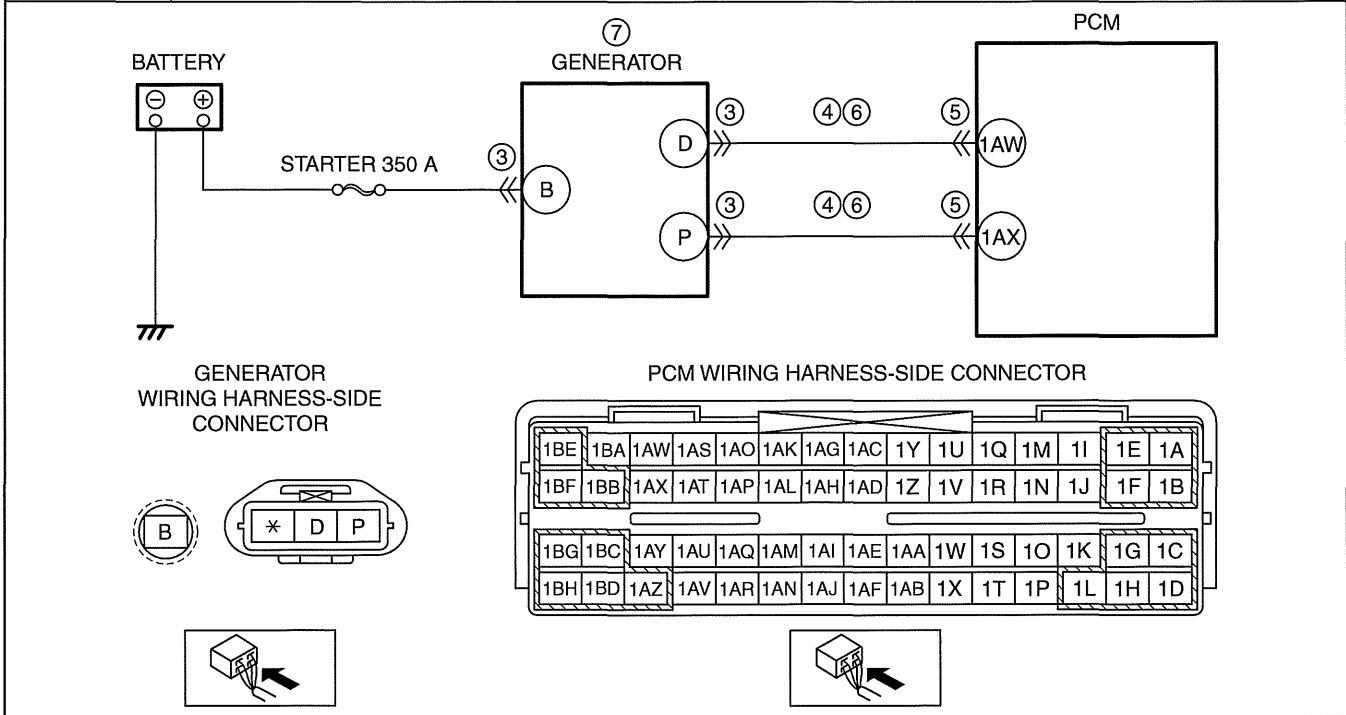
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2503:00 [L3 WITH TC]

id010239709600

DTC P2503:00	Charging system voltage low
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM needs more than 20 A from the generator, and determines that the generator output voltage is below 8.5 V for 5 s while the engine is running. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Drive belt exceed limit Generator connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Generator terminal D—PCM terminal 1AW — Generator terminal P—PCM terminal 1AX PCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Generator terminal D—PCM terminal 1AW — Generator terminal P—PCM terminal 1AX Generator malfunction PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> Verify that the drive belt auto tensioner indicator mark does not exceed limit. (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) Does the indicator mark exceed limit? 	Yes	Replace the drive belt, then go to Step 8. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	INSPECT GENERATOR CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the generator connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT GENERATOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Generator connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Generator terminal D — Generator terminal P • Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) Go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT GENERATOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Generator and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Generator terminal D—PCM terminal 1AW — Generator terminal P—PCM terminal 1AX • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

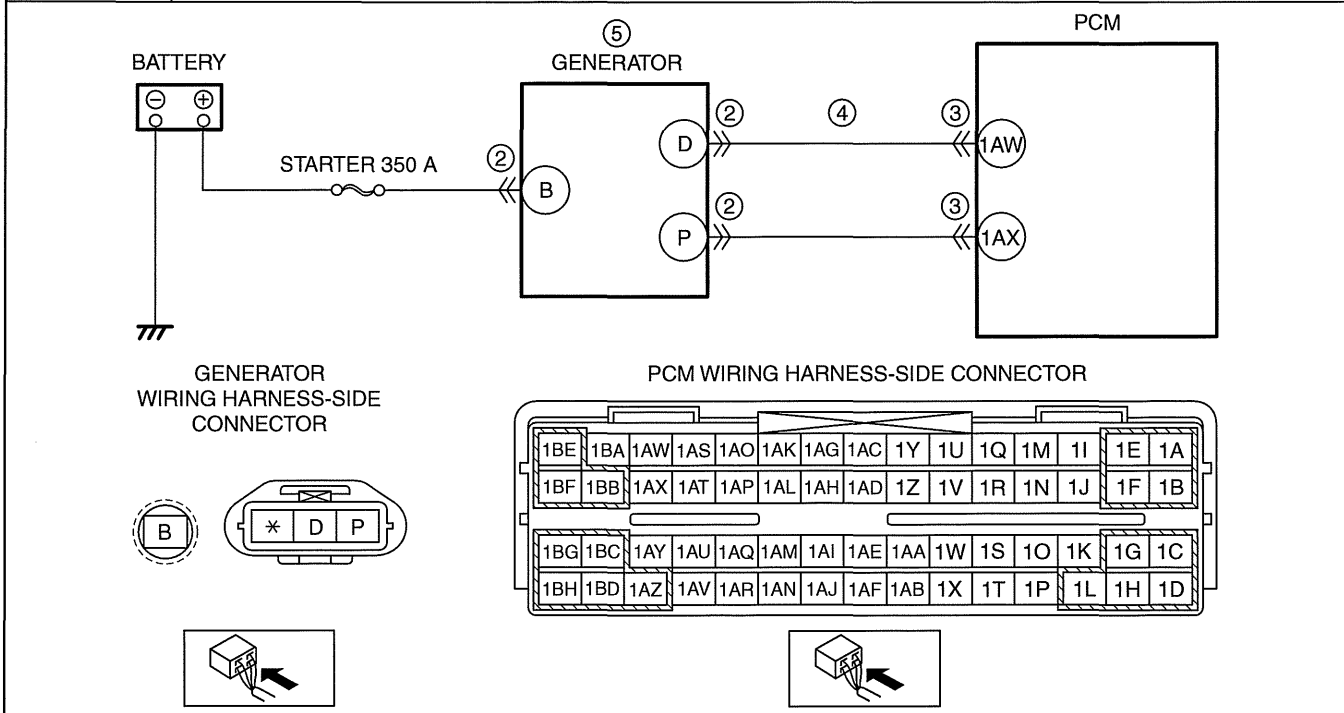
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ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2504:00 [L3 WITH TC]

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DTC P2504:00	Charging system voltage high
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM determines that the generator output voltage is above 18.5 V or the battery voltage is above 16.0 V for 5 s while the engine is running. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Generator connector or terminals malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between generator terminal D and PCM terminal 1AW Generator malfunction <ul style="list-style-type: none"> — Short to power supply in field coil control circuit at generator PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT GENERATOR CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the generator connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
4	INSPECT GENERATOR CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Generator and PCM connectors are disconnected. • Switch the ignition to ON (engine off). • Measure the voltage at the generator terminal D (wiring harness-side). • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to Step 8.
5	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

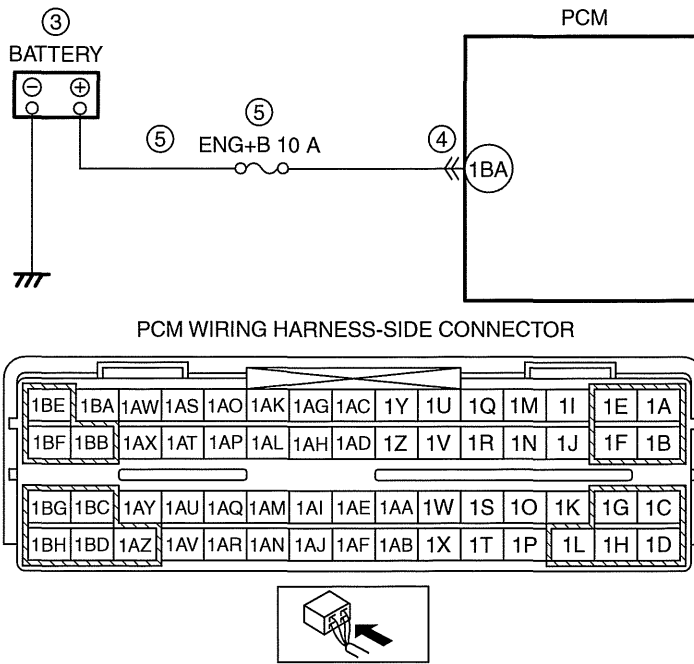
01-02B

ON-BOARD DIAGNOSTIC [L3 WITH TC]

DTC P2507:00 [L3 WITH TC]

id010239709800

DTC P2507:00	PCM battery voltage low
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the voltage of the back-up battery positive terminal. If the PCM detects that the battery positive terminal voltage is below 2.5 V for 5 s, the PCM determines that the back-up voltage circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Battery malfunction PCM connector or terminals malfunction Short to ground or open circuit in PCM power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and PCM terminal 1BA — ENG+B 10 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and PCM terminal 1BA PCM malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

01-02B

STEP	INSPECTION		ACTION
5	INSPECT PCM POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> PCM connector is disconnected. Measure the voltage at the PCM terminal 1BA (wiring harness-side). Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG+B 10 A fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO or KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC P2610:00 [L3 WITH TC]

id010239303800

DTC P2610:00	PCM internal engine off timer performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal engine off timer is damaged. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA (Mode 2)/Snapshot data is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal engine off timer is damaged.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Start the engine. Perform the Pending Trouble Code Access Procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

DTC U3000:41 [L3 WITH TC]

id010239851600

DTC U3000:41	PCM processor error
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM internal EEPROM malfunction. Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the KOEO self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	DTC troubleshooting completed.

01-03A SYMPTOM TROUBLESHOOTING [LF, L5]

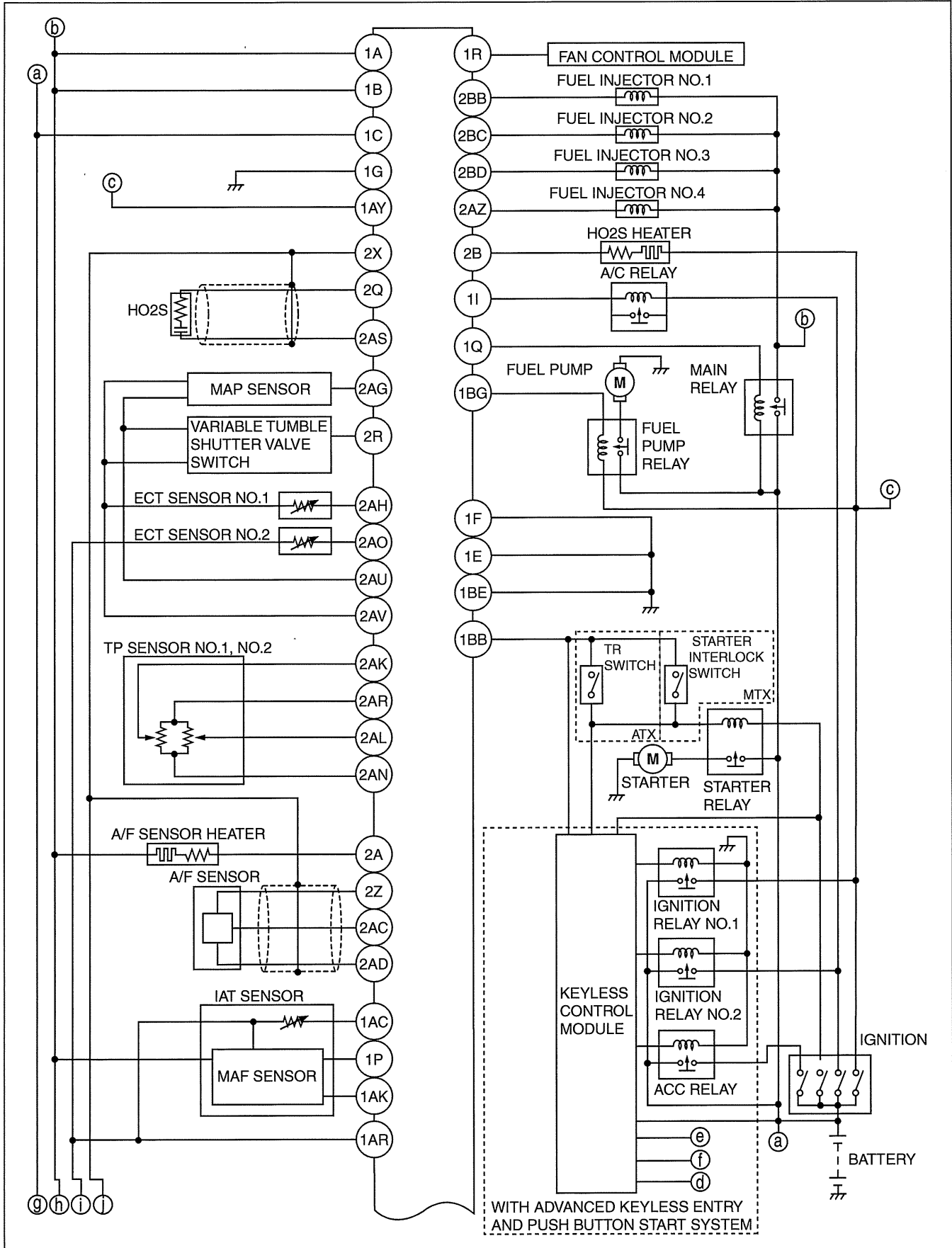
SYMPTOM TROUBLESHOOTING		NO.20 FUEL ODOR (IN ENGINE	
WIRING DIAGRAM [LF, L5]	01-03A-2	COMPARTMENT) [LF, L5]	01-03A-70
SYMPTOM DIAGNOSTIC INDEX		NO.21 ENGINE NOISE [LF, L5]	01-03A-71
[LF, L5]	01-03A-4	NO.22 VIBRATION CONCERNS	
CONTROL SYSTEM DEVICE AND		(ENGINE) [LF, L5]	01-03A-72
CONTROL RELATIONSHIP CHART		NO.23 A/C DOES NOT WORK	
[LF, L5]	01-03A-5	SUFFICIENTLY [LF, L5]	01-03A-73
QUICK DIAGNOSTIC CHART		NO.24 A/C IS ALWAYS ON OR	
[LF, L5]	01-03A-7	A/C COMPRESSOR RUNS	
FOREWORD [LF, L5]	01-03A-22	CONTINUOUSLY [LF, L5]	01-03A-76
NO.1 MELTING OF MAIN OR		NO.25 A/C IS NOT CUT OFF UNDER	
OTHER FUSES [LF, L5]	01-03A-22	WIDE OPEN THROTTLE CONDITIONS	
NO.2 MIL ILLUMINATES [LF, L5]	01-03A-23	[LF, L5]	01-03A-77
NO.3 WILL NOT CRANK [LF, L5]	01-03A-24	NO.26 EXHAUST SULPHUR SMELL	
NO.4 HARD TO START/LONG CRANK/		[LF, L5]	01-03A-77
ERRATIC START/ERRATIC CRANK		NO.27 FUEL REFILL CONCERNS	
[LF, L5]	01-03A-31	[LF, L5]	01-03A-79
NO.5 ENGINE STALLS-AFTER START/		NO.28 FUEL FILLING SHUT OFF	
AT IDLE [LF, L5]	01-03A-33	CONCERNS [LF, L5]	01-03A-80
NO.6 CRANKS NORMALLY BUT		NO.29 SPARK PLUG CONDITION	
WILL NOT START [LF, L5]	01-03A-38	[LF, L5]	01-03A-81
NO.7 SLOW RETURN TO IDLE		INTERMITTENT CONCERN	
[LF, L5]	01-03A-43	TROUBLESHOOTING [LF, L5]	01-03A-84
NO.8 ENGINE RUNS ROUGH/		Vibration Method	01-03A-84
ROLLING IDLE [LF, L5]	01-03A-44	Water Sprinkling Method	01-03A-85
NO.9 FAST IDLE/RUNS ON		ENGINE CONTROL SYSTEM	
[LF, L5]	01-03A-47	OPERATION INSPECTION [LF, L5].	01-03A-86
NO.10 LOW IDLE/STALLS DURING		Input Signal System Inspection	
DECELERATION [LF, L5]	01-03A-49	Procedure	01-03A-86
NO.11 ENGINE STALLS/QUITS,		Main Relay Operation Inspection	01-03A-87
ENGINE RUNS ROUGH, MISSES,		Intake Manifold Vacuum Inspection	01-03A-87
BUCK/JERK, HESITATION/STUMBLE,		Electronic Throttle Control System	
SURGES [LF, L5]	01-03A-51	Inspection	01-03A-87
NO.12 LACK/LOSS OF		Variable Intake Air Control Operation	
POWER-ACCELERATION/CRUISE		Inspection	01-03A-89
[LF, L5]	01-03A-55	Variable Tumble Control Operation	
NO.13 KNOCKING/		Inspection	01-03A-89
PINGING-ACCELERATION/CRUISE		Fuel Injector Operation Inspection	01-03A-90
[LF, L5]	01-03A-58	Fuel Cut Control System Inspection	01-03A-91
NO.14 POOR FUEL ECONOMY		Fuel Pump Operation Inspection	01-03A-91
[LF, L5]	01-03A-60	Fuel Pump Control System	
NO.15 EMISSION COMPLIANCE		Inspection	01-03A-91
[LF, L5]	01-03A-62	Spark Test	01-03A-91
NO.16 HIGH OIL CONSUMPTION/		EGR Control System Inspection	01-03A-92
LEAKAGE [LF, L5]	01-03A-64	Purge Control System Inspection	01-03A-92
NO.17 COOLING SYSTEM		A/C Cut-off Control System	
CONCERNS-OVERHEATING		Inspection	01-03A-93
[LF, L5]	01-03A-64	Cooling Fan Control System	
NO.18 COOLING SYSTEM		Inspection	01-03A-93
CONCERNS-RUNS COLD		Variable Valve Timing Control System	
[LF, L5]	01-03A-67	Operation Inspection	01-03A-93
NO.19 EXHAUST SMOKE [LF, L5]	01-03A-68	Evaporative Emission (EVAP) System	
		Leak Inspection	01-03A-94

01-03A

SYMPTOM TROUBLESHOOTING [LF, L5]

SYMPTOM TROUBLESHOOTING WIRING DIAGRAM [LF, L5]

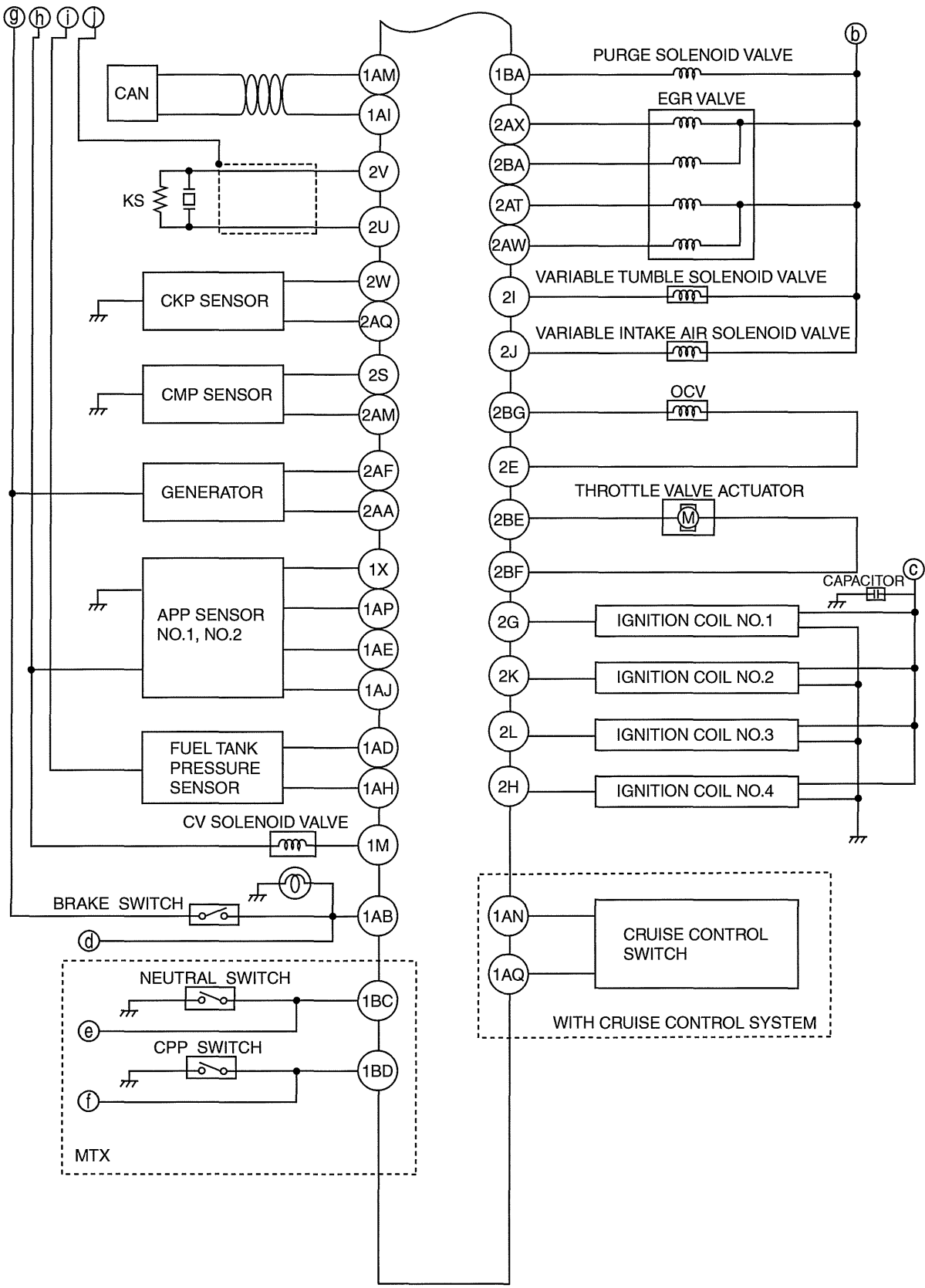
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SYMPTOM TROUBLESHOOTING [LF, L5]

01-03A



am3uun000045

SYMPTOM TROUBLESHOOTING [LF, L5]

SYMPTOM DIAGNOSTIC INDEX [LF, L5]

id010397800500

- Confirm trouble symptom using the following diagnostic index, then go to appropriate troubleshooting chart.

Diagnostic Index

No.	TROUBLESHOOTING ITEM		DESCRIPTION
1	Melting of main or other fuses		—
2	MIL illuminates		<ul style="list-style-type: none"> • MIL is illuminated incorrectly.
3	Will not crank		<ul style="list-style-type: none"> • Starter does not work.
4	Hard to start/long crank/erratic start/erratic crank		<ul style="list-style-type: none"> • Starter cranks engine at normal speed but engine requires excessive cranking time before starting.
5	Engine stalls	After start/at idle	<ul style="list-style-type: none"> • Engine stops unexpectedly at idle and/or after start.
6	Crank normally but will not start		<ul style="list-style-type: none"> • The starter cranks engine at normal speed but engine will not run. • Refer to symptom troubleshooting "No.5 ENGINE STALLS" if this symptom appears after engine stall. • Fuel is in tank. • Battery is in normal condition.
7	Slow return to idle		<ul style="list-style-type: none"> • Engine takes more time than normal to return to idle speed.
8	Engine runs rough/rolling idle		<ul style="list-style-type: none"> • Engine speed fluctuates between specified idle speed and lower speed, and engine shakes excessively. • Idle speed is too slow and engine shakes excessively.
9	Fast idle/runs on		<ul style="list-style-type: none"> • Engine speed continues at fast idle after warm-up. • Engine runs after ignition is off.
10	Low idle/stalls during deceleration		<ul style="list-style-type: none"> • Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.
11	Engine stalls/quits	Acceleration/cruise	<ul style="list-style-type: none"> • Engine stops unexpectedly at beginning of acceleration or during acceleration. • Engine stops unexpectedly while cruising.
	Engine runs rough	Acceleration/cruise	<ul style="list-style-type: none"> • Engine speed fluctuates during acceleration or cruising.
	Misses	Acceleration/cruise	<ul style="list-style-type: none"> • Engine misses during acceleration or cruising.
	Buck/jerk	Acceleration/cruise/ deceleration	<ul style="list-style-type: none"> • Vehicle bucks/jerks during acceleration, cruising, or deceleration.
	Hesitation/stumble	Acceleration	<ul style="list-style-type: none"> • Momentary pause at beginning of acceleration or during acceleration.
12	Lack/loss of power	Acceleration/cruise	<ul style="list-style-type: none"> • Performance is poor under load (such as power down when climbing hills).
13	Knocking/pinging	Acceleration/cruise	<ul style="list-style-type: none"> • Sound is produced when air/fuel mixture is ignited by something other than spark plug (such as hot spot in combustion chamber).
14	Poor fuel economy		<ul style="list-style-type: none"> • Fuel economy is unsatisfactory.
15	Emission compliance		<ul style="list-style-type: none"> • Fails emissions test.
16	High oil consumption/leakage		<ul style="list-style-type: none"> • Oil consumption is excessive.
17	Cooling system concerns	Overheating	<ul style="list-style-type: none"> • Engine runs at higher than normal temperature/overheats.
18	Cooling system concerns	Runs cold	<ul style="list-style-type: none"> • Engine does not reach normal operating temperature.
19	Exhaust smoke		<ul style="list-style-type: none"> • Blue, black, or white smoke from exhaust system.
20	Fuel odor (in engine compartment)		<ul style="list-style-type: none"> • Gasoline fuel smell or visible leakage.
21	Engine noise		<ul style="list-style-type: none"> • Engine noise from under hood.
22	Vibration concerns (engine)		<ul style="list-style-type: none"> • Vibration from under hood or driveline.
23	A/C does not work sufficiently		<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not engage when A/C is turned on.
24	A/C is always on or A/C compressor runs continuously		<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage.
25	A/C is not cut off under wide open throttle conditions		<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage under wide open throttle.
26	Exhaust sulphur smell		<ul style="list-style-type: none"> • Rotten egg smell (sulphur) from exhaust.
27	Fuel refill concerns		<ul style="list-style-type: none"> • Fuel tank does not fill smoothly.
28	Fuel filling shut off concerns		<ul style="list-style-type: none"> • Fuel does not shut off properly.
29	Spark plug condition		<ul style="list-style-type: none"> • Incorrect spark plug condition.
30	ATX concerns	Upshift/downshift/ engagement	<ul style="list-style-type: none"> • ATX concerns not related to engine performance.

SYMPTOM TROUBLESHOOTING [LF, L5]

CONTROL SYSTEM DEVICE AND CONTROL RELATIONSHIP CHART [LF, L5]

id010397800200

x: Applicable

01-03A

Item	MAIN RELAY	DRIVE-BY-WIRE CONTROL	VARIABLE INTAKE AIR CONTROL	VARIABLE TUMBLE CONTROL	VARIABLE VALVE TIMING CONTROL	FUEL INJECTION CONTROL	FUEL PUMP CONTROL	ESA CONTROL	PURGE CONTROL	EGR CONTROL	A/F SENSOR HEATER CONTROL HO2S HEATER CONTROL	A/C CUT-OFF CONTROL	ELECTRICAL FAN CONTROL	STARTER CUT-OFF CONTROL	GENERATOR CONTROL	CAN
Input device																
APP sensor No.1, No.2		x			x	x		x				x				
TP sensor No.1, No.2		x		x	x	x		x		x	x					
MAF sensor		x		x	x	x		x	x	x	x					
IAT sensor		x		x	x	x		x	x	x	x				x	
MAP sensor		x				x			x							
ECT sensor No.1, No.2		x		x	x	x		x	x	x	x	x	x	x ^{*2}	x	
A/F sensor						x			x							
HO2S						x			x							
CKP sensor		x	x	x	x	x	x	x	x	x	x	x		x ^{*2}	x	
CMP sensor					x	x		x								
KS								x								
Ignition switch ^{*1} , ignition relay ^{*2}	x						x									
Brake switch		x				x		x	x							
Cruise control switch (With cruise control system)		x														
Neutral switch (MTX)		x				x		x		x		x				
CPP switch (MTX)		x				x		x		x		x				
Battery						x			x				x		x	
Generator (Terminal P: stator coil)		x													x	
Fuel tank pressure sensor																
Variable tumble shutter valve switch				x												
BARO sensor (built into PCM)		x				x			x				x			
CAN		x				x	x	x				x	x	x		x
Output device																
Main relay	x															
Throttle valve actuator		x														
Variable intake air solenoid valve			x													
Variable tumble solenoid valve				x												
OCV					x											
Fuel injector						x										
Fuel pump relay							x									
Ignition coil								x								
Purge solenoid valve									x							

SYMPTOM TROUBLESHOOTING [LF, L5]

Item	MAIN RELAY	DRIVE-BY-WIRE CONTROL	VARIABLE INTAKE AIR CONTROL	VARIABLE TUMBLE CONTROL	VARIABLE VALVE TIMING CONTROL	FUEL INJECTION CONTROL	FUEL PUMP CONTROL	ESA CONTROL	PURGE CONTROL	EGR CONTROL	A/F SENSOR HEATER CONTROL HO2S HEATER CONTROL	A/C CUT-OFF CONTROL	ELECTRICAL FAN CONTROL	STARTER CUT-OFF CONTROL	GENERATOR CONTROL	CAN
EGR valve										x						
A/F sensor heater											x					
HO2S heater											x					
A/C relay												x				
Fan control module													x			
Starter relay														x		
Generator (Terminal D: field coil)															x	
CAN																x

*1 : Without advanced keyless entry and push button start system

*2 : With advanced keyless entry and push button start system

SYMPTOM TROUBLESHOOTING [LF, L5]

QUICK DIAGNOSTIC CHART [LF, L5]

id010397800600

X: Applied

Troubleshooting item		Symptoms																	
		Starter motor malfunction (Mechanical or electrical)	Starter circuit including ignition switch is open	Starter interlock switch malfunction (MTX)	Improper engine oil level	Low or dead battery	Charging system malfunction	Improper engine compression	Improper valve timing	Hydrolocked engine	Improper engine oil viscosity	Improper dipstick	Base engine malfunction	Drive plate (ATX) or flywheel (MTX) are seized	Improper tension or damaged drive belts	Improper engine coolant level	Water and anti-freeze mixture is improper	Cooling system malfunction (Radiator, hoses, overflow system, thermostat etc.)	Cooling fan system malfunction
1	Melting of main or other fuses																		
2	MIL illuminates																		
3	Will not crank	X	X	X		X	X			X				X					
4	Hard to start/long crank/erratic start/erratic crank	X																	
5	Engine stalls																		
	After start/at idle								X	X									
6	Cranks normally but will not start								X	X									
7	Slow return to idle																	X	
8	Engine runs rough/rolling idle								X	X									
9	Fast idle/runs on																		
10	Low idle/stalls during deceleration																		

01-03A

SYMPTOM TROUBLESHOOTING [LF, L5]

Troubleshooting item		Symptoms																	
		Starter motor malfunction (Mechanical or electrical)	Starter circuit including ignition switch is open	Starter interlock switch malfunction (MTX)	Improper engine oil level	Low or dead battery	Charging system malfunction	Improper engine compression	Improper valve timing	Hydrolocked engine	Improper engine oil viscosity	Improper dipstick	Base engine malfunction	Drive plate (ATX) or flywheel (MTX) are seized	Improper tension or damaged drive belts	Improper engine coolant level	Water and anti-freeze mixture is improper	Cooling system malfunction (Radiator, hoses, overflow system, thermostat etc.)	Cooling fan system malfunction
11	Engine stalls/quits	Acceleration/cruise						X	X										
	Engine runs rough	Acceleration/cruise						X	X										
	Misses	Acceleration/cruise						X	X										
	Buck/jerk	Acceleration/cruise/deceleration						X	X										
	Hesitation/stumble	Acceleration						X	X										
	Surges	Acceleration/cruise						X	X										
12	Lack/loss of power	Acceleration/cruise						X	X										
13	Knocking/pinging	Acceleration/cruise						X										X	
14	Poor fuel economy							X	X									X	X
15	Emission compliance							X	X				X					X	
16	High oil consumption/leakage										X	X	X						
17	Cooling system concerns	Overheating												X	X	X	X	X	X
18	Cooling system concerns	Runs cold																X	X
19	Exhaust smoke							X				X						X	

SYMPTOM TROUBLESHOOTING [LF, L5]

01-03A

Troubleshooting item		Starter motor malfunction (Mechanical or electrical)	Starter circuit including ignition switch is open	Starter interlock switch malfunction (MTX)	Improper engine oil level	Low or dead battery	Charging system malfunction	Improper engine compression	Improper valve timing	Hydrolocked engine	Improper engine oil viscosity	Improper dipstick	Base engine malfunction	Drive plate (ATX) or flywheel (MTX) are seized	Improper tension or damaged drive belts	Improper engine coolant level	Water and anti-freeze mixture is improper	Cooling system malfunction (Radiator, hoses, overflow system, thermostat etc.)	Cooling fan system malfunction	
20	Fuel odor (in engine compartment)																			
21	Engine noise				X								X							
22	Vibration concerns (engine)													X	X					
23	A/C does not work sufficiently																			
24	A/C is always on or A/C compressor runs continuously																			
25	A/C is not cut off under wide open throttle conditions																			
26	Exhaust sulphur smell																			
27	Fuel refill concerns																			
28	Fuel filling shut off concerns																			
29	Spark plug condition							X												
30	ATX concerns	(See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FSSA-EL].)																		
	Upshift/downshift/engagement																			

SYMPTOM TROUBLESHOOTING [LF, L5]

X: Applied

Troubleshooting item		1	2	3	4	5	6	7	8	9	10	
		Melting of main or other fuses	MIL illuminates	Will not crank	Hard to start/long crank/erratic start/erratic crank	Engine stalls	After start/at idle	Engine stalls normally but will not start	Slow return to idle	Engine runs rough/rolling idle	Fast idle/runs on	Low idle/stalls during deceleration
	Engine and transaxle mounts are improperly installed											
	Cooling fan sheet is improperly installed											
	Cruise control system operation improperly (With cruise control system)									X		
	Fuel quality				X	X	X	X				
	Variable valve timing system malfunction		X			X	X					
	Variable tumble system malfunction		X									
	Engine overheating					X	X	X				
	Air cleaner element clogging or restriction				X	X	X					
	Air leakage from intake-air system (Loose tubes, cracks breakage)				X	X	X			X		
	Intake air temperature is too hot											
	Idle learning of electric throttle control system is not completed								X			
	Electric throttle control system improper operation		X		X	X	X			X		X
	Throttle body malfunction (stuck open or close, restriction)							X		X		
	Variable intake-air system malfunction		X									
	Vacuum leakage (vacuum hose damage, misrouting)			X	X	X						X
	Ignition coil malfunction (e.g. open, short or cracks)				X	X						
	Initial ignition timing misadjustment (CKP sensor & crankshaft pulley misadjustment)				X	X				X		
	Spark plug malfunction			X	X	X						

SYMPTOM TROUBLESHOOTING [LF, L5]

Troubleshooting item		Engine stalls/quits	Acceleration/cruise	Engine runs rough	Misses	Buck/jerk	Hesitation/stumble	Surges	Lack/loss of power	Knocking/pinging	Poor fuel economy	Emission compliance	High oil consumption/leakage	Cooling system concerns	Overheating
	Engine and transaxle mounts are improperly installed														
	Cooling fan sheet is improperly installed														
	Cruise control system operation improperly (With cruise control system)	X													
	Fuel quality	X		X	X	X	X	X	X		X				
	Variable valve timing system malfunction								X		X				
	Variable tumble system malfunction	X		X	X	X	X	X	X		X				
	Engine overheating	X		X	X	X	X	X	X	X					
	Air cleaner element clogging or restriction	X		X	X	X	X	X	X		X				
	Air leakage from intake-air system (Loose tubes, cracks breakage)	X		X	X	X	X	X	X			X			
	Intake air temperature is too hot								X						
	Idle learning of electric throttle control system is not completed														
	Electric throttle control system improper operation	X		X	X	X	X	X	X						
	Throttle body malfunction (stuck open or close, restriction)	X		X	X	X	X	X	X			X			
	Variable intake-air system malfunction								X		X				
	Vacuum leakage (vacuum hose damage, misrouting)	X		X	X	X	X	X	X			X			
	Ignition coil malfunction (e.g. open, short or cracks)														
	Initial ignition timing misadjustment (CKP sensor & crankshaft pulley misadjustment)														
	Spark plug malfunction	X		X	X	X	X	X	X		X				

SYMPTOM TROUBLESHOOTING [LF, L5]

30	ATX concerns	Upshift/ downshift t/ engagement	(See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL],)	Troubleshooting item	
				Cooling system concerns	Runs cold
					Engine and transaxle mounts are improperly installed
					Cooling fan sheet is improperly installed
					Cruise control system operation improperly (With cruise control system)
					Fuel quality
					Variable valve timing system malfunction
					Variable tumble system malfunction
					Engine overheating
		X			Air cleaner element clogging or restriction
				X	Air leakage from intake-air system (Loose tubes, cracks breakage)
					Intake air temperature is too hot
					Idle learning of electric throttle control system is not completed
					Electric throttle control system improper operation
					Throttle body malfunction (stuck open or close, restriction)
					Variable intake-air system malfunction
				X	Vacuum leakage (vacuum hose damage, misrouting)
				X	Ignition coil malfunction (e.g. open, short or cracks)
					Initial ignition timing misadjustment (CKP sensor & crankshaft pulley misadjustment)
		X			Spark plug malfunction
18	Cooling system concerns				
19	Exhaust smoke			X	
20	Fuel odor (in engine compartment)				
21	Engine noise			X	
22	Vibration concerns (engine)		X		
23	A/C does not work sufficiently				
24	A/C is always on or A/C compressor runs continuously				
25	A/C is not cut off under wide open throttle conditions		X		
26	Exhaust sulphur smell		X		
27	Fuel refill concerns				
28	Fuel filling shut off concerns				
29	Spark plug condition			X	

SYMPTOM TROUBLESHOOTING [LF, L5]

X: Applied

Troubleshooting item		Erratic signal to ignition coil	CKP sensor is damaged (e.g. open or short circuit)	Crankshaft pulley is damaged	Improper gap between CKP sensor and crankshaft	Fuel pump malfunction (Mechanically or electrically)	Pressure regulator malfunction	Fuel hoses restriction or clogging	Fuel injectors malfunction (Leakage or clogging, inoperative)	el leakage from fuel system (including insulator, fuel injector O-ring)	Fuel filters restriction or clogging	CMP sensor is damaged (e.g. open or short circuit)	Camshaft is damaged	Improper air/fuel ratio mixture control	Exhaust system restriction or clogging	Catalytic converter malfunction	EGR system malfunction	Fuel-filler cap malfunction	Fuel into evaporative purge hose
1	Melting of main or other fuses																		
2	MIL illuminates		X									X		X					
3	Will not crank																		
4	Hard to start/long crank/erratic start/erratic crank	X	X	X	X	X	X	X			X	X	X	X	X		X		
5	Engine stalls	X	X	X	X	X	X	X	X	X		X	X	X	X		X		
	After start/at idle																		
6	Cranks normally but will not start	X	X	X	X	X	X	X	X	X				X	X		X		
7	Slow return to idle																		
8	Engine runs rough/rolling idle	X	X	X	X	X	X	X			X	X	X	X	X		X		
9	Fast idle/runs on																		
10	Low idle/stalls during deceleration													X					
11	Engine stalls/quits	X	X	X	X	X	X	X	X		X	X	X	X	X		X		X
	Accelerati on/cruise																		
	Engine runs rough	X	X	X	X	X	X	X	X		X	X	X	X	X		X		X
	Accelerati on/cruise																		
	Misses	X	X	X	X	X	X	X	X		X	X	X	X	X		X		X
	Accelerati on/cruise																		
Buck/jerk	X	X	X	X	X	X	X	X			X	X	X	X		X		X	
Accelerati on/cruise/ decelerati on																			
Hesitation/ stumble	X	X	X	X	X	X	X	X			X	X	X	X	X		X		X
Accelerati on																			
Surges	X	X	X	X	X	X	X	X			X	X	X	X	X		X		X
Accelerati on/cruise																			
12	Lack/loss of power	X	X	X	X	X	X	X				X	X		X		X		
Accelerati on/cruise																			
13	Knocking/ pinging					X	X					X							
Accelerati on/cruise																			

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SYMPTOM TROUBLESHOOTING [LF, L5]

Troubleshooting item		Symptom																	
		Erratic signal to ignition coil	CKP sensor is damaged (e.g. open or short circuit)	Crankshaft pulley is damaged	Improper gap between CKP sensor and crankshaft	Fuel pump malfunction (Mechanically or electrically)	Pressure regulator malfunction	Fuel hoses restriction or clogging	Fuel injectors malfunction (Leakage or clogging, inoperative)	el leakage from fuel system (including insulator, fuel injector O-ring)	Fuel filters restriction or clogging	CMP sensor is damaged (e.g. open or short circuit)	Camshaft is damaged	Improper air/fuel ratio mixture control	Exhaust system restriction or clogging	Catalytic converter malfunction	EGR system malfunction	Fuel-filler cap malfunction	Fuel into evaporative purge hose
14	Poor fuel economy	X					X				X	X	X		X				
15	Emission compliance	X				X	X	X			X	X	X	X	X	X	X	X	
16	High oil consumption/ leakage																		
17	Cooling system concerns																		
	Overheating																		
18	Cooling system concerns																		
	Runs cold																		
19	Exhaust smoke	X				X	X	X	X		X								
20	Fuel odor (in engine compartment)						X			X									
21	Engine noise																		
22	Vibration concerns (engine)																		
23	A/C does not work sufficiently																		
24	A/C is always on or A/C compressor runs continuously																		
25	A/C is not cut off under wide open throttle conditions																		
26	Exhaust sulphur smell					X	X	X			X								
27	Fuel refill concerns																		
28	Fuel filling shut off concerns																		
29	Spark plug condition	X				X	X	X	X	X			X	X					
30	ATX concerns																		
	Upshift/downshift/engagement	(See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL].)																	

SYMPTOM TROUBLESHOOTING [LF, L5]

X: Applied

Troubleshooting item		Check valve (two-way)	PCV valve malfunction	Constant voltage supply circuit malfunction	Nonreturn valve malfunction	Fuel shut off valve malfunction	Main relay malfunction (Mechanically or electrically)	PCM or sensor GND circuit open or short	ECT sensor No.1, No.2 malfunction	TR switch misadjustment (ATX)	TR switch malfunction (ATX)	Brake switch or related circuit malfunction	MAP sensor or related circuit malfunction	A/F sensor, HO2S or related circuit malfunction	IAT sensor or related circuit malfunction	BARO sensor or related circuit malfunction	Neutral switch, CPP switch or related circuit malfunction (MTX)	MAF sensor or related circuit malfunction	KS or related circuit malfunction
1	Melting of main or other fuses																		
2	MIL illuminates							X	X			X	X	X	X	X	X	X	X
3	Will not crank									X	X								
4	Hard to start/long crank/erratic start/erratic crank							X						X				X	
5	Engine stalls		X				X							X		X			
	After start/at idle																		
6	Cranks normally but will not start			X			X							X					
7	Slow return to idle							X											
8	Engine runs rough/rolling idle		X				X							X		X			
9	Fast idle/runs on							X											
10	Low idle/stalls during deceleration										X	X		X			X	X	
11	Engine stalls/quits	X	X	X			X						X	X		X		X	
	Accelerati on/cruise																		
	Engine runs rough	X	X	X			X						X	X		X		X	
	Accelerati on/cruise																		
	Misses	X	X	X			X						X	X				X	
	Accelerati on/cruise																		
11	Buck/jerk	X	X	X			X						X	X				X	
	Accelerati on/cruise/ decelerati on																		
	Hesitation/ stumble	X	X	X			X						X	X		X		X	
Accelerati on																			
11	Surges	X	X	X			X						X	X				X	
	Accelerati on/cruise																		
12	Lack/loss of power		X															X	
Accelerati on/cruise																			
13	Knocking/ pinging								X						X			X	X
Accelerati on/cruise																			
14	Poor fuel economy		X															X	
Accelerati on/cruise																			

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SYMPTOM TROUBLESHOOTING [LF, L5]

Troubleshooting item		SYMPTOM TROUBLESHOOTING [LF, L5]																	
		Check valve (two-way)	PCV valve malfunction	Constant voltage supply circuit malfunction	Nonreturn valve malfunction	Fuel shut off valve malfunction	Main relay malfunction (Mechanically or electrically)	PCM or sensor GND circuit open or short	ECT sensor No.1, No.2 malfunction	TR switch misadjustment (ATX)	TR switch malfunction (ATX)	Brake switch or related circuit malfunction	MAP sensor or related circuit malfunction	A/F sensor, HO2S or related circuit malfunction	IAT sensor or related circuit malfunction	BARO sensor or related circuit malfunction	Neutral switch, CPP switch or related circuit malfunction (MTX)	MAF sensor or related circuit malfunction	KS or related circuit malfunction
15	Emission compliance		X										X						
16	High oil consumption/leakage		X																
17	Cooling system concerns	Overheating																	
18	Cooling system concerns	Runs cold																	
19	Exhaust smoke		X																
20	Fuel odor (in engine compartment)																		
21	Engine noise																		
22	Vibration concerns (engine)																		
23	A/C does not work sufficiently																		
24	A/C is always on or A/C compressor runs continuously																		
25	A/C is not cut off under wide open throttle conditions																		
26	Exhaust sulphur smell																		
27	Fuel refill concerns				X	X													
28	Fuel filling shut off concerns				X	X													
29	Spark plug condition							X					X				X		
30	ATX concerns	Upshift/downshift/engagement	(See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL].)																

SYMPTOM TROUBLESHOOTING [LF, L5]

X: Applied

Troubleshooting Item		TP sensor or related circuit malfunction	APP sensor or related circuit malfunction	Improper refrigerant charging amount	Improper A/C system operation	A/C compressor magnetic clutch malfunction	Improper load signal input	Clutch slippage (MTX)	ATX related parts malfunction (ATX)	VSS related circuit malfunction	Improper ATF level (ATX)	Brake dragging	Loose parts	Improper balance of wheels and tires	Drive line malfunction	Suspension malfunction	Immobilizer system operating	
1	Melting of main or other fuses																	
2	MIL illuminates	X							X									
3	Will not crank																X	
4	Hard to start/long crank/erratic start/erratic crank																	
5	Engine stalls			X	X												X	
	After start/at idle																	
6	Cranks normally but will not start																X	
7	Slow return to idle																	
8	Engine runs rough/rolling idle			X	X		X											
9	Fast idle/runs on						X											
10	Low idle/stalls during deceleration	X	X		X	X												
11	Engine stalls/quits	X	X	X	X			X	X	X								
	Acceleratio n/cruise																	
	Engine runs rough	X	X	X	X			X	X	X								
	Acceleratio n/cruise																	
	Misses	X	X	X	X			X	X	X								
	Acceleratio n/cruise																	
11	Buck/jerk	X	X	X	X			X	X	X								
	Acceleratio n/cruise/ deceleratio n																	
	Hesitation/ stumble	X	X	X	X			X	X	X								
	Acceleratio n																	
11	Surges	X	X	X	X			X	X	X								
	Acceleratio n/cruise																	
12	Lack/loss of power	X	X	X	X			X	X	X		X						
13	Knocking/ pinging																	
	Acceleratio n/cruise																	
14	Poor fuel economy							X			X	X						
15	Emission compliance																	
16	High oil consumption/ leakage																	
17	Cooling system concerns			X	X													
	Overheatin g																	

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SYMPTOM TROUBLESHOOTING [LF, L5]

Troubleshooting item			TP sensor or related circuit malfunction	APP sensor or related circuit malfunction	Improper refrigerant charging amount	Improper A/C system operation	A/C compressor magnetic clutch malfunction	Improper load signal input	Clutch slippage (MTX)	ATX related parts malfunction (ATX)	VSS related circuit malfunction	Improper ATF level (ATX)	Brake dragging	Loose parts	Improper balance of wheels and tires	Drive line malfunction	Suspension malfunction	Immobilizer system operating	
18	Cooling system concerns	Runs cold																	
19	Exhaust smoke																		
20	Fuel odor (in engine compartment)																		
21	Engine noise													X					
22	Vibration concerns (engine)													X	X	X	X		
23	A/C does not work sufficiently				X	X	X												
24	A/C is always on or A/C compressor runs continuously					X	X												
25	A/C is not cut off under wide open throttle conditions			X															
26	Exhaust sulphur smell																		
27	Fuel refill concerns																		
28	Fuel filling shut off concerns																		
29	Spark plug condition																		
30	ATX concerns	Upshift/downshift/engagement	(See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL].)																

SYMPTOM TROUBLESHOOTING [LF, L5]

X: Applied

01-03A

Troubleshooting item			Immobilizer system or related circuit malfunction	Advanced keyless entry and push button start system malfunction (if equipped)	
1	Melting of main or other fuses				
2	MIL illuminates				
3	Will not crank		X	X	
4	Hard to start/long crank/erratic start/erratic crank				
5	Engine stalls	After start/ at idle	X		
6	Crank normally but will not start		X		
7	Slow return to idle				
8	Engine runs rough/rolling idle				
9	Fast idle/runs on				
10	Low idle/stalls during deceleration				

SYMPTOM TROUBLESHOOTING [LF, L5]

Troubleshooting item			Immobilizer system or related circuit malfunction	Advanced keyless entry and push button start system malfunction (if equipped)
11	Engine stalls/ quits	Accelerati on/cruise		
	Engine runs rough	Accelerati on/cruise		
	Misses	Accelerati on/cruise		
	Buck/jerk	Accelerati on/cruise/ decelerati on		
	Hesitation /stumble	Accelerati on		
	Surges	Accelerati on/cruise		
12	Lack/loss of power	Accelerati on/cruise		
13	Knocking/ pinging	Accelerati on/cruise		
14	Poor fuel economy			
15	Emission compliance			
16	High oil consumption/ leakage			
17	Cooling system concerns	Overheati ng		
18	Cooling system concerns	Runs cold		
19	Exhaust smoke			

SYMPTOM TROUBLESHOOTING [LF, L5]

01-03A

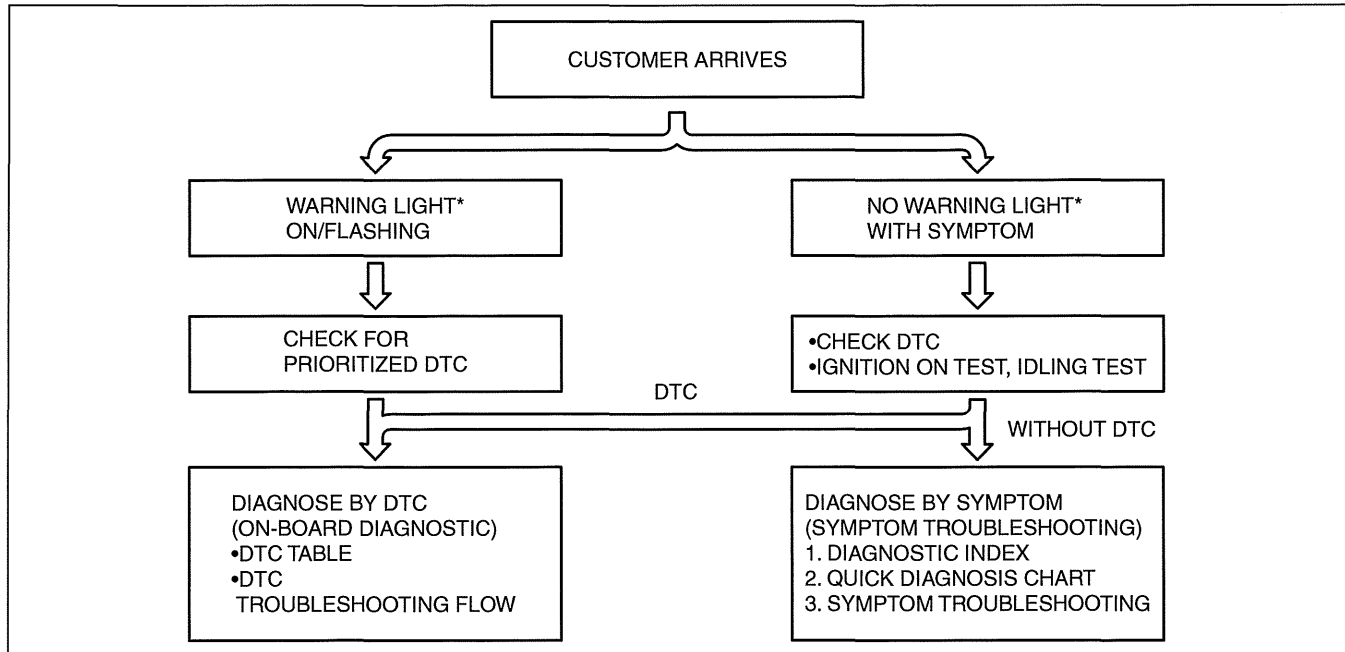
Troubleshooting item		Immobilizer system or related circuit malfunction	Advanced keyless entry and push button start system malfunction (if equipped)
20	Fuel odor (in engine compartment)		
21	Engine noise		
22	Vibration concerns (engine)		
23	A/C does not work sufficiently		
24	A/C is always on or A/C compressor runs continuously		
25	A/C is not cut off under wide open throttle conditions		
26	Exhaust sulphur smell		
27	Fuel refill concerns		
28	Fuel filling shut off concerns		
29	Spark plug condition		
30	ATX concerns Upshift/downshift/engagement	(See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL].)	

SYMPTOM TROUBLESHOOTING [LF, L5]

FOREWORD [LF, L5]

id010397910000

- When the customer reports a vehicle malfunction, check the malfunction indicator lamp (MIL) indication and diagnostic trouble code (DTC), then diagnose the malfunction according to the following flowchart:
 - If a DTC exists, diagnose the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
 - If no DTC exists and the MIL does not illuminate or flash, diagnose the applicable symptom troubleshooting. (See 01-03A-7 QUICK DIAGNOSTIC CHART [LF, L5].)



am3uuw0000267

*: Malfunction Indicator Lamp (MIL), Generator Warning Light, Security Light

NO.1 MELTING OF MAIN OR OTHER FUSES [LF, L5]

id010397800700

1 MELTING OF MAIN OR OTHER FUSES	
[TROUBLESHOOTING HINTS] Inspect condition of fuse.	
Shorted wiring harness ↓ Repair shorted wiring harness and replace fuse	Deterioration ↓ Replace fuse
Damaged Fuse	Related Wiring Harness
MAIN	<ul style="list-style-type: none"> • BTN fuse <ul style="list-style-type: none"> — ROOM fuse • FAN fuse • IG KEY2 fuse • Generator
BTN	<ul style="list-style-type: none"> • ROOM fuse
ROOM	<ul style="list-style-type: none"> • DLC-2
FAN	<ul style="list-style-type: none"> • Fan control module
IG KEY2	<ul style="list-style-type: none"> • Starter relay
FUEL	<ul style="list-style-type: none"> • Fuel pump unit

SYMPTOM TROUBLESHOOTING [LF, L5]

1	MELTING OF MAIN OR OTHER FUSES
ST SIG	<ul style="list-style-type: none"> Starter relay
EGI INJ	<ul style="list-style-type: none"> Fuel injector No.1 Fuel injector No.2 Fuel injector No.3 Fuel injector No.4
ENG+B	<ul style="list-style-type: none"> PCM Canister vent solenoid valve
PCM	<ul style="list-style-type: none"> PCM
ENGINE IG	<ul style="list-style-type: none"> Ignition coil No.1 Ignition coil No.2 Ignition coil No.3 Ignition coil No.4
O2 SSR	<ul style="list-style-type: none"> HO2S
ENGINE	<ul style="list-style-type: none"> Variable tumble solenoid valve OCV Variable intake air solenoid valve EGR valve Purge solenoid valve A/F sensor MAF/IAT sensor

01-03A

NO.2 MIL ILLUMINATES [LF, L5]

id010397800800

2	MIL ILLUMINATES
DESCRIPTION	<ul style="list-style-type: none"> MIL is illuminated incorrectly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MIL illuminates for emission-related concern (PCM DTC is stored) Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> If the MIL blinks at steady rate, misfire condition could possibly exist.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection result.
2	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If vehicle is repaired, troubleshooting completed. If vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.3 WILL NOT CRANK [LF, L5]

id010397800900

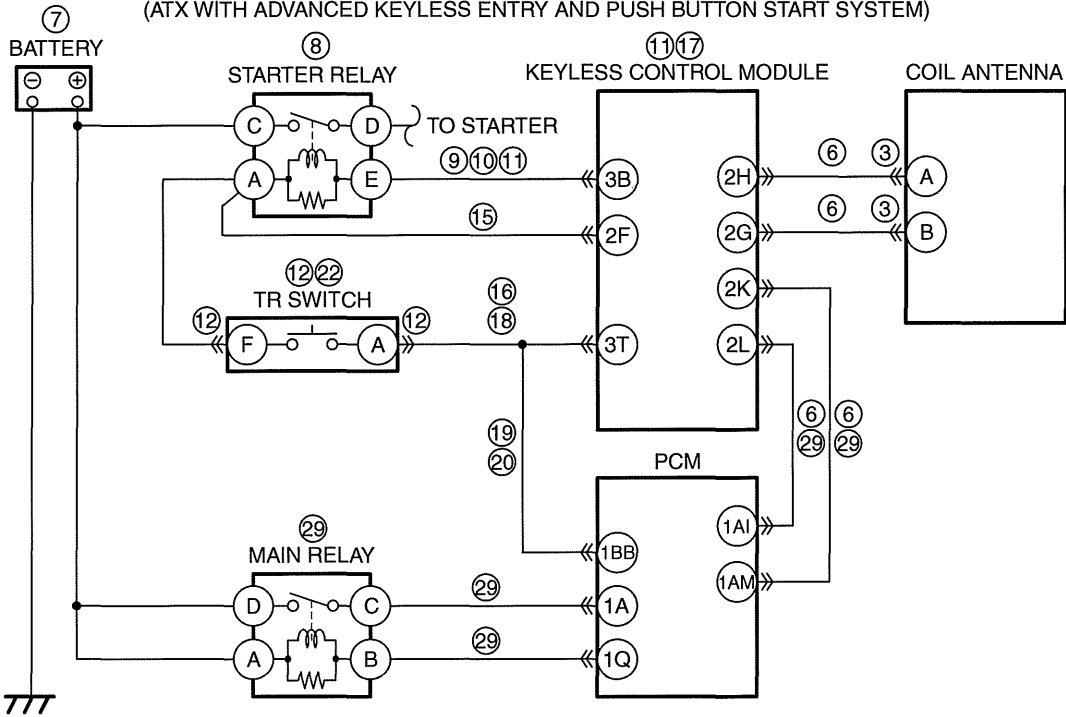
3	WILL NOT CRANK
DESCRIPTION	<ul style="list-style-type: none"> • Starter does not work.
POSSIBLE CAUSE	<p>Vehicles without advanced keyless entry and push button start system:</p> <ul style="list-style-type: none"> • Coil antenna connector or terminals malfunction • Instrument cluster and related wiring harness malfunction • Immobilizer system malfunction • Coil antenna circuit and related connectors malfunction • Charging system malfunction • Open circuit in wiring harness between PCM terminal 1BB and starter relay • TR switch mis-adjustment (ATX) • Open or short circuit in wiring harness between TR switch and TCM (ATX) • Starter interlock switch and related wiring harness malfunction (MTX) • Open or short circuit in wiring harness between starter relay and PCM • Open or short circuit in wiring harness between starter relay and ignition switch • Ignition switch and related wiring harness malfunction • Open or short circuit in wiring harness between starter relay and battery positive terminal • Open or short circuit in wiring harness between starter relay and starter • Starter malfunction • Seized/hydro locked engine, drive plate (ATX), flywheel (MTX) • PCM continuous memory DTC is stored • Starter circuit in ignition switch • Open circuit in wiring harness between ignition switch and starter <p>Vehicles with advanced keyless entry and push button start system:</p> <ul style="list-style-type: none"> • Advanced keyless entry and push button start system malfunction • Coil antenna connector or terminals malfunction • Instrument cluster and related wiring harness malfunction • Immobilizer system malfunction • Coil antenna circuit and related connectors malfunction • Charging system malfunction • Starter relay malfunction • Open circuit in wiring harness between keyless control module terminal 3B and starter relay terminal E • Short to ground in wiring harness between keyless control module terminal 3B and starter relay terminal E • Keyless control module malfunction • TR switch malfunction (ATX) • Open or short circuit in wiring harness between battery positive terminal and starter cut relay (MTX) • Starter cut relay malfunction (MTX) • Open or short circuit in wiring harness between starter cut relay and clutch cut switch (MTX) • Open or short circuit in wiring harness between clutch cut switch and body ground (MTX) • Clutch cut switch malfunction (MTX) • Open or short circuit in wiring harness between starter relay terminal E and keyless control module terminal 2F • Open circuit in wiring harness between keyless control module terminal 3T and TR switch terminal A (ATX) • Open circuit in wiring harness between keyless control module terminal 3T and starter cut relay terminal D (MTX) • Starter and related wiring harness malfunction • Open circuit in wiring harness between TR switch terminal A and PCM terminal 1BB (ATX) • Open circuit in wiring harness between starter cut relay terminal D and PCM terminal 1BB (MTX) • Open circuit in wiring harness between PCM terminal 1BB and starter relay • TR switch mis-adjustment (ATX) • Open or short circuit in wiring harness between TR switch and TCM (ATX) • Starter interlock switch and related wiring harness malfunction (MTX) • Open or short circuit in wiring harness between starter relay and PCM • Open or short circuit in wiring harness between starter relay and ignition switch • Ignition switch and related wiring harness malfunction • Open or short circuit in wiring harness between starter relay and battery positive terminal • Open or short circuit in wiring harness between starter relay and starter • Starter malfunction • Seized/hydro locked engine, drive plate (ATX), flywheel (MTX) • PCM continuous memory DTC is stored • Starter circuit in ignition switch • Open circuit in wiring harness between ignition switch and starter

SYMPTOM TROUBLESHOOTING [LF, L5]

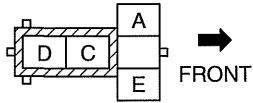
3

WILL NOT CRANK

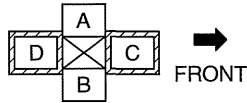
(ATX WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)



STARTER RELAY CONNECTOR



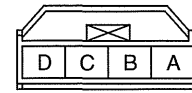
MAIN RELAY CONNECTOR



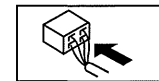
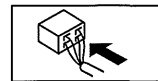
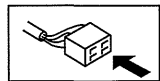
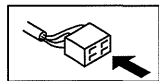
TR SWITCH WIRING HARNESS-SIDE CONNECTOR



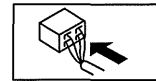
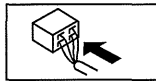
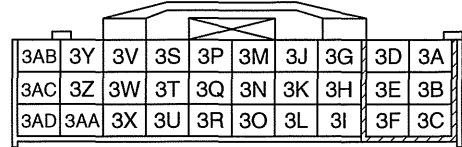
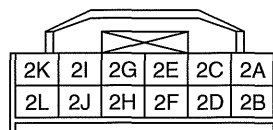
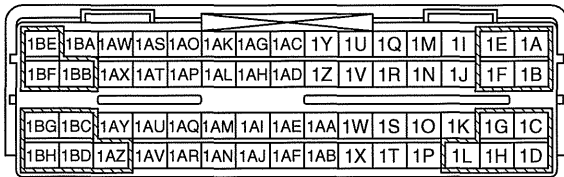
COIL ANTENNA WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



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SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	<p>Note</p> <ul style="list-style-type: none"> The following test should be performed on the advanced keyless entry and push button start system. If not equipped, go to the next step. <p>Insert the emergency key in the emergency slot and start the engine. Does the engine start?</p>	Yes	Inspect the advanced keyless entry and push button start system. Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
2	<p>Connect the M-MDS to the DLC-2. Do the following conditions appear?</p> <ul style="list-style-type: none"> The engine is not completely started. Immobilizer system DTC B10DA:62 is displayed. 	Yes	Both conditions appear: <ul style="list-style-type: none"> Go to Step 5.
		No	Either condition or other one appears: <ul style="list-style-type: none"> Go to the next step.
3	<p>Inspect the coil antenna connector and terminals for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction?</p>	Yes	Repair or replace the connector or terminals. Return to Step 1.
		No	Go to the next step.
4	<p>Does the security light flash?</p>	Yes	Go to the next step.
		No	Inspect the instrument cluster and the related wiring harness. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection result.
5	<p>Connect the M-MDS to DLC-2. Perform the immobilizer system DTC inspection. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are any DTCs present?</p>	Yes	Go to the appropriate DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
6	<p>Inspect the wiring harness between the following terminals (wiring harness-side) and related connectors:</p> <ul style="list-style-type: none"> Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> Coil antenna terminal A—Instrument cluster terminal 2Q Coil antenna terminal B—Instrument cluster terminal 2M PCM terminal 1AM—Instrument cluster terminal 2B PCM terminal 1AI—Instrument cluster terminal 2D Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> Coil antenna terminal A—Keyless control module terminal 2H Coil antenna terminal B—Keyless control module terminal 2G PCM terminal 1AM—Keyless control module terminal 2K PCM terminal 1AI—Keyless control module terminal 2L <p>Is there any malfunction?</p>	Yes	Repair or replace the suspected wiring harness and connector.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
7	Inspect the following: <ul style="list-style-type: none"> • Battery connection • Battery condition (See 01-17A-4 BATTERY INSPECTION [LF, L5].) • Fuse (See 01-03A-22 NO.1 MELTING OF MAIN OR OTHER FUSES [LF, L5].) • Selector lever is in P or N position (ATX) Are all items normal?	Yes	Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to Step 20. Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 7.
8	Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction?	Yes	Replace the starter relay.
		No	Go to the next step.
9	Remove the starter relay. Switch the ignition to ON (engine off). Measure the voltage at the starter relay terminal E (wiring harness-side). Is the voltage B+?	Yes	Go to Step 12.
		No	Go to the next step.
10	Switch the ignition to off. Disconnect the keyless control module connector. Inspect for continuity between keyless control module terminal 3B (wiring harness-side) and starter relay terminal E (wiring harness-side). Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness and connector.
11	Inspect for continuity between keyless control module terminal 3B (wiring harness-side) and body ground. Is there continuity?	Yes	Repair or replace the suspected wiring harness and connector.
		No	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
12	Install the starter relay. Short the terminals of the following connector using a jumper wire: <ul style="list-style-type: none"> • ATX: <ul style="list-style-type: none"> — TR switch terminals A and F (wiring harness-side) • MTX: <ul style="list-style-type: none"> — Starter interlock switch terminals A and B (wiring harness-side) Switch the ignition to start. Does the engine start?	Yes	ATX: <ul style="list-style-type: none"> • Replace the TR switch. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].) MTX: <ul style="list-style-type: none"> • Go to the next step.
		No	Go to Step 14.
13	Reconnect the disconnected connectors. Measure the voltage at the keyless control module terminal 3O (wiring harness-side). Is the voltage following? <ul style="list-style-type: none"> • Clutch pedal depressed: Below 1.0 V • Clutch pedal released: B+ 	Yes	Inspect the following: <ul style="list-style-type: none"> • Wiring harness between battery positive terminal and starter cut relay • Starter cut relay Repair or replace the malfunctioning part according to the inspection result.
		No	Inspect the following: <ul style="list-style-type: none"> • Wiring harness between starter cut relay and clutch cut switch • Wiring harness between clutch cut switch and ground • Clutch cut switch (stuck) Repair or replace the malfunctioning part according to the inspection result.
14	Is the starter relay operation sound heard when the engine starting procedure is performed in Step 12?	Yes	Go to the next step.
		No	Go to Step 18.
15	Switch the ignition to ON (engine off). Measure the voltage at the keyless control module terminal 2F (wiring harness-side). Is the voltage B+?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness and connector.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
16	Switch the ignition to off. Disconnect the keyless control module, TR switch (ATX), or starter interlock switch (MTX) connectors. Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> • ATX: — Keyless control module terminal 3T—TR switch terminal A • MTX: — Keyless control module terminal 3T—Starter cut relay terminal D Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
17	Inspect the following: <ul style="list-style-type: none"> • Starter • Wiring harness between the starter and ground • Starter power supply (from battery through secondary starter relay, to starter) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
18	Switch the ignition to off. Disconnect the keyless control module, TR switch (ATX), or starter interlock switch (MTX) connectors. Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> • ATX: — Keyless control module terminal 3T—TR switch terminal A • MTX: — Keyless control module terminal 3T—Starter cut relay terminal D Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness and connector.
19	Disconnect the PCM connector (with starter interlock switch (MTX) or TR switch (ATX) connectors left removed). Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> • ATX: — TR switch terminal A—PCM terminal 1BB • MTX: — Starter cut relay terminal D—PCM terminal 1BB Is there continuity?	Yes	Go to Step 28.
		No	Repair or replace the suspected wiring harness and connector.
20	Inspect for continuity between PCM terminal 1BB (wiring harness-side) and starter relay with P or N position (ATX)/clutch pedal depressed (MTX). Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
21	Switch the ignition to start with P or N position (ATX)/clutch pedal depressed (MTX). Is a clicking sound heard from the starter relay?	Yes	Go to Step 26.
		No	ATX: • Go to the next step. MTX: • Go to Step 23.
22	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Access TR PID using the M-MDS. Is TR PID indicated P/N when selecting the P or N position?	Yes	Go to Step 24.
		No	Verify that the TR switch is adjusted properly. Inspect for open or short circuit between TR switch and TCM. Repair or replace the malfunctioning part according to the inspection result. Repeat Step 21.
23	Inspect the starter interlock switch. (See 01-19A-8 STARTER INTERLOCK SWITCH INSPECTION [LF, L5].) Is there any malfunction?	Yes	Inspect the related wiring harness. Repair or replace the malfunctioning part according to the inspection result. Repeat Step 21.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
24	Inspect the starter relay and the wiring harness between the following: (See 09-21-17 RELAY INSPECTION.) <ul style="list-style-type: none"> • Starter relay and PCM • Starter relay and ignition switch Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 21.
		No	Go to the next step.
25	Inspect the ignition switch and the related wiring harness. (See 09-21-7 IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 21.
		No	Go to the next step.
26	Inspect the wiring harness between the following: <ul style="list-style-type: none"> • Starter relay and battery positive terminal • Starter relay and starter Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to the next step.
		No	Go to the next step.
27	Inspect the starting system. (See 01-19A-4 STARTER INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
28	Inspect for a seized/hydro locked engine or flywheel (MTX) or drive plate (ATX). Is the engine seized or hydro locked?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
29	Connect the M-MDS to the DLC-2. Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are there any continuous memory DTCs present?	Yes	Continuous memory DTC is displayed: <ul style="list-style-type: none"> • Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) Communication error message is displayed: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Open circuit in the wiring harness between main relay terminal B (wiring harness-side) and PCM terminal 1Q (wiring harness-side) — Open circuit in the wiring harness between main relay terminal C and PCM terminal 1A (wiring harness-side) — Main relay (stuck open) — Open or short circuit in the wiring harness between DLC-2 and PCM terminals 1AM or 1AI (wiring harness-side) — Open or poor ground circuit (PCM terminal 1E, 1F or 1G) — Poor connection of vehicle body ground • Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
30	Perform the KOEO self-test using the M-MDS. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Are there DTCs displayed during the KOEO inspection?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Inspect the following: <ul style="list-style-type: none"> • Start circuit in ignition switch • Open circuit in wiring harness between ignition switch and starter Repair or replace the malfunctioning part according to the inspection result.
31	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.4 HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK [LF, L5]

id010397801000

4	HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK
DESCRIPTION	<ul style="list-style-type: none"> • Starter cranks engine at normal speed but engine requires excessive cranking time before starting.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Cooling system malfunction • Ignition coil related wiring harness malfunction • Spark plug malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Improper operation of electronic throttle control system • Excessive fuel pressure • Fuel leakage from fuel system • Purge solenoid valve malfunction • MAF sensor malfunction • Restriction in exhaust system • EGR valve malfunction • Starting system malfunction <p>Warning The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following: <ul style="list-style-type: none"> • Vacuum leakage • Proper fuel quality (such as proper octane, contamination, winter/summer blend) • Loose bands on intake air system • Cracks on intake air system parts • Intake air system restriction (such as air cleaner element, fresh air duct) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	Is engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].)
		No	Go to the next step.
4	Inspect the ignition coil related wiring harness condition (intermittent open or short circuit) for all cylinders. Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Go to the next step.
5	Inspect the spark plug conditions. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> • Inspect for fuel leakage from fuel injector. Spark plug is grayish white: <ul style="list-style-type: none"> • Inspect the fuel injector for clogging. Repair or replace the malfunctioning part according to the inspection result.
		No	Install the spark plugs on original cylinders. Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
6	Visually inspect the CKP sensor and teeth of crankshaft pulley. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
7	Attempt to start the engine at part throttle. Does the engine run smoothly at part throttle?	Yes	Inspect the electronic throttle control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
8	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	Is the fuel line pressure held after ignition is off? (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect the fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) <ul style="list-style-type: none"> • If the fuel injector has malfunction: <ul style="list-style-type: none"> — Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].) • If the fuel injector is normal: <ul style="list-style-type: none"> — Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
10	Disconnect the vacuum hose from purge solenoid valve and plug opening end of vacuum hose. Switch the ignition to start. Is the starting condition improved?	Yes	Inspect if the purge solenoid valve is stuck open. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
11	Inspect the MAF sensor for the following: <ul style="list-style-type: none"> • Contamination • MAF sensor terminal B voltage (ground circuit) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
12	Visually inspect the exhaust system part. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
13	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
14	Inspect the starting system. (See 01-19A-4 STARTER INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace components as required.
		No	Inspect for loose connectors or poor terminal contact. <ul style="list-style-type: none"> • If there is a malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection result. • If there is no malfunction: <ul style="list-style-type: none"> — Remove the EGR valve and visually inspect for a mechanically stuck EGR valve. — Repair or replace the malfunctioning part according to the inspection result.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
15	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

01-03A

NO.5 ENGINE STALLS-AFTER START/AT IDLE [LF, L5]

id010397801100

5	ENGINE STALLS—AFTER START/AT IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine stops unexpectedly at idle and/or after start.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Coil antenna connector or terminals malfunction • Instrument cluster and related wiring harness malfunction • Immobilizer system malfunction • Coil antenna and related wiring harness • Air cleaner restriction • EGR valve malfunction • Electrical connector disconnection • Poor fuel quality • Ignition wiring malfunction • Air leakage from intake air system • Intake air system restriction • Improper operation of electronic throttle control system • Vacuum leakage • APP sensor and related wiring harness malfunction • TP sensor and related wiring harness malfunction • PCM continuous memory DTC is stored • Improper operation of electronic throttle control system • CKP sensor and related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Ignition coil and related wiring harness malfunction • Spark plug malfunction • Exhaust system part malfunction • Excessive fuel pressure • Fuel leakage from fuel system • Improper operation of A/C system • Purge solenoid valve malfunction • Evaporative emission control system malfunction • Air leakage from intake air system • EGR valve malfunction • Improper operation of variable valve timing control system • Low engine compression • PCV valve malfunction <p>Warning The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Do the following conditions appear? <ul style="list-style-type: none"> • The engine is not completely started. • Immobilizer system DTC B10DA:62 is displayed. 	Yes	Both conditions appear: <ul style="list-style-type: none"> • Go to Step 3.
		No	Either condition or other one appears: <ul style="list-style-type: none"> • Go to the next step.
2	Does the engine stall after approx. 2 s from when the engine is started?	Yes	Go to the next step.
		No	Immobilizer system is normal. <ul style="list-style-type: none"> • Go to Step 10.
3	Inspect the coil antenna connector and terminals for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction?	Yes	Repair or replace the connector or terminals. Return to Step 2.
		No	Go to the next step.
4	Does the security light flash?	Yes	Go to the next step.
		No	Inspect the instrument cluster and related wiring harness. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection result.
5	Connect the M-MDS to DLC-2. Perform the immobilizer system DTC inspection. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
6	Inspect the wiring harness between the following terminals and related connectors: <ul style="list-style-type: none"> • Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Coil antenna terminal A—Instrument cluster terminal 2Q — Coil antenna terminal B—Instrument cluster terminal 2M — PCM terminal 1AM—Instrument cluster terminal 2B — PCM terminal 1AI—Instrument cluster terminal 2D • Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Coil antenna terminal A—Keyless control module terminal 2H — Coil antenna terminal B—Keyless control module terminal 2G — PCM terminal 1AM—Keyless control module terminal 2K — PCM terminal 1AI—Keyless control module terminal 2L Is there any malfunction?	Yes	Repair or replace the suspected wiring harness and connector.
		No	Go to the next step.
7	Inspect the following: <ul style="list-style-type: none"> • Air cleaner element • EGR valve • Electrical connections • Fuel quality: proper octane, contamination, winter/summer blend • Ignition wiring • No air leakage from intake air system • No restriction of intake air system • Proper sealing of intake manifold and components attached to intake manifold • Smooth operation of throttle valve • Vacuum connection Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 7.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
8	Access the APP1 and APP2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Crank the engine with the accelerator pedal released. Are the APP1 and APP2 PIDs indicating that the accelerator pedal is in the released position?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • APP sensor (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Wiring harness between the following terminals and related connectors: <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1AE — APP sensor terminal B—PCM terminal 1AP — APP sensor terminal C—PCM terminal 1AJ — APP sensor terminal D—Engine ground — APP sensor terminal E—PCM terminal 1X — APP sensor terminal F—Main relay terminal C Repair or replace the malfunctioning part according to the inspection result.
9	Access the TP_REL PID using M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Crank the engine with the accelerator pedal released. Is the TP_REL PID indicating that the accelerator pedal is in the released position?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • TP sensor (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) • Wiring harness between the following terminals and related connectors: <ul style="list-style-type: none"> — TP sensor terminal A—PCM terminal 2AK — TP sensor terminal B—PCM terminal 2AR — TP sensor terminal C—PCM terminal 2AL — TP sensor terminal D—PCM terminal 2AN Repair or replace the malfunctioning part according to the inspection result.
10	Connect the M-MDS to the DLC-2. Perform the KOEO/KOER self-test using the M-MDS. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) <ul style="list-style-type: none"> • If the engine stalls: <ul style="list-style-type: none"> — Perform the KOEO self-test using the M-MDS. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Are there any continuous memory DTCs present?	Yes	Continuous memory DTC is displayed: <ul style="list-style-type: none"> • Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) Communication error message is displayed: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Open circuit in the wiring harness between main relay terminal B and PCM terminal 1Q — Open circuit in the wiring harness between main relay terminal C and PCM terminal 1A — Main relay (stuck open) — Open or short circuit in the wiring harness between DLC-2 and PCM terminals 1AM or 1AI — Open or poor ground circuit (PCM terminal 1E, 1F or 1G) — Poor connection of vehicle body ground • Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
11	Attempt to start the engine at part throttle. Does the engine run smoothly at part throttle.	Yes	Inspect the electronic throttle control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
12	Connect the M-MDS to the DLC-2. Access the RPM PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Is the RPM PID indicating the engine speed during engine cranking?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • Open or short circuit in CKP sensor • Open or short circuit between CKP sensor terminal A and body ground • Open or short circuit between CKP sensor terminal B and PCM terminal 2W • Open or short circuit between CKP sensor terminal C and PCM terminal 2AQ • CKP sensor and related wiring harness Repair or replace the malfunctioning part according to the inspection result. <ul style="list-style-type: none"> • If CKP sensor and wiring harness are normal: <ul style="list-style-type: none"> — Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
13	Visually inspect the CKP sensor and teeth of the crankshaft pulley. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
14	Inspect the ignition coil related wiring harness condition (intermittent open or short circuit) for all cylinders. (See 01-18A-2 IGNITION COIL INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair the suspected wiring harnesses.
		No	Go to the next step.
15	Inspect the spark plug condition. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> Inspect for fuel leakage from fuel injector. Spark plug is grayish white: <ul style="list-style-type: none"> Inspect the fuel injector for clogging.
		No	Install the spark plugs on original cylinders. Go to the next step.
16	Perform the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step. <ul style="list-style-type: none"> If a symptom occurs with the A/C on: <ul style="list-style-type: none"> Go to Step 20.
		No	Repair or replace the malfunctioning part according to the inspection result.
17	Visually inspect the exhaust system part. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
18	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect the fuel line for clogging. <ul style="list-style-type: none"> If there is a malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection result. If there is no malfunction: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
19	Visually inspect for fuel leakage at the fuel injector O-ring and fuel line. Is the fuel line pressure held after the ignition is off?	Yes	Go to the next step.
		No	Inspect the fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) <ul style="list-style-type: none"> If the fuel injector has malfunction: <ul style="list-style-type: none"> Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/ INSTALLATION [LF, L5].) If the fuel injector is normal: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [LF, L5].)
20	<p>Note</p> <ul style="list-style-type: none"> Following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. <p>Connect pressure gauges to the A/C low side and high side pressure lines. Turn the A/C on and measure the low side and high side pressures. Are the pressures within the specifications? (See 07-10-6 REFRIGERANT PRESSURE CHECK.)</p>	Yes	Go to the next step.
		No	If the A/C is always on: <ul style="list-style-type: none"> Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].) For other symptoms: <ul style="list-style-type: none"> Inspect the following: <ul style="list-style-type: none"> Refrigerant charging amount Condenser fan operation Repair or replace the malfunctioning part according to the inspection result.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
21	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Switch the ignition to start. Is the engine stall now eliminated?	Yes	Inspect if the purge solenoid valve is stuck open. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Inspect the evaporative emission control system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
22	Is air leakage felt or heard at the intake air system components while racing the engine to higher speed?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
23	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
24	Inspect the variable valve timing control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
25	Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for causes.
26	Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Inspect the valve timing. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
27	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle repaired, troubleshooting is completed. • If the vehicle not repaired or additional diagnostic information not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [LF, L5]

NO.6 CRANKS NORMALLY BUT WILL NOT START [LF, L5]

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6	CRANKS NORMALLY BUT WILL NOT START
DESCRIPTION	<ul style="list-style-type: none"> • The starter cranks engine at normal speed but engine will not run. • Refer to symptom troubleshooting "No.5 ENGINE STALLS" if this symptom appears after engine stall. • Fuel is in tank. • Battery is in normal condition.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Coil antenna connector or terminals malfunction • Instrument cluster and related wiring harness malfunction • Immobilizer system malfunction • Coil antenna and related wiring harness • Wiring harness between the following terminals and related connectors malfunction: <ul style="list-style-type: none"> — PCM terminal 1AM—Instrument cluster terminal 2B — PCM terminal 1AI—Instrument cluster terminal 2D • Vacuum leakage • External fuel shut off or accessory • Poor fuel quality • Air leakage from intake air system • Intake air system restriction • Proper sealing of intake manifold and components attached to intake manifold: EGR valve • Ignition wiring malfunction • Electrical connector disconnection • Fuse malfunction • Improper operation of electronic throttle control system • APP sensor and related wiring harness malfunction • TP sensor and related wiring harness malfunction • PCM continuous memory DTC is stored • Improper operation of electronic throttle control system • CKP sensor and related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Ignition coil and related wiring harness malfunction • Spark plug malfunction • Exhaust system part malfunction • Excessive fuel pressure • Fuel leakage from fuel system • Purge solenoid valve malfunction • Evaporative emission control system malfunction • Air leakage from intake air system • EGR valve malfunction • Improper operation of variable valve timing control system • Low engine compression <p>Warning The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Do the following conditions appear? <ul style="list-style-type: none"> The engine is not completely started. Immobilizer system DTC B10DA:62 is displayed. 	Yes	Both conditions appear: <ul style="list-style-type: none"> Go to Step 3.
		No	Either condition or other one appears: <ul style="list-style-type: none"> Go to the next step.
2	Does the engine stall after approx. 2 s since the engine is started?	Yes	Go to the next step.
		No	Immobilizer system is normal: <ul style="list-style-type: none"> Go to Step 8.
3	Inspect the coil antenna connector and terminals for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction?	Yes	Repair or replace the connector or terminals. Return to Step 2.
		No	Go to the next step.
4	Does the security light flash?	Yes	Go to the next step.
		No	Inspect the instrument cluster and related wiring harness. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection result.
5	Connect the M-MDS to DLC-2. Perform the immobilizer system DTC inspection. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
6	Inspect the wiring harness between the following terminals and related connectors: <ul style="list-style-type: none"> Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> Coil antenna terminal A—Instrument cluster terminal 2Q Coil antenna terminal B—Instrument cluster terminal 2M PCM terminal 1AM—Instrument cluster terminal 2B PCM terminal 1AI—Instrument cluster terminal 2D Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> Coil antenna terminal A—Keyless control module terminal 2H Coil antenna terminal B—Keyless control module terminal 2G PCM terminal 1AM—Keyless control module terminal 2K PCM terminal 1AI—Keyless control module terminal 2L Is there any malfunction?	Yes	Repair or replace the suspected wiring harness and connector.
		No	Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> Go to Step 8. Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> Go to the next step.
7	Inspect the wiring harness between the following terminals and connectors: <ul style="list-style-type: none"> PCM terminal 1AM—Instrument cluster terminal 2B PCM terminal 1AI—Instrument cluster terminal 2D Is there any malfunction?	Yes	Repair or replace the suspected wiring harness and connector.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
8	Verify the following: <ul style="list-style-type: none"> • Vacuum connection • External fuel shut off or accessory (such as kill switch, alarm) • Fuel quality: proper octane, contamination, winter/summer blend • No air leakage from intake air system • Intake air system restriction (such as air cleaner element, fresh air duct) • Proper sealing of intake manifold and components attached to intake manifold: EGR valve • Ignition wiring • Electrical connections • Fuses • Smooth operation of throttle valve Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 8.
		No	Go to the next step.
9	Access the APP1 and APP2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Crank the engine with the accelerator pedal released. Are the APP1 and APP2 PIDs indicating that the accelerator pedal is in the released position?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • APP sensor (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) • Wiring harness between the following terminals and related connectors: <ul style="list-style-type: none"> — APP sensor terminal A—PCM terminal 1AE — APP sensor terminal B—PCM terminal 1AP — APP sensor terminal C—PCM terminal 1AJ — APP sensor terminal D—Engine ground — APP sensor terminal E—PCM terminal 1X — APP sensor terminal F—Main relay terminal C Repair or replace the malfunctioning part according to the inspection result.
10	Access the TP_REL PID using M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Crank the engine with the accelerator pedal released. Is the TP_REL PID indicating that the accelerator pedal is in the released position?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • TP sensor (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) • Wiring harness between the following terminals and related connectors: <ul style="list-style-type: none"> — TP sensor terminal A—PCM terminal 2AK — TP sensor terminal B—PCM terminal 2AR — TP sensor terminal C—PCM terminal 2AL — TP sensor terminal D—PCM terminal 2AN Repair or replace the malfunctioning part according to the inspection result.
11	Connect the M-MDS to the DLC-2. Perform the KOEO/KOER self-test using the M-MDS. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) <ul style="list-style-type: none"> • If the engine stalls: <ul style="list-style-type: none"> — Perform the KOEO self-test using the M-MDS. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].) Are there any continuous memory DTCs present?	Yes	Continuous memory DTC is displayed: <ul style="list-style-type: none"> • Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) Communication error message is displayed: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Open circuit in the wiring harness between main relay terminal B and PCM terminal 1Q — Open circuit in the wiring harness between main relay terminal C and PCM terminal 1A — Main relay (stuck open) — Open or short circuit in the wiring harness between DLC-2 and PCM terminals 1AM or 1AI — Open or poor ground circuit (PCM terminal 1E, 1F or 1G) — Poor connection of vehicle body ground • Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
12	Does the engine start with the throttle valve closed?	Yes	Go to Step 27.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
13	Will the engine start and run smoothly at part throttle?	Yes	Inspect the electronic throttle control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
14	Connect the M-MDS to the DLC-2. Access RPM PID using the M-MDS. Is RPM PID indicating the engine speed when cranking the engine?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • Open or short circuit in CKP sensor • Open or short circuit between CKP sensor terminal A and body ground • Open or short circuit between CKP sensor terminal B and PCM terminal 2W • Open or short circuit between CKP sensor terminal C and PCM terminal 2AQ • CKP sensor and related wiring harness Repair or replace the malfunctioning part according to the inspection result. <ul style="list-style-type: none"> • If CKP sensor and wiring harness are normal: <ul style="list-style-type: none"> — Go to the next step.
15	Visually inspect the CKP sensor and teeth of the crankshaft pulley. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
16	Inspect the ignition coil related wiring harness condition (intermittent open or short circuit) for all cylinders. (See 01-18A-2 IGNITION COIL INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair the suspected wiring harnesses.
		No	Go to the next step.
17	Inspect the spark plug condition. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> • Inspect for fuel leakage from fuel injector. Spark plug is grayish white: <ul style="list-style-type: none"> • Inspect the fuel injector for clogging.
		No	Install the spark plugs on original cylinders. Go to the next step.
18	Perform the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to spark test result.
19	Visually inspect the exhaust system part. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
20	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
21	Visually inspect for fuel leakage at the fuel injector O-ring and fuel line. Is the fuel line pressure held after the ignition is off?	Yes	Go to the next step.
		No	Inspect the fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) <ul style="list-style-type: none"> • If the fuel injector has malfunction: <ul style="list-style-type: none"> — Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].) • If the fuel injector is normal: <ul style="list-style-type: none"> — Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
22	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Switch the ignition to start. Is the engine stall now eliminated?	Yes	Inspect if the purge solenoid valve is stuck open. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Inspect the evaporative emission control system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
23	Is air leakage felt or heard at the intake air system components while racing the engine to higher speed?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
24	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
25	Inspect the variable valve timing control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Does the variable valve timing control system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
26	Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)	Yes	Inspect the valve timing. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].)
		No	Inspect for causes.
27	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle repaired, troubleshooting is completed. — If the vehicle not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.7 SLOW RETURN TO IDLE [LF, L5]

id010397801300

7	SLOW RETURN TO IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine takes more time than normal to return to idle speed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • ECT sensor No.1, No.2 malfunction • Thermostat is stuck open • Throttle body malfunction • Air leakage from intake air system

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Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
2	Access the ECT and ECT2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Start the engine and warm it up to ECT1 and ECT2 PIDs are above 90 °C {194 °F} . Does the ECT and ECT2 PIDs increasing dull at thermostat initial opening temperature? <ul style="list-style-type: none"> • Thermostat initial opening temperature: 80—84 °C {176—183 °F} 	Yes	Inspect characteristic of the ECT sensor No.1, No.2. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Thermostat operation is normal: <ul style="list-style-type: none"> • Go to the next step.
3	Is the throttle body free of contamination?	Yes	Inspect for air leakage from the intake air system components while racing the engine to higher speed. Repair or replace the malfunctioning part according to the inspection result.
		No	Clean or replace the throttle body. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [LF, L5]

id010397801400

8	ENGINE RUNS ROUGH/ROLLING IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed fluctuates between specified idle speed and lower speed, and engine shakes excessively. • Idle speed is too slow and engine shakes excessively.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Idle learning of electronic throttle control system is not completed • Electrical connector disconnection • External fuel shut off or accessory • Poor fuel quality • Fuse malfunction • Ignition wiring malfunction • Air leakage from intake air system • PCM ground circuit (1E, 1F, 1G or 1BE) malfunction • EGR valve malfunction • Improper operation of electronic throttle control system • PCM DTC is stored • MAF sensor and related wiring harness malfunction • Improper operation of A/C system • CKP sensor and teeth of crankshaft pulley malfunction • Ignition coil and related wiring harness malfunction • Spark plug malfunction • Improper operation of electronic throttle control system • Excessive fuel pressure • Fuel leakage from fuel system • Purge solenoid valve malfunction • Evaporative emission control system malfunction • CMP sensor and teeth of camshaft malfunction • EGR valve malfunction • Improper operation of variable valve timing control system • Low engine compression • PCV valve malfunction <p>Warning The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Start the engine and warm it up completely. Idle the engine for 5 min or more . Does the symptom disappear?	Yes	Symptom troubleshooting is completed (cause of this symptom is that the idle learning for electronic throttle control system is not completed).
		No	Go to the next step.
2	Verify the following: <ul style="list-style-type: none"> • Electrical connections • External fuel shut off or accessory (such as kill switch, alarm) • Fuel quality (such as proper octane, contamination, winter/summer blend) • Fuses • Ignition wiring • No air leakage from intake air system • PCM ground circuit (1E, 1F, 1G or 1BE) • Proper sealing of intake manifold and components attached to intake manifold: EGR valve • Smooth operation of throttle valve Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 2.
		No	Go to the next step.
3	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].)
		No	Go to the next step.
5	Connect the M-MDS to the DLC-2. Access the MAF PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Drive the vehicle during monitoring the PID. Is the MAF PID within the specification?	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the MAF sensor and related wiring harness. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
6	<p>Note</p> <ul style="list-style-type: none"> • The following test is for engine running at rough idle with A/C on. If other symptoms exist, go to the next step. Connect a pressure gauge to the A/C low and high pressure side lines. Start the engine and idle it. Turn the A/C switch on. Measure the low side and high side pressures. Are the pressures within the specifications? (See 07-10-6 REFRIGERANT PRESSURE CHECK.)	Yes	Go to the next step.
		No	If the A/C is always on: <ul style="list-style-type: none"> • Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].) For other symptoms: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Refrigerant charging amount — Condenser fan operation • Repair or replace the malfunctioning part according to the inspection result.
7	Visually inspect the CKP sensor and teeth of the crankshaft pulley. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
8	Inspect the ignition coil related wiring harness condition (intermittent open or short circuit) for all cylinders. Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
9	Inspect the spark plug condition. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> Inspect for fuel leakage from fuel injector. Spark plug is grayish white: <ul style="list-style-type: none"> Inspect the fuel injector for clogging.
		No	Install the spark plugs on original cylinders. Go to the next step.
10	Perform the electronic throttle control system operation inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
11	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect the fuel line for clogging. <ul style="list-style-type: none"> If there is a malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection result. If there is no malfunction: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	Visually inspect for fuel leakage at the fuel injector O-ring and fuel line. Is the fuel line pressure held after the ignition is off?	Yes	Go to the next step.
		No	Inspect the fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) <ul style="list-style-type: none"> If the fuel injector has malfunction: <ul style="list-style-type: none"> Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].) If the fuel injector is normal: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
13	Connect the M-MDS to the DLC-2. Start the engine and idle it. Access the LONGFT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Measure the LONGFT1 PID at idle. Is the PID value between -14% and +14% ?	Yes	Go to the next step.
		No	Less than specification (too rich): <ul style="list-style-type: none"> Inspect the EVAP control system. Greater than specification (too lean): <ul style="list-style-type: none"> Inspect for air leakage at the intake air system components. Repair or replace the malfunctioning part according to the inspection result. <ul style="list-style-type: none"> If the system is normal: <ul style="list-style-type: none"> Go to the next step.
14	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Switch the ignition to start. Is the engine stall now eliminated?	Yes	Inspect if the purge solenoid valve is stuck open. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Inspect the evaporative emission control system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
15	Visually inspect the exhaust system part. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
16	Visually inspect the CMP sensor and teeth of the camshaft. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
17	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
18	Inspect the variable valve timing control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
19	Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for causes.
20	Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Inspect the valve timing. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].)
21	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.9 FAST IDLE/RUNS ON [LF, L5]

id010397801500

9	FAST IDLE/RUNS ON
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed continues at fast idle after warm-up. • Engine runs after the ignition is off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ECT sensor No.1, No.2 malfunction • A/C switch malfunction • Refrigerant pressure sensor malfunction • Evaporator temperature sensor malfunction • FAN switch malfunction • Communication between climate control unit and instrument cluster • Communication between instrument cluster and PCM • CPP switch malfunction (MTX) • Neutral switch malfunction (MTX) • TR switch malfunction (ATX) • Communication between TCM and PCM (ATX) • Improper operation of electronic throttle control system • APP sensor malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Access ECT1 and ECT2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Start and warm up the engine to normal operating temperature. Are the ECT1 and ECT2 PIDs between 82—112°C {180—234°F} ?	Yes	Go to the next step.
		No	ECT1 and ECT2 PIDs are higher than 112 °C {234 °F} : <ul style="list-style-type: none"> • Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].) ECT1 and ECT2 PIDs are less than 82 °C {180 °F} : <ul style="list-style-type: none"> • Go to the symptom troubleshooting "NO.18 COOLING SYSTEM CONCERNS-RUNS COLD". (See 01-03A-67 NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [LF, L5].)

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	Connect the M-MDS to the DLC-2 Access the AC_REQ, CPP/, CPP/PNP and TR PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are PID values normal?	Yes	Go to the next step.
		No	<p>AC_REQ PID is not specified:</p> <ul style="list-style-type: none"> Inspect the A/C switch, refrigerant pressure sensor, evaporator temperature sensor and fan switch. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Inspect communication between climate control unit and instrument cluster. Inspect communication between instrument cluster and PCM. <p>CPP PID is not specified (MTX):</p> <ul style="list-style-type: none"> Inspect the CPP switch. (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].) <p>CPP/PNP PID is not specified (MTX):</p> <ul style="list-style-type: none"> Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) <p>TR PID is not specified (ATX):</p> <ul style="list-style-type: none"> Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) Inspect communication between TCM and PCM. <p>Repair or replace the malfunctioning part according to the inspection result.</p>
4	Is there air leakage felt or heard at the intake air system components while racing the engine to higher speed?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> Electronic throttle control system operation (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) APP sensor (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) <p>Repair or replace the malfunctioning part according to the inspection result.</p>
5	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.10 LOW IDLE/STALLS DURING DECELERATION [LF, L5]

id010397801600

10	LOW IDLE/STALLS DURING DECELERATION
DESCRIPTION	<ul style="list-style-type: none"> • Engine stops unexpectedly at the beginning of deceleration or recovery from deceleration.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ECT sensor No.1, No.2 malfunction • Improper operation of A/C magnetic clutch • Vacuum leakage • Air leakage from intake air system • PCM DTC is stored • Improper operation of electronic throttle control system • Improper operation of evaporative emission control system • APP sensor malfunction • TP sensor malfunction • MAF sensor malfunction • VSS malfunction • A/C switch malfunction • Refrigerant pressure sensor malfunction • Evaporator temperature sensor malfunction • FAN switch malfunction • Communication between climate control unit and instrument cluster • Communication between instrument cluster and PCM • CPP switch malfunction (MTX) • Neutral switch malfunction (MTX) • TR switch malfunction (ATX) • Communication between TCM and PCM (ATX)

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Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the engine idle roughly?	Yes	Go to the symptom troubleshooting "NO.8 ENGINE RUNS ROUGH/ROLLING IDLE". (See 01-03A-44 NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [LF, L5].)
		No	Go to the next step.
2	Turn off the A/C switch and fan switch. Does the A/C magnetic clutch engage?	Yes	Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY." (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].)
		No	Go to the next step.
3	Verify the following: <ul style="list-style-type: none"> • Proper routing of and no damage to the vacuum lines • No air leakage from the intake air system Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
4	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
5	Perform the electronic throttle control system operation inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
6	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from purge solenoid valve side. Plug the open end of the vacuum hose. Drive the vehicle. Does the engine condition improve?	Yes	Inspect the evaporative emission control system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5]) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
7	Connect the M-MDS to the DLC-2 Access the APP1, APP2, TP_REL, MAF and VSS PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are PID values normal?	Yes No	Go to the next step. APP1, APP2 PIDs are not specified: <ul style="list-style-type: none"> • Inspect the APP sensor. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) TP_REL is not specified: <ul style="list-style-type: none"> • Inspect the TP sensor. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) MAF PID is not specified: <ul style="list-style-type: none"> • Inspect the MAF sensor. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) VSS PID is not specified: <ul style="list-style-type: none"> • Inspect the VSS. (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Repair or replace the malfunctioning part according to the inspection result.
8	Connect the M-MDS to the DLC-2 Access the AC_REQ, CPP/, CPP/PNP and TR PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are PID values normal?	Yes No	Go to the next step. AC_REQ PID is not specified: <ul style="list-style-type: none"> • Inspect the A/C switch, refrigerant pressure sensor, evaporator temperature sensor and fan switch. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) • Inspect the evaporator temperature sensor. (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Inspect communication between climate control unit and instrument cluster. Inspect communication between instrument cluster and PCM. CPP PID is not specified (MTX): <ul style="list-style-type: none"> • Inspect the CPP switch. (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].) CPP/PNP PID is not specified (MTX): <ul style="list-style-type: none"> • Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) TR PID is not specified (ATX): <ul style="list-style-type: none"> • Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) Inspect communication between TCM and PCM. Repair or replace the malfunctioning part according to the inspection result.
9	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.11 ENGINE STALLS/QUITS, ENGINE RUNS ROUGH, MISSES, BUCK/JERK, HESITATION/STUMBLE, SURGES [LF, L5]

id010397801700

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11	<p>ENGINE STALLS/QUITS—ACCELERATION/CRUISE ENGINE RUNS ROUGH—ACCELERATION/CRUISE MISSES—ACCELERATION/CRUISE BUCK/JERK—ACCELERATION/CRUISE/DECELERATION HESITATION/STUMBLE—ACCELERATION SURGES—ACCELERATION/CRUISE</p>
DESCRIPTION	<ul style="list-style-type: none"> • Engine stops unexpectedly at the beginning of acceleration or during acceleration. • Engine stops unexpectedly while cruising. • Engine speed fluctuates during acceleration or cruising. • Engine misses during acceleration or cruising. • Vehicle bucks/jerks during acceleration, cruising, or deceleration. • Momentary pause at beginning of acceleration or during acceleration. • Momentary minor irregularity in engine output.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air cleaner restriction • Electrical connector disconnection • Poor fuel quality • Ignition wiring malfunction • Air leakage from intake air system • Intake air system restriction • EGR valve malfunction • Improper operation of electronic throttle control system • Vacuum leakage • PCM DTC is stored • APP sensor malfunction • TP sensor malfunction • CKP sensor and related wiring harness malfunction • MAF sensor and related wiring harness malfunction • Battery power supply circuit malfunction • VSS and related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Spark plug malfunction • Improper operation of electronic throttle control system • Exhaust system part malfunction • Excessive fuel pressure • Fuel leakage from fuel system • Improper operation of A/C control system • Improper operation of cruise control system • A/F sensor malfunction • Fuel shut- off valve malfunction • Purge solenoid valve malfunction • Evaporative emission control system malfunction • CMP sensor and teeth of camshaft malfunction • Improper operation of variable valve timing control system • EGR valve malfunction • Low engine compression • PCV valve malfunction <p>Warning The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Verify the following: <ul style="list-style-type: none"> • Air cleaner element • Electrical connections • Fuel quality (such as proper octane, contamination, winter/summer blend) • Ignition wiring • No air leakage from intake air system • No restriction of the intake air system • Proper sealing of intake manifold and components attached to intake manifold: such as EGR valve • Smooth operation of the throttle valve • Vacuum connection Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].)
		No	Go to the next step.
4	Connect the M-MDS to the DLC-2 Access the APP1, APP2, TP_REL, MAF, VPWR and VSS PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are PID values normal?	Yes	Go to the next step.
		No	APP1, APP2 PIDs are not specified: <ul style="list-style-type: none"> • Inspect if the output signal from the APP sensor changes smoothly. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) TP_REL is not specified: <ul style="list-style-type: none"> • Inspect if the output signal from the TP sensor changes smoothly. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) RPM_REL is not specified: <ul style="list-style-type: none"> • Inspect the CKP sensor and related wiring harness for vibration or an intermittent open/short circuit. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) MAF PID is not specified: <ul style="list-style-type: none"> • Inspect for an intermittent open circuit of the MAF sensor and the related wiring harness. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) VPWR PID is not specified: <ul style="list-style-type: none"> • Inspect for an intermittent open circuit. VSS PID is not specified: <ul style="list-style-type: none"> • Inspect for an intermittent open circuit in the VSS and related wiring harness. (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Repair or replace the malfunctioning part according to the inspection result.
5	Visually inspect the CKP sensor and teeth of the crankshaft pulley. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
6	Inspect the spark plug condition. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> Inspect for fuel leakage from fuel injector. Spark plug is grayish white: <ul style="list-style-type: none"> Inspect the fuel injector for clogging. Repair or replace the malfunctioning part according to the inspection result.
		No	Install the spark plugs on original cylinders. Go to the next step.
7	Perform the electronic throttle control system operation inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
8	Visually inspect the exhaust system part. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
9	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect the fuel line for clogging. <ul style="list-style-type: none"> If there is a malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection result. If there is no malfunction: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	Visually inspect for fuel leakage at the fuel injector O-ring and fuel line. Is the fuel line pressure held after the ignition is off?	Yes	Go to the next step.
		No	Inspect the fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) <ul style="list-style-type: none"> If the fuel injector has malfunction: <ul style="list-style-type: none"> Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].) If the fuel injector is normal: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
11	<p>Note</p> <ul style="list-style-type: none"> Following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. <p>Connect pressure gauges to the A/C low side and high side pressure lines. Turn the A/C on and measure the low side and high side pressures. Are the pressures within the specifications? (See 07-10-6 REFRIGERANT PRESSURE CHECK.)</p>	Yes	Go to the next step.
		No	If the A/C is always on: <ul style="list-style-type: none"> Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].) For other symptoms: <ul style="list-style-type: none"> Inspect the following: <ul style="list-style-type: none"> Refrigerant charging amount Condenser fan operation Repair or replace the malfunctioning part according to the inspection result.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
12	<p>Note</p> <ul style="list-style-type: none"> The following test should be performed for symptoms with the cruise control on. If other symptoms exist, go to the next step. <p>Inspect the cruise control system. (See 01-20A-1 CRUISE CONTROL SWITCH INSPECTION [LF, L5].) Is there any malfunction?</p>	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
13	<p>Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) Is there any malfunction?</p>	Yes	<p>Inspect for followings:</p> <ul style="list-style-type: none"> Exhaust gas leakage between exhaust manifold and A/F sensor Loose installation of A/F sensor <p>If there is no malfunction:</p> <ul style="list-style-type: none"> Replace the A/F sensor. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].) <p>If there is a malfunction:</p> <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
14	<p>Inspect the evaporative hose between the fuel tank and the purge solenoid valve. Does the fuel flow into the evaporative hose?</p>	Yes	<p>Inspect the fuel shut-off valve. (See 01-16A-11 FUEL SHUT-OFF VALVE INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.</p>
		No	Go to the next step.
15	<p>Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Switch the ignition to start. Is the engine stall now eliminated?</p>	Yes	<p>Inspect if the purge solenoid valve is stuck open. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Inspect the evaporative emission control system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.</p>
		No	Go to the next step.
16	<p>Visually inspect the CMP sensor and teeth of the camshaft. Is there any malfunction?</p>	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
17	<p>Inspect the variable valve timing control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?</p>	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
18	<p>Inspect the EGR system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?</p>	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
19	<p>Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)</p>	Yes	Go to the next step.
		No	Inspect for causes.
20	<p>Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?</p>	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> Valve timing Internal transaxle part (ATX) Clutch (MTX) EGR valve (mechanical stuck) Engine mounts Check valve (two-way) <p>Repair or replace the malfunctioning part according to the inspection result.</p>

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
21	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE [LF, L5]

id010397804800

12	LACK/LOSS OF POWER—ACCELERATION/CRUISE
DESCRIPTION	<ul style="list-style-type: none"> • Performance is poor under load (such as power down when climbing hills).
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor fuel quality • Air leakage from intake air system • Intake air system restriction • EGR valve malfunction • Vacuum leakage • PCM DTC is stored • APP sensor malfunction • TP sensor malfunction • CKP sensor and related wiring harness malfunction • MAF sensor and related wiring harness malfunction • Battery power supply circuit malfunction • VSS and related wiring harness malfunction • CKP sensor and teeth of crankshaft pulley malfunction • Spark plug malfunction <ul style="list-style-type: none"> — Fuel leakage from fuel injector — Fuel injector is clogging • Improper operation of electronic throttle control system • Exhaust system part malfunction • Excessive fuel pressure • Improper operation of variable tumble control • Improper operation of variable intake air control • Improper operation of A/C system • Purge solenoid valve malfunction • Evaporative emission control system malfunction • CMP sensor and teeth of camshaft malfunction • EGR valve malfunction • Improper operation of variable valve timing control system • Low engine compression • PCV valve malfunction <p>Warning The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Verify the following: <ul style="list-style-type: none"> • Fuel quality (such as proper octane, contamination, winter/summer blend) • No air leakage from the intake air system • No restriction of the intake air system • Proper sealing of the intake manifold and components attached to the intake manifold; such as the EGR valve • Restriction in the intake air system (such as the air cleaner element, fresh air duct) • Vacuum connection Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].)
		No	Go to the next step.
4	Connect the M-MDS to the DLC-2 Access the APP1, APP2, TP_REL, MAF, VPWR and VSS PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are PID values normal?	Yes	Go to the next step.
		No	APP1, APP2 PIDs are not specified: <ul style="list-style-type: none"> • Inspect if the output signal from the APP sensor changes smoothly. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) TP_REL is not specified: <ul style="list-style-type: none"> • Inspect if the output signal from the TP sensor changes smoothly. (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].) RPM_REL is not specified: <ul style="list-style-type: none"> • Inspect the CKP sensor and related wiring harness for vibration or an intermittent open/short circuit. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) MAF PID is not specified: <ul style="list-style-type: none"> • Inspect for an intermittent open circuit of the MAF sensor and the related wiring harness. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) VPWR PID is not specified: <ul style="list-style-type: none"> • Inspect for an intermittent open circuit. VSS PID is not specified: <ul style="list-style-type: none"> • Inspect for an intermittent open circuit in the VSS and related wiring harness. (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Repair or replace the malfunctioning part according to the inspection result.
5	Visually inspect the CKP sensor and teeth of the crankshaft pulley. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
6	Inspect the spark plug condition. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> • Inspect for fuel leakage from fuel injector. Spark plug is grayish white: <ul style="list-style-type: none"> • Inspect the fuel injector for clogging. Repair or replace the malfunctioning part according to the inspection result.
		No	Install the spark plugs on original cylinders. Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
7	Perform the electronic throttle control system operation inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
8	Visually inspect the exhaust system part. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
9	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
10	Inspect the variable tumble control operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
11	Inspect the variable intake air control operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
12	<p>Note</p> <ul style="list-style-type: none"> • Following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. <p>Connect pressure gauges to the A/C low side and high side pressure lines. Turn the A/C on and measure the low side and high side pressures. Are the pressures within the specifications? (See 07-10-6 REFRIGERANT PRESSURE CHECK.)</p>	Yes	Go to the next step.
		No	If the A/C is always on: <ul style="list-style-type: none"> • Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].) For other symptoms: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Refrigerant charging amount — Condenser fan operation • Repair or replace the malfunctioning part according to the inspection result.
13	Inspect the A/C cut-off operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Inspect the A/C cut-off system components. Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
14	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Switch the ignition to start. Is the engine stall now eliminated?	Yes	Inspect if the purge solenoid valve is stuck open. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Inspect the evaporative emission control system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
15	Visually inspect the CMP sensor and teeth of the camshaft. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
16	Inspect the EGR system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
17	Inspect the variable valve timing control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
18	Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for causes.
19	Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Inspect the following: <ul style="list-style-type: none"> • Valve timing • Internal transaxle part (ATX) • Clutch (MTX) • Brake system for dragging Repair or replace the malfunctioning part according to the inspection result.
20	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.13 KNOCKING/PINGING-ACCELERATION/CRUISE [LF, L5]

id010397812100

13	KNOCKING/PINGING—ACCELERATION/CRUISE
DESCRIPTION	<ul style="list-style-type: none"> • Sound is produced when air/fuel mixture is ignited by something other than spark plug (such as hot spot in combustion chamber).
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Engine overheating due to cooling system malfunction • ECT sensor No.1 malfunction • IAT sensor malfunction • MAF sensor malfunction • PCM DTC is stored • Low engine compression • Excessive fuel pressure • KS malfunction <p>Warning The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Access the ECT1 PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Verify ECT1 PID is less than 116°C {241°F} during driving. Is the ECT1 PID less than the specification?	Yes	Go to the next step.
		No	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03A-64 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5].)
2	Connect the M-MDS to the DLC-2. Access the IAT and MAF PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	IAT PID is not specified: <ul style="list-style-type: none"> Inspect IAT sensor. (See 01-40A-25 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [LF, L5].) MAF PID is not specified: <ul style="list-style-type: none"> Inspect MAF sensor. (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
3	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for cause.
5	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect the fuel line for clogging. <ul style="list-style-type: none"> If there is a malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection result. If there is no malfunction: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	Inspect the KS. (See 01-40A-33 KNOCK SENSOR (KS) INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the KS. (See 01-40A-33 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect ignition timing. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
7	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

01-03A

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.14 POOR FUEL ECONOMY [LF, L5]

id010397802000

14	POOR FUEL ECONOMY
DESCRIPTION	<ul style="list-style-type: none"> • Fuel economy is unsatisfactory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Contaminated air cleaner element • Improper ATF level (ATX) • Brake dragging • Clutch slippage (MTX) • Improper coolant level • Poor fuel quality • PCM DTC is stored • Engine cooling system malfunction • Spark plug malfunction • Excessive fuel pressure • Improper operation of variable tumble control • Improper operation of variable valve timing control system • Improper operation of variable valve intake air control • Exhaust system clogging • Contaminated MAF sensor • Low engine compression • PCV valve malfunction <p>Warning The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read following warnings before servicing fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Air cleaner element for contamination • ATF level (ATX) • Brake dragging • Clutch slippage (MTX) • Coolant level • Fuel quality Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	Access the ECT1 and ECT2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Drive the vehicle while monitoring the PID. Are the PIDs within specification? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for coolant leakage, and inspect the cooling fan and condenser fan operations or and inspect the thermostat operation. Repair or replace the malfunctioning part according to the inspection result.
4	Perform the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
5	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
6	Inspect the variable tumble control operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
7	Inspect the variable valve timing control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
8	Inspect the variable intake air control operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
9	Visually inspect the exhaust system parts. Are there any deformed exhaust system parts?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
10	Inspect the MAF sensor for contamination. Is there any contamination?	Yes	Replace the MAF/IAT sensor. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
11	Is the engine compression correct? (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for causes.
12	Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect the valve timing. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
13	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [LF, L5]

NO.15 EMISSION COMPLIANCE [LF, L5]

id010397802100

15	EMISSION COMPLIANCE
DESCRIPTION	<ul style="list-style-type: none"> • Fails emissions test.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Electrical connector disconnection • Intake air system and air cleaner element malfunction • Vacuum lines leakage or blockage • PCM DTC is stored • Cooling system malfunction • Fuel-filler cap malfunction • A/F sensor malfunction • Spark plug malfunction • Erratic or no signal from CMP sensor • Excessive fuel pressure • Charcoal canister malfunction • Exhaust system clogging • TWC malfunction • EGR system malfunction • PCV valve malfunction <p>Warning The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read following warnings before servicing fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following: <ul style="list-style-type: none"> • Electrical connections • Intake air system and air cleaner element concerns: obstructions, leakage or soiling • Proper maintenance schedule followed • Vacuum lines for leakage or blockage Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
3	Is any other driveability concern present?	Yes	Go to the appropriate symptom troubleshooting. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].)
		No	Go to the next step.
4	Access the ECT1 and ECT2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Drive the vehicle while monitoring the PID. Are the PIDs within specification? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Inspect for coolant leakage, and inspect the cooling fan and condenser fan operations or and inspect the thermostat operation. Repair or replace the malfunctioning part according to the inspection result.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
5	Inspect the fuel-filler cap. (See 01-16A-5 FUEL-FILLER CAP INSPECTION [LF, L5].) Is there any leakage at the fuel-filler cap?	Yes	Replace the fuel-filler cap.
		No	Go to the next step.
6	Inspect the A/F sensor. (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].) Is there any malfunction?	Yes	Inspect for followings: <ul style="list-style-type: none"> • Exhaust gas leakage between exhaust manifold and A/F sensor • Loose installation of A/F sensor If there is no malfunction: <ul style="list-style-type: none"> • Replace the A/F sensor. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].) If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
7	Perform the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
8	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
9	Inspect for fuel saturation inside the charcoal canister. Is there an excess amount of liquid fuel present in canister?	Yes	Replace the charcoal canister. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect the fuel tank vent system, then go to the next step. (See 01-14A-12 FUEL TANK INSPECTION [LF, L5].)
10	Visually inspect the exhaust system parts. Are there any deformed exhaust system parts?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
11	Inspect the TWC. (See 01-15A-1 EXHAUST SYSTEM INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the TWC. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
12	Inspect the EGR system. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect the cause.
13	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [LF, L5]

NO.16 HIGH OIL CONSUMPTION/LEAKAGE [LF, L5]

id010397802200

16	HIGH OIL CONSUMPTION/LEAKAGE
DESCRIPTION	<ul style="list-style-type: none"> • Oil consumption is excessive.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper dipstick • Improper engine oil viscosity • PCV valve malfunction • Engine internal parts malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • External leakage • Proper dipstick • Proper engine oil viscosity Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Inspect the internal engine parts such as valves, valve guides, valve stem seals, cylinder head drain passage, and piston rings. Repair or replace the malfunctioning part according to the inspection result.
3	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [LF, L5]

id010397802300

17	COOLING SYSTEM CONCERNS—OVERHEATING
DESCRIPTION	<ul style="list-style-type: none"> • Engine runs at higher than normal temperature/overheats.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Radiator hoses damage • Coolant leakage • Improper coolant level • Fans reverse rotation • Fuse malfunction • Coolant overflow system malfunction • Poor radiator condition • Improper or damaged radiator cap • Improper water/anti-freeze mixture • PCM, climate control unit, instrument cluster or multi information display DTC is stored • Improper operation of A/C system <ul style="list-style-type: none"> — Climate control unit malfunction (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal) — Instrument cluster malfunction (does not receive A/C request signal from climate control unit or transmit it to PCM) — Communication error between PCM and instrument cluster — Communication error between instrument cluster and climate control unit (Full-auto air conditioner) — Short to ground circuit between instrument cluster terminal 2I and climate control unit terminal 2P (Manual air conditioner) • Improper operation of cooling fan control system • Improper tension of drive belt • Leakage around heater unit • Leakage at coolant hoses and/or radiator • Thermostat malfunction

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following: <ul style="list-style-type: none"> • Collapsed or restricted radiator hoses • Coolant leakage • Engine coolant level • Fan rotational direction • Fuses • Overflow system • Radiator condition • Radiator pressure cap • Water and anti-freeze mixture Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 1.
		No	Go to the next step.
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM, climate control unit, instrument cluster and multi information display DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 07-02-4 DTC DISPLAY.) (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 07-02-5 DTC TABLE.) (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	Go to the next step.
3	Start the engine and idle it. Turn the A/C switch on and set the blower fan to any speed. Does the magnetic clutch engage?	Yes	Go to Step 11.
		No	Inspect the following: <ul style="list-style-type: none"> • Refrigerant charging amount • Open circuit in the wiring harness between the A/C relay and PCM terminal 1I • Seized A/C magnetic clutch • A/C magnetic clutch Repair or replace the malfunctioning part according to the inspection result. <ul style="list-style-type: none"> • If all items are normal: — Go to the next step.
4	Access the PCM PID AC_REQ using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Start the engine and idle it. Monitor the AC_REQ PID while turning on and off the air conditioner by switching the control panel. Does the PID change according to air control panel switching? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to Step 11.
		No	Manual air conditioner: <ul style="list-style-type: none"> • Go to Step 8. Full-auto air conditioner: <ul style="list-style-type: none"> • Go to the next step.
5	Verify the multi information display indication of A/C system while turning on and off the air conditioner by switching the control panel. Does the multi information display indicate properly?	Yes	Replace the instrument cluster (instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	Inspect the multi information display. (See 09-22-19 MULTI INFORMATION DISPLAY INSPECTION.) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
7	Access climate control unit PIDs EVAP_TEMP and AC_PRES using the M-MDS. (See 07-02-22 PID/DATA MONITOR DISPLAY.) Monitor the EVAP_TEMP and AC_PRES PIDs while turning on and off the air conditioner by switching the control panel. Is the PIDs normal? (See 07-02-22 PID/DATA MONITOR TABLE.)	Yes	Replace the climate control unit (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal). (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Repair or replace the malfunctioning part according to the inspection result.

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SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
8	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Start the engine and idle it. Measure the voltage at the climate control unit terminal 2P while turning on and off the air conditioner by switching the control panel. Is the voltage change in specified according to air control panel switching? (See 01-40A-8 PCM INSPECTION [LF, L5].) • Specification — Turn on the A/C: Below 1 V — Turn off the A/C: Approx. 5 V	Yes	Replace the instrument cluster (instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	Inspect for following part and related harness: • Refrigerant pressure sensor (climate control unit terminal 1H) • Evaporator temperature sensor (climate control unit terminal 1C) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
10	Inspect for open or short circuit between climate control unit terminal 2P (wiring harness-side) and instrument cluster terminal 2I (wiring harness-side). Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the climate control unit (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal.). (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
11	Inspect the cooling fan control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
12	Inspect the drive belt. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
13	Inspect the leakage around the heater unit in the passenger compartment. Is there any leakage?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
14	Inspect the leakage at the coolant hoses and/or radiator. Is there any leakage?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
15	Cool down the engine. Remove thermostat and inspect operation. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].) (See 01-12A-12 THERMOSTAT INSPECTION [LF, L5].) Is there any malfunction?	Yes	Access the ECT1 and ECT2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Inspect both the ECT1 and ECT2 PIDs and the low engine coolant temperature indicator light condition. • If the low engine coolant temperature indicator light on the instrument cluster indicates turned off but the ECT1 and ECT2 PIDs are not the same as the low engine coolant temperature indicator light condition: — Inspect the ECT sensor No.1, No.2. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • If the low engine coolant temperature indicator light indication on the instrument cluster illuminates but the ECT1 and ECT2 PIDs are normal: — Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection result.
		No	The engine coolant temperature and thermostat are normal, inspect engine block for leakage or blockage.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
16	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

01-03A

NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [LF, L5]

id010397802400

18	COOLING SYSTEM CONCERNS—RUNS COLD
DESCRIPTION	<ul style="list-style-type: none"> • Engine does not reach normal operating temperature.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/C and heater system malfunction • Thermostat malfunction • Improper operation of cooling fan control system

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is the customer complaint "Lack of passenger compartment heat" only?	Yes	Inspect A/C and heater system. Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
2	Does the engine speed continue at fast idle?	Yes	Go to the symptom troubleshooting "NO.9 FAST IDLE/RUNS ON". (See 01-03A-47 NO.9 FAST IDLE/RUNS ON [LF, L5].)
		No	Go to the next step.
3	Cool down the engine. Remove the thermostat and inspect operation. (See 01-12A-11 THERMOSTAT REMOVAL/ INSTALLATION [LF, L5].) (See 01-12A-12 THERMOSTAT INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the thermostat. (See 01-12A-11 THERMOSTAT REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
4	Inspect the cooling fan control system operation. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Access the ECT1 and ECT2 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Inspect both the ECT1 and ECT2 PIDs and the low engine coolant temperature indicator light condition. <ul style="list-style-type: none"> • If the low engine coolant temperature indicator light on the instrument cluster indicates turned off but the ECT1 and ECT2 PIDs are not the same as the low engine coolant temperature indicator light condition: <ul style="list-style-type: none"> — Inspect the ECT sensor No.1, No.2. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) • If the low engine coolant temperature indicator light indication on the instrument cluster illuminates but the ECT1 and ECT2 PIDs are normal: <ul style="list-style-type: none"> — Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection result.
5	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace PCM. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.19 EXHAUST SMOKE [LF, L5]

id010397803900

19	EXHAUST SMOKE
DESCRIPTION	<ul style="list-style-type: none"> • Blue, black, or white smoke from exhaust system.
POSSIBLE CAUSE	<p>Blue smoke (Burning oil):</p> <ul style="list-style-type: none"> • PCV valve malfunction • Engine internal oil leakage <p>White smoke (Water in combustion):</p> <ul style="list-style-type: none"> • Cooling system malfunction (coolant loss) • Engine internal coolant leakage <p>Black smoke (Rich fuel mixture):</p> <ul style="list-style-type: none"> • Air cleaner restriction • Intake air system is collapsed or restricted • Fuel return line is restricted • PCM DTC is stored • Excessive fuel pressure • CMP sensor malfunction • Ignition system malfunction <p>Warning</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read following warnings before servicing fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	What color is the smoke coming from the exhaust system?	Blue	Burning oil is indicated: <ul style="list-style-type: none"> • Go to the next step.
		White	Water in the combustion is indicated: <ul style="list-style-type: none"> • Go to Step 3.
		Black	Rich fuel mixture is indicated: <ul style="list-style-type: none"> • Go to Step 4.
2	Inspect the PCV valve. (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the PCV valve and the oil separator as a single unit, then go to the next step. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [LF, L5].)
		No	Inspect the following: <ul style="list-style-type: none"> • Blocked oil drain passage in the cylinder head • Damaged cylinder bore • Damaged valve guide, stems or valve seals • Piston ring is not seated, seized or worn. Repair or replace the malfunctioning part according to the inspection result. <ul style="list-style-type: none"> • If other drivability symptoms are present: <ul style="list-style-type: none"> — Return to the diagnostic index to service any additional symptoms.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
3	Does the cooling system hold pressure?	Yes	Inspect the following: <ul style="list-style-type: none"> • Cracked or porous engine block • Cylinder head gasket leakage • Intake manifold gasket leakage If other drivability symptoms are present: <ul style="list-style-type: none"> • Return to the diagnostic index to service any additional symptoms.
		No	Inspect for cause.
4	Inspect the following: <ul style="list-style-type: none"> • Air cleaner restriction • Collapsed or restricted intake air system • Restricted fuel return line Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 4.
		No	Go to the next step.
5	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
6	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
7	Perform the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible at each cylinder?	Yes	Inspect the CMP sensor. (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Repair or replace the malfunctioning part according to the inspection result.
8	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [LF, L5]

NO.20 FUEL ODOR (IN ENGINE COMPARTMENT) [LF, L5]

id010397802600

20	FUEL ODOR (IN ENGINE COMPARTMENT)
DESCRIPTION	<ul style="list-style-type: none"> • Gasoline fuel smell or visible leakage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Excessive fuel pressure • Fuel leakage from fuel system • Fuel tank vent system blockage • Purge solenoid valve malfunction • PCM DTC is stored • Charcoal canister malfunction <p>Warning The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read following warnings before servicing fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
2	Visually inspect for fuel leakage at the fuel injector O-ring and fuel line. Is the fuel line pressure held after the ignition is off?	Yes	Go to the next step.
		No	Inspect the fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) <ul style="list-style-type: none"> • If the fuel injector has malfunction: <ul style="list-style-type: none"> — Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].) • If the fuel injector is normal: <ul style="list-style-type: none"> — Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
3	Inspect for blockage/restriction or an open circuit in the wiring harness between the engine vacuum port and the charcoal canister. Inspect for blockage in the fuel tank vent system. Is there any malfunction?	Yes	Replace the vacuum hose.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
4	Inspect the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Inspect the charcoal canister for fuel saturation. <ul style="list-style-type: none"> • If an excess amount of liquid fuel is present: <ul style="list-style-type: none"> — Replace the charcoal canister. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].)
6	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.21 ENGINE NOISE [LF, L5]

id010397802700

21	ENGINE NOISE
DESCRIPTION	<ul style="list-style-type: none"> • Engine noise from under hood.
POSSIBLE CAUSE	<p>Squeal, click or chirp noise:</p> <ul style="list-style-type: none"> • Improper engine oil level • Improper drive belt tension • Generator mis-installation • Splash shield or under cover looseness (splashed water to drive belts) <p>Rumble or grind noise:</p> <ul style="list-style-type: none"> • Improper drive belt tension <p>Rattle sound noise:</p> <ul style="list-style-type: none"> • Loose parts <p>Hiss sound noise:</p> <ul style="list-style-type: none"> • Air leakage from intake air system • Loose spark plug • Vacuum leakage <p>Rap or roar noise:</p> <ul style="list-style-type: none"> • Dynamic dumper looseness • Exhaust system looseness • Intake air system looseness <p>Other noise:</p> <ul style="list-style-type: none"> • Tappet noise • Timing chain noise

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is a squealing, click or chirping sound present?	Yes	Inspect the following: <ul style="list-style-type: none"> • Engine oil level • Drive belt tension • Generator installation • Splash shield or under cover looseness Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
2	Is a rumbling or grinding noise present?	Yes	Inspect the drive belt tension. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
3	Is a rattling noise present?	Yes	Inspect the rattling location for loose parts. Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
4	Is a hissing noise present?	Yes	Inspect the following: <ul style="list-style-type: none"> • Intake air system leakage • Spark plug looseness • Vacuum leakage Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
5	Is a rapping or roar noise present?	Yes	Inspect for looseness in the following: <ul style="list-style-type: none"> • Dynamic dumper • Exhaust system • Intake air system Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
6	Is a knocking noise present?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING-ACCELERATION/CRUISE". (See 01-03A-58 NO.13 KNOCKING/PINGING-ACCELERATION/CRUISE [LF, L5].)
		No	If the noise comes from inside the engine: <ul style="list-style-type: none"> • Inspect the tappet noise. • Repair or replace the malfunctioning part according to the inspection result.
7	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.22 VIBRATION CONCERNS (ENGINE) [LF, L5]

id010397802800

22	VIBRATION CONCERNS (ENGINE)
DESCRIPTION	<ul style="list-style-type: none"> • Vibration from under hood or driveline.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Loose attaching bolts or worn parts • Components malfunction such as worn parts

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following components for loose attaching bolts or worn parts: <ul style="list-style-type: none"> • Cooling fan • Drive belt and pulleys • Engine mounts • Exhaust system mounts • Generator Is there any malfunction?	Yes	Readjust or retighten engine mount installation position. Repair or replace the malfunctioning part if necessary for other parts.
		No	Inspect the following systems: <ul style="list-style-type: none"> • Wheels • ATX • MTX • Driveline • Suspension Repair or replace the malfunctioning part according to the inspection result.
2	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.23 A/C DOES NOT WORK SUFFICIENTLY [LF, L5]

id010397802900

23	A/C DOES NOT WORK SUFFICIENTLY
DESCRIPTION	<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not engage when A/C is turned on.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM, climate control unit, instrument cluster or multi information display DTC is stored • Refrigerant pressure sensor malfunction • Improper refrigerant charging amount • Seized A/C compressor • Evaporator temperature sensor malfunction • Open or short circuit in wiring harness between evaporator temperature sensor and climate control unit (Full-auto air conditioner) • Instrument cluster malfunction (Does not receive A/C request signal from climate control unit or transmit it to PCM) • Multi information display malfunction • Climate control unit malfunction (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal) • Open or short circuit in wiring harness between climate control unit terminal 2P and instrument cluster terminal 2I (Manual air conditioner) • A/C compressor malfunction • Open circuit in wiring harness between A/C compressor terminal A and body ground • A/C relay malfunction • Open circuit in wiring harness between A/C relay and PCM terminal 11 • Open circuit in wiring harness between ignition switch (IG2) and A/C relay (vehicles without advanced keyless entry and push button start system) • Open circuit in wiring harness between IG2 relay and A/C relay (vehicles with advanced keyless entry and push button start system) • Open circuit in wiring harness between battery positive terminal and A/C relay • Open circuit in wiring harness between A/C relay and A/C magnetic clutch

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Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM, climate control unit, instrument cluster and multi information display DTC inspection. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 07-02-4 DTC DISPLAY.) (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 07-02-5 DTC TABLE.) (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	Go to the next step.
2	Access the PCM PID ACCS using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Start the engine and idle it. Turn the PCM PID ACCS to ON from OFF using the M-MDS simulation function. Is the A/C magnetic clutch engaged?	Yes	Manual air conditioner: <ul style="list-style-type: none"> • Go to Step 4. Full-auto air conditioner: <ul style="list-style-type: none"> • Go to the next step.
		No	Go to Step 13.
3	Access the climate control unit PID AC_PRES using the M-MDS. (See 07-02-22 PID/DATA MONITOR DISPLAY.) Monitor the climate control unit AC_PRES PID while turning on and off the air conditioner by switching the control panel. Is the PID normal? (See 07-02-22 PID/DATA MONITOR TABLE.)	Yes	Go to Step 6.
		No	Go to Step 5.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
4	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Measure the voltage at the climate control unit terminal 1H (wiring harness-side). Is the voltage normal? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)	Yes	Go to Step 7.
		No	Go to the next step.
5	Inspect the refrigerant pressure sensor. (See 07-40B-16 REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is there any malfunction?	Yes	Replace the refrigerant pressure sensor. (See 07-40B-15 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40A-24 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect the following: <ul style="list-style-type: none"> • Refrigerant charging amount • A/C compressor for seizure Repair or replace the malfunctioning part according to the inspection result.
6	Access the climate control unit PID EVAP_TEMP using the M-MDS. (See 07-02-22 PID/DATA MONITOR DISPLAY.) Monitor the climate control unit PID EVAP_TEMP while turning on and off the air conditioner by switching the control panel. Is the PID normal? (See 07-02-22 PID/DATA MONITOR TABLE.)	Yes	Go to Step 9.
		No	Go to Step 8.
7	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Measure the voltage at the climate control unit terminal 1C (wiring harness-side). Is the voltage normal? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)	Yes	Go to Step 11.
		No	Go to the next step.
8	Inspect the evaporator temperature sensor. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is there any malfunction?	Yes	Replace the evaporator temperature sensor. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect for open or short circuit between evaporator temperature sensor and climate control unit. Repair or replace the suspected wiring harness.
9	Verify the multi information display indication of A/C system while turning on and off the air conditioner by switching the control panel. Does the multi information display indicate properly?	Yes	Replace the instrument cluster (instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	Inspect the multi information display. (See 09-22-19 MULTI INFORMATION DISPLAY INSPECTION.) Is there any malfunction?	Yes	Replace the multi information display. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Replace the climate control unit (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal). (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
11	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Start the engine and idle it. Measure the voltage at the climate control unit terminal 2P (wiring harness-side) while turning on and off the air conditioner by switching the control panel. Is the voltage change in specified according to air control panel switching? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) <ul style="list-style-type: none"> • Specification: <ul style="list-style-type: none"> — Turn on the A/C: Below 1.0 V — Turn off the A/C: Approx. 5 V 	Yes	Replace the instrument cluster (instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
12	Inspect for open or short circuit between climate control unit terminal 2P (wiring harness-side) and instrument cluster terminal 2I (wiring harness-side). Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the climate control unit (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal). (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
13	Start the engine and idle it. Turn the PCM PID ACCS to ON from OFF using the M-MDS simulation function. Measure the voltage at the A/C compressor terminal B (wiring harness-side). Is the voltage specified? <ul style="list-style-type: none"> • Specification: <ul style="list-style-type: none"> — 10.5 V or more 	Yes	Go to the next step.
		No	Go to Step 15.
14	Inspect for continuity between A/C compressor terminal A (wiring harness-side) and body ground. Is there continuity?	Yes	Replace the A/C compressor. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No	Repair or replace the suspected wiring harness.
15	Inspect the A/C relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction?	Yes	Replace the A/C relay.
		No	Go to the next step.
16	Switch the ignition to off. Disconnect the A/C relay and PCM connectors. Inspect for continuity between A/C relay and PCM terminal 1I (wiring harness-side). Is there continuity?	Yes	Inspect for open circuit between the following: <ul style="list-style-type: none"> • Ignition switch (IG2) and A/C relay (vehicles without advanced keyless entry and push button start system) • IG2 relay and A/C relay (vehicles with advanced keyless entry and push button start system) • Battery positive terminal and A/C relay • A/C relay and A/C magnetic clutch
		No	Repair or replace the suspected wiring harness.
17	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

01-03A

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5]

id010397803000

24	A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY
DESCRIPTION	<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM, instrument cluster or climate control unit DTC is stored • Short to power supply in wiring harness between A/C relay and magnetic clutch • A/C compressor magnetic clutch engagement is stuck • A/C relay malfunction • Short to ground in wiring harness between A/C relay and PCM • Short to ground in wiring harness between climate control unit terminal 2P and instrument cluster (Manual air conditioner) • Climate control unit malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM, instrument cluster and climate control unit DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	Go to the next step.
2	Start the engine and idle it. Turn the A/C switch on with blower switch is on. Remove the A/C relay. Does the A/C magnetic clutch disengage?	Yes	Go to Step 4.
		No	Go to the next step.
3	Switch the ignition to off. Disconnect the A/C compressor connector. Switch the ignition to ON. Measure the voltage at A/C compressor terminal B. Is the voltage B+?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the A/C compressor (A/C magnetic clutch engagement is stuck). (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
4	Inspect the A/C relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction?	Yes	Replace the relay.
		No	Go to the next step.
5	Access the ACCS PID using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Start the engine and idle it. Turn the A/C switch on and off with blower switch is on. Is the PID value always ON?	Yes	Manual air conditioner: <ul style="list-style-type: none"> • Go to the next step. Full-auto air conditioner: <ul style="list-style-type: none"> • Replace the climate control unit (A/C switch signal is always on). (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect for short to ground in wiring harness between PCM terminal 11 and A/C relay. Repair or replace the malfunctioning part according to the inspection result.
6	Switch the ignition to off. Disconnect the instrument cluster and climate control unit connectors. Inspect for continuity between climate control unit terminal 2P (wiring harness-side) and body ground. Is there continuity?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the climate control unit (A/C switch signal is always on). (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
7	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.25 A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS [LF, L5]

id010397803100

25	A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS
DESCRIPTION	<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage under wide open throttle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • APP sensor malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the A/C compressor disengage when the A/C switch is turned off?	Yes	Go to the next step.
		No	Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03A-76 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [LF, L5].)
2	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Inspect the APP sensor. (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection result.
3	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.26 EXHAUST SULPHUR SMELL [LF, L5]

id010397803200

26	EXHAUST SULPHUR SMELL
DESCRIPTION	<ul style="list-style-type: none"> • Rotten egg smell (sulphur) from exhaust.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Electrical connector disconnection • Poor fuel quality • Vacuum leakage • PCM DTC is stored • Improper fuel pressure • Charcoal canister malfunction <p>Warning The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read following warnings before servicing fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [LF, L5]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Are any drivability or exhaust smoke concerns present?	Yes	Go to the appropriate flow chart.
		No	Go to the next step.
2	Inspect the following: <ul style="list-style-type: none"> • Electrical connections • Fuel quality • Vacuum lines Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 2.
		No	Go to the next step.
3	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
4	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
5	Inspect the charcoal canister for fuel saturation. Is an excess amount of liquid fuel present in the canister?	Yes	Replace the charcoal canister. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect the fuel tank vent system. <ul style="list-style-type: none"> • If the fuel tank vent system is normal: <ul style="list-style-type: none"> — Suggest trying a different brand since the sulfur content can vary in different fuels. • If the fuel tank vent system is not normal: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection result.
6	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.27 FUEL REFILL CONCERNS [LF, L5]

id010397803300

27	FUEL REFILL CONCERNS
DESCRIPTION	<ul style="list-style-type: none"> • Fuel tank does not fill smoothly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Nonreturn valve malfunction • Improper use of fuel nozzle • Inadequate fuel filling speed <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE REPAIR PROCEDURE” and “AFTER REPAIR PROCEDURE” described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
2	Remove the fuel-filler pipe. Make sure nonreturn valve is installed properly. Inspect the nonreturn valve operation. Is there any malfunction?	Yes	Nonreturn valve is installed improperly: <ul style="list-style-type: none"> • Reinstall the nonreturn valve to proper position. Nonreturn valve does not operate properly: <ul style="list-style-type: none"> • Replace the nonreturn valve.
		No	Inspect the following: <ul style="list-style-type: none"> • Improper use of fuel nozzle • Inadequate fuel filling speed Repair or replace the malfunctioning part according to the inspection result.
3	Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.28 FUEL FILLING SHUT OFF CONCERNS [LF, L5]

id010397912000

28	FUEL FILLING SHUT OFF CONCERNS
DESCRIPTION	<ul style="list-style-type: none"> • Fuel does not shut off properly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Nonreturn valve malfunction • Fuel nozzle is not inserted correctly • Fuel nozzle malfunction • Fuel shut-off valve malfunction <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE REPAIR PROCEDURE” and “AFTER REPAIR PROCEDURE” described in this manual. <p style="margin-left: 40px;">(See01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)</p> <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Connect the M-MDS to the DLC-2. Switch the ignition to ON (engine off). Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present?	Yes	Go to the appropriate DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
2	Remove the fuel-filler pipe. Make sure nonreturn valve is installed properly. Inspect the nonreturn valve operation. Is there any malfunction?	Yes	Nonreturn valve is installed improperly: <ul style="list-style-type: none"> • Reinstall the nonreturn valve to proper position. Nonreturn valve does not operate properly: <ul style="list-style-type: none"> • Replace the nonreturn valve.
		No	Inspect for the following: <ul style="list-style-type: none"> • Fuel is not inserted correctly • Improper use of fuel nozzle • Inspect fuel shut-off valve. Repair or replace the malfunctioning part according to the inspection result.
3	Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [LF, L5]

NO.29 SPARK PLUG CONDITION [LF, L5]

id010397803600

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29	SPARK PLUG CONDITION
DESCRIPTION	<ul style="list-style-type: none"> • Incorrect spark plug condition.
POSSIBLE CAUSE	<p>Note</p> <ul style="list-style-type: none"> • Inspecting the spark plug conditions can determine whether a problem is related to a specific cylinder or possibly all cylinders. <p>Wet/carbon stuck on specific plug:</p> <ul style="list-style-type: none"> • Spark—Weak, not visible • Air/fuel mixture—Excessive fuel injection volume • Compression—No compression, low compression • Malfunction spark plug <p>Grayish white with specific plug:</p> <ul style="list-style-type: none"> • Air/fuel mixture—Insufficient fuel injection volume • Malfunction spark plug <p>Wet/carbon is stuck on all plugs:</p> <ul style="list-style-type: none"> • Spark—Spark weak • Air/fuel mixture—Too rich • Compression—Low compression • Clogging in intake/exhaust system <p>Grayish white with all plugs:</p> <ul style="list-style-type: none"> • Air/fuel mixture—Too lean <p>Warning</p> <p>The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].) (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and the quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Remove all spark plugs. Inspect the spark plug. (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].) Is there any malfunction?	Yes	Symptom troubleshooting completed.
		No	Specific plug is wet or covered with carbon: <ul style="list-style-type: none"> • Go to the next step. Specific plug looks grayish white: <ul style="list-style-type: none"> • Go to Step 7. All plugs are wet or covered with carbon: <ul style="list-style-type: none"> • Go to Step 9. All plugs look grayish white: <ul style="list-style-type: none"> • Go to Step 15.
2	Are the spark plugs wet/covered with carbon from the engine oil?	Yes	Inspect all areas related to oil, working up and down.
		No	Go to the next step.
3	Inspect the spark plugs for the following: <ul style="list-style-type: none"> • Air gap • Cracked insulator • Heat range • Worn electrode Is there any malfunction?	Yes	Replace the spark plug. (See 01-18A-3 SPARK PLUG REMOVAL/ INSTALLATION [LF, L5].)
		No	Go to the next step.
4	Inspect the compression pressure at the suspected malfunctioning cylinder. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
5	Install all spark plugs. Perform the spark test at the suspected malfunctioning cylinder. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible (compare with normal cylinder)?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
6	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Inspect fuel injector for the following: <ul style="list-style-type: none"> • Injection volume • Leakage • Open or short circuit in injector Repair or replace the malfunctioning part according to the inspection result.
7	Inspect the spark plug for the following: <ul style="list-style-type: none"> • Air gap • Heat range Is there any malfunction?	Yes	Replace the spark plug. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
8	Perform the fuel injector operation inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
9	Is the air cleaner element free of clogging?	Yes	Go to the next step.
		No	Replace the air cleaner element.
10	Perform the spark test. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
11	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	RESULTS	ACTION
12	Access the following PIDs using the M-MDS: <ul style="list-style-type: none"> • ECT1 • ECT2 • O2S11 (When engine can be started) • O2S12 (When engine can be started) • MAF (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
13	Perform the purge control inspection when the engine can be started. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
14	Perform the compression inspection. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Visually inspect for deformed exhaust system parts. Repair or replace the malfunctioning part according to the inspection result.
15	If the engine cannot be started: <ul style="list-style-type: none"> • Inspect the intake air system for air leakage. If the engine can be started: <ul style="list-style-type: none"> • Perform the intake manifold vacuum inspection. Is air sucked in from intake air system?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
16	Inspect the fuel line pressure. (See 01-14A-6 FUEL LINE PRESSURE INSPECTION [LF, L5].) Is there any malfunction?	Yes	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect the fuel line for clogging. <ul style="list-style-type: none"> — If there is a malfunction: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection result. — If there is no malfunction: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.
17	Access the following PIDs using the M-MDS: <ul style="list-style-type: none"> • ECT1 • ECT2 • O2S11 (When engine can be started) • O2S12 (When engine can be started) • MAF (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are the PIDs normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Inspect PCM ground condition. Repair or replace the malfunctioning part according to the inspection result.
		No	Repair or replace the malfunctioning part according to the inspection result.
18	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].) — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [LF, L5]

INTERMITTENT CONCERN TROUBLESHOOTING [LF, L5]

id010397800400

Vibration Method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the steps below.

Note

- There are several reasons why the vehicle or engine vibration could cause an electrical malfunction. Inspect the following:
 - Connectors not fully seated
 - Wiring harnesses not having full play
 - Wiring harnesses laying across brackets or moving parts
 - Wiring harnesses routed too close to hot parts
- An improperly routed, improperly clamped, or loose wiring harness can cause a wiring harness to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass such as through the firewall and body panels are the major areas to be checked.

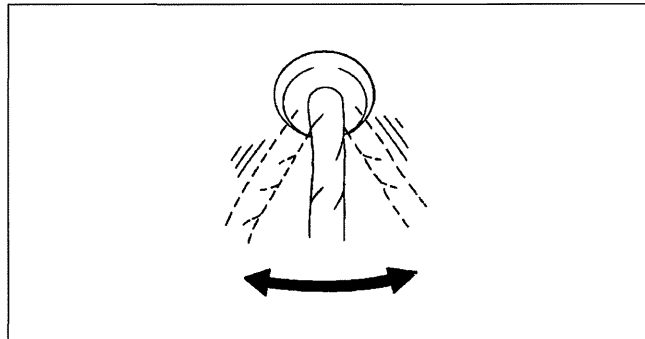
Inspection Method for Switch Connectors or Wiring Harnesses

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps during idle.

3. Access PIDs for the switch you are inspecting.
4. Turn the switch on manually.
5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.
 - If PID value is unstable, inspect for poor connection.



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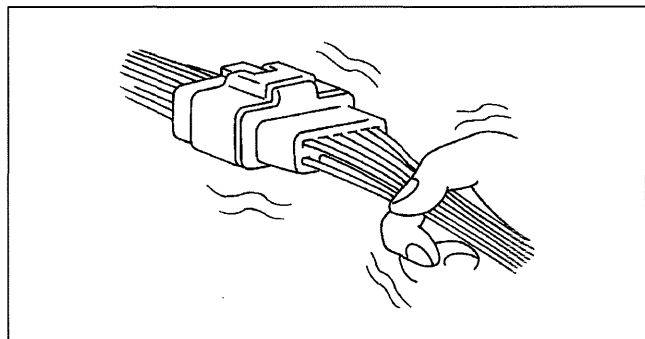
Inspection Method for Sensor Connectors or Wiring Harnesses

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps during idle.

3. Access PIDs for the switch you are inspecting.
4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.
 - If PID value is unstable, inspect for poor connection.



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SYMPTOM TROUBLESHOOTING [LF, L5]

Inspection Method for Sensors

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps during idle.

3. Access PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.
 - If PID value is unstable or malfunction occurs, check for poor connection or poorly mounted sensor or both.

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Inspection Method for Actuators or Relays

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

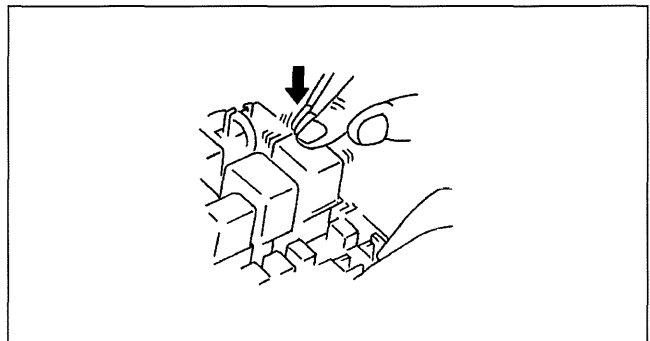
Note

- If the engine starts and runs, perform the following steps during idle.

3. Prepare the output state control function for actuators or relays that you are inspecting.
4. Vibrate the actuator or relay with your finger for 3 s after output state control function is activated.
 - If variable click sound is heard, check for poor connection or poorly mounted actuator or both, or the relay.

Note

- Vibrating relays too strongly may result in open relays.



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Water Sprinkling Method

If malfunction occurs only under high humidity or rainy/snowy weather, perform the following steps:

Caution

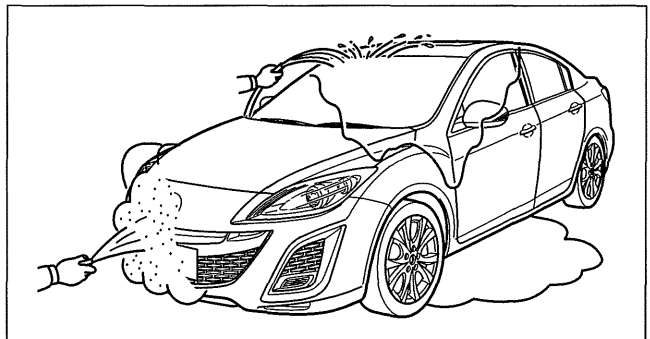
- Indirectly change the temperature and humidity by spraying water onto the front of the radiator.
- If a vehicle is subject to water leakage, the leakage may damage the control module. When testing a vehicle with a water leakage problem, special caution must be used.

1. Connect the M-MDS to the DLC-2 if you are inspecting sensors or switches.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps at idle.

3. Access PIDs for sensor or switch if you are inspecting sensors or switches.
4. If you are inspecting the switch, turn it on manually.
5. Spray water onto the vehicle or run it through a car wash.
 - If PID value is unstable or malfunction occurs, repair or replace part if necessary.



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SYMPTOM TROUBLESHOOTING [LF, L5]

ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5]

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Input Signal System Inspection Procedure

1. Find an irregular signal. (See 01-03A-86 Finding irregular signals.)
2. Locate source. (See 01-03A-86 Locating the source of unusual signals.)
3. Repair or replace the malfunctioning part.
4. Confirm that the irregular signal is no longer detected.

Finding irregular signals

While referring to 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5], use the PID/DATA monitor and record function to inspect the input signal system relating to the problem.

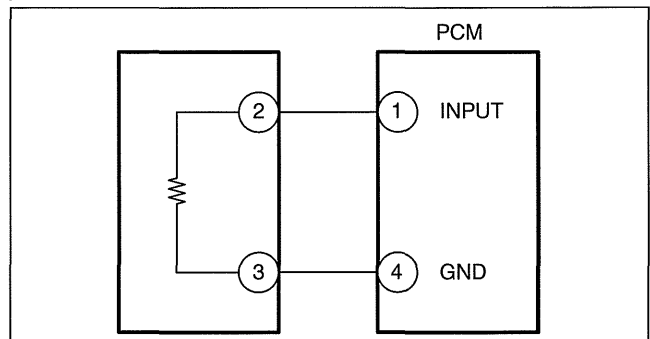
1. Start the engine and idle the vehicle. You can assume that any signals that are out of specification by a wide margin are irregular.
2. When recreating the problem, any sudden change in monitor input signals that is not intentionally created by the driver can be determined as irregular.

Locating the source of unusual signals

Caution

- Compare the M-MDS monitor voltage with the measurement voltage using the digital measurement system function. If you use another tester, misreading may occur.
- When measuring voltage, attach the tester ground to the ground of the PCM that is being tested, or to the engine itself. If this is not performed, the measured voltage and actual voltage may differ.
- After connecting the pin to a waterproof coupler, confirming continuity and measuring the voltage, inspect the waterproof connector for cracks. If there are any, use sealant to fix them. Failure to do this may result in deterioration of the wiring harness or terminal from water damage, leading to problems with the vehicle.

Thermistor type (IAT sensor and ECT sensor No.1, No.2)



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Input signal system inspection for thermistor type

1. When an irregular signal is detected, measure the #1 PCM terminal voltage.
 - If the #1 terminal voltage and the M-MDS monitor voltage are the same, proceed to the next step.
 - If there is a difference of **0.5 V or more**, inspect the following points concerning the PCM connector:
 - Female terminal opening loose
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Harness/pin crimp is loose or disconnected
2. Measure the #2 sensor terminal voltage.
 - If there is a **0.5 V or more** difference between the sensor and the M-MDS voltages, inspect the wiring harness for open or short circuits.
 - If the sensor and the M-MDS voltages are the same, inspect the following points concerning the sensor connector:
 - Female terminal opening is loose
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Harness/pin crimp is loose or disconnected
 - If there are no problems, proceed to next investigation below.

GND system inspection for thermistor type

- Confirm that terminal sensor #3 is at **0 V**.
 - If it is at **0 V**, inspect the sensor. If necessary, replace the sensor.
 - If not, inspect for the following:
 - Open circuit in wiring harness
 - Female terminal opening is loose
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Harness/pin crimp is loose or disconnected

Main Relay Operation Inspection

1. Verify that the main relay clicks when the ignition is switched to ON and off.
 - If there is no operation sound, inspect the following:
 - Main relay (See 09-21-17 RELAY INSPECTION.)
 - Harness and connector between ignition switch^{*1}/relay block^{*2} and main relay
 - Harness and connector between PCM terminal 1Q and main relay terminal B

^{*1} : Vehicles without advanced keyless entry and push button start system

^{*2} : Vehicles with advanced keyless entry and push button start system

Intake Manifold Vacuum Inspection

1. Verify air intake hoses are installed properly.
2. Start the engine and run it at idle.
3. Disconnect the vacuum hose between the intake manifold and purge solenoid valve from the intake manifold side.
4. Connect a vacuum gauge to the intake manifold and measure the intake manifold vacuum.
 - If not as specified, inspect the following:

Specification

LF: More than 68 kPa {510 mmHg, 20 inHg}

L5: More than 70 kPa {525 mmHg, 21 inHg}

Note

- Air suction can be located by engine speed change when lubricant is sprayed on the area where suction is occurring.
 - Air suction at throttle body, intake manifold and PCV valve installation points
 - EGR valve (stuck open)
 - Fuel injector insulator
 - Engine compression (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)

Electronic Throttle Control System Inspection

Engine coolant temperature compensation inspection

1. Connect the M-MDS to the DLC-2.
2. Access the following PIDs:
 - ECT1
 - ECT2
 - IAT
 - RPM
3. Verify that the engine is cold, then start the engine.
4. Verify that the engine speed decreases as the engine warms up.
 - If the engine speed does not decrease or decreases slowly, inspect the following:
 - ECT sensor No.1, No.2 and related wiring harness (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].)
 - Electronic throttle body and related wiring harness (See 01-13A-6 THROTTLE BODY INSPECTION [LF, L5].)

SYMPTOM TROUBLESHOOTING [LF, L5]

Load compensation inspection

1. Start the engine and idle it.
2. Connect the M-MDS to the DLC-2.
3. Verify that P0506:00 or P0507:00 is not displayed.
 - If P0506:00 or P0507:00 are displayed, perform DTC inspection. (See 01-02A-168 DTC P0506:00 [LF, L5].)
(See 01-02A-170 DTC P0507:00 [LF, L5].)
4. Access the RPM PID.

Note

- Excludes temporary idle speed drop just after the loads are turned on.

5. Verify that the engine speed is within the specification under each load condition.
 - If load condition is not as specified, inspect the following:
 - A/C switch and related wiring harness (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)
 - Fan switch and related wiring harness (See 07-40B-22 FAN SWITCH INSPECTION [MANUAL AIR CONDITIONER].)

Idle speed (ATX: P, N position, MTX: Neutral position)
600—700 rpm (MTX), 650—750 (ATX)

Idle-up speed (ATX: P, N position, MTX: Neutral position)
A/C on and refrigerant pressure sensor (middle pressure) is off: 700—800 rpm (MTX), 650—750 (ATX)
A/C on and refrigerant pressure sensor (middle pressure) is on: 700—800 rpm (MTX), 670—770 (ATX)
Electrical loads on: 650—800 rpm

Throttle position (TP) sweep inspection

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that none of the following DTC are displayed:
 - P0122:00, P0123:00, P0222:00, P0223:00, P0638:00, P2100:00, P2101:00, P2107:00, P2108:00, P2119:00, P2122:00, P2123:00, P2127:00, P2128:00, P2135:00, P2138:00
 - If any one DTC is displayed, perform DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
4. Access TP_REL PID.
5. Verify that the PID reading is within the CTP_REL value. (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If the PID reading is out of range, perform the following:
 - Remove the air duct from the throttle body.
 - Verify that the throttle valve opens when the accelerator pedal is depressed.
 - If the throttle valve opens, inspect the TP sensor and related wiring harness.
 - If the throttle valve does not open, inspect the throttle actuator control motor and related wiring harness.
6. Gradually depress the throttle pedal and verify that the PID reading increases accordingly.
 - If the PID reading drops momentarily, inspect the following:
 - TP sensor
7. Fully depress the throttle pedal and verify that the PID reading is within WOT value. (See 01-40A-8 PCM INSPECTION [LF, L5]d.)
 - If the PID reading is out of range, perform the followings:
 - Remove the air duct from throttle body.
 - Verify that the throttle valve opens when throttle pedal is depressed.
 - If the throttle valve opens, inspect the TP sensor and related wiring harness.
 - If the throttle valve does not open, inspect the throttle actuator control motor and related wiring harness.

SYMPTOM TROUBLESHOOTING [LF, L5]

Variable Intake Air Control Operation Inspection

1. Start the engine.
2. Inspect the rod operation under the following condition:

Rod operation

Engine speed	4,400 rpm (LF)/4,600 rpm (L5)	
	Below	Above
Shutter valve actuator	Operate	Not operate

- If the rod operation is not as specified, inspect as follows:
 - (1) Stop the engine.
 - (2) Connect the M-MDS to the DLC-2.
 - (3) Verify that DTC P0661:00 or P0662:00 is not displayed.
 - If DTC P0661:00 or P0662:00 is shown, perform DTC inspection. (See 01-02A-193 DTC P0661:00 [LF, L5].) (See 01-02A-195 DTC P0662:00 [LF, L5].)
 - (4) Inspect the variable intake air solenoid valve. (See 01-13A-7 VARIABLE INTAKE AIR SOLENOID VALVE INSPECTION [LF, L5].)
 - If the variable intake air solenoid valve is not normal, replace the variable intake air solenoid valve. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - If the variable intake air solenoid valve is normal, inspect the following:
 - Vacuum hose and vacuum chamber for looseness or damage
 - Shutter valve actuator (See 01-13A-7 VARIABLE INTAKE AIR SHUTTER VALVE ACTUATOR INSPECTION [LF, L5].)
 - Shutter valve stuck open or closed

Variable Tumble Control Operation Inspection

1. Connect the M-MDS to the DLC-2.
2. Access ECT1 and ECT2 PIDs.
3. Verify that ECT1 and ECT2 PIDs are **less than 60 °C {140 °F} (LF)/63 °C {145 °F} (L5)**.
4. Start the engine.
5. Inspect rod operation under the following conditions:

Rod operation

Engine speed	3,750 rpm	
	Below	Above
Shutter valve actuator	Operate	Not operate

- If the rod operation is not specified, inspect as follows:
 - (1) Verify that DTC P2009:00 or P2010:00 is not displayed.
 - If DTC No. P2009:00 or P2010:00 are shown, perform DTC inspection. (See 01-02A-224 DTC P2009:00 [LF, L5].) (See 01-02A-226 DTC P2010:00 [LF, L5].)
 - (2) Inspect the variable tumble solenoid valve. (See 01-13A-7 VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5].)
 - If the variable tumble solenoid valve is not normal, replace the variable tumble solenoid valve. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - If the variable tumble solenoid valve is normal, inspect the following:
 - Vacuum hose and vacuum chamber for looseness or damage
 - Shutter valve actuator (See 01-13A-7 VARIABLE INTAKE AIR SHUTTER VALVE ACTUATOR INSPECTION [LF, L5].)
 - Shutter valve stuck open or closed

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SYMPTOM TROUBLESHOOTING [LF, L5]

Fuel Injector Operation Inspection

If simulation function of M-MDS is used:

STEP	INSPECTION	RESULTS	ACTION
1	Start the engine and warm it up until normal operating temperature. Connect the M-MDS to DLC-2. Access the INJ#1, INJ#2, INJ#3 and INJ#4 PIDs using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Turn the fuel injector from on to off using the PIDs each cylinder. Does the engine speed drop?	Yes	Fuel injector work properly.
		No	Go to the next step.
2	Disconnect the fuel injector that the engine speed does not drop at Step 1. Switch the ignition to ON. Measure the voltage between suspect fuel injector terminal A (wiring harness-side) and body ground. Is the voltage B+?	Yes	Go to the next step.
		No	Repair or replace for a possible open or short circuit.
3	Inspect for open or short circuit in wiring harness between suspect fuel injector terminal B and following PCM terminals: <ul style="list-style-type: none"> • Fuel injector No.1 — PCM terminal 2BB • Fuel injector No.2 — PCM terminal 2BC • Fuel injector No.3 — PCM terminal 2BD • Fuel injector No.4 — PCM terminal 2AZ 	Yes	Repair or replace for a possible open or short circuit.
		No	Go to the next step.
4	Inspect suspect fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/ INSTALLATION [LF, L5].)
		No	Replace the PCM. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)

If simulation function of M-MDS is used:

STEP	INSPECTION	RESULTS	ACTION
1	While cranking engine, inspect for fuel injector operation sound at each cylinder using a soundscope. Is operation sound heard?	Yes	Fuel injector work properly.
		No	Go to the next step.
2	Disconnect the fuel injector that the engine speed does not drop at Step 1. Switch the ignition to ON. Measure the voltage between suspect fuel injector terminal A (wiring harness-side) and body ground. Is the voltage B+?	Yes	Go to the next step.
		No	Repair or replace for a possible open or short circuit.
3	Inspect for open or short circuit in wiring harness between suspect fuel injector terminal B and following PCM terminals: <ul style="list-style-type: none"> • Fuel injector No.1 — PCM terminal 2BB • Fuel injector No.2 — PCM terminal 2BC • Fuel injector No.3 — PCM terminal 2BD • Fuel injector No.4 — PCM terminal 2AZ 	Yes	Repair or replace for a possible open or short circuit.
		No	Go to the next step.
4	Inspect suspect fuel injector. (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].) Is there any malfunction?	Yes	Replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/ INSTALLATION [LF, L5].)
		No	Replace the PCM. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)

SYMPTOM TROUBLESHOOTING [LF, L5]

Fuel Cut Control System Inspection

1. Warm up engine and idle it.
2. Turn off the electrical loads and A/C switch.
3. Connect the M-MDS to the DLC-2.
4. Access RPM PID.
5. Listen for the fuel injector operation sound at all cylinders using the soundscope and monitor both PIDs while performing the following steps:
 - (1) Depress the accelerator pedal and increase the engine speed to **4,000 rpm**.
 - (2) Quickly release the accelerator pedal (brake pedal is not depressed) and verify that the fuel injector operation sound stops, and starts again when the engine speed drops **below 1,200 rpm**.
 - If not as specified, inspect the following:
 - ECT sensor No.1, No.2 and related wiring harness (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].)
 - Neutral/ CPP switch and related wiring harness (MTX) (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].)
 - TR switch and related wiring harness (ATX) (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].)

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Fuel Pump Operation Inspection

1. Remove the fuel-filler cap.
2. Switch the ignition to ON.
3. Turn the fuel pump relay from off to on using the FP PID and inspect if the operation sound is heard.
 - If no operation sounds is heard, proceed to next step.
4. Measure voltage at wiring harness side fuel pump connector terminal B

Specification

B+ (Ignition at on)

- If the voltage is as specified, inspect the following:
 - Fuel pump continuity
 - Fuel pump GND
 - Wiring harness between fuel pump relay terminal E and PCM terminal 1BG
- If not as specified, inspect the following:
 - Fuel pump relay
 - Wiring harness connector (Main relay—Fuel pump relay—Fuel pump)

Fuel Pump Control System Inspection

1. Crank the engine and verify that fuel pump relay operation sound is heard.
2. If operation sound is not heard, inspect the following:
 - Fuel pump relay (See 09-21-17 RELAY INSPECTION.)
 - Wiring harness and connectors (Main relay—Fuel pump relay terminal E—PCM terminal 1BG)

Spark Test

1. Disconnect the fuel pump relay.
2. Verify that each ignition coil and connector is connected properly.
3. Inspect the ignition system in the following procedure.

Warning

- **High voltage in the ignition system can cause strong electrical shock which can result in serious injury. Avoid direct contact to the vehicle body during the following spark test.**

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Disconnect the ignition coil from the spark plugs. • Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].) • Verify that the spark plugs do not have carbon deposits. • Are the spark plugs normal? 	Yes	Go to the next step.
		No	Perform no-load racing at 4,000 rpm for 2 min, 2 times to burn off the carbon deposits. Repeat Step 1.
2	<ul style="list-style-type: none"> • Inspect the spark plugs for damage, wear, and proper plug gap. • Are the spark plugs normal? 	Yes	Go to the next step.
		No	Replace spark plugs, then go to Step 1. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)

SYMPTOM TROUBLESHOOTING [LF, L5]

STEP	INSPECTION	ACTION	
3	<ul style="list-style-type: none"> • Reconnect the spark plugs to the ignition coil. • Ground the spark plugs to the engine. • Is a strong blue spark visible at each cylinder while cranking the engine? 	Yes	Ignition system is normal.
		No	Some cylinders do not spark: <ul style="list-style-type: none"> • Go to the next step. All cylinders do not spark: <ul style="list-style-type: none"> • Go to Step 5.
4	<ul style="list-style-type: none"> • Inspect for open or short circuit between the following terminals: <ul style="list-style-type: none"> — Ignition coil No.1 terminal C (wiring harness-side)—PCM terminal 2G (wiring harness-side) — Ignition coil No.2 terminal C (wiring harness-side)—PCM terminal 2K (wiring harness-side) — Ignition coil No.3 terminal C (wiring harness-side)—PCM terminal 2L (wiring harness-side) — Ignition coil No.4 terminal C (wiring harness-side)—PCM terminal 2H (wiring harness-side) • Is there any malfunction? 	Yes	Repair or replace the suspected wiring harness, then go to Step 1.
		No	Inspect and replace the ignition coil. (See 01-18A-2 IGNITION COIL INSPECTION [LF, L5].) (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
5	<ul style="list-style-type: none"> • Measure the voltage at terminal A (wiring harness-side) in each ignition coils. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the power supply circuit of ignition coils.
6	<ul style="list-style-type: none"> • Inspect the PCM and ignition coil connector or terminals for poor connection. • Is there any malfunction? 	Yes	Repair or replace the malfunctioning connector or terminals, then go to Step.1.
		No	Go to the next step.
7	<ul style="list-style-type: none"> • Inspect the CKP sensor and crankshaft pulley. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to Step.1.
		No	Inspect for open or short circuit in wiring harness and connector of CKP sensor.

EGR Control System Inspection

1. Crank the engine and verify that EGR valve operation (initial operation) sound is heard.
 - If the operation sound is not heard, connect the M-MDS to the DLC-2 and verify that the DTC P0403:00 is shown. Perform DTC inspection. (See 01-02A-133 DTC P0403:00 [LF, L5].)
2. Start the engine and idle it.
3. Warm up the engine to normal operating temperature.
4. Access the following PIDs:
 - ECT1, ECT2, RPM, SEGRP_DSD, APP1, APP2, VSS
5. Idle the vehicle and verify that the SEGRP value is 0.
6. Put the vehicle in drive.
7. Depress the accelerator pedal and verify that the SEGRP_DSD value is increased.
 - If the EGR valve increases, inspect the following:
 - EGR valve (stuck open or close) (See 01-16A-9 EGR VALVE INSPECTION [LF, L5].)
 - Wiring harness and connectors (Main relay—EGR valve—PCM)
 - If the SEGRP_DSD value does not increase, inspect the VSS, APP1, APP2, TP_REL, ECT1 and ECT2 PIDs. (See 01-40A-8 PCM INSPECTION [LF, L5].)
8. Stop the vehicle and verify that the SEGRP value returns to 0.

Purge Control System Inspection

1. Start the engine.
2. Disconnect the vacuum hose between the purge solenoid valve and the charcoal canister.
3. Put a finger to the purge solenoid valve and verify that there is no vacuum applied when the engine is cold.
 - If there is a vacuum, inspect the following:
 - Wiring harness and connectors (Purge solenoid valve terminal A—PCM terminal 1BA)
 - Purge solenoid valve (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].)
4. Warm up the engine to the normal operating temperature.
5. Stop the engine.
6. Connect the M-MDS to the DLC-2 and verify that the DTC P0443:00 is shown. Perform DTC inspection. (See 01-02A-147 DTC P0443:00 [LF, L5].)
7. Switch the ignition to ON.
8. Access ECT1 and ECT2 PIDs.
9. Verify that the engine coolant temperature is **more than 60 °C {140 °F}**.
 - If the M-MDS indicates **less than 60 °C {140 °F}**, perform the ECT sensor No.1, No.2 inspection. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].)

SYMPTOM TROUBLESHOOTING [LF, L5]

10. Set the vehicle on the dynamometer or chassis roller.

Warning

- When the dynamometer or chassis roller is operating, there is a possibility that the operator may come into contact with or be caught up in the rotating parts, leading to serious injuries or death. When performing work while the dynamometer or chassis roller is operating, be careful not to come into contact with or be caught up in any of the rotating parts.

11. Drive vehicle at engine speed **approx. 2,000 rpm for 30 s or more.**

12. Put a finger to the purge solenoid valve and verify that there is no vacuum applied while step 2.

- If there is no vacuum, inspect the following:
 - Wiring harness and connector (Main relay—Purge solenoid valve—PCM terminal 1BA)
 - Purge solenoid valve (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].)
 - MAF, APP1, APP2, TP_REL and LOAD PIDs (See 01-40A-8 PCM INSPECTION [LF, L5].)
- If there is vacuum, inspect the following:
 - Vacuum hose (Purge solenoid valve—Charcoal canister)

A/C Cut-off Control System Inspection

1. Start the engine.
2. Turn the A/C switch and the fan switch on.
3. Verify that the A/C compressor magnetic clutch actuates.
 - If it does not actuate, go to symptom troubleshooting “NO.23 A/C DOES NOT WORK SUFFICIENTLY”. (See 01-03A-73 NO.23 A/C DOES NOT WORK SUFFICIENTLY [LF, L5].)
4. Fully open the throttle valve and verify that the A/C compressor magnetic clutch does not actuate for **2—5 s**.
 - If it actuates, inspect as follows:
 - A/C relay (See 09-21-17 RELAY INSPECTION.)
 - Open or short to ground circuit in wiring harness and connectors (Ignition switch (vehicles without advanced keyless entry and push button start system)/IG2 relay (vehicles with advance keyless entry and push button start)—A/C relay—PCM terminal 1I)
 - A/C related parts
 - APP1, APP2 PIDs (See 01-40A-8 PCM INSPECTION [LF, L5].)

Cooling Fan Control System Inspection

1. Connect the M-MDS to the DLC-2.
2. Start the engine and warm it up to normal operating temperature.
3. Perform the KOER self-test. (See 01-02A-11 KOEO/KOER SELF TEST [LF, L5].)
4. Verify that the DTC P0480:00 is not shown and the cooling fan operates during the KOER self-test.
 - If DTC P0480:00 is shown, perform the DTC troubleshooting procedure. (See 01-02A-163 DTC P0480:00 [LF, L5].)
 - If the cooling fans do not operate, indicated order in accordance with fan operation conditions.

Cooling fans do not operate

- Inspect for followings:
 - Open circuit between the fan control module and battery post
 - Open circuit between fan control module and ground
 - Poor connection of the fan control module connector
 - If there is no malfunction, replace the cooling fan component. (See 01-12A-13 COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5].)

Cooling fan motor does not operate

- Inspect for followings:
 - Open or short to ground circuit between the fan control module and cooling fan motor
 - Poor connection of the fan control module connector or cooling fan motor connector
 - If there is no malfunction, replace the cooling fan component. (See 01-12A-13 COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5].)

Variable Valve Timing Control System Operation Inspection

When idling cannot be continued

1. Remove the OCV and verify that the spool valve is at maximum retard position. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
2. Connect the OCV.
3. Switch the ignition to ON.
4. Verify that the spool valve is at maximum retard position.
 - If the spool valve is stuck in the advance direction, inspect for the following:
 - Short circuit in wiring harnesses or connectors between OCV and PCM
5. Inspect the variable valve timing actuator. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5])

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SYMPTOM TROUBLESHOOTING [LF, L5]

When idling can be continued

1. Disconnect OCV connector.
2. Warm up the engine and idle it.
3. Apply battery voltage to the OCV and verify that the engine idles roughly or stalls.
 - If the engine idles roughly or stalls, inspect the timing chain component (valve timing deviation).
 - If the engine does not idle roughly or stalls, go to the next step.
4. Remove the OCV and perform spool valve operation inspection. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
 - If not as specified, inspect the following:
 - OCV (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
 - Harnesses and connectors between OCV and PCM open or short
 - If as specified, inspect the following hydraulic passages for clogging or leakage or both:
 - Oil pressure switch—OCV
 - OCV—Camshaft
 - Camshaft internal passage
5. If they are normal, replace the camshaft pulley (with built-in variable valve timing actuator). (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)

Evaporative Emission (EVAP) System Leak Inspection

- To verify that the problem has been fixed properly after repairs, the run drive cycle or EVAP system leak inspection must be performed.

EVAP system leak inspection using the M-MDS

EVAP system test out line

- The EVAP system test, which can substituted for the run drive cycle as an EVAP control system repair confirmation method, can detect the small/large leak or blockage without run-drive cycle.

Note

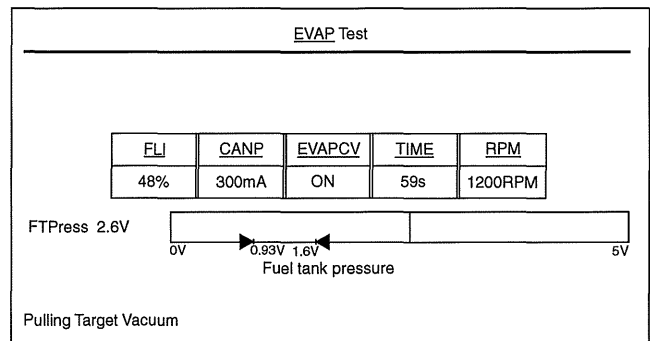
- M-MDS can not detect "VERY SMALL LEAK". To identify the leak point, please use the leak tester or ultrasonic leak detector.

EVAP system test description

- The EVAP system test finds gas leaks or blockage of EVAP system using the changes of the fuel tank pressure.
 - This test starts after sending an on-demand test signal from the M-MDS to the PCM.
 - This test consists of three stages, and each stage is performed automatically as follows:

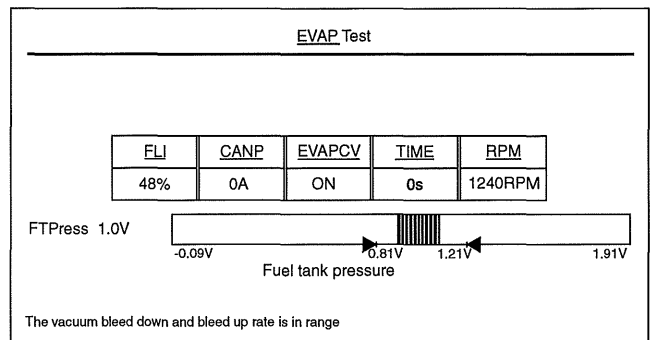
Stage 1 test. (Test for large leak or blockage)

- M-MDS send the stage 1 test start signal to the PCM.
- PCM controls the CV solenoid valve and purge solenoid valve to control the tank pressure to the targeted value.
- M-MDS detect the large leak or the purge line blockage if the tank pressure does not arrive at the target vacuum in specified period.



Stage 2 test. (Test for small leak)

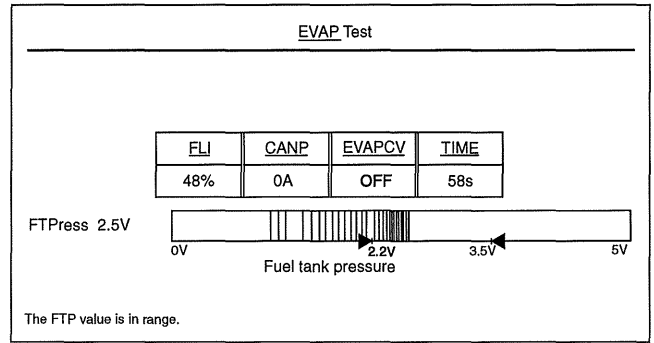
- When fuel tank pressure arrived at the targeted pressure at stage 1 test, M-MDS send the stage 2 test signal to the PCM to turn off the purge solenoid to keep the tank pressure.
- M-MDS detect the small leak if the tank pressure can not keep within the target in specified period.



SYMPTOM TROUBLESHOOTING [LF, L5]

Stage 3 test. (Test for blockage)

- M-MDS send the stage 3 test signal to the PCM to turn off the CV solenoid for check the blockage of EVAP system.
- M-MDS detect blockage of the CV solenoid valve or air filter if the tank pressure does not arrive at the target (atmosphere).



01-03A

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EVAP system malfunction judgment

- M-MDS detect the small/large leak or blockage based on fuel tank pressure at the end of EVAP Test.

The EVAP Test could not obtain the target vacuum. A large leak or blockage is suspect.

- This judgment means tank pressure could not arrive at target pressure at stage 1 test.
 - Check for the large leakage or inspect the purge solenoid valve operation and related hoses.
 - Repair or replace any malfunctioning parts.

The EVAP Test could not maintain the target vacuum. A small leak is suspect.

- This judgment means tank pressure could not stay in target pressure at stage 2 test.
 - Run the EVAP Test again after Re-tighten the fuel filler cap.
 - If small leak is suspected again, use the leak tester or ultrasonic leak detector for identify the leak point.
 - Repair or replace any malfunctioning parts.

Blockage in EVAP system.

- This judgment means tank pressure could not return to atmosphere at stage 3 test.
 - Inspect the CV solenoid, Air filter, Charcoal canister and related hoses for blockage.

No large leaks or blockage have been detected in the EVAP system at this time.

- M-MDS can not detect "VERY SMALL LEAK".
 - To identify the leak point, please use the leak tester or ultrasonic leak detector.

A small leak in the purge solenoid valve is suspect.

- This judgment means tank pressure goes to minus side at stage 2 test.
 - Check the purge solenoid valve. Refer to the workshop manual.

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SYMPTOM TROUBLESHOOTING [LF, L5]

Evaporative system test procedure

1. Verify that all PIDs within the following specifications.

Note

- To successfully perform this procedure, all PIDs must be within the specifications before proceeding to the next step.

2. Select the following items from the initialization screen of the M-MDS.
 1. Select the "Powertrain".
 2. Select the "Fuel".
 3. Select the "EVAP Test".
 - Verify that ECT and IAT are within the specifications at the confirmation screen. To successfully perform this procedure, ECT and IAT must be within the spec before proceeding to the next step.
 - Fuel Level must be maintained within **15%—85%**. PCM will cancel the EVAP Test If the Fuel Level is **lower than 15%** or **higher than 85%**.
3. Verify the test results described on the M-MDS and follow the instructions.

Specification

PID	PID Range
BARO	74.9 kPa {562 mmHg, 22.1 inHg} or more
FLI	15—85%
ECT	ECT minus IAT -10—25 °C {-5.6—13.9 °F}
IAT	

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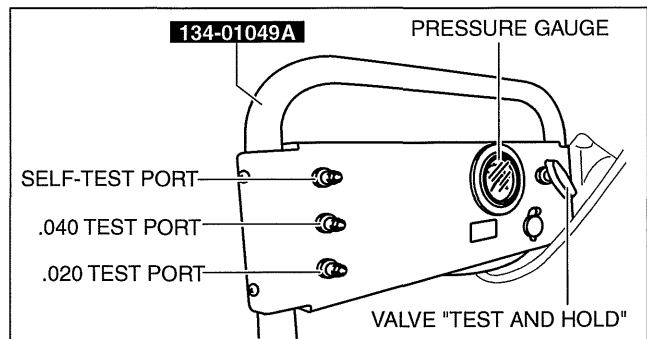
EVAP system leak inspection using leak tester

1. Perform the following **SST** (EVAP System Tester 134-01049A) self-test:

Note

- If the tester does not work correctly during the self-test, refer to the tester operators manual for a more detailed self-test procedure.

- (1) Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve.
- (2) Connect the vehicle interface hose (part of the **SST**) to the SELF-TEST port located on the control panel. Hand tighten the fitting. (Do not overtighten.)
- (3) Turn the control valve to the TEST position.
- (4) The gauge should read **331—381 mm {13—15 in}** of water.
 - If the gauge is not reading in this range, adjust the pressure by turning the black knob on the low pressure regulator at the nitrogen bottle.
- (5) Turn the control valve to the HOLD position.
- (6) Verify that the gauge holds pressure and that the flow meter reads no flow.
 - If there is no drop in pressure and no flow, the tester passes the self-test.
 - If the gauge leaks down, refer to the tester operators manual.



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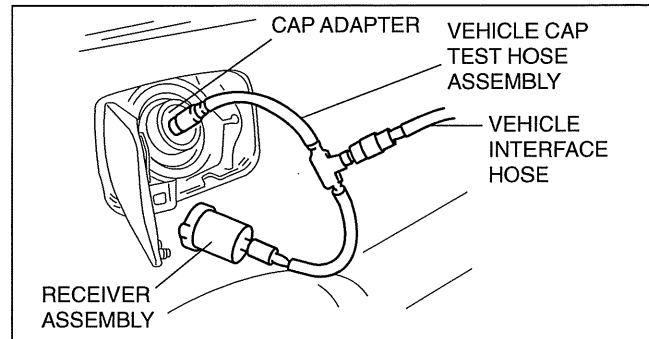
SYMPTOM TROUBLESHOOTING [LF, L5]

2. Connect the **SST** to the vehicle.
 - (1) Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve.
 - (2) Remove the fuel-filler cap from the vehicle.
 - If the fuel-filler cap is not a MAZDA part or equivalent, replace it.

Note

- **INSPECT FUEL FILLER CAP AND FILLER NECK**
 - Visually inspect for damage, insufficient sealing, rust, cracks or warps for filler cap and filler neck.
 - Repair or replace if necessary.

- (3) Connect the receiver assembly (**SST**: 134-01059) to the vehicle cap test hose assembly (part of the **SST**) and the fuel-filler cap from the vehicle.
 - (4) Connect the cap adaptor (**SST**: 134-01058) to the vehicle cap test hose assembly (part of the **SST**) and to the fuel-filler neck.
 - (5) Connect the vehicle interface hose (part of the **SST**) to the center fitting of the vehicle cap test hose assembly (part of the **SST**).
3. Connect the M-MDS to the DLC-2.
 4. Switch the ignition to ON (engine off).
 5. Request the PCM on-board device control (Mode 08) using the M-MDS to close the canister vent value.



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Note

- The canister vent value is closed for **10 min** unless the following any actions are done:
 - The engine is started.
 - The ignition is switched to off.

6. Make sure the control valve on the 134-01049A is in the HOLD position and that the valve on the cylinder of nitrogen gas is open.
7. Turn the control valve to the open position and let the system fill. You should note a drop in the gauge pressure along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses.
8. If the gauge and the flow meter do not settle to a measurable level after **2—3 min**, then refer to the Mazda Workshop Manual to verify that the canister vent valve is properly closed. If canister vent valve is properly closed. The EVAP system has large leakage. Check for leakage and repair as necessary.
9. Verify the pressure gauge and flow meter reading to determine if there is an evaporative emissions leak:

NO EVAPORATIVE LEAK:

- The flow meter registers “zero flow” and the pressure gauge returns to the pre-set pressure of **356 mm {14 in}** of water (H₂O).

EVAPORATIVE LEAK:

- The pressure does not return to the preset level of **356 mm {14 in}** of water (H₂O) when measuring the flow. See “SETTING LEAK STANDARD FOR TESTING” (.020 to .040 inch H₂O) of the Evaporative Emissions Tester operators manual (134-01067).

Note

- Turn the control valve to the HOLD position then disconnect the **SST**.

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01-03B SYMPTOM TROUBLESHOOTING [L3 WITH TC]

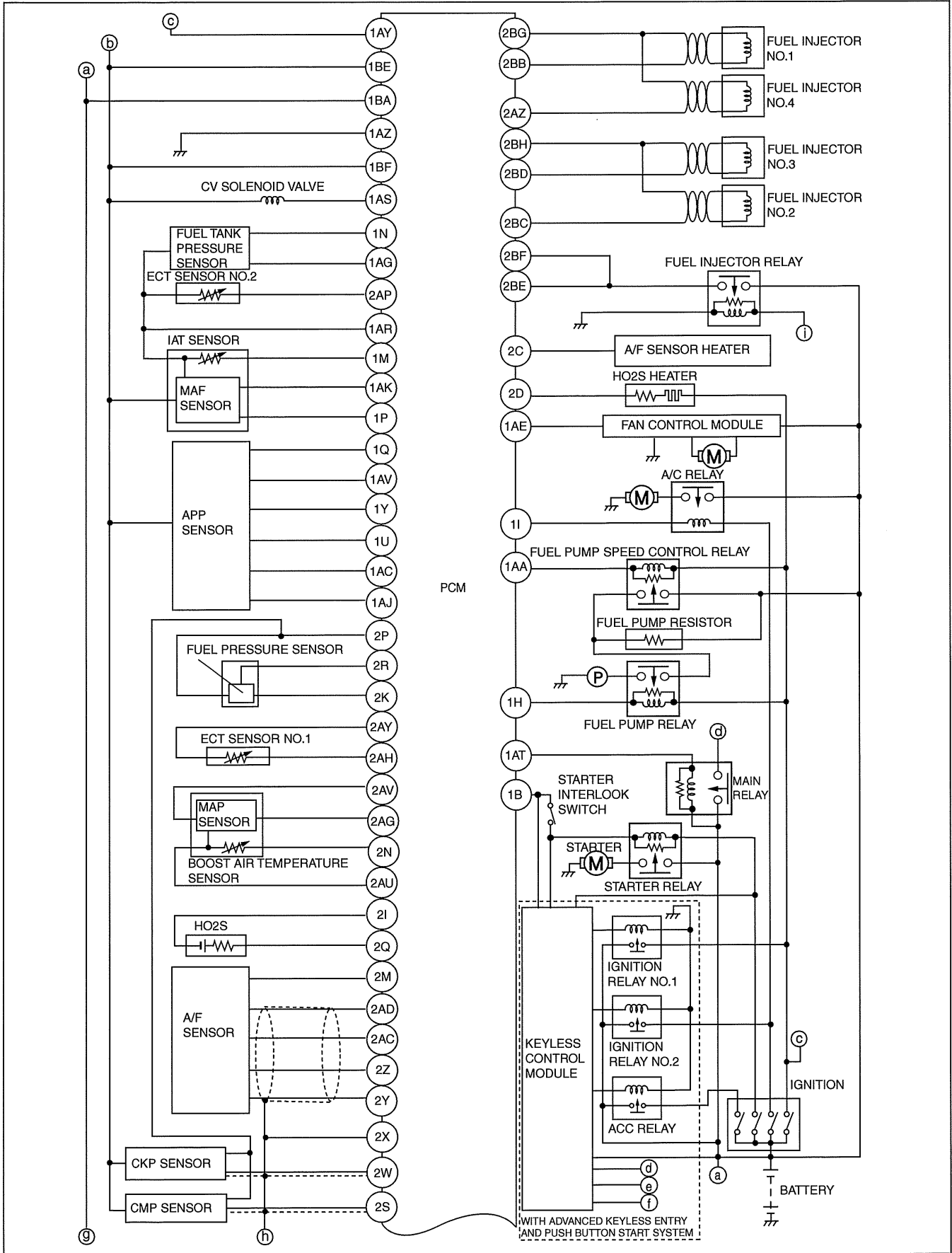
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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

SYMPTOM TROUBLESHOOTING WIRING DIAGRAM [L3 WITH TC]

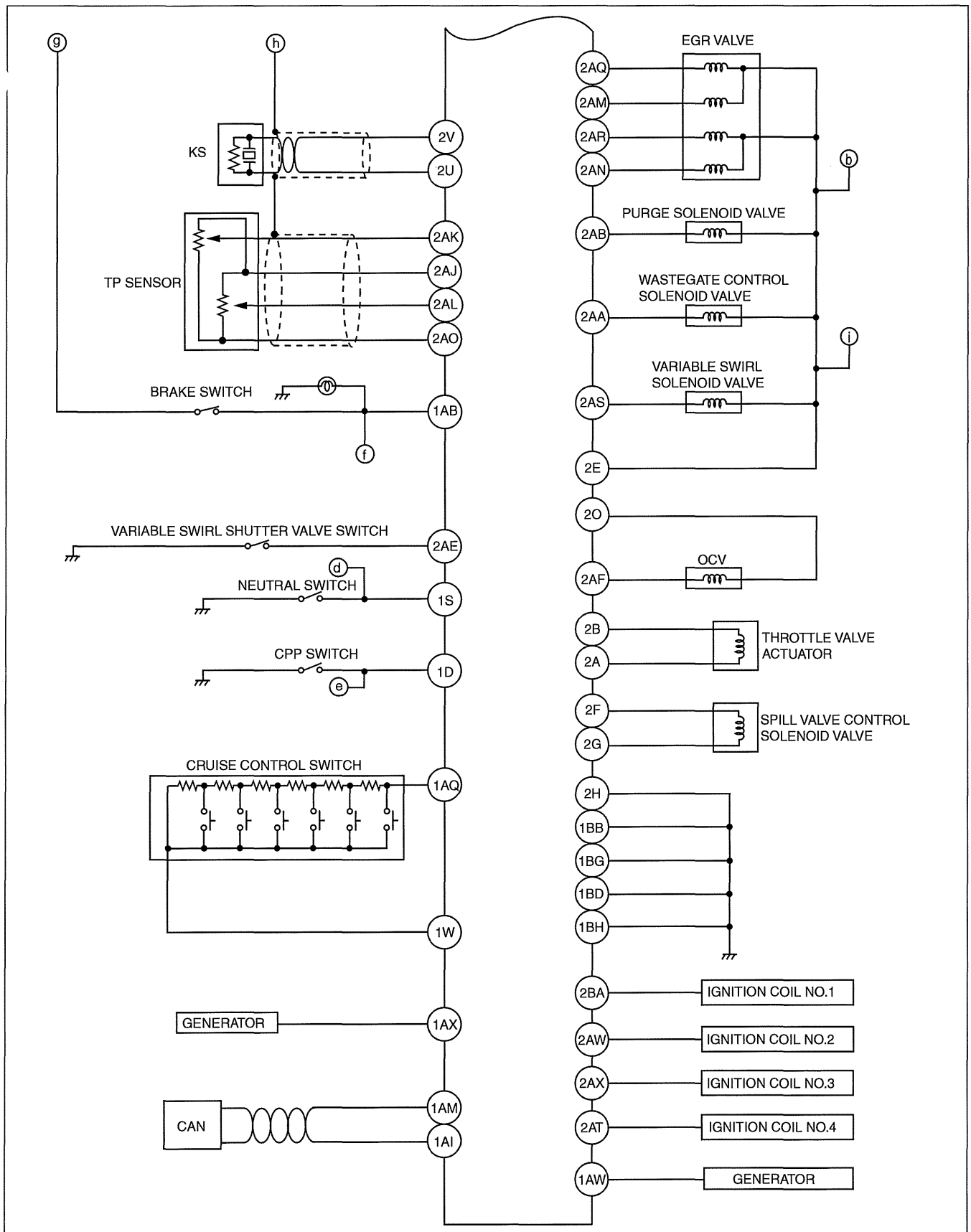
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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

SYMPTOM DIAGNOSTIC INDEX [L3 WITH TC]

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- Verify malfunction symptoms using the following diagnostic index, then go to the appropriate troubleshooting chart.

Diagnostic Index

No.	TROUBLESHOOTING ITEM		DESCRIPTION
1	Melting of main or other fuses		—
2	MIL illuminates		<ul style="list-style-type: none"> • MIL is illuminated incorrectly.
3	Will not crank		<ul style="list-style-type: none"> • Starter does not work.
4	Hard to start/long crank/erratic start/erratic crank		<ul style="list-style-type: none"> • Starter cranks the engine at normal speed but the engine requires excessive cranking time before starting. • Battery is operating normally.
5	Engine stalls	After start/at idle	<ul style="list-style-type: none"> • Engine stops unexpectedly at idle or after start or both.
6	Crankes normally but will not start		<ul style="list-style-type: none"> • Starter cranks engine at normal speed but engine will not run. • Refer to symptom troubleshooting "NO.5 ENGINE STALLS" if this symptom appears after the engine stalls. • Fuel is in tank. • Battery is in normal condition.
7	Slow return to idle		<ul style="list-style-type: none"> • Engine takes more time than normal to return to idle speed. • Engine speed continues at fast idle after warm-up.
8	Engine runs rough/rolling idle		<ul style="list-style-type: none"> • Engine speed fluctuates between the specified idle speed and lower speed, and engine shakes excessively. • Idle speed is too slow and the engine shakes excessively.
9	Fast idle/runs on		<ul style="list-style-type: none"> • Engine speed continues at fast idle after warm-up. • Engine runs after the ignition is switched off.
10	Low idle/stalls during deceleration		<ul style="list-style-type: none"> • Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.
11	Engine stalls/quits	Acceleration/cruise	<ul style="list-style-type: none"> • Engine stops unexpectedly at beginning of acceleration or during acceleration. • Engine stops unexpectedly while cruising.
	Engine runs rough	Acceleration/cruise	<ul style="list-style-type: none"> • Engine speed fluctuates during acceleration or cruising.
	Misses	Acceleration/cruise	<ul style="list-style-type: none"> • Engine misses during acceleration or cruising.
	Buck/jerk	Acceleration/cruise/ deceleration	<ul style="list-style-type: none"> • Vehicle bucks/jerks during acceleration, cruising, or deceleration.
	Hesitation/stumble	Acceleration	<ul style="list-style-type: none"> • Momentary pause at beginning of acceleration or during acceleration.
12	Surges	Acceleration/cruise	<ul style="list-style-type: none"> • Momentary minor irregularity in engine output.
12	Lack/loss of power	Acceleration/cruise	<ul style="list-style-type: none"> • Performance is poor under load (e.g., power down when climbing hills).
13	Knocking/pinging		<ul style="list-style-type: none"> • Sound is produced when air/fuel mixture is ignited by something other than a spark plug (e.g., hot spot in the combustion chamber).
14	Poor fuel economy		<ul style="list-style-type: none"> • Fuel economy is unsatisfactory.
15	Emission compliance		<ul style="list-style-type: none"> • Fails emissions test.
16	High oil consumption/leakage		<ul style="list-style-type: none"> • Oil consumption is excessive.
17	Cooling system concerns	Overheating	<ul style="list-style-type: none"> • Engine runs at higher than normal temperature/overheats.
18	Cooling system concerns	Runs cold	<ul style="list-style-type: none"> • Engine does not reach normal operating temperature.
19	Exhaust smoke		<ul style="list-style-type: none"> • Blue, black, or white smoke from exhaust system.
20	Fuel odor (in engine compartment)		<ul style="list-style-type: none"> • Gasoline fuel smell or visible leakage.
21	Engine noise		<ul style="list-style-type: none"> • Engine noise from under hood.
22	Vibration concerns (engine)		<ul style="list-style-type: none"> • Vibration from under the hood or driveline.
23	A/C does not work sufficiently		<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not engage when A/C is turned on.
24	A/C is always on or A/C compressor runs continuously		<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage.
25	A/C is not cut off under wide open throttle conditions		<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage under WOT.
26	Exhaust sulphur smell		<ul style="list-style-type: none"> • Rotten egg smell (sulphur) from exhaust.
27	Fuel refill concerns		<ul style="list-style-type: none"> • Fuel tank does not fill smoothly.
28	Fuel filling shut off concerns		<ul style="list-style-type: none"> • Fuel does not shut off properly.
29	Spark plug condition		<ul style="list-style-type: none"> • Incorrect spark plug condition.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

CONTROL SYSTEM DEVICE AND CONTROL RELATIONSHIP CHART [L3 WITH TC]

id010339800200

X: Applied

Item	ELECTRONIC THROTTLE CONTROL	IAC	VARIABLE SWIRL CONTROL	VARIABLE VALVE TIMING CONTROL	FUEL INJECTION CONTROL	FUEL PUMP CONTROL	ESA CONTROL	EGR CONTROL	EVAPORATIVE PURGE CONTROL	HO2S HEATER CONTROL	A/C CUT-OFF CONTROL	ELECTRICAL FAN CONTROL	STARTER CUT-OFF CONTROL	GENERATOR CONTROL	CRUISE CONTROL	CAN	HIGH PRESSURE FUEL PUMP CONTROL	WASTEGATE CONTROL	FUEL PUMP SPEED CONTROL
Input device																			
IAT sensor (integrated in MAF/IAT sensor)	X	X			X		X		X					X			X	X	X
MAF sensor (integrated in MAF/IAT sensor)	X	X	X	X	X		X	X	X	X		X					X	X	X
TP sensor No.1, No.2	X	X			X		X	X			X							X	X
APP sensor No.1, No.2	X	X	X	X	X		X	X	X		X	X							
MAP sensor (integrated in MAP sensor/Boost air temperature sensor)	X	X			X				X		X								
ECT sensor No.1, No.2	X	X	X	X	X		X	X	X	X	X	X		X					X
CMP sensor		X		X	X		X										X		
CKP sensor	X	X	X	X	X	X	X	X	X	X	X	X		X			X	X	X
KS							X												
A/F sensor, HO2S					X				X										X
BARO sensor	X	X			X				X			X						X	X
CPP switch	X	X			X		X	X	X		X				X			X	
Neutral switch	X	X			X		X	X	X		X				X			X	
Brake switch		X			X		X								X				
Instrument cluster (A/C on request signal)		X									X	X							
Refrigerant pressure sensor		X									X	X							
Battery	X			X		X	X	X	X	X				X			X	X	X
Generator (Terminal P: starter coil)		X												X					
Vehicle speed signal	X	X			X		X	X				X		X	X	X			
Cruise control switch															X				
Instrument cluster (CAN signal)	X	X			X		X			X			X			X			
Ignition switch ^{*1} / Relay block ^{*2}				X	X	X	X	X		X		X							
Fuel pressure sensor	X				X	X											X		

01-03B

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Item	ELECTRONIC THROTTLE CONTROL	IAC	VARIABLE SWIRL CONTROL	VARIABLE VALVE TIMING CONTROL	FUEL INJECTION CONTROL	FUEL PUMP CONTROL	ESA CONTROL	EGR CONTROL	EVAPORATIVE PURGE CONTROL	HO2S HEATER CONTROL	A/C CUT-OFF CONTROL	ELECTRICAL FAN CONTROL	STARTER CUT-OFF CONTROL	GENERATOR CONTROL	CRUISE CONTROL	CAN	HIGH PRESSURE FUEL PUMP CONTROL	WASTEGATE CONTROL	FUEL PUMP SPEED CONTROL
Boost air temperature sensor (integrated in MAP sensor/Boost air temperature sensor)		X			X		X	X									X		
Output device																			
Throttle valve actuator	X	X													X				
Drive-by-wire-relay	X																		
Variable swirl shutter valve actuator			X																
OCV				X															
Injector driver circuit (built-in PCM)					X														
Fuel pump relay						X													
Ignition coil							X												
EGR valve								X											
Purge solenoid valve									X										
A/F sensor heater, HO2S heater										X									
A/C relay											X								
Fan control module												X							
Starter relay													X	X					
Generator (Terminal D: field coil)														X					
ABS HU/CM, DSC HU/CM (CAN signal)																X			
Instrument cluster (CAN signal)																X			
Spill valve control solenoid valve																	X		
Wastegate control solenoid valve																		X	
Fuel pump speed control relay																			X

*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

QUICK DIAGNOSTIC CHART [L3 WITH TC]

id010339800600

X: Applied

Troubleshooting item		Possible factor	Starter motor malfunction (mechanical or electrical)	Starter circuit including ignition switch is open	Improper engine oil level	Low or dead battery	Charging system malfunction	Improper engine compression	Improper dipstick	Base engine malfunction	Flywheel is seized	Improper tension or damaged drive belts	Improper engine coolant level	Water and anti-freeze mixture is improper	Cooling system malfunction (radiator, hoses, overflow system, thermostat, etc.)	Cooling fan system malfunction
1	Melting of main or other fuses															
2	MIL illuminates															
3	Will not crank		X	X	X	X				X	X					
4	Hard to start/long crank/erratic start/erratic crank		X					X		X						
5	Engine stalls	After start/at idle						X								
6	Cranks normally but will not start							X								
7	Slow return to idle														X	X
8	Engine runs rough/rolling idle							X								
9	Fast idle/runs on															
10	Low idle/stalls during deceleration							X								
11	Engine stalls/quits	Acceleration/cruise						X								
	Engine runs rough	Acceleration/cruise						X								
	Misses	Acceleration/cruise						X								
	Buck/jerk	Acceleration/cruise/ deceleration						X								
	Hesitation/stumble	Acceleration						X								
	Surges	Acceleration/cruise						X								
12	Lack/loss of power	Acceleration/cruise						X								
13	Knocking/pinging	Acceleration/cruise						X								X
14	Poor fuel economy							X					X		X	X
15	Emission compliance							X		X					X	
16	High oil consumption/leakage								X	X						
17	Cooling system concerns	Overheating										X	X	X	X	X
18	Cooling system concerns	Runs cold													X	X
19	Exhaust smoke							X		X					X	
20	Fuel odor (in engine compartment)															
21	Engine noise											X				
22	Vibration concerns (engine)															
23	A/C does not work sufficiently															
24	A/C is always on or A/C compressor runs continuously															
25	A/C is not cut off under wide open throttle conditions															
26	Exhaust sulphur smell															
27	Fuel refill concerns															
28	Fuel filling shut off concerns															
29	Spark plug condition							X								

01-03B

am3uuw000598

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

X: Applied

Possible factor		Engine or transaxle mounts are improperly installed	Cooling fan or condenser fan seats are improper	Fuel quality	Improper engine oil viscosity	Improper valve timing	Oil leakage (internal, turbocharger, external)	Improper oil or fluid level	Coolant leakage (internal, turbocharger, external)	Variable valve timing system malfunction	Variable tumble control system malfunction	Engine overheating	Air cleaner element clogging or restriction	Air leakage from intake-air system (loose tubes, cracks, gaskets blockage)	Air suction in intake-air system	Intake-air system restriction
Troubleshooting item																
1	Melting of main or other fuses															
2	MIL illuminates									X	X					
3	Will not crank															
4	Hard to start/long crank/erratic start/erratic crank			X		X							X	X		X
5	Engine stalls After start/at idle			X					X		X		X	X		X
6	Cranks normally but will not start			X		X						X	X	X		X
7	Slow return to idle														X	
8	Engine runs rough/rolling idle			X		X						X		X		X
9	Fast idle/runs on								X					X		
10	Low idle/stalls during deceleration					X								X		X
11	Engine stalls/quits Acceleration/cruise			X		X				X	X	X				X
	Engine runs rough Acceleration/cruise			X		X				X	X	X				X
	Misses Acceleration/cruise			X		X				X	X	X				X
	Buck/jerk Acceleration/cruise/ deceleration			X		X				X	X	X				X
	Hesitation/stumble Acceleration			X		X				X	X	X				X
	Surges Acceleration/cruise			X		X				X	X	X				X
12	Lack/loss of power Acceleration/cruise			X		X			X	X	X	X	X	X		X
13	Knocking/pinging Acceleration/cruise			X							X		X			
14	Poor fuel economy			X		X							X			
15	Emission compliance			X		X						X	X	X		
16	High oil consumption/leakage				X		X									
17	Cooling system concerns Overheating								X							
18	Cooling system concerns Runs cold															
19	Exhaust smoke						X		X				X	X		
20	Fuel odor (in engine compartment)															
21	Engine noise							X								
22	Vibration concerns (engine)	X	X													
23	A/C does not work sufficiently															
24	A/C is always on or A/C compressor runs continuously															
25	A/C is not cut off under wide open throttle conditions															
26	Exhaust sulphur smell			X												
27	Fuel refill concerns															
28	Fuel filling shut off concerns															
29	Spark plug condition												X			

am3uuw0000599

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

X: Applied

01-03B

Possible factor		Electronic throttle control improper operation	Throttle body malfunction	Vacuum leakage (vacuum hose damage, misrouting)	Turbocharger malfunction	Improper operation of wastegate system	Charge air cooler malfunction	Ignition coil malfunction (e.g. open, short or cracks)	Initial ignition timing misadjustment (CKP and pulse wheel misadjustment)	Spark plug malfunction	Fuel pump (low-pressure side) malfunction (mechanically or electrically)	Pressure regulator (built-in fuel pump unit at fuel tank)	Inadequate fuel pressure (high-pressure side)	Inadequate fuel pressure (low-pressure side)	Fuel line restriction or clogging
Troubleshooting item															
1	Melting of main or other fuses														
2	MIL illuminates	X													
3	Will not crank														
4	Hard to start/long crank/erratic start/erratic crank	X	X					X	X	X	X		X	X	X
5	Engine stalls	After start/at idle	X	X				X			X		X	X	X
6	Cranks normally but will not start		X	X				X		X	X		X	X	X
7	Slow return to idle												X	X	
8	Engine runs rough/rolling idle	X	X					X		X	X		X	X	
9	Fast idle/runs on	X	X												
10	Low idle/stalls during deceleration	X		X									X	X	X
11	Engine stalls/quits	Acceleration/cruise	X	X	X	X	X			X	X		X	X	X
	Engine runs rough	Acceleration/cruise	X	X	X	X	X			X	X		X	X	X
	Misses	Acceleration/cruise	X	X	X	X	X			X	X		X	X	X
	Buck/jerk	Acceleration/cruise/ deceleration	X	X	X	X	X			X	X		X	X	X
	Hesitation/stumble	Acceleration	X	X	X	X	X			X	X		X	X	X
	Surges	Acceleration/cruise	X	X	X	X	X			X	X		X	X	X
12	Lack/loss of power	Acceleration/cruise	X	X	X	X	X	X		X	X		X	X	X
13	Knocking/pinging	Acceleration/cruise	X				X	X	X				X	X	
14	Poor fuel economy			X	X		X	X		X			X	X	X
15	Emission compliance		X	X	X	X	X			X			X	X	
16	High oil consumption/leakage				X										
17	Cooling system concerns	Overheating													
18	Cooling system concerns	Runs cold													
19	Exhaust smoke					X	X			X			X	X	
20	Fuel odor (in engine compartment)												X	X	
21	Engine noise			X	X										
22	Vibration concerns (engine)														
23	A/C does not work sufficiently														
24	A/C is always on or A/C compressor runs continuously														
25	A/C is not cut off under wide open throttle conditions														
26	Exhaust sulphur smell			X									X	X	
27	Fuel refill concerns														
28	Fuel filling shut off concerns														
29	Spark plug condition									X	X	X	X	X	X

am3uuw0000599

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

X: Applied

Possible factor		Fuel injector malfunction (inoperative)	Fuel filters restriction or clogging	Fuel pressure limiter malfunction (built-in common rail)	Spill valve control solenoid valve malfunction (built-in high pressure fuel pump)	Fuel leakage at fuel line	High pressure fuel pump malfunction	Incorrect fuel injection timing or amount	Improper air/fuel ratio mixture control	Fuel pump resistor or related circuit malfunction	Exhaust system or catalytic converter restriction	Exhaust gas leakage	Catalytic converter malfunction	EGR system malfunction	EVAP control system malfunction	PCV valve malfunction
Troubleshooting item																
1	Melting of main or other fuses															
2	MIL illuminates	X							X				X	X	X	
3	Will not crank															
4	Hard to start/long crank/erratic start/erratic crank	X	X	X	X	X	X	X	X		X			X	X	X
5	Engine stalls	After start/at idle	X	X	X	X	X	X	X	X	X			X	X	X
6	Cranks normally but will not start		X	X	X	X	X	X	X	X	X			X	X	X
7	Slow return to idle		X	X				X								
8	Engine runs rough/rolling idle		X	X	X	X	X				X			X	X	X
9	Fast idle/runs on		X		X											
10	Low idle/stalls during deceleration		X	X	X	X	X							X	X	
11	Engine stalls/quits	Acceleration/cruise	X	X	X		X	X	X	X	X			X	X	X
	Engine runs rough	Acceleration/cruise	X	X	X		X	X	X	X	X			X	X	X
	Misses	Acceleration/cruise	X	X	X		X	X	X	X	X			X	X	X
	Buck/jerk	Acceleration/cruise/ deceleration	X	X	X		X	X	X	X	X			X	X	X
	Hesitation/stumble	Acceleration	X	X	X		X	X	X	X	X			X	X	X
	Surges	Acceleration/cruise	X	X	X		X	X	X	X	X			X	X	X
12	Lack/loss of power	Acceleration/cruise		X	X		X	X		X	X	X		X	X	X
13	Knocking/pinging	Acceleration/cruise	X		X			X			X			X		
14	Poor fuel economy		X	X		X	X	X		X				X		X
15	Emission compliance		X	X	X		X	X	X	X		X	X	X	X	X
16	High oil consumption/leakage															X
17	Cooling system concerns	Overheating														
18	Cooling system concerns	Runs cold														
19	Exhaust smoke		X					X			X					X
20	Fuel odor (in engine compartment)		X			X									X	
21	Engine noise															
22	Vibration concerns (engine)															
23	A/C does not work sufficiently															
24	A/C is always on or A/C compressor runs continuously															
25	A/C is not cut off under wide open throttle conditions															
26	Exhaust sulphur smell														X	
27	Fuel refill concerns														X	
28	Fuel filling shut off concerns														X	
29	Spark plug condition	X				X			X	X						

am3uuw000599

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

X: Applied

01-03B

Possible factor		Nonreturn valve malfunction	Fuel shut off valve malfunction	Constant voltage supply circuit malfunction	Main relay malfunction (mechanically or electrically)	No battery power supply to PCM	Poor PCM ground or vehicle ground (open)	Electrical connector disconnection	ECT sensor No. 1 or related circuit	ECT sensor No. 1 or related circuit	Brake switch or related circuit malfunction	A/F sensor, HO2S or related circuit malfunction	IAT sensor (integrated in MAF/IAT sensor) or related circuit malfunction	Boost air temperature sensor (integrated in MAP sensor/ Boost air temperature sensor) or related circuit malfunction	Fuel pressure sensor or related circuit malfunction	MAP sensor (integrated in MAP sensor/ Boost air temperature sensor) or related circuit malfunction
Troubleshooting item																
1	Melting of main or other fuses															
2	MIL illuminates							X	X	X	X	X	X	X	X	X
3	Will not crank				X											
4	Hard to start/long crank/erratic start/erratic crank								X						X	
5	Engine stalls					X	X		X						X	
	After start/at idle															
6	Cranks normally but will not start							X	X						X	
7	Slow return to idle								X						X	
8	Engine runs rough/rolling idle							X	X						X	X
9	Fast idle/runs on								X							
10	Low idle/stalls during deceleration								X		X	X			X	
11	Engine stalls/quits				X				X				X	X	X	X
	Engine runs rough				X				X				X	X	X	X
	Misses				X				X				X	X	X	X
	Buck/jerk				X				X				X	X	X	X
	Hesitation/stumble				X				X				X	X	X	X
	Surges				X				X				X	X	X	X
12	Lack/loss of power								X				X	X	X	X
13	Knocking/pinging												X	X	X	X
14	Poor fuel economy								X				X	X	X	X
15	Emission compliance								X		X		X	X	X	X
16	High oil consumption/leakage															
17	Cooling system concerns															
	Overheating															
18	Cooling system concerns															
	Runs cold															
19	Exhaust smoke												X	X		X
20	Fuel odor (in engine compartment)															
21	Engine noise															
22	Vibration concerns (engine)															
23	A/C does not work sufficiently															
24	A/C is always on or A/C compressor runs continuously															
25	A/C is not cut off under wide open throttle conditions															
26	Exhaust sulphur smell								X							
27	Fuel refill concerns	X	X													
28	Fuel filling shut off concerns	X	X													
29	Spark plug condition			X											X	X

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

X: Applied

Possible factor																	
Troubleshooting item		CMP sensor damaged (e.g.open or short circuit)	CMP sensor pulse wheel (camshaft) is damaged	Improper gap between CKP sensor and pulse wheel	CKP sensor damaged (e.g.open or short circuit)	CKP sensor pulse wheel damaged	Neutral switch/ CPP switch or related circuit malfunction	MAF sensor or related circuit malfunction	KS or related circuit malfunction	TP sensor or related circuit malfunction	APP sensor or related circuit malfunction	Improper vehicle speed signal	Cruise control system operation improperly	A/C system improper operation	Improper refrigerant charging amount	A/C relay (A/C control signal circuit) malfunction	
1	Melting of main or other fuses																
2	MIL illuminates	X		X				X	X	X	X	X					
3	Will not crank						X										
4	Hard to start/long crank/erratic start/erratic crank	X	X	X	X	X		X									
5	Engine stalls	X	X	X	X	X		X			X			X	X	X	
6	Cranks normally but will not start	X	X	X	X	X		X			X						
7	Slow return to idle	X	X	X	X	X		X			X						X
8	Engine runs rough/rolling idle	X	X	X	X	X		X			X			X	X	X	
9	Fast idle/runs on										X		X				X
10	Low idle/stalls during deceleration	X	X	X	X	X	X	X		X	X			X			
11	Engine stalls/quits	X	X	X	X	X	X	X		X	X	X		X			
	Engine runs rough	X	X	X	X	X	X	X		X	X	X		X			
	Misses	X	X	X	X	X	X	X		X	X	X		X			
	Buck/jerk	X	X	X	X	X	X	X		X	X	X		X			
	Hesitation/stumble	X	X	X	X	X	X	X		X	X	X		X			
	Surges	X	X	X	X	X	X	X		X	X	X		X			
12	Lack/loss of power	X	X	X	X	X		X			X	X		X			X
13	Knocking/pinging	X	X					X	X		X						
14	Poor fuel economy	X	X	X	X	X	X	X			X	X		X			
15	Emission compliance	X	X	X	X	X	X	X		X	X	X					
16	High oil consumption/leakage																
17	Cooling system concerns													X	X		
18	Cooling system concerns																
19	Exhaust smoke			X				X		X	X	X					
20	Fuel odor (in engine compartment)																
21	Engine noise																
22	Vibration concerns (engine)																
23	A/C does not work sufficiently													X	X	X	
24	A/C is always on or A/C compressor runs continuously													X		X	
25	A/C is not cut off under wide open throttle conditions										X						
26	Exhaust sulphur smell																
27	Fuel refill concerns																
28	Fuel filling shut off concerns																
29	Spark plug condition							X									

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

X: Applied

Troubleshooting item		Possible factor									
		A/C compressor magnetic clutch malfunction	Clutch slippage	Fluid level low or air in power steering fluid	Brake dragging	Loose parts	Improper balance of wheels and tires	Drive line malfunction	Suspension malfunction	Immobilizer system operating properly	Immobilizer system or related circuit malfunction
1	Melting of main or other fuses										
2	MIL illuminates										
3	Will not crank								X	X	X
4	Hard to start/long crank/erratic start/erratic crank										
5	Engine stalls	After start/at idle								X	
6	Cranks normally but will not start									X	
7	Slow return to idle										
8	Engine runs rough/rolling idle										
9	Fast idle/runs on										
10	Low idle/stalls during deceleration		X								
11	Engine stalls/quits	Acceleration/cruise		X							
	Engine runs rough	Acceleration/cruise		X							
	Misses	Acceleration/cruise		X							
	Buck/jerk	Acceleration/cruise/ deceleration		X							
	Hesitation/stumble	Acceleration		X							
	Surges	Acceleration/cruise		X							
12	Lack/loss of power	Acceleration/cruise		X	X						
13	Knocking/pinging	Acceleration/cruise									
14	Poor fuel economy			X	X						
15	Emission compliance										
16	High oil consumption/leakage										
17	Cooling system concerns	Overheating									
18	Cooling system concerns	Runs cold									
19	Exhaust smoke										
20	Fuel odor (in engine compartment)										
21	Engine noise			X		X					
22	Vibration concerns (engine)					X	X	X	X		
23	A/C does not work sufficiently		X								
24	A/C is always on or A/C compressor runs continuously		X								
25	A/C is not cut off under wide open throttle conditions										
26	Exhaust sulphur smell										
27	Fuel refill concerns										
28	Fuel filling shut off concerns										
29	Spark plug condition										

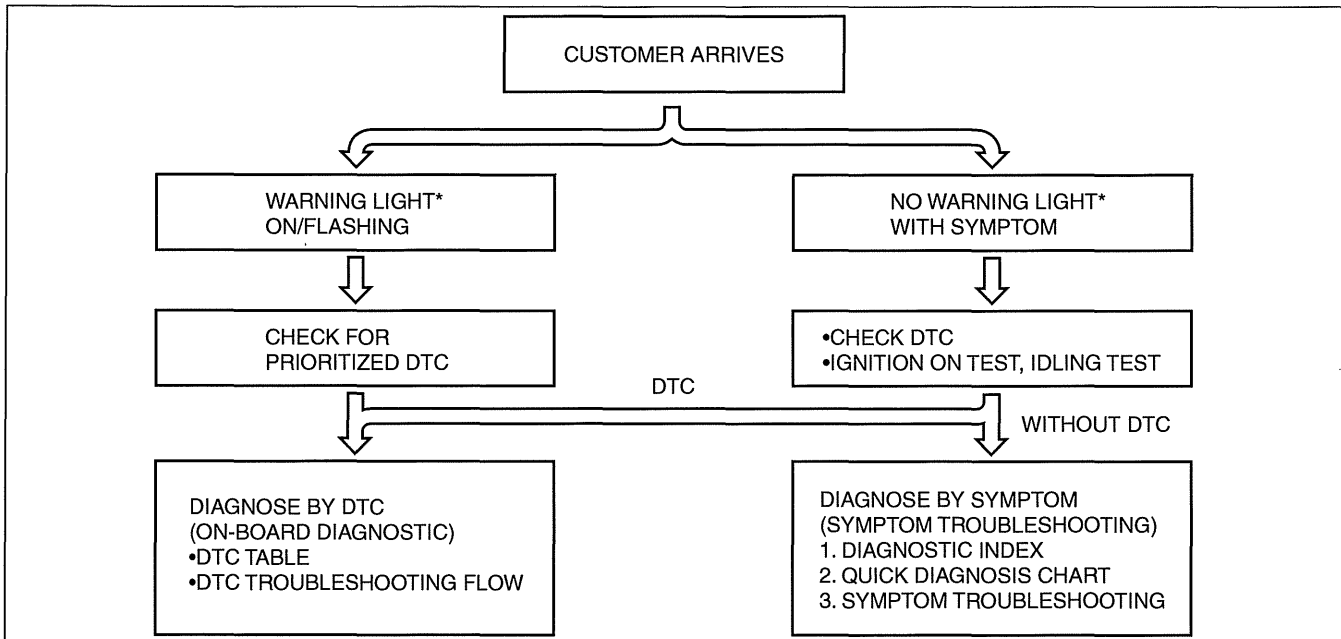
01-03B

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

FOREWORD [L3 WITH TC]

id010339800300

- When the customer reports a vehicle malfunction, check the malfunction indicator lamp (MIL) indication and diagnostic trouble code (DTC), then diagnose the malfunction according to the following flowchart:
 - If a DTC exists, diagnose the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
 - If no DTC exists and the MIL does not illuminate or flash, diagnose the applicable symptom troubleshooting. (See 01-03B-4 SYMPTOM DIAGNOSTIC INDEX [L3 WITH TC].)

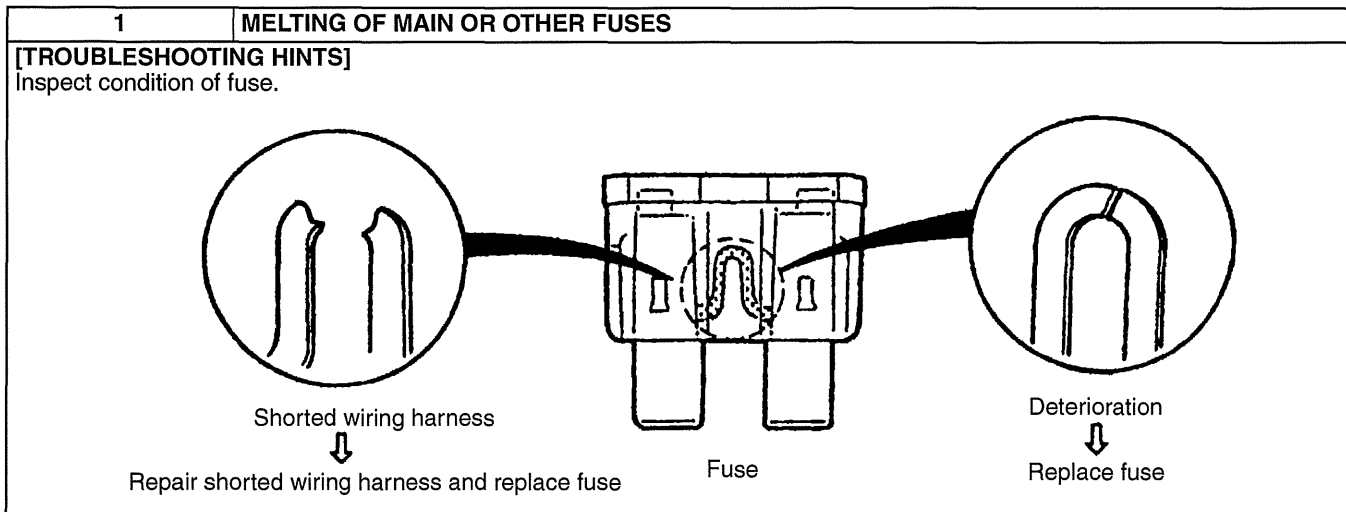


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*: Malfunction Indicator Lamp (MIL), Generator Warning Light, Security Light

NO.1 MELTING OF MAIN OR OTHER FUSES [L3 WITH TC]

id010339800700



Damaged fuse	Related wiring harness
MAIN	<ul style="list-style-type: none"> Starter Generator
IGN	<ul style="list-style-type: none"> ROOM fuse
ROOM	<ul style="list-style-type: none"> DLC-2
FAN 1	<ul style="list-style-type: none"> Cooling fan relay No.1 — Fan control module No.1
FAN 2	<ul style="list-style-type: none"> Cooling fan relay No.2 — Fan control module No.2
IG KEY1	<ul style="list-style-type: none"> Ignition switch — ENGINE fuse — METER fuse — ENG BAR3 fuse

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

01-03B

Damaged fuse	Related wiring harness
ENGINE (15 A)	<ul style="list-style-type: none"> • Fuel pump speed control relay • Fuel pump relay • Condenser • Ignition coil No.1 • Ignition coil No.2 • Ignition coil No.3 • Ignition coil No.4 • PCM
METER	<ul style="list-style-type: none"> • Starter relay No.2
ENG BAR3	<ul style="list-style-type: none"> • HO2S heater
IG KEY2	<ul style="list-style-type: none"> • Ignition switch • Starter relay No.1
FUEL PUMP	<ul style="list-style-type: none"> • Fuel pump resistor • Fuel pump speed control relay
INJ1	<ul style="list-style-type: none"> • Fuel injector relay — PCM
INJ2	<ul style="list-style-type: none"> • PCM
ENGINE (30 A)	<ul style="list-style-type: none"> • Main relay — ECM fuse — ENG BAR1 fuse — ENG BAR2 fuse — ETC fuse
ECM	<ul style="list-style-type: none"> • PCM • Fuel injector relay • Cooling fan relay No.1 • Cooling fan relay No.2
ENG BAR1	<ul style="list-style-type: none"> • CV solenoid • MAF/IAT sensor • PCM • Purge solenoid valve • Wastegate control solenoid valve • Variable swirl solenoid valve • EGR valve • CKP sensor • CMP sensor
ENG BAR2	<ul style="list-style-type: none"> • A/F sensor
ETC	<ul style="list-style-type: none"> • PCM

NO.2 MIL ILLUMINATES [L3 WITH TC]

id010339800800

2	MIL ILLUMINATES
DESCRIPTION	<ul style="list-style-type: none"> • MIL is illuminated incorrectly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • MIL illuminates for emission-related concern (DTC is stored in PCM) • Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> • If the MIL blinks at a steady rate, a misfire condition could possibly exist.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Repair or replace the malfunctioning part according to the inspection results.
2	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.3 WILL NOT CRANK [L3 WITH TC]

id010339800900

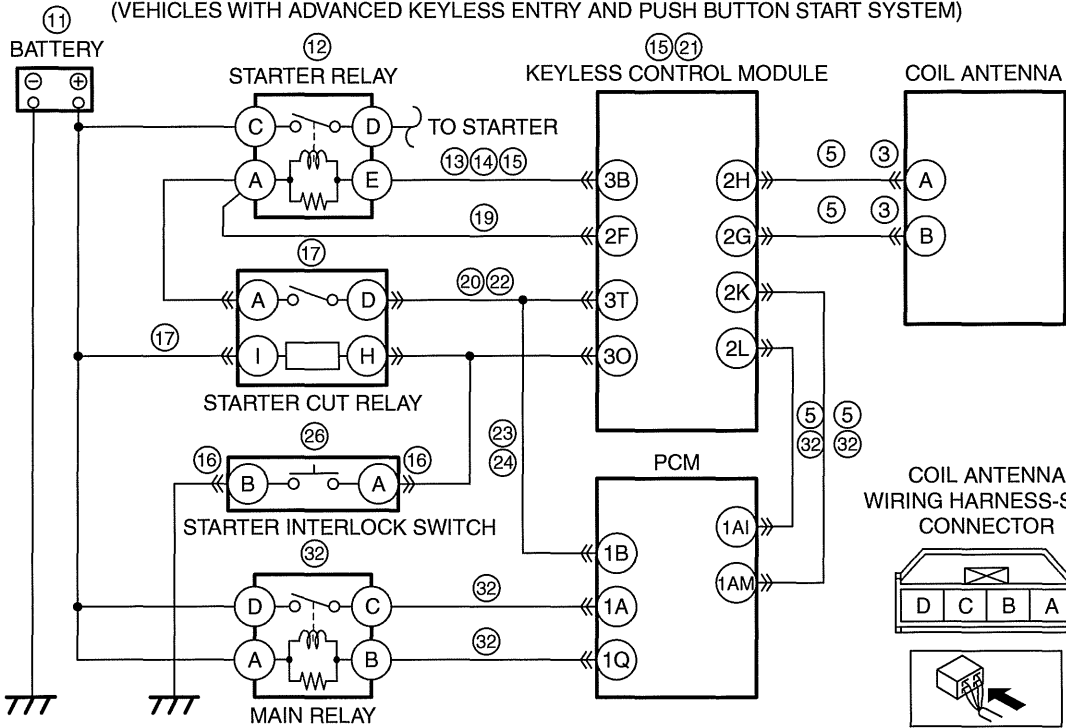
3	WILL NOT CRANK
DESCRIPTION	<ul style="list-style-type: none"> • Starter does not work.
POSSIBLE CAUSE	<p>Vehicles without advanced keyless entry and push button start system:</p> <ul style="list-style-type: none"> • Coil antenna connector or terminals malfunction • Instrument cluster and related wiring harness malfunction • Immobilizer system malfunction • PCM ground circuit malfunction • Coil antenna circuit and related connectors malfunction • Charging system malfunction • Open circuit in wiring harness between PCM terminal 1B and starter relay • Starter interlock switch and related wiring harness malfunction • Open or short circuit in wiring harness between starter relay and PCM • Open or short circuit in wiring harness between starter relay and ignition switch • Ignition switch and related wiring harness malfunction • Open or short circuit in wiring harness between starter relay and battery positive terminal • Open or short circuit in wiring harness between starter relay and starter • Starter malfunction • Seized/hydro locked engine, flywheel • PCM continuous memory DTC is stored • Starter circuit in ignition switch • Open circuit in wiring harness between ignition switch and starter <p>Vehicles with advanced keyless entry and push button start system:</p> <ul style="list-style-type: none"> • Advanced keyless entry and push button start system malfunction • Coil antenna connector or terminals malfunction • Instrument cluster and related wiring harness malfunction • Immobilizer system malfunction • PCM ground circuit malfunction • Coil antenna circuit and related connectors malfunction • Charging system malfunction • Starter relay malfunction • Open circuit in wiring harness between keyless control module terminal 3B and starter relay terminal E • Short to ground in wiring harness between keyless control module terminal 3B and starter relay terminal E • Keyless control module malfunction • Open or short circuit in wiring harness between battery positive terminal and starter cut relay • Starter cut relay malfunction • Open or short circuit in wiring harness between starter cut relay and starter interlock switch • Open or short circuit in wiring harness between starter interlock switch and body ground • Starter interlock switch malfunction • Open or short circuit in wiring harness between starter relay terminal E and keyless control module terminal 2F • Open circuit in wiring harness between keyless control module terminal 3T and starter cut relay terminal D • Starter and related wiring harness malfunction • Open circuit in wiring harness between starter cut relay terminal D and PCM terminal 1B • Open circuit in wiring harness between PCM terminal 1B and starter relay • Starter interlock switch and related wiring harness malfunction • Open or short circuit in wiring harness between starter relay and PCM • Open or short circuit in wiring harness between starter relay and ignition switch • Ignition switch and related wiring harness malfunction • Open or short circuit in wiring harness between starter relay and battery positive terminal • Open or short circuit in wiring harness between starter relay and starter • Starter malfunction • Seized/hydro locked engine, flywheel • PCM continuous memory DTC is stored • Starter circuit in ignition switch • Open circuit in wiring harness between ignition switch and starter

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

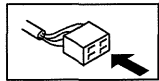
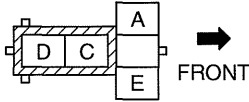
3

WILL NOT CRANK

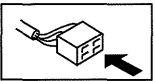
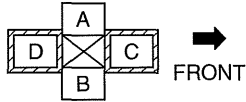
(VEHICLES WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)



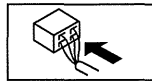
STARTER RELAY CONNECTOR



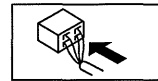
MAIN RELAY CONNECTOR



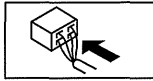
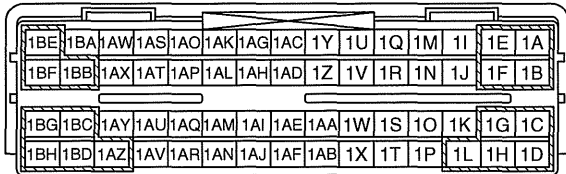
STARTER CUT RELAY WIRING HARNESS-SIDE CONNECTOR



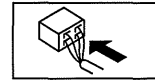
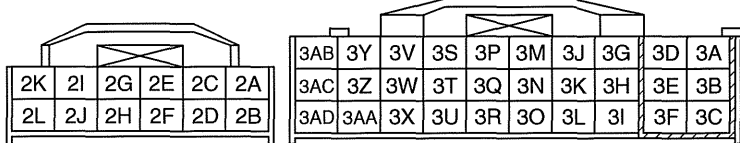
STARTER INTERLOCK SWITCH WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



01-03B

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	<p>Note</p> <ul style="list-style-type: none"> The following test should be performed on the advanced keyless entry and push button start system. If not equipped, go to the next step. <p>Start the engine using the standard ignition key. Does the engine start?</p>	Yes	Inspect the advanced keyless entry and push button start system. Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
2	<p>Do the following conditions appear?</p> <ul style="list-style-type: none"> The engine is not completely started. Immobilizer system DTC B10DA:62 is displayed. 	Yes	Both conditions appear: <ul style="list-style-type: none"> Go to Step 6.
		No	Either condition or other one appears: <ul style="list-style-type: none"> Go to the next step.
3	<p>Inspect if the coil antenna connector securely connected to the coil antenna. Is the coil antenna connector installed securely?</p>	Yes	Go to the next step.
		No	Retighten the coil antenna connector, then repeat Step 1.
4	<p>Does the security light flash?</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> Instrument cluster (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Wiring harness between keyless control module terminal 2K and instrument cluster terminal 2B Wiring harness between keyless control module terminal 2L and instrument cluster terminal 2D Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> Instrument cluster (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Wiring harness between PCM terminal 1AM and instrument cluster terminal 2B Wiring harness between PCM terminal 1AI and instrument cluster terminal 2D <p>Repair or replace the malfunctioning part according to the inspection results.</p>
5	<p>Retrieve the immobilizer system DTC using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are any DTCs present?</p>	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
6	<p>Inspect for continuity between PCM terminals 1BD, 1BG, 1AZ, 1BH and ground. Is there continuity?</p>	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
7	<p>Switch the ignition to ON (engine off). Measure the voltage at the PCM terminal 1BD, 1BG, 1AZ, 1BH (wiring harness-side). Is the voltage below 1.0 V?</p>	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
8	<p>Switch the ignition to ON (engine off). Access the VPWR PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the VPWR PID value B+?</p>	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
9	Disconnect the coil antenna connector. Switch the ignition to ON (engine off). Measure the voltage at the coil antenna terminal D (wiring harness-side). Is the voltage B+ ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between coil antenna terminal D and fuse panel.
10	Inspect the wiring harness between the following terminals (wiring harness-side) and related connectors: <ul style="list-style-type: none"> • Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Coil antenna terminal A—Instrument cluster terminal 2Q — Coil antenna terminal B—Instrument cluster terminal 2M — PCM terminal 1AM—Instrument cluster terminal 2B — PCM terminal 1AI—Instrument cluster terminal 2D • Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Coil antenna terminal A—Keyless control module terminal 2H — Coil antenna terminal B—Keyless control module terminal 2G — PCM terminal 1AM—Keyless control module terminal 2K — PCM terminal 1AI—Keyless control module terminal 2L Is there any malfunction?	Yes	Repair or replace the suspected wiring harness and connector.
		No	Go to the next step.
11	Inspect the following: <ul style="list-style-type: none"> • Battery connection • Battery condition (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Fuse (See 01-03B-14 NO.1 MELTING OF MAIN OR OTHER FUSES [L3 WITH TC].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat this step.
		No	Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to Step 24. Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to the next step.
12	Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction?	Yes	Replace the starter relay.
		No	Go to the next step.
13	Remove the starter relay. Switch the ignition to ON (engine off). Measure the voltage at the starter relay terminal E (wiring harness-side). Is the voltage B+ ?	Yes	Go to Step 16.
		No	Go to the next step.
14	Switch the ignition to off. Disconnect the keyless control module connector. Inspect for continuity between keyless control module terminal 3B (wiring harness-side) and starter relay terminal E (wiring harness-side). Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness and connector.
15	Inspect for continuity between keyless control module terminal 3B (wiring harness-side) and body ground. Is there continuity?	Yes	Repair or replace the suspected wiring harness and connector.
		No	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
16	Install the starter relay. Short the terminals of the starter interlock switch terminals A and B (wiring harness-side) using a jumper wire. Switch the ignition to start. Does the engine start?	Yes	Go to the next step.
		No	Go to Step 18.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
17	Reconnect all disconnected connectors. Measure the voltage at the keyless control module terminal 3O (wiring harness-side). Is the voltage following? • Clutch pedal depressed: Below 1.0 V • Clutch pedal released: B+	Yes	Inspect the following: • Wiring harness between battery positive terminal and starter cut relay • Starter cut relay (See 09-21-15 STARTER CUT RELAY INSPECTION [MTX].) Repair or replace the malfunctioning part according to the inspection result.
		No	Inspect the following: • Wiring harness between starter cut relay and starter interlock switch • Wiring harness between starter interlock switch and ground • Starter interlock switch (stuck) (See 01-19B-8 STARTER INTERLOCK SWITCH INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning part according to the inspection result.
18	Is the starter relay operation sound heard when the engine starting procedure is performed in Step 12?	Yes	Go to the next step.
		No	Go to Step 22.
19	Switch the ignition to ON (engine off). Measure the voltage at the keyless control module terminal 2F (wiring harness-side). Is the voltage B+ ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness and connector.
20	Switch the ignition to off. Disconnect the keyless control module and starter interlock switch connectors. Inspect for continuity between keyless control module terminal 3T (wiring harness-side) and starter cut relay terminal D (wiring harness-side). Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
21	Inspect the following: • Starter (See 01-19B-4 STARTER INSPECTION [L3 WITH TC].) • Wiring harness between the starter and ground • Starter power supply (from battery through secondary starter relay, to starter) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
22	Switch the ignition to off. Disconnect the keyless control module and starter interlock switch connectors. Inspect for continuity between keyless control module terminal 3T (wiring harness-side) and starter cut relay terminal D (wiring harness-side). Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness and connector.
23	Disconnect the PCM connector (with starter interlock switch connector left removed). Inspect for continuity between starter cut relay terminal D (wiring harness-side) and PCM terminal 1B (wiring harness-side). Is there continuity?	Yes	Go to Step 31.
		No	Repair or replace the suspected wiring harness and connector.
24	Inspect for continuity between PCM terminal 1B (wiring harness-side) and starter relay with clutch pedal depressed. Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
25	Switch the ignition to start with clutch pedal depressed. Is a clicking sound heard from the starter relay?	Yes	Go to Step 29.
		No	Go to the next step.
26	Inspect the starter interlock switch. (See 01-19B-8 STARTER INTERLOCK SWITCH INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Inspect the related wiring harness. Repair or replace the malfunctioning part according to the inspection result. Repeat Step 25.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
27	Inspect the starter relay and the wiring harness between the following: (See 09-21-17 RELAY INSPECTION.) <ul style="list-style-type: none"> • Starter relay and PCM • Starter relay and ignition switch Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 25.
		No	Go to the next step.
28	Inspect the ignition switch and the related wiring harness. (See 09-21-7 IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result. Repeat Step 25.
		No	Go to the next step.
29	Inspect the wiring harness between the following: <ul style="list-style-type: none"> • Starter relay and battery positive terminal • Starter relay and starter Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result, then go to the next step.
		No	Go to the next step.
30	Inspect the starting system. (See 01-19B-4 STARTER INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
31	Inspect for a seized/hydro locked engine or flywheel. Is the engine seized or hydro locked?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection result.
32	Perform the PCM DTC inspection using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are there any continuous memory DTCs present?	Yes	Continuous memory DTC is displayed: <ul style="list-style-type: none"> • Go to the appropriate DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].) Communication error message is displayed: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Open circuit in the wiring harness between main relay terminal B (wiring harness-side) and PCM terminal 1AT (wiring harness-side) — Open circuit in the wiring harness between main relay terminal C and PCM terminal 1BE (wiring harness-side) — Main relay (stuck open) (See 09-21-17 RELAY INSPECTION.) — Open or short circuit in the wiring harness between DLC-2 and PCM terminals 1AM or 1AI (wiring harness-side) — Open or poor ground circuit (PCM terminal 1BD, 1BG, 1AZ or 1BH) — Poor connection of vehicle body ground • Repair or replace the malfunctioning part according to the inspection result.
		No	Go to the next step.
33	Perform the KOEO self test using the M-MDS. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Are there DTCs displayed during the KOEO inspection?	Yes	Go to the appropriate DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Inspect the following: <ul style="list-style-type: none"> • Start circuit in ignition switch (vehicles without advanced keyless entry and push button start system) • Open circuit in wiring harness between battery and starter Repair or replace the malfunctioning part according to the inspection result.
34	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.4 HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK [L3 WITH TC]

id010339801000

4	HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK
DESCRIPTION	<ul style="list-style-type: none"> • Starter cranks the engine at normal speed but the engine requires excessive cranking time before starting. • Battery is operating normally.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Vacuum leakage • Poor fuel quality • Starting system malfunction • Erratic signal to ignition coils • Spark plug malfunction • Air leakage from intake-air system • Improper air/fuel mixture ratio control • Incorrect fuel injection timing • Erratic signal from CKP sensor • Erratic signal from CMP sensor • A/F sensor, HO2S or related circuit malfunction • ECT sensor No.1 or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • Intake-air system restriction • Improper operation of electronic throttle control system • PCV valve malfunction • Inadequate fuel pressure (high or low pressure side) • Relief valve malfunction (built-in fuel delivery pipe) • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Fuel filter clogging • Fuel line restriction • Fuel leakage • Fuel pump (low-side) resistor or related circuit malfunction • Fuel injector malfunction • Fuel pressure sensor (built-in fuel delivery pipe) malfunction • High pressure fuel pump malfunction • Exhaust system or TWC restriction • EGR valve malfunction • Purge solenoid valve malfunction • Low engine compression • Improper valve timing <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Fuel leakage • Intake-air system leakage or restriction • Vacuum leakage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
3	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the ECT PID value is less than 116 °C {241 °F} during driving. Is the ECT PID value less than specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	The cause of this concern could be from the cooling system overheating. <ul style="list-style-type: none"> Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
4	Will the engine run smoothly at part throttle?	Yes	Go to the next step.
		No	Go to Step 6.
5	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Go to the next step. If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
6	Disconnect the vacuum hose from purge solenoid valve and plug opening end of vacuum hose. Start the engine. Is the starting condition improper?	Yes	Inspect if the purge solenoid valve is stuck open. Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
7	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improper?	Yes	Replace the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
8	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) Damaged trigger wheel and camshaft Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
9	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> ECT MAF O2S11 O2S12 LONGFT1 SHTFT1 Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING". (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
10	Inspect for restriction in the exhaust system and the TWC. Is there any restriction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
11	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
12	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 17.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
13	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 15.
14	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to Step 16.
15	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. • Go to Step 21.
		No	Relief valve malfunction. • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
16	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: • Fuel line restriction • Fuel filter clogging • If normal: — Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [L3 WITH TC].) • If not: — Repair or replace the malfunctioning parts according to the inspection results.
17	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
18	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Does the starting system work properly?	Yes	Go to the next step.
		No	Inspect for the following: • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
19	Inspect the starting system. (See 01-19B-4 STARTER INSPECTION [L3 WITH TC].) Does the starting system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
20	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) • If a malfunction remains: — Repair or replace the malfunctioning part according to the inspection results.
21	Verify test results. • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.5 ENGINE STALLS-AFTER START/AT IDLE [L3 WITH TC]

id010339801100

5	ENGINE STALLS—AFTER START/AT IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine stops unexpectedly at idle or after start or both.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/C system improper operation • Air leakage from intake-air system • Purge solenoid valve malfunction • Improper operation of electronic throttle control system • EGR valve malfunction • Vacuum leakage • Engine overheating • Low engine compression • Ignition system malfunction • Poor fuel quality • PCV valve malfunction • Intake-air system restriction • Exhaust system and/or TWC restriction or clogging • Electrical connector disconnection • Open or short circuit in the fuel pump (low-side) body or related wiring harness • Fuel pump resistor or related circuit malfunction • No battery power supply to PCM or poor ground • Inadequate fuel pressure (high or low pressure side) • Fuel pressure sensor (built-in fuel delivery pipe) or related circuit malfunction • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Relief valve malfunction (built-in fuel delivery pipe) • Fuel pump (low-side) body mechanical malfunction • Fuel leakage • Fuel line restriction • Fuel filter clogging • Incorrect fuel injection timing • High pressure fuel pump malfunction • Fuel injector malfunction • Ignition coil malfunction • Improper air/fuel mixture ratio control • No signal from CKP sensor due to sensor, related wiring harness or wrong installation • Erratic signal from CMP sensor • A/F sensor, HO2S or related circuit malfunction • ECT sensor No.1 or related circuit malfunction • APP sensor or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • Improper valve timing • Improper operation of variable valve timing control system • Immobilizer system and/or circuit malfunction <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Do any of the following conditions appear? <ul style="list-style-type: none"> Engine does not start completely. Immobilizer system DTC B10DA:62 is displayed. 	Yes	Both conditions are appear: <ul style="list-style-type: none"> Go to Step 5.
		No	Either or other condition appears: <ul style="list-style-type: none"> Go to the next step.
2	Does the engine stall after approx. 2 s from when it is started?	Yes	Go to the next step.
		No	Retrieve the immobilizer system DTC using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Go to Step 15. If not: <ul style="list-style-type: none"> Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
3	Inspect if the coil antenna connector securely connected to the coil antenna. Is the coil antenna connector installed securely?	Yes	Go to the next step.
		No	Retighten the coil antenna connector, then repeat Step 2.
4	Does the security light flash?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> Instrument cluster (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Wiring harness between keyless control module terminal 2K and instrument cluster terminal 2B Wiring harness between keyless control module terminal 2L and instrument cluster terminal 2D Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> Instrument cluster (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Wiring harness between PCM terminal 1AM and instrument cluster terminal 2B Wiring harness between PCM terminal 1AI and instrument cluster terminal 2D Repair or replace the malfunctioning part according to the inspection results.
5	Retrieve the immobilizer system DTC using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
6	Inspect for continuity between PCM terminals 1BD, 1BG, 1AZ, 1BH and ground. Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
7	Switch the ignition to ON (engine off). Measure the voltage at the PCM terminal 1BD, 1BG, 1AZ, 1BH (wiring harness-side). Is the voltage below 1.0 V ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
8	Switch the ignition to ON (engine off). Access the VPWR PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the VPWR PID value B+ ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
9	Disconnect the coil antenna connector. Switch the ignition to ON (engine off). Measure the voltage at the coil antenna terminal D (wiring harness-side). Is the voltage B+ ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between coil antenna terminal D and fuse panel.
10	Inspect the following wiring harness and connectors: <ul style="list-style-type: none"> • Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Between coil antenna terminal A and keyless control module terminal 2H — Between coil antenna terminal B and keyless control module terminal 2G • Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Between coil antenna terminal A and instrument cluster terminal 2Q — Between coil antenna terminal B and instrument cluster terminal 2M Is there any malfunction (open or short circuit, terminal corrosion, etc.)?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to the next step. Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to Step 15.
11	Inspect for continuity between keyless control module terminal 2B (wiring harness-side) and body ground. Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
12	Switch the ignition to ON (engine off). Measure the voltage at the keyless control module terminal 1B, 3C and 4AA (wiring harness-side). Is the voltage below 1.0 V ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
13	Switch the ignition to ON (engine off). Measure the voltage at the keyless control module terminal 2A, 2C and 2E (wiring harness-side). Is the voltage B+ ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
14	Inspect the following wiring harnesses and connectors. <ul style="list-style-type: none"> • Between keyless control module terminal 2L and PCM terminal 1AI • Between keyless control module terminal 2K and PCM terminal 1AM Is there any malfunction (open or short circuit, terminal corrosion, etc.)?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
15	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Intake-air system leakage and restriction • Electrical connectors • Poor connection for PCM ground and body ground • Fuel leakage • Vacuum leakage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
16	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
17	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the ECT PID value is less than 116 °C {241 °F} during driving. Is the ECT PID value less than specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	The cause of this concern could be from the cooling system overheating. <ul style="list-style-type: none"> Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
18	Switch the ignition to ON (engine off). Access the VPWR PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the VPWR PID value B+ ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between main relay terminal C and PCM terminal 1BE.
19	<p>Note</p> <ul style="list-style-type: none"> Following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. <p>Connect the pressure gauges to A/C low side and high side pressure lines. Turn the A/C on and measure low side and high side pressures. Are the pressures within the specifications? (See 07-10-6 REFRIGERANT PRESSURE CHECK.)</p>	Yes	Go to the next step.
		No	If the A/C is always on: <ul style="list-style-type: none"> Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].) <p>For other symptoms:</p> <ul style="list-style-type: none"> Inspect the following: <ul style="list-style-type: none"> Refrigerant charging amount Condenser fan operation Repair or replace the malfunctioning part according to the inspection results.
20	Will the engine run smoothly at part throttle?	Yes	Go to the next step.
		No	Go to Step 22.
21	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Go to the next step. If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
22	Disconnect the vacuum hose between purge solenoid valve and intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Start the engine. Is the engine stall now eliminated?	Yes	Inspect the following: <ul style="list-style-type: none"> Purge solenoid valve (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) EVAP system <p>Repair or replace the malfunctioning parts according to the inspection results.</p>
		No	Go to the next step.
23	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
24	Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable valve timing control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

01-03B

STEP	INSPECTION	RESULTS	ACTION
25	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
26	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • ECT • APP1 • APP2 • MAF • O2S11 • O2S12 • LONGFT1 • SHTFT1 Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the “INTERMITTENT CONCERN TROUBLESHOOTING.” (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
27	Inspect for restriction in the exhaust system and TWC. Is there any restriction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
28	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
29	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 31.
		No	Go to the next step.
30	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump or fuel pressure sensor) malfunction.
		No	Relief valve or fuel pressure sensor malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
31	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging <ul style="list-style-type: none"> — If normal: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) — If not: <ul style="list-style-type: none"> • Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
32	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Does the starting system work properly?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
33	Disconnect the fuel injector connectors. Connect the NOID light to the fuel injector harness-side terminals. Inspect the NOID light dim during cranking. Does the NOID light illuminate?	Yes	Go to the next step.
		No	Inspect the fuel injector wiring harnesses. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the suspected wiring harness.
34	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is the PCV valve normal?	Yes	Replace the fuel injector. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].) If a malfunction remains: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results.
		No	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
35	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.6 CRANKS NORMALLY BUT WILL NOT START [L3 WITH TC]

id010339801200

6	CRANKS NORMALLY BUT WILL NOT START
DESCRIPTION	<ul style="list-style-type: none"> • Starter cranks engine at normal speed but engine will not run. • Refer to symptom troubleshooting "NO.5 ENGINE STALLS" if this symptom appears after the engine stalls. • Fuel is in tank. • Battery is in normal condition.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air leakage from intake-air system • Open PCM ground or vehicle body ground • Improper operation of electronic throttle control system • EGR valve malfunction • Low engine compression • Engine overheating • Vacuum leakage • Ignition system malfunction • Poor fuel quality • PCV valve malfunction • Intake-air system restriction • Improper air/fuel mixture ratio control • No signal from CKP sensor due to sensor, related wire or incorrect installation • No signal from CMP sensor due to sensor, related wire or incorrect installation • A/F sensor, HO2S or related circuit malfunction • ECT sensor No.1 or related circuit malfunction • APP sensor or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • High pressure fuel pump malfunction • Exhaust system or TWC malfunction • Disconnected electrical connector • Open or short in fuel pump (low-side) body and related harness • Inadequate fuel pressure (high or low pressure side) • Fuel pressure sensor (built-in fuel delivery pipe) or related circuit malfunction • Relief valve malfunction (built-in fuel delivery pipe) • Fuel line clogging or restriction • Incorrect fuel injection timing • Fuel pump resistor or control relay malfunction • Fuel pump (low-side) mechanical malfunction • Fuel leakage • Fuel injector malfunction • Purge solenoid valve malfunction • Spark plug malfunction • Ignition coil malfunction • Improper valve timing • Improper operation of variable valve timing control system • Immobilizer system or related wiring harness malfunction <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Do any of the following conditions appear? <ul style="list-style-type: none"> • Engine does not start completely. • Immobilizer system DTC B10DA:62 is displayed. 	Yes	Both conditions are appear: <ul style="list-style-type: none"> • Go to Step 5.
		No	Either or other condition appears: <ul style="list-style-type: none"> • Go to the next step.
2	Does the engine stall after approx. 2 s from when it is started?	Yes	Go to the next step.
		No	Retrieve the immobilizer system DTC using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Go to Step 15. • If not: <ul style="list-style-type: none"> — Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
3	Inspect if the coil antenna connector securely connected to the coil antenna. Is the coil antenna connector installed securely?	Yes	Go to the next step.
		No	Retighten the coil antenna connector, then repeat Step 2.
4	Does the security light illuminate?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Instrument cluster (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) — Wiring harness between keyless control module terminal 2K and instrument cluster terminal 2B — Wiring harness between keyless control module terminal 2L and instrument cluster terminal 2D • Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Instrument cluster (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) — Wiring harness between PCM terminal 1AM and instrument cluster terminal 2B — Wiring harness between PCM terminal 1AI and instrument cluster terminal 2D Repair or replace the malfunctioning part according to the inspection results.
5	Retrieve the immobilizer system DTC using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	Go to the next step.
6	Inspect for continuity between PCM terminals 1BD, 1BG, 1AZ, 1BH and ground. Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
7	Switch the ignition to ON (engine off). Measure the voltage at the PCM terminal 1BD, 1BG, 1AZ, 1BH (wiring harness-side). Is the voltage below 1.0 V ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
8	Switch the ignition to ON (engine off). Access the VPWR PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the VPWR PID value B+ ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
9	Disconnect the coil antenna connector. Switch the ignition to ON (engine off). Measure the voltage at the coil antenna terminal D (wiring harness-side). Is the voltage B+ ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between coil antenna terminal D and fuse panel.
10	Inspect the following wiring harness and connectors: <ul style="list-style-type: none"> • Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Between coil antenna terminal A and keyless control module terminal 2H — Between coil antenna terminal B and keyless control module terminal 2G • Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> — Between coil antenna terminal A and instrument cluster terminal 2Q — Between coil antenna terminal B and instrument cluster terminal 2M Is there any malfunction (open or short circuit, terminal corrosion, etc.)?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to the next step. Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to Step 15.
11	Inspect for continuity between keyless control module terminal 2B (wiring harness-side) and body ground. Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
12	Switch the ignition to ON (engine off). Measure the voltage at the keyless control module terminal 1B, 3C and 4AA (wiring harness-side). Is the voltage below 1.0 V ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
13	Switch the ignition to ON (engine off). Measure the voltage at the keyless control module terminal 2A, 2C and 2E (wiring harness-side). Is the voltage B+ ?	Yes	Go to the next step.
		No	Repair or replace the suspected wiring harness.
14	Inspect the following wiring harnesses and connectors. <ul style="list-style-type: none"> • Between keyless control module terminal 2L and PCM terminal 1AI • Between keyless control module terminal 2K and PCM terminal 1AM Is there any malfunction (open or short circuit, terminal corrosion, etc.)?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
15	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Intake-air system leakage and restriction • Electrical connectors • Fuses • Poor connection for PCM ground and body ground • Fuel leakage • Vacuum leakage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
16	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
17	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the ECT PID value is less than 116 °C {241 °F} during driving. Is the ECT PID value less than specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	The cause of this concern could be from the cooling system overheating. <ul style="list-style-type: none"> • Perform the symptom troubleshooting “NO.17 COOLING SYSTEM CONCERNS-OVERHEATING”. (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
18	Does the engine start with throttle close?	Yes	Go to the next step.
		No	Go to Step 23.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
19	Will the engine start and run smoothly at part throttle?	Yes	Go to the next step.
		No	Go to Step 21.
20	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Go to the next step. If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
21	Access the RPM PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the RPM PID value indicating engine speed when the cranking engine.	Yes	Go to the next step.
		No	Inspect the CKP sensor for following: <ul style="list-style-type: none"> Installation condition (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) Damaged trigger wheel and camshaft Open or short circuit in wiring harnesses Repair or replace the malfunctioning parts according to the inspection results.
22	Inspect CMP sensor for the following: <ul style="list-style-type: none"> Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) Damaged trigger wheel and camshaft Open or short circuit in wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
23	Disconnect the vacuum hose between purge solenoid valve and intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Start the engine. Is the engine stall now eliminated?	Yes	Inspect the following: <ul style="list-style-type: none"> Purge solenoid valve (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) EVAP system Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
24	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
25	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> ECT APP1 APP2 MAF O2S11 O2S12 LONGFT1 SHTFT1 Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING." (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
26	Inspect for restriction in the exhaust system and TWC. Is there any restriction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
27	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
28	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Crank the engine. Does the FUEL_PRES PID value increase?	Yes	Go to Step 30.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
29	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Crank the engine. Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Does the FUEL_PRES PID value increase?	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump or fuel pressure sensor) malfunction.
		No	Relief valve or fuel pressure sensor malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
30	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging — If normal: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) — If not: <ul style="list-style-type: none"> • Repair or replace the malfunctioning parts according to the inspection results.
31	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Does the starting system work properly?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
32	Disconnect the fuel injector connectors. Connect the NOID light to the fuel injector harness-side terminals. Inspect the NOID light dim during cranking. Does the NOID light illuminate?	Yes	Go to the next step.
		No	Inspect the fuel injector wiring harnesses. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the suspected wiring harness.
33	Inspect the OCV. (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].) Is the OCV normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
34	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is the PCV valve normal?	Yes	Replace the fuel injector. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].) If a malfunction remains: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results.
		No	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
35	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.7 SLOW RETURN TO IDLE [L3 WITH TC]

id010339801300

7	SLOW RETURN TO IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine takes more time than normal to return to idle speed. • Engine speed continues at fast idle after warm-up.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ECT sensor No.1 or related circuit malfunction • Thermostat is stuck open • Incorrect fuel injection timing • Erratic signal from CKP sensor • Erratic signal from CMP sensor • APP sensor or related circuit malfunction • Air suction in intake-air system • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • Fuel pressure sensor (built-in fuel delivery pipe) or related circuit malfunction • Excessive fuel pressure • Relief valve malfunction (built-in fuel delivery pipe) • Fuel injector malfunction • Cooling fan control system malfunction • Improper load signal input • Injector driver circuit (built-in PCM) malfunction <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the air suction in the intake-air system components while racing the engine to higher speed. Is there any air suction?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Start the engine and warm it up completely. Is the ECT PID value below 82 °C {180 °F} ?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting “NO.18 COOLING SYSTEM CONCERNS-RUNS COLD”. (See 01-03B-70 NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [L3 WITH TC].)
4	Verify the cooling fan operation. Does the cooling fan operate properly according to the ECT PID value?	Yes	Go to the next step.
		No	Perform the Cooling Fan Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning part according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
5	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
6	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • ECT • APP1 • APP2 • MAF Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the "INTERMITTENT CONCERN TROUBLESHOOTING." (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
7	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 11.
		No	Go to the next step.
8	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 10.
9	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 11.
10	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump or fuel pressure sensor) malfunction. <ul style="list-style-type: none"> • Go to Step 13.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
11	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
12	Remove the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].) Inspect the thermostat. (See 01-12B-12 THERMOSTAT INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Inspect the throttle body. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> • If normal or the problem remains: <ul style="list-style-type: none"> — Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
13	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [L3 WITH TC]

id010339801400

8	ENGINE RUNS ROUGH/ROLLING IDLE
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed fluctuates between the specified idle speed and lower speed, and engine shakes excessively. • Idle speed is too slow and the engine shakes excessively.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air leakage from intake-air system • Improper operation of A/C system • Erratic signal to ignition coil • Spark plug malfunction • Purge solenoid valve malfunction • Improper operation of electronic throttle control system • EGR valve malfunction • Low engine compression or excessive unbalance for each cylinder • Improper valve timing • Improper operation of variable valve timing control system • Poor fuel quality • PCV valve malfunction • Intake-air system restriction • Exhaust system or TWC restriction or clogging • Disconnected electrical connectors • Inadequate fuel pressure (high or low pressure side) • Fuel pressure sensor (built-in fuel delivery pipe) malfunction • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Relief valve malfunction (built-in delivery pipe) • Fuel pump (low-side) body mechanical malfunction • Fuel filter restriction or clogging • Fuel leakage • Incorrect fuel injection timing • Unbalanced fuel injection amount for each cylinder • High pressure fuel pump malfunction • Fuel injector malfunction • Erratic signal from CKP sensor • Erratic or no signal from CMP sensor • ECT sensor No.1 or related circuit malfunction • MAP sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • APP sensor or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) malfunction • Incorrect or no load signal input • Engine overheating • Vacuum leakage <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Intake-air system restriction or leakage • Electrical connectors connection • Fuel leakage in fuel system • Vacuum leakage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the ECT PID value is less than 116 °C {241 °F} during driving. Is the ECT PID value less than specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	The cause of this concern could be from the cooling system overheating. <ul style="list-style-type: none"> • Perform the symptom troubleshooting “NO.17 COOLING SYSTEM CONCERNS-OVERHEATING”. (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
4	<p>Note</p> <ul style="list-style-type: none"> • Following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. Connect the pressure gauges to A/C low side and high side pressure lines. Turn the A/C on and measure low side and high side pressures. Are the pressures within the specifications? (See 07-10-6 REFRIGERANT PRESSURE CHECK.)	Yes	Go to the next step.
		No	If the A/C is always on: <ul style="list-style-type: none"> • Go to the symptom troubleshooting “NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY”. (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].) For other symptoms: <ul style="list-style-type: none"> • Inspect the following: <ul style="list-style-type: none"> — Refrigerant charging amount — Condenser fan operation • Repair or replace the malfunctioning part according to the inspection results.
5	Inspect the engine condition while tapping the EGR valve housing. Does the engine condition improve?	Yes	Replace the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
6	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Go to the next step. • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
7	Disconnect the vacuum hose between purge solenoid valve and intake manifold from the purge solenoid valve side. Plug the open end of the vacuum hose. Start the engine. Is the engine stall now eliminated?	Yes	Inspect the following: <ul style="list-style-type: none"> • Purge solenoid valve (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) • EVAP system Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
8	Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable valve timing control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
9	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
10	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • ECT • APP1 • APP2 • MAF • MAP Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the "INTERMITTENT CONCERN TROUBLESHOOTING." (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
11	Inspect for restriction in the exhaust system and TWC. Is there any restriction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
12	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
13	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 17.
		No	Go to the next step.
14	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 16.
15	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 17.
16	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
17	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging • If normal: <ul style="list-style-type: none"> — Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
18	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
19	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Does the starting system work properly?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
20	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> • If a malfunction remains: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results.
21	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

01-03B

NO.9 FAST IDLE/RUNS ON [L3 WITH TC]

id010339801500

9	FAST IDLE/RUNS ON
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed continues at fast idle after warm-up. • Engine runs after the ignition is switched off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ECT sensor No.1 or related circuit malfunction • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Fuel injector malfunction • Air leakage from intake-air system • Throttle body malfunction • APP sensor or related circuit malfunction • Improper operation of cruise control system • Improper load signal input • Improper operation of electric throttle control system <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Start the engine and warm it up completely. Is the ECT PID value between 82—112 °C {180—234 °F} ?	Yes	Go to the next step.
		No	ECT PID value is higher than 112 °C {234 °F} : <ul style="list-style-type: none"> Perform the symptom troubleshooting “NO.17 COOLING SYSTEM CONCERNS-OVERHEATING”. (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].) ECT PID value is less than 82 °C {180 °F} : <ul style="list-style-type: none"> Perform the symptom troubleshooting “NO.18 COOLING SYSTEM CONCERNS-RUNS COLD”. (See 01-03B-70 NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [L3 WITH TC].)
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Inspect for leakage in the intake-air system. Is there any leakage?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
4	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> If normal: — Go to the next step. If not: — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
5	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> AC_REQ APP1 APP2 ECT Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> If normal: — Perform the “INTERMITTENT CONCERN TROUBLESHOOTING”. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) If not: — Repair or replace the malfunctioning parts according to the inspection results.
6	Inspect the high pressure fuel pump. (See 01-14B-20 HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
8	Inspect the operation of the cruise control system. Does the cruise control system work properly?	Yes	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Repair or replace the malfunctioning parts according to the inspection results.
9	Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.10 LOW IDLE/STALLS DURING DECELERATION [L3 WITH TC]

id010339801600

10	LOW IDLE/STALLS DURING DECELERATION
DESCRIPTION	<ul style="list-style-type: none"> • Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor fuel quality • Vacuum leakage • Improper operation of electronic throttle control system • Air leakage from intake-air system • Intake-air system restriction • EVAP control system malfunction • Improper air/fuel mixture ratio control • Erratic signal from CKP sensor • Erratic signal from CMP sensor • APP sensor or related circuit malfunction • TP sensor or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • A/F sensor, HO2S or related circuit malfunction • Brake switch or related circuit malfunction • CPP switch or related circuit malfunction • Neutral switch or related circuit malfunction • Improper operation of A/C magnetic clutch • Inadequate fuel pressure (high or low pressure side) • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Relief valve malfunction (built-in fuel delivery pipe) • Fuel leakage • Fuel line restriction • Fuel filter clogging • Incorrect fuel injection timing • High pressure fuel pump malfunction • Fuel injector malfunction • Low engine compression • Improper valve timing • EGR system malfunction • Vacuum leakage • ECT sensor No.1 or related circuit malfunction • Fuel pressure sensor (built-in fuel delivery pipe) malfunction <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the engine idle rough?	Yes	Perform the symptom troubleshooting "NO.8 ENGINE RUNS ROUGH/ROLLING IDLE". (See 01-03B-38 NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [L3 WITH TC].)
		No	Go to the next step.
2	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Intake-air system restriction or leakage • Fuel leakage in fuel system • Vacuum leakage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
3	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
4	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
5	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • AC_REQ • APP1 • APP2 • BOO • ECT • MAF • TP_REL • O2S11 • O2S12 • LONGFT1 • SHTFT1 Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the "INTERMITTENT CONCERN TROUBLESHOOTING." (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
6	Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the EGR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
7	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Go to the next step. • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
8	Perform the Purge Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the purge solenoid valve work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
9	Perform the A/C Cut-off Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the A/C cut-off operation work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
10	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 14.
		No	Go to the next step.
11	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 13.
12	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to Step 14.
13	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
14	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Fuel line restriction • Fuel filter clogging • If normal: <ul style="list-style-type: none"> — Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
15	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
16	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> • If a malfunction remains: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results.
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
17	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.11 ENGINE STALLS/QUITS, ENGINE RUNS ROUGH, MISSES, BUCK/JERK, HESITATION/STUMBLE, SURGES [L3 WITH TC]

id010339801700

11	ENGINE STALLS/QUITS—ACCELERATION/CRUISE ENGINE RUNS ROUGH—ACCELERATION/CRUISE MISSES—ACCELERATION/CRUISE BUCK/JERK—ACCELERATION/CRUISE/DECELERATION HESITATION/STUMBLE—ACCELERATION SURGES—ACCELERATION/CRUISE
DESCRIPTION	<ul style="list-style-type: none">• Engine stops unexpectedly at beginning of acceleration or during acceleration.• Engine stops unexpectedly while cruising.• Engine speed fluctuates during acceleration or cruising.• Engine misses during acceleration or cruising.• Vehicle bucks/jerks during acceleration, cruising, or deceleration.• Momentary pause at beginning of acceleration or during acceleration.• Momentary minor irregularity in engine output.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

11	<p>ENGINE STALLS/QUITS—ACCELERATION/CRUISE ENGINE RUNS ROUGH—ACCELERATION/CRUISE MISSES—ACCELERATION/CRUISE BUCK/JERK—ACCELERATION/CRUISE/DECELERATION HESITATION/STUMBLE—ACCELERATION SURGES—ACCELERATION/CRUISE</p>
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper operation of A/C system • Air leakage from intake-air system • Intake-air system restriction • Purge solenoid valve malfunction • Improper operation of electronic throttle control system • EGR system malfunction • Low engine compression • Turbocharger malfunction • Improper operation of wastegate control system • Vacuum leakage • Poor fuel quality • Main relay intermittent malfunction • Throttle body malfunction • Engine overheating • Spark plug malfunction • Variable swirl system malfunction • Air cleaner restriction • PCV valve malfunction • Improper valve timing due to jumping out timing chain • Exhaust system and/or TWC restriction • Intermittent open or short circuit in fuel pump circuit • Incorrect fuel injection timing • Inadequate fuel pressure (high or low pressure side) • Fuel pressure sensor (built-in fuel delivery pipe) malfunction • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Relief valve malfunction (built-in delivery pipe) • High pressure fuel pump malfunction • Fuel injector malfunction • Improper fuel pump speed control operation • Fuel pump mechanical malfunction • Fuel line restriction or clogging • Improper air/fuel mixture ratio control operation • Erratic or no signal from CMP sensor • Erratic signal from CKP sensor • A/F sensor, HO2S or related circuit malfunction • APP sensor or related circuit malfunction • ECT sensor No.1 or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • IAT sensor (integrated in MAF/IAT sensor) or related circuit malfunction • MAP sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • Boost air temperature sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • Intermittent open or short circuit MAF sensor, APP sensor, TP sensor and VSS • Clutch slippage <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Air leakage from intake-air system • Intake-air system restriction • Air cleaner element • Fuel leakage from fuel line • Clutch slippage • Vacuum leakage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the ECT PID value is less than 116 °C {241 °F} during driving. Is the ECT PID value less than specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	The cause of this concern could be from the cooling system overheating. <ul style="list-style-type: none"> • Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
4	Perform the Main Relay Operation Inspection with wiggle the related harness. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the main relay operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
5	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
6	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • APP1 • APP2 • BAT • CPP • PNP • ECT • MAF • IAT • MAP • FP • VSS • O2S11 • O2S12 • LONGFT1 • SHTFT1 Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the "INTERMITTENT CONCERN TROUBLESHOOTING". (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
7	Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the EGR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
8	Perform the A/C Cut-off Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the A/C cut-off operation work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
9	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> • If normal: — Go to the next step. • If not: — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
10	Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable swirl system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
11	Perform the Purge Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the purge solenoid valve work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
12	Perform the Fuel Pump Speed Control Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the fuel pump speed control work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
13	Perform the Wastegate Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the wastegate control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
14	Remove the parts necessary to inspect the turbocharger without removing the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Inspect if the turbocharger compressor wheel is bent, damaged, or interfering with housing on vehicle. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
15	Inspect the turbocharger compressor wheel locknut is loose or has fallen down inside the turbocharger. Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
16	Inspect the turbocharger compressor wheel by hand. Does the wheel turn easily and smoothly?	Yes	Go to the next step.
		No	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
17	Inspect the turbocharger turbine wheel is damaged, cracked or interfering with housing on vehicle. Note <ul style="list-style-type: none"> • Inspect all fins on each turbine wheel. Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
18	Is any engine oil found inside the turbocharger turbine housing?	Yes	Excessive amount of oil is found: <ul style="list-style-type: none"> • Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Small amount of oil is found: <ul style="list-style-type: none"> • Wipe the oil out of the vehicle, then go to the next step.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
19	Is any engine oil found inside the turbocharger compressor housing?	Yes	Wipe the oil out of the vehicle and install all removed parts in Step 14, then go to the next step.
		No	Turbocharger is normal: <ul style="list-style-type: none"> Install all removed parts in Step 14, then go to the next step.
20	Inspect for restriction in the exhaust system and TWC. Is there any restriction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
21	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
22	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 24.
		No	Go to the next step.
23	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve or fuel pressure sensor malfunction. <ul style="list-style-type: none"> Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
24	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> Fuel line restriction Fuel filter clogging If normal: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
25	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
26	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> Damaged valve seat Worn valve stem and valve guide Worn or stuck piston ring Worn piston, piston ring or cylinder Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
27	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> If a malfunction remains: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
28	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE [L3 WITH TC]

id010339801800

12	LACK/LOSS OF POWER—ACCELERATION/CRUISE
DESCRIPTION	<ul style="list-style-type: none"> • Performance is poor under load (e.g., power down when climbing hills).

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

12	LACK/LOSS OF POWER—ACCELERATION/CRUISE
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper operation of A/C system • Improper operation of A/C cut-off control • Air leakage or restriction from intake-air system • Loose turbocharger compressor to intake manifold duct connecting • Turbocharger rotating assembly binding or dragging • Wastegate control solenoid valve malfunction (stuck open) • Turbocharger malfunction • Charge air cooler malfunction • Variable swirl system malfunction • Improper operation of electronic throttle control system • Purge solenoid valve malfunction • EGR system malfunction • Brake dragging • Low engine compression • Poor fuel quality • Vacuum leakage • Incorrect signal to ignition coil • Spark plug malfunction • Engine overheating • Throttle body malfunction • Air cleaner restriction or dirty • PCV valve malfunction • Improper valve timing due to jumping out of timing chain • Improper operation of variable valve timing control system • Restriction in exhaust system or TWC • Leakage at exhaust manifold or turbocharger mounting flange • Intermittent open or short fuel pump related circuit • Inadequate fuel pressure (high-or low pressure side) • Fuel pressure sensor (built-in fuel delivery pipe) malfunction • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Relief valve malfunction (built-in fuel delivery pipe) • High pressure fuel pump malfunction • Improper operation of fuel pump speed control • Fuel pump mechanical malfunction • Fuel line restriction or clogging • Fuel injector malfunction • Incorrect fuel injection timing • Erratic signal from CKP sensor • Erratic or no signal from CMP sensor • ECT sensor No.1 or related circuit malfunction • MAP sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • APP sensor or related circuit malfunction • MAF/IAT sensor or related circuit malfunction • Boost air temperature sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • Intermittent open or short circuit MAF sensor, APP sensor, TP sensor and VSS • Clutch slippage <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Air cleaner restriction or dirty • Intake-air system restriction or leakage • Charge air cooler condition (restriction or damaged) • Turbocharger compressor-to-intake manifold duct loose connection • Leakage at exhaust manifold or turbocharger mounting flange • Vacuum leakage • Brake dragging • Clutch slippage Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Is the engine overheating?	Yes	Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
		No	Go to the next step.
4	Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the EGR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
5	Perform the A/C Cut-off Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the A/C cut-off operation work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
6	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Go to the next step. • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
7	Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable swirl system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
8	Perform the Variable Valve Timing Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable valve timing control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
9	Perform the Purge Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the purge solenoid valve work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
10	Perform the Fuel Pump Speed Control Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the fuel pump speed control work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
11	Perform the Wastegate Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the wastegate control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
12	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • BAT • ECT • MAF • IAT • APP1 • APP2 • TP REL • MAP • FP (Low side pressure line) • VSS Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the “INTERMITTENT CONCERN TROUBLESHOOTING.” (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
13	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
14	Inspect the spark plug condition. Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: <ul style="list-style-type: none"> • Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) • Repair or replace the malfunctioning parts according to the inspection results. Spark plug is grayish white: <ul style="list-style-type: none"> • Go to Step 24.
		No	Reinstall the spark plugs on the original cylinders, then go to the next step.
15	Inspect for restriction in the exhaust system and TWC. Is there any restriction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
16	Remove the parts necessary to inspect the turbocharger without removing the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Inspect if the turbocharger compressor wheel is bent, damaged, or interfering with housing on vehicle. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
17	Inspect the turbocharger compressor wheel locknut is loose or has fallen down inside the turbocharger. Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
18	Inspect the turbocharger compressor wheel by hand. Does the wheel turn easily and smoothly?	Yes	Go to the next step.
		No	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
19	Inspect the turbocharger turbine wheel is damaged, cracked or interfering with housing on vehicle. Note <ul style="list-style-type: none"> Inspect all fins on each turbine wheel. Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
20	Is any engine oil found inside the turbocharger turbine housing?	Yes	Excessive amount of oil is found: <ul style="list-style-type: none"> Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].) Small amount of oil is found: <ul style="list-style-type: none"> Wipe the oil out of the vehicle, then go to the next step.
		No	Go to the next step.
21	Is any engine oil found inside the turbocharger compressor housing?	Yes	Wipe the oil out of the vehicle and install all removed parts in Step 16, then go to the next step.
		No	Turbocharger is normal: <ul style="list-style-type: none"> Install all removed parts in Step 16, then go to the next step.
22	Inspect for fuel leakage in the fuel line. Is there any leakage?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
23	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 25.
		No	Go to the next step.
24	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve or fuel pressure sensor malfunction. <ul style="list-style-type: none"> Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
25	Connect the fuel pressure gauge between the fuel pump and the high pressure fuel pump. Measure the fuel pressure line of the low pressure side. (See 01-14B-6 FUEL LINE PRESSURE INSPECTION [L3 WITH TC].) Is the fuel pressure within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> Fuel line restriction Fuel filter clogging If normal: <ul style="list-style-type: none"> Replace the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/ INSTALLATION [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
26	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
27	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
28	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> • If a malfunction remains: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results.
29	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.13 KNOCKING/PINGING [L3 WITH TC]

id010339801900

13	KNOCKING/PINGING
DESCRIPTION	<ul style="list-style-type: none"> Sound is produced when air/fuel mixture is ignited by something other than a spark plug (e.g., hot spot in the combustion chamber).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Poor fuel quality Engine overheating due to cooling system malfunction Variable swirl solenoid valve stuck closed Improper operation of electronic throttle system Air leakage or restriction from intake-air system ECT sensor No.1 or related circuit malfunction MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction IAT sensor (integrated in MAF/IAT sensor) or related circuit malfunction Boost air temperature sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction Incorrect fuel injection timing or amount Fuel injector malfunction KS or related circuit malfunction Ignition system malfunction Erratic signal from CMP sensor Inadequate engine compression Inadequate fuel pressure (high-pressure side) MAP sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction Wastegate control solenoid valve malfunction (stuck closed) Charge air cooler malfunction Fuel pressure sensor (built-in fuel delivery pipe) malfunction APP sensor or related circuit malfunction Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) Exhaust system and/or TWC restriction EGR system malfunction <p>Warning</p> <ul style="list-style-type: none"> The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Verify that the ECT PID value is less than 116 °C {241 °F} during driving. Is the ECT PID value less than specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	The cause of this concern could be from the cooling system overheating. <ul style="list-style-type: none"> Perform the symptom troubleshooting “NO.17 COOLING SYSTEM CONCERNS-OVERHEATING”. (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
2	Inspect for the following: <ul style="list-style-type: none"> Air leakage or restriction from intake-air system Fuel quality (proper octane, contamination, winter/summer blend) Exhaust system and/or TWC restriction Charge air cooler condition (restriction or damaged) Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> Repeat this step.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
3	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	Inspect the KS. (See 01-40B-35 KNOCK SENSOR (KS) INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the KS. (See 01-40B-34 KNOCK SENSOR (KS) REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the EGR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
6	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Go to the next step. • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
7	Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable swirl system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
8	Perform the Wastegate Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the wastegate control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
9	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
10	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
11	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • BAT • ECT • MAF • IAT • APP1 • APP2 • TP REL • MAP Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the "INTERMITTENT CONCERN TROUBLESHOOTING." (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
12	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 14.
		No	Go to the next step.
13	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve or fuel pressure sensor malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
14	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Inspect the fuel injector for each cylinder. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) Replace the fuel injector if necessary. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
15	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.14 POOR FUEL ECONOMY [L3 WITH TC]

id010339802000

14	POOR FUEL ECONOMY
DESCRIPTION	<ul style="list-style-type: none"> • Fuel economy is unsatisfactory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Contaminated air cleaner element • Engine cooling system malfunction • Weak spark • Spark plug malfunction • Poor fuel quality • Erratic signal from CKP sensor • Erratic or no signal from CMP sensor • Fuel pressure sensor (built-in fuel delivery pipe) malfunction • ECT sensor No.1 or related circuit malfunction • MAP sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • APP sensor or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • Contaminated MAF sensor • IAT sensor (integrated in MAF/IAT sensor) or related circuit malfunction • Boost air temperature sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • VSS or related circuit malfunction • CPP switch or related circuit malfunction • Neutral switch or related circuit malfunction • Variable swirl system malfunction • Improper coolant level • Inadequate fuel pressure (high-pressure side) • Injection timing is incorrect • Fuel injector or related circuit malfunction • High pressure fuel pump malfunction • Fuel leakage • Fuel line restriction • Fuel filter clogging • PCV valve malfunction • Brake dragging • Clutch slippage • Improper operation of A/C system • Improper valve timing due to jumping out of timing chain • Improper engine compression • Turbocharger malfunction • Charge air cooler malfunction • Exhaust system and/or TWC clogging • EGR system malfunction • Vacuum leakage <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Air cleaner element for contamination • Intake-air system restriction • Fuel quality (proper octane, contamination, winter/summer blend) • Coolant level • Clutch slippage • Brake dragging • Charge air cooler condition (restriction or damaged) • Vacuum leakage • Fuel leakage • MAF sensor contaminated • Exhaust system and/or TWC restriction Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Perform the Cooling Fan Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the cooling fan system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
4	Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the EGR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
5	Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable swirl system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
6	Perform the Wastegate Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the wastegate control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
7	Perform the A/C Cut-off Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the A/C cut-off operation work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
8	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
9	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
10	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • APP1 • APP2 • BAT • ECT • MAF • CPP • PNP • IAT • TP REL • MAP • VSS Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. • If normal: — Perform the “INTERMITTENT CONCERN TROUBLESHOOTING.” (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: — Repair or replace the malfunctioning parts according to the inspection results.
11	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 15.
		No	Go to the next step.
12	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 14.
13	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to Step 15.
14	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. • Go to Step 19.
		No	Relief valve or fuel pressure sensor malfunction. • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
15	Inspect the turbocharger. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
16	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
17	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Go to the next step.
		No	Inspect for the following: • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
18	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) • If a malfunction remains: — Repair or replace the malfunctioning part according to the inspection results.
19	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.15 EMISSION COMPLIANCE [L3 WITH TC]

id010339802100

15	EMISSION COMPLIANCE
DESCRIPTION	<ul style="list-style-type: none"> • Fails emissions test.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor fuel quality • Vacuum lines leakage or blockage • Cooling system malfunction • Engine overheating • Spark plug malfunction • Air leakage from intake-air system • Variable swirl system malfunction • Improper operation of wastegate control system • Turbocharger malfunction • Charge air cooler malfunction • Inadequate fuel pressure (high-pressure side) • PCV valve malfunction or incorrect valve installation • EGR system malfunction • Exhaust system and/or TWC restriction • Fuel tank ventilation system malfunction • Charcoal canister damage • Air cleaner element clogging or restriction • Throttle body malfunction • Improper operation of electronic throttle control system • Relief valve malfunction (built-in fuel delivery pipe) • Spill valve control solenoid valve malfunction (built-in high pressure fuel pump) • Improper air/fuel mixture ratio control operation • Erratic or no signal from CMP sensor • Erratic signal from CKP sensor • A/F sensor, HO2S or related circuit malfunction • ECT sensor No.1 or related circuit malfunction • MAF sensor (integrated in MAF/IAT sensor) or related circuit malfunction • IAT sensor (integrated in MAF/IAT sensor) or related circuit malfunction • Boost air temperature sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • Fuel pressure sensor (built-in fuel delivery pipe) malfunction • APP sensor or related circuit malfunction • TP sensor or related circuit malfunction • MAP sensor (integrated in MAP sensor/boost air temperature sensor) or related circuit malfunction • VSS or related circuit malfunction • CPP switch or related circuit malfunction • Neutral switch or related circuit malfunction • Fuel line restriction • High pressure fuel pump malfunction • Fuel injector or related circuit malfunction • Incorrect fuel injection timing • TWC malfunction • Engine internal parts malfunction • Excessive carbon is built-up in combustion chamber • Improper engine compression • Improper valve timing <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is the engine overheating?	Yes	Perform the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See 01-03B-68 NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC].)
		No	Go to the next step.
2	Is the engine runs cold?	Yes	Perform the symptom troubleshooting "NO.18 COOLING SYSTEM CONCERNS-RUNS COLD". (See 01-03B-70 NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [L3 WITH TC].)
		No	Go to the next step.
3	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	Inspect for the following: <ul style="list-style-type: none"> • Fuel quality (proper octane, contamination, winter/summer blend) • Charge air cooler condition (restriction or damaged) • Air cleaner element (clogging or restriction) • Intake-air system leakage • PCV valve installation • Vacuum line leakage or blockage • Fuel leakage at fuel system • Charcoal canister damaged • Exhaust system and/or TWC restriction Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
5	Perform the EGR Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the EGR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
6	Perform the TP sweep inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the electronic throttle control system work properly?	Yes	Visually inspect the throttle body (damage/scratching). <ul style="list-style-type: none"> • If normal: — Go to the next step. • If not: — Repair or replace the malfunctioning parts according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
7	Perform the Variable Swirl System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the variable swirl system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
8	Perform the Wastegate Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the wastegate control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
9	Perform the Evaporative Emission (EVAP) System Leak Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is the EVAP system normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
10	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
11	Inspect the CMP sensor and CKP sensor for the following: <ul style="list-style-type: none"> • Installation condition (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) • Damaged trigger wheel and camshaft • Open or short circuit in the wiring harnesses Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
12	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> • APP1 • APP2 • BAT • ECT • MAF • IAT • TP REL • MAP • VSS • CPP • PNP • O2S11 • O2S12 • LONGFT1 • SHTFT1 Do the PID values indicate the correct values under the trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> • If normal: <ul style="list-style-type: none"> — Perform the "INTERMITTENT CONCERN TROUBLESHOOTING." (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) • If not: <ul style="list-style-type: none"> — Repair or replace the malfunctioning parts according to the inspection results.
13	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 17.
		No	Go to the next step.
14	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 16.
15	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 17.
16	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. <ul style="list-style-type: none"> • Go to Step 22.
		No	Relief valve or fuel pressure sensor malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
17	Inspect the turbocharger. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
18	Inspect the TWC. Is there any malfunction?	Yes	Replace the TWC. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
19	Perform the Fuel Injector Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Do the fuel injectors operate normally?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
20	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Go to the next step.
		No	Inspect for the following: <ul style="list-style-type: none"> • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
21	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Replace the PCM (injector driver circuit malfunction). (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) <ul style="list-style-type: none"> • If a malfunction remains: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results.
22	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.16 HIGH OIL CONSUMPTION/LEAKAGE [L3 WITH TC]

id010339802200

16	HIGH OIL CONSUMPTION/LEAKAGE
DESCRIPTION	<ul style="list-style-type: none"> • Oil consumption is excessive.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper dipstick • Improper engine oil viscosity • PCV valve malfunction • Engine internal parts malfunction • Seal leakage at the compressor or turbine end of turbocharger (indicated by oil in housing on wheel) • Oil leakage

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> • Proper dipstick • Proper engine oil viscosity • Engine oil level Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
2	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	Inspect the oil leakage from outside of the engine. Is there any leakage?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
4	Remove the parts necessary to inspect the turbocharger without removing the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Visually inspect for the oil leakage inside turbocharger compressor and turbine housing. Is there any leakage?	Yes	Excessive amount of oil is found: <ul style="list-style-type: none"> Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Small amount of oil is found: <ul style="list-style-type: none"> Wipe the oil out of the vehicle, then go to the next step.
		No	Go to the next step.
5	Is any engine oil found around oil pipes attached on the turbocharger center housing?	Yes	If oil leaks from damaged pipe: <ul style="list-style-type: none"> Replace the oil pipe, then install all removed parts in Step 4.
		No	Inspect the internal engine parts such as valves, valve guides, valve stem seals, cylinder head drain passage, and piston rings. Repair or replace the malfunctioning parts according to the inspection results, then install all removed parts in Step 4.
6	Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [L3 WITH TC]

id010339802300

17	COOLING SYSTEM CONCERNS—OVERHEATING
DESCRIPTION	<ul style="list-style-type: none"> Engine runs at higher than normal temperature/overheats.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Improper coolant level Blown fuse Coolant leakage (engine internal, turbocharger, external) Excessive A/C system pressure Improper operation of A/C system Improper water/anti-freeze mixture Fans reverse rotation Poor radiator condition Thermostat malfunction Radiator hose damage Cooling fan inoperative Improper or damaged radiator cap Coolant overflow system malfunction Improper drive belt tension Drive belt damage ECT sensor No.1 or related circuit malfunction ECT sensor No.2 or related circuit malfunction Instrument cluster malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for the following: <ul style="list-style-type: none"> Engine coolant level Coolant leakage (around heater unit in passenger compartment, coolant hoses and/or radiator.) Water and anti-freeze mixture Radiator condition Collapsed or restricted radiator hoses Radiator pressure cap Coolant overflow system Fan rotational direction Fuses Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> Repeat this step.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	Perform the KOEO or KOER self test using the M-MDS. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	Start the engine and run it at idle speed. Turn the A/C switch off. Does the A/C compressor disengaged?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].)
5	Perform the Cooling Fan Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the cooling fan system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
6	Inspect the drive belt. (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
7	Inspect for leakage around heater unit in the passenger compartment. Is there any leakage?	Yes	Inspect the heater unit for leakage. Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
8	Inspect for leakage at the coolant hoses and/or radiator. Is there any leakage?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
9	Cool down the engine. Remove the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/ INSTALLATION [L3 WITH TC].) Inspect the thermostat. (See 01-12B-12 THERMOSTAT INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Reinstall the thermostat, then go to the next step. (See 01-12B-11 THERMOSTAT REMOVAL/ INSTALLATION [L3 WITH TC].)
10	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Inspect for both ECT PID and temperature gauge readings. Does the ECT PID value accord with the engine coolant temperature indicator readings?	Yes	The engine coolant temperature and thermostat are normal. <ul style="list-style-type: none"> Inspect the engine block for leakage or blockage. Repair or replace the malfunctioning part according to the inspection results.
		No	If the low engine coolant temperature indicator light on the instrument cluster indicates turned off but the ECT PID value is not the same as the low engine coolant temperature indicator light condition: <ul style="list-style-type: none"> Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) Replace the ECT sensor No.1 if necessary. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/ INSTALLATION [L3 WITH TC].) If the low engine coolant temperature indicator light indication on the instrument cluster illuminates but the ECT PID value is normal: <ul style="list-style-type: none"> Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Replace the instrument cluster if necessary. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
11	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.18 COOLING SYSTEM CONCERNS—RUNS COLD [L3 WITH TC]

id010339802400

18	COOLING SYSTEM CONCERNS—RUNS COLD
DESCRIPTION	<ul style="list-style-type: none"> • Engine does not reach normal operating temperature.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Thermostat malfunction • Condenser fan system malfunction • Cooling fan system malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is a customer complaint "Lack of passenger compartment heat" only?	Yes	Inspect the A/C heater system. <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
2	Does the engine speed continue at fast idle?	Yes	Perform the symptom troubleshooting "NO.9 FAST IDLE/RUNS ON". (See 01-03B-41 NO.9 FAST IDLE/RUNS ON [L3 WITH TC].)
		No	Go to the next step.
3	Perform the Cooling Fan Control System Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the cooling fan system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
4	Cool down the engine. Remove the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/ INSTALLATION [L3 WITH TC].) Inspect the thermostat. (See 01-12B-12 THERMOSTAT INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Reinstall the thermostat, then go to the next step. (See 01-12B-11 THERMOSTAT REMOVAL/ INSTALLATION [L3 WITH TC].)
5	Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Inspect for both ECT PID and temperature gauge readings. Does the ECT PID value accord with the engine coolant temperature indicator readings?	Yes	The engine coolant temperature and thermostat are normal. <ul style="list-style-type: none"> • Inspect the engine block for leakage or blockage. • Repair or replace the malfunctioning part according to the inspection results.
		No	If the low engine coolant temperature indicator light on the instrument cluster indicates turned off but the ECT PID value is not the same as the low engine coolant temperature indicator light condition: <ul style="list-style-type: none"> • Inspect the ECT sensor No.1. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].) • Replace the ECT sensor No.1 if necessary. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/ INSTALLATION [L3 WITH TC].) If the low engine coolant temperature indicator light indication on the instrument cluster illuminates but the ECT PID value is normal: <ul style="list-style-type: none"> • Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) • Replace the instrument cluster if necessary. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
6	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.19 EXHAUST SMOKE [L3 WITH TC]

id010339802500

19	EXHAUST SMOKE
DESCRIPTION	<ul style="list-style-type: none"> • Blue, black, or white smoke from exhaust system.
POSSIBLE CAUSE	<p>Blue smoke (Burning oil):</p> <ul style="list-style-type: none"> • PCV valve malfunction • Engine internal oil leakage • Oil leakage at the compressor or turbine end of the turbocharger <p>White smoke (Water in combustion):</p> <ul style="list-style-type: none"> • Cooling system malfunction (coolant loss) • Engine internal coolant leakage • Coolant leakage at the compressor or the turbine end of the turbocharger <p>Black smoke (Rich fuel mixture):</p> <ul style="list-style-type: none"> • Air cleaner restriction • Intake-air system is collapsed or restricted • Leakage at engine intake or exhaust manifold • Wastegate control solenoid valve malfunction (stuck open) • Excessive fuel pressure • Improper engine compression • Ignition system malfunction • Improper fuel injection timing and amount <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	What color is smoke coming from the exhaust system?	Blue	Burning oil is indicated. <ul style="list-style-type: none"> • Go to the next step.
		White	Water in combustion is indicated. <ul style="list-style-type: none"> • Go to Step 5.
		Black	Rich fuel mixture is indicating. <ul style="list-style-type: none"> • Go to Step 6.
2	Inspect the PCV valve. (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
3	Remove the parts necessary to inspect the turbocharger without removing the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Visually inspect for the turbocharger compressor housing. Is any engine oil found inside turbocharger compressor housing?	Yes	Install all removed parts in this step. <ul style="list-style-type: none"> Excessive amount of oil is found: <ul style="list-style-type: none"> Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Small amount of oil is found: <ul style="list-style-type: none"> Wipe the oil out of the vehicle, then go to the next step.
		No	Turbocharger is normal. <ul style="list-style-type: none"> Install all removed parts in this step, then go to the next step.
4	Inspect for the following engine internal parts: <ul style="list-style-type: none"> Damaged valve guide, stems or valve seals Blocked oil drain passage in cylinder head Piston ring is not seated, seized or worn Damage cylinder bore Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Engine internal parts are normal. <ul style="list-style-type: none"> If other driveability symptoms are present: <ul style="list-style-type: none"> Return to diagnostic index to service additional symptoms.
5	Does the cooling system hold the coolant pressure? (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)	Yes	Inspect for the following: <ul style="list-style-type: none"> Cylinder head gasket leakage Intake manifold gasket leakage Cracked or porous engine block <ul style="list-style-type: none"> If other driveability symptoms are present: <ul style="list-style-type: none"> Return to diagnostic index to service additional symptoms. If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
		No	Inspect for the cause. <ul style="list-style-type: none"> If there is any malfunction: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
6	Inspect for the following for intake-air system: <ul style="list-style-type: none"> Air cleaner restriction Collapsed or restricted Leakage Is there any malfunction?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
7	Access the following PIDs using the M-MDS : (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) <ul style="list-style-type: none"> APP1 APP2 BAT ECT MAF IAT TP REL MAP VSS CPP PNP O2S11 O2S12 LONGFT1 SHTFT1 Monitor the PIDs under the black smoke appeared engine condition. Do all PID values indicate normal according to the engine conditions? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.
8	Access the same PIDs as in Step 7 under the trouble condition. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Do the PID values indicate correct values under trouble condition? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Inspect the suspected parts and related wiring harness. <ul style="list-style-type: none"> If normal: <ul style="list-style-type: none"> Perform the "INTERMITTENT CONCERN TROUBLESHOOTING. (See 01-03B-89 INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
9	Inspect the wastegate. (See 01-13B-14 WASTEGATE ACTUATOR INSPECTION [L3 WITH TC].) Does the wastegate stuck open?	Yes	Perform the Wastegate Control System Operation Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
10	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 14.
		No	Go to the next step.
11	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 13.
12	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to Step 14.
13	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. • Go to Step 16.
		No	Relief valve malfunction. • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
14	Perform the Spark Test. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
15	Measure the compression pressure for each cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Are compression pressures within the specification?	Yes	Inspect the fuel injector for each cylinder. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC]) Replace the suspected fuel injector. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC])
		No	Inspect for the following: • Damaged valve seat • Worn valve stem and valve guide • Worn or stuck piston ring • Worn piston, piston ring or cylinder • Improper valve timing Repair or replace the malfunctioning parts according to the inspection results.
16	Verify test results. • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.20 FUEL ODOR (IN ENGINE COMPARTMENT) [L3 WITH TC]

id010339802600

20	FUEL ODOR (IN ENGINE COMPARTMENT)
DESCRIPTION	<ul style="list-style-type: none"> • Gasoline fuel smell or visible leakage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Excessive fuel pressure • Purge solenoid valve malfunction • Fuel system vent system blockage • Evaporative gas leakage • Improper connection of evaporative related vacuum hoses • Charcoal canister malfunction • Fuel leakage from fuel system <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Visually inspect the fuel leakage at the fuel line. Is there any leakage?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
2	Inspect the vacuum hose routine. (See 01-13B-3 INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC].) Are vacuum hoses routines properly?	Yes	Go to the next step.
		No	Reconnect the vacuum hose.
3	Perform the Evaporative Emission (EVAP) System Leak Inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is the EVAP system normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
4	Inspect the airflow of the purge solenoid valve. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].) Is the purge solenoid airflow properly?	Yes	Go to the next step.
		No	Replace the purge solenoid valve. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
5	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Monitor the FUEL_PRES PID while idle and race the engine. Is the FUEL_PRES PID value indicate 15 MPa {153 kgf/cm², 2175 psi} or less?	Yes	Inspect the charcoal canister for fuel saturation. <ul style="list-style-type: none"> • If excess amount of liquid fuel is present: <ul style="list-style-type: none"> — Replace the charcoal canister. (See 01-16B-5 CHARCOAL CANISTER REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Inspect the fuel pressure sensor and high pressure fuel pump. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) (See 01-14B-20 HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC].) Replace the fuel pressure sensor or high pressure fuel pump if necessary. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
6	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.21 ENGINE NOISE [L3 WITH TC]

id010339802700

21	ENGINE NOISE
DESCRIPTION	<ul style="list-style-type: none"> • Engine noise from under hood.
POSSIBLE CAUSE	<p>Squeal, click or chirp noise:</p> <ul style="list-style-type: none"> • Improper engine oil level • Loose installation of solenoid valves • Improper drive belt tension <p>Rumble or grinding sound noise:</p> <ul style="list-style-type: none"> • Loose parts • Fluid level low or air in power the steering fluid • Improper drive belt tension <p>Hiss sound noise:</p> <ul style="list-style-type: none"> • Vacuum leakage • Loose spark plug • Air leakage from the intake-air system <p>Rattle noise:</p> <ul style="list-style-type: none"> • Loose parts <p>Rap or roar noise:</p> <ul style="list-style-type: none"> • Exhaust system looseness <p>Excessive noise from turbocharger</p> <ul style="list-style-type: none"> • Foreign objects or material in the compressor inlet to the intake manifold ducting or the compressor housing • Carbon built-up in the turbine housing • Turbocharger routing assembly banding or dragging • Loose intake or exhaust ducting systems <p>Other noise:</p> <ul style="list-style-type: none"> • Camshaft friction gear noise or MLA noise • Timing chain noise <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is the noise from the turbocharger?	Yes	Go to Step 8.
		No	Go to the next step.
2	Is squeal, click or chirp sound present?	Yes	Inspect the engine oil level, solenoid valves installation or drive belt tension. Repair or replace the malfunctioning part according to the inspection results if necessary.
		No	Go to the next step.
3	Is rumble or grinding sound present?	Yes	Inspect the following: <ul style="list-style-type: none"> • Drive belt tension • Loose parts in engine compartment • Power steering system fluid level <ul style="list-style-type: none"> — If normal: <ul style="list-style-type: none"> • Perform the power steering fluid line air bleed. (See 06-14-3 AIR BLEEDING.) — If not: <ul style="list-style-type: none"> • Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
4	Is rattle sound present?	Yes	Inspect the location of rattle for loose parts. Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
5	Is hiss sound present?	Yes	Inspect the following: <ul style="list-style-type: none"> • Vacuum leakage • Spark plug looseness • Intake-air system leakage Repair or replace the malfunctioning part according to the inspection results if necessary.
		No	Go to the next step.
6	Is rap or roar sound present?	Yes	Inspect the exhaust system or loose parts. Repair or replace the malfunctioning part according to the inspection results if necessary.
		No	Go to the next step.
7	Is knocking noise present?	Yes	Perform the symptom troubleshooting "NO.13 KNOCKING/PINGING". (See 01-03B-57 NO.13 KNOCKING/PINGING [L3 WITH TC].)
		No	If noise comes from engine internal: <ul style="list-style-type: none"> • Inspect for the friction gear, timing chain or MLA noise. • Repair or replace the malfunctioning part according to the inspection results.
8	Inspect the intake and exhaust housing system for loose installation. Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
9	Remove the parts necessary to inspect the turbocharger without removing the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) Inspect if the turbocharger compressor wheel is bent, damaged, or interfering with housing on vehicle. (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
10	Inspect the turbocharger compressor wheel locknut is loose or has fallen down inside the turbocharger. Is there any malfunction?	Yes	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	Inspect the turbocharger compressor wheel by hand. Does the wheel turn easily and smoothly?	Yes	Go to the next step.
		No	Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
12	Visually inspect the turbine housing. Is there any carbon built-up or foreign material on the turbine housing?	Yes	Clean built-up carbon or remove foreign materials. <ul style="list-style-type: none"> If turbine housing damaged: <ul style="list-style-type: none"> Replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Install the all removal parts at Step 9. Inspect all turbocharger related parts installed correctly. <ul style="list-style-type: none"> If a malfunction remains: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results.
13	Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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NO.22 VIBRATION CONCERNS (ENGINE) [L3 WITH TC]

id010339802800

22	VIBRATION CONCERNS (ENGINE)
DESCRIPTION	<ul style="list-style-type: none"> Vibration from under the hood or driveline.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Loose attaching bolts or worn parts Components malfunction such as worn parts

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following components for loose attaching bolts or worn parts: <ul style="list-style-type: none"> Cooling fan Drive belt and pulley Engine mounts Exhaust system Is there any malfunction?	Yes	Inspect the following systems: <ul style="list-style-type: none"> Wheels Transmission and mounts Driveline Suspension Repair or replace the malfunctioning part according to the inspection results if necessary.
		No	Readjust or retighten suspect parts installation position. Service if necessary for other parts.
2	Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.23 A/C DOES NOT WORK SUFFICIENTLY [L3 WITH TC]

id010339802900

23	A/C DOES NOT WORK SUFFICIENTLY
DESCRIPTION	<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not engage when A/C is turned on.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM, climate control unit, instrument cluster or multi information display DTC is stored. • Refrigerant pressure sensor malfunction • Improper refrigerant charging amount • Seized A/C compressor • Evaporator temperature sensor malfunction • Open or short circuit in wiring harness between evaporator temperature sensor and climate control unit (Full-auto air conditioner) • Instrument cluster malfunction (Does not receive A/C request signal from climate control unit or transmit it to PCM) • Multi information display malfunction • Climate control unit malfunction (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal) • Open or short circuit in wiring harness between climate control unit terminal 2P and instrument cluster terminal 2I (Manual air conditioner) • A/C compressor malfunction • Open circuit in wiring harness between A/C magnetic clutch terminal A and body ground • A/C relay malfunction • Open circuit in wiring harness between A/C relay and PCM terminal 1I • Open circuit in wiring harness between ignition switch and A/C relay (vehicles without advanced keyless entry and push button start system) • Open circuit in wiring harness between IG2 relay and A/C relay (vehicles with advanced keyless entry and push button start system) • Open circuit in wiring harness between battery positive terminal and A/C relay • Open circuit in wiring harness between A/C relay and A/C magnetic clutch

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Switch the ignition to ON (engine off). Perform the PCM, instrument cluster, climate control unit and multi information display DTC inspection using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) (See 07-02-4 DTC DISPLAY.) (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].) (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) (See 07-02-5 DTC TABLE.) (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	Go to the next step.
2	Access the PCM PID ACCS using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Start the engine and idle it. Turn the ACCS PID to ON from OFF using the M-MDS simulation function. Is the A/C magnetic clutch engaged?	Yes	Manual air conditioner: <ul style="list-style-type: none"> • Go to Step 4. Full-auto air conditioner: <ul style="list-style-type: none"> • Go to the next step.
		No	Go to Step 13.
3	Access the climate control unit PID AC_PRES using the M-MDS. (See 07-02-22 PID/DATA MONITOR DISPLAY.) Monitor the climate control unit AC_PRES PID while turning on and off the air conditioner by switching the control panel. Is the AC_PRES PID value normal? (See 07-02-22 PID/DATA MONITOR TABLE.)	Yes	Go to Step 6.
		No	Go to Step 5.
4	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Measure the voltage at the climate control unit terminal 1H (wiring harness-side). Is the voltage normal? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)	Yes	Go to Step 7.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
5	Inspect the refrigerant pressure sensor. (See 07-40B-16 REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is there any malfunction?	Yes	Replace the refrigerant pressure sensor. (See 07-40B-15 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40A-24 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect the following: <ul style="list-style-type: none"> • Refrigerant charging amount • A/C compressor for seizure Repair or replace the malfunctioning part according to the inspection result.
6	Access the climate control unit PID EVAP_TEMP using the M-MDS. (See 07-02-22 PID/DATA MONITOR DISPLAY.) Monitor the climate control unit PID EVAP_TEMP while turning on and off the air conditioner by switching the control panel. Is the EVAP_TEMP PID value normal? (See 07-02-22 PID/DATA MONITOR TABLE.)	Yes	Go to Step 9.
		No	Go to Step 8.
7	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Measure the voltage at the climate control unit terminal 1C (wiring harness-side). Is the voltage normal? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)	Yes	Go to Step 11.
		No	Go to the next step.
8	Inspect the evaporator temperature sensor. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is there any malfunction?	Yes	Replace the evaporator temperature sensor. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect for open or short circuit between evaporator temperature sensor and climate control unit. Repair or replace the suspected wiring harness.
9	Verify the multi information display indication of A/C system while turning on and off the air conditioner by switching the control panel. Does the multi information display indicate properly?	Yes	Replace the instrument cluster (instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	Inspect the multi information display. (See 09-22-19 MULTI INFORMATION DISPLAY INSPECTION.) Is there any malfunction?	Yes	Replace the multi information display. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Replace the climate control unit (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal). (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
11	Remove the climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) Reconnect the climate control unit connector. Start the engine and idle it. Measure the voltage at the climate control unit terminal 2P (wiring harness-side) while turning on and off the air conditioner by switching the control panel. Is the voltage change in specified according to air control panel switching? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)	Yes	Replace the instrument cluster (instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
12	Inspect for open or short circuit between climate control unit terminal 2P (wiring harness-side) and instrument cluster terminal 2I (wiring harness-side). Is there any malfunction?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the climate control unit (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal). (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
13	Start the engine and idle it. Turn the PCM PID ACCS to ON from OFF using the M-MDS simulation function. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Measure the voltage at the A/C magnetic clutch terminal A (wiring harness-side). Is the voltage specified? Specification: • 10.5 V or more	Yes	Go to the next step.
		No	Go to Step 15.
14	Inspect for continuity between A/C magnetic clutch terminal A (wiring harness-side) and body ground. Is there continuity?	Yes	Replace the A/C compressor. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
15	Inspect the A/C relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction?	Yes	Replace the A/C relay.
		No	Go to the next step.
16	Switch the ignition to off. Disconnect the A/C relay and PCM connectors. Inspect for continuity between A/C relay and PCM terminal 1I (wiring harness-side). Is there continuity?	Yes	Inspect for open circuit between the following: • Ignition switch and A/C relay (vehicles without advanced keyless entry and push button start system) • IG2 relay and A/C relay (vehicles with advanced keyless entry and push button start system) • Battery positive terminal and A/C relay • A/C relay and A/C magnetic clutch Repair or replace the suspected wiring harness.
		No	Repair or replace the suspected wiring harness.
17	Verify test results. • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC]

id010339803000

24	A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY
DESCRIPTION	<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM, instrument cluster or climate control unit DTC is stored. • Short to power supply in wiring harness between A/C relay and magnetic clutch • A/C compressor magnetic clutch engagement is stuck. • A/C relay malfunction • Short to ground in wiring harness between A/C relay and PCM • Short to ground in wiring harness between climate control unit terminal 2P and instrument cluster (Manual air conditioner) • Climate control unit malfunction

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Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Switch the ignition to ON (engine off). Perform the PCM, instrument cluster and climate control unit DTC inspection using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) (See 07-02-4 DTC DISPLAY.) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].) (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) (See 07-02-5 DTC TABLE.)
		No	Go to the next step.
2	Start the engine and idle it. Turn the A/C switch on with blower switch is on. Remove the A/C relay. Does the A/C magnetic clutch disengage?	Yes	Go to Step 4.
		No	Go to the next step.
3	Switch the ignition to off. Disconnect the A/C compressor connector. Switch the ignition to ON (engine off). Measure the voltage at A/C compressor terminal B (wiring harness-side). Is the voltage B+ ?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the A/C compressor (A/C magnetic clutch engagement is stuck). (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
4	Inspect the A/C relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction?	Yes	Replace the A/C relay.
		No	Go to the next step.
5	Access the ACCS PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Start the engine and idle it. Turn the A/C switch on and off with blower switch is on. Is the ACCS PID value always ON?	Yes	Manual air conditioner: <ul style="list-style-type: none"> • Go to the next step. Full-auto air conditioner: <ul style="list-style-type: none"> • Replace the climate control unit (A/C switch signal is always on). (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Inspect for short to ground in wiring harness between PCM terminal 1I and A/C relay. Repair or replace the suspected wiring harness.
6	Switch the ignition to off. Disconnect the instrument cluster and climate control unit connectors. Inspect for continuity between climate control unit terminal 2P (wiring harness-side) and body ground. Is there continuity?	Yes	Repair or replace the suspected wiring harness.
		No	Replace the climate control unit (A/C switch signal is always on). (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
7	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.25 A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS [L3 WITH TC]

id010339803100

25	A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS
DESCRIPTION	<ul style="list-style-type: none"> • A/C compressor magnetic clutch does not disengage under WOT.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • APP sensor malfunction • Loosely installed APP sensor

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the A/C compressor disengage when the A/C switch is turned off?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].)
2	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Inspect the APP sensor. (See 01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].) Replace the accelerator pedal if necessary. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/ INSTALLATION [L3 WITH TC].)
3	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

NO.26 EXHAUST SULPHUR SMELL [L3 WITH TC]

id010339803200

26	EXHAUST SULPHUR SMELL
DESCRIPTION	<ul style="list-style-type: none"> • Rotten egg smell (sulphur) from exhaust.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Electrical connectors are disconnected or connected poorly • Charcoal canister malfunction • Vacuum lines are disconnected or connected improperly • Improper fuel pressure • Poor fuel quality <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Are any driveability or exhaust smoke concerns present?	Yes	Go to the appropriate flow chart. (See 01-03B-4 SYMPTOM DIAGNOSTIC INDEX [L3 WITH TC].)
		No	Go to the next step.
2	Inspect for the following: <ul style="list-style-type: none"> • Electrical connections • Vacuum lines • Fuel quality Is there any malfunction?	Yes	Service if necessary. <ul style="list-style-type: none"> • Repeat this step.
		No	Go to the next step.
3	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
4	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 8.
		No	Go to the next step.
5	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 7.
6	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to Step 8.
7	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
8	Inspect the charcoal canister for fuel saturation. (See 01-16B-6 CHARCOAL CANISTER INSPECTION [L3 WITH TC].) Is a excess amount of liquid fuel present in canister?	Yes	Replace the charcoal canister. (See 01-16B-5 CHARCOAL CANISTER REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Inspect the fuel tank vent system. <ul style="list-style-type: none"> • If the fuel tank vent system is normal: <ul style="list-style-type: none"> — Suggest trying a different brand since sulfur content can vary in different fuels. • If the fuel tank vent system is not normal: <ul style="list-style-type: none"> — Repair or replace the malfunctioning part according to the inspection results.
9	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.27 FUEL REFILL CONCERNS [L3 WITH TC]

id010339803300

27	FUEL REFILL CONCERNS
DESCRIPTION	<ul style="list-style-type: none"> • Fuel tank does not fill smoothly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clogged EVAP pipes • Nonreturn valve malfunction • Improper use of fuel nozzle • Inadequate fuel filling speed <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	Remove the fuel-filler pipe. Make sure nonreturn valve is installed properly. Inspect the nonreturn valve operation. Does the nonreturn valve operate properly?	Yes	Inspect for the following: <ul style="list-style-type: none"> • Improper use of fuel nozzle • Inadequate fuel filling speed Repair or replace the malfunctioning part according to the inspection results.
		No	Nonreturn valve is installed improperly: <ul style="list-style-type: none"> • Reinstall the nonreturn valve to proper position. Nonreturn valve does not operate properly: <ul style="list-style-type: none"> • Replace the nonreturn valve.
3	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.28 FUEL FILLING SHUT OFF CONCERNS [L3 WITH TC]

id010339803400

28	FUEL FILLING SHUT OFF CONCERNS
DESCRIPTION	<ul style="list-style-type: none"> • Fuel does not shut off properly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clogged EVAP pipes • Nonreturn valve malfunction • Fuel shut-off valve malfunction • Fuel nozzle malfunction • Fuel nozzle is not inserted correctly <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	Switch the ignition to ON. Retrieve any DTCs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	Remove the fuel-filler pipe. Make sure nonreturn valve is installed properly. Inspect the nonreturn valve operation. Does the nonreturn valve operate properly?	Yes	Inspect for the following: <ul style="list-style-type: none"> • Improper use of fuel nozzle • Fuel is not inserted correctly • Inspect fuel shut-off valve Repair or replace the malfunctioning part according to the inspection results.
		No	Nonreturn valve is installed improperly: <ul style="list-style-type: none"> • Reinstall the nonreturn valve to proper position. Nonreturn valve does not operate properly: <ul style="list-style-type: none"> • Replace the nonreturn valve.
3	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. <ul style="list-style-type: none"> — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

NO.29 SPARK PLUG CONDITION [L3 WITH TC]

id010339803600

29	SPARK PLUG CONDITION
DESCRIPTION	<ul style="list-style-type: none"> • Incorrect spark plug condition.
POSSIBLE CAUSE	<p>Note</p> <ul style="list-style-type: none"> • Inspecting the condition of the spark plugs can determine whether a problem is related to a specific cylinder or possibly all cylinders. <p>Wet/carbon stuck on specific plug:</p> <ul style="list-style-type: none"> • Spark—Weak, not visible • Air/fuel mixture—Excessive fuel injection volume • Compression—No compression, low compression • Malfunctioning spark plug <p>Grayish white with specific plug:</p> <ul style="list-style-type: none"> • Air/fuel mixture—Insufficient fuel injection volume • Malfunctioning spark plug <p>Wet/carbon is stuck on all plugs:</p> <ul style="list-style-type: none"> • Spark—Spark weak • Air/fuel mixture—Too rich, excessive fuel pressure • Compression—Low compression • Clogging in intake/exhaust system <p>Grayish white with all plugs:</p> <ul style="list-style-type: none"> • Air/fuel mixture—Too lean, insufficient fuel pressure <p>Warning</p> <ul style="list-style-type: none"> • The following troubleshooting flow chart contains the fuel system diagnosis and repair procedures. Read the following warnings before performing the fuel system services: <ul style="list-style-type: none"> — Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. — Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].) (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].) <p>Caution</p> <ul style="list-style-type: none"> • Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Remove all spark plugs. (See 01-18B-3 SPARK PLUG REMOVAL/ INSTALLATION [L3 WITH TC].) Inspect the spark plug condition. (See 01-18B-3 SPARK PLUG INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Specific plug is wet or covered with carbon: <ul style="list-style-type: none"> • Go to the next step. Specific plug looks grayish white: <ul style="list-style-type: none"> • Go to Step 10. All plugs are wet or covered with carbon: <ul style="list-style-type: none"> • Go to Step 12. All plugs look grayish white: <ul style="list-style-type: none"> • Go to Step 21.
		No	Symptom troubleshooting completed.
2	Is the spark plug wet/covered with carbon from engine oil?	Yes	Inspect all areas related to oil. Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
3	Inspect the spark plugs for the following: <ul style="list-style-type: none"> • Cracked insulator • Heat range • Air gap • Worn electrode Is there any malfunction?	Yes	Replace the spark plug. (See 01-18B-3 SPARK PLUG REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	Inspect the compression pressure at the suspected cylinder. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Is the compression pressure correct?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
5	Reinstall all the spark plugs. (See 01-18B-3 SPARK PLUG REMOVAL/ INSTALLATION [L3 WITH TC].) Perform the Spark Test at the suspected cylinder. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible (compare with normal cylinder)?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
6	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Inspect the suspected fuel injector for open or short circuit in the fuel injector. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
7	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 9.
8	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
9	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Relief valve malfunction. <ul style="list-style-type: none"> • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
10	Inspect the spark plug for the following. <ul style="list-style-type: none"> • Heat range • Air gap Is there any malfunction?	Yes	Replace the spark plug. (See 01-18B-3 SPARK PLUG REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
11	Perform the KOER self test using the M-MDS. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Is the suspected fuel injector circuit related DTC (P0201:00, P0202:00, P0203:00 or P0204:00) present?	Yes	Go to the applicable DTC inspection. (See 01-02B-127 DTC P0201:00 [L3 WITH TC].) (See 01-02B-129 DTC P0202:00 [L3 WITH TC].) (See 01-02B-131 DTC P0203:00 [L3 WITH TC].) (See 01-02B-133 DTC P0204:00 [L3 WITH TC].)
		No	Inspect the suspect fuel injector for resistance: (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) Repair or replace the malfunctioning parts according to the inspection results.
12	Is the air cleaner element free of blockage?	Yes	Go to the next step.
		No	Replace the air cleaner element.
13	Perform the Spark Test. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Is a strong blue spark visible at each cylinder?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
14	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to Step 18.
		No	Go to the next step.
15	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 17.

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
16	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
17	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction. • Go to Step 19.
		No	Relief valve malfunction. • Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
18	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • ECT • O2S11 (When engine can be started) • MAF Are all PIDs normal? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
19	Perform the Purge Control System Inspection (when engine can be started). (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].) Does the purge solenoid valve work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning parts according to the inspection results.
20	Inspect the engine compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) Is the engine compression normal?	Yes	Inspect for clogging in the exhaust system. Repair or replace the malfunctioning part according to the inspection results.
		No	Repair or replace the malfunctioning parts according to the inspection results.
21	When the engine cannot be started: • Inspect the intake-air system for air leakage. When the engine can be started: • Perform the intake manifold vacuum inspection. Is air sucked in from the intake-air system?	Yes	Repair or replace the malfunctioning parts according to the inspection results.
		No	Go to the next step.
22	Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specification? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) • ECT • O2S11 • O2S12 • MAF — If normal: • Inspect the PCM ground condition. • Repair or replace the malfunctioning part according to the inspection results. — If not: • Inspect the PCM ground condition. • Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
23	Is the vehicle accelerate performance normally?	Yes	Go to the next step.
		No	Go to Step 25.
24	Inspect the fuel pressure sensor. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].) Is there any malfunction?	Yes	Replace the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

STEP	INSPECTION	RESULTS	ACTION
25	Replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) Access the FUEL_PRES PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the FUEL_PRES PID value within the specified? (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	Yes	High-pressure fuel pump or spill valve control solenoid valve (built-in high pressure fuel pump) malfunction.
		No	Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) • ECT • O2S11 • O2S12 • MAF — If normal: • Inspect the PCM ground condition. • Repair or replace the malfunctioning part according to the inspection results. — If not: • Inspect the PCM ground condition. • Repair or replace the malfunctioning part according to the inspection results.
26	Verify test results. • If normal, return to the diagnostic index to service any additional symptoms. • If a malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform the repair or diagnosis. — If the vehicle is repaired, troubleshooting is completed. — If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

01-03B

INTERMITTENT CONCERN TROUBLESHOOTING [L3 WITH TC]

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Vibration Method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the steps below.

Note

- There are several reasons why the vehicle or engine vibration could cause an electrical malfunction. Check the following:
 - Connectors are not fully seated.
 - Wiring harnesses do not have full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose harness can cause a wiring harness to become pinched between parts.
- The connector joints, points of vibration, and places where the wiring harnesses pass through the firewall and body panels are the major areas to be checked.

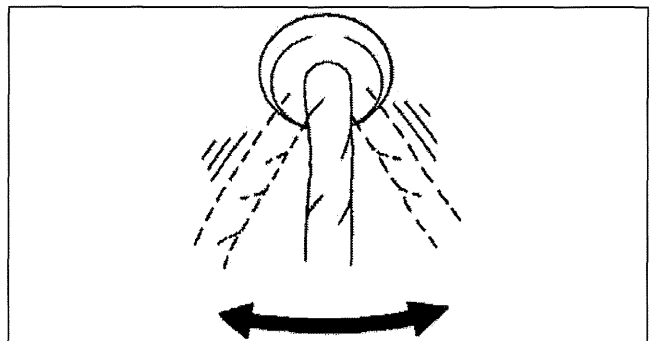
Inspection Method for Switch Connectors or Wires

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps during idle.

3. Access the PIDs for the switch you are inspecting.
4. Turn the switch on manually.
5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.
 - If the PID value is unstable, check for a poor connection.



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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

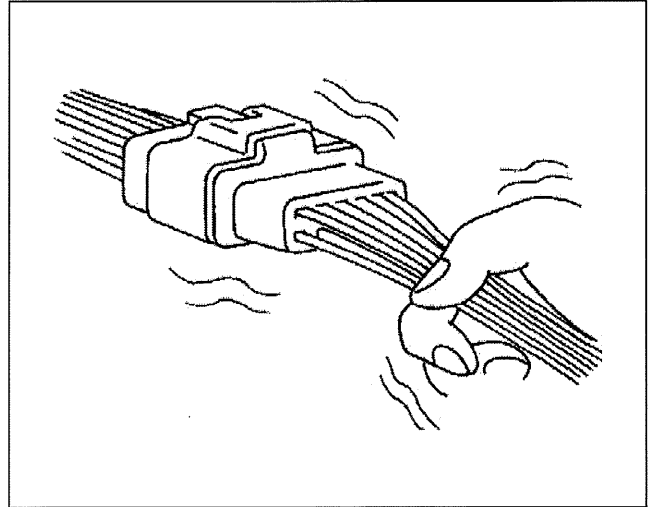
Inspection Method for Sensor Connectors or Wires

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps during idling.

3. Access the PIDs for the switch you are inspecting.
4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.
 - If the PID value is unstable, check for poor connection.



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Inspection Method for Sensors

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps during idle.

3. Access the PIDs for the switch you are inspecting.
4. Shake the sensor slightly with your finger.
 - If the PID value is unstable or a malfunction occurs, check for a poor connection or a poorly mounted sensor or both.

Inspection Method for Actuators or Relays

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

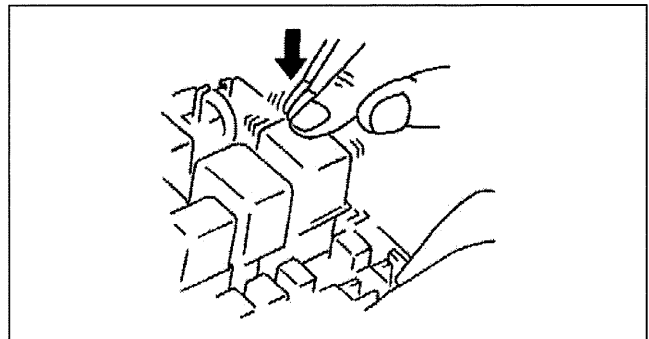
Note

- If engine starts and runs, perform the following steps during idling.

3. Prepare the output state control function for actuators or relays that you are inspecting.
4. Shake the actuator or relay with your finger for 3 s after the output state control function is activated.
 - If a variable click sound is heard, check for a poor connection or a poorly mounted actuator or both, or the relay.

Note

- Shake the relays too strongly may result in open circuits.



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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Water Sprinkling Method

If a malfunction occurs only during high humidity or rainy/snowy weather, perform the following steps:

Caution

- Indirectly change the temperature and humidity by spraying water onto the front of the radiator.
- If a vehicle is subject to water leakage, the leakage may damage the control module. When testing a vehicle with a water leakage problem, special caution must be used.

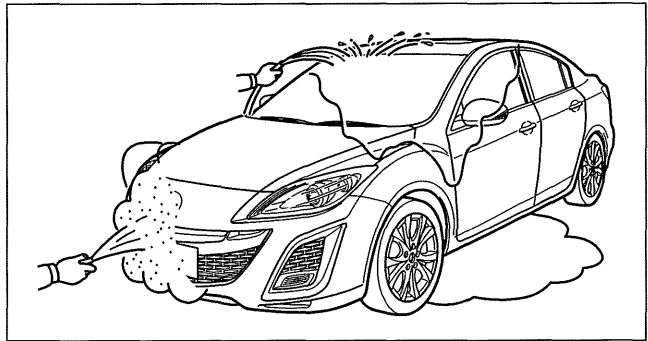
01-03B

1. Connect the M-MDS to the DLC-2 if you are inspecting sensors or switches.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps is idling.

3. Access the PIDs for the sensor or the switch if you are inspecting sensors or switches.
4. If you are inspecting the switch, turn it on manually.
5. Spray water onto the vehicle or run it through a car wash.
 - If the PID value is unstable or a malfunction occurs, repair or replace parts if necessary.



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ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC]

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Input Signal System Investigation Procedure

1. Find an unusual signal. (See 01-03B-91 Finding unusual signals.)
2. Locate the source. (See 01-03B-91 Locating the source of unusual signals.)
3. Repair or replace the defective part.
4. Confirm that the unusual signal has been erased.

Finding unusual signals

While referring to 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC], use the PID/DATA monitor and record function to inspect the input signal system relating to the problem.

1. Start the engine and idle the vehicle. You can assume that any signals that are out of specification by a wide margin are unusual.
2. When recreating the problem, any sudden change in the monitor input signals that is not consciously created by the driver can be determined as unusual.

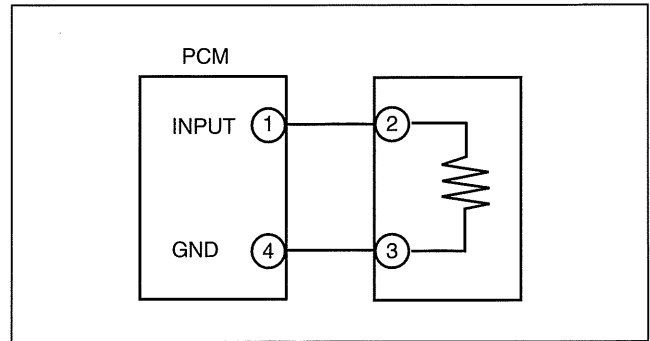
Locating the source of unusual signals

Caution

- Compare the M-MDS monitor voltage with the measurement voltage using the digital measurement system function. If you use another tester, a misreading may occur.
- When measuring the voltage, attach the tester ground to the ground of the PCM that is being tested, or to the engine itself. If this is not done, the measured voltage and actual voltage may differ.
- After connecting the pin to a waterproof coupler, confirm continuity and measure the voltage, and inspect the waterproof connector for cracks. If there are any, use sealant to fix them. Failure to do this may result in deterioration of the wiring harness or terminal from water damage, leading to problems with the vehicle.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Thermistor type (IAT sensor, ECT sensor No.1, ECT sensor No.2 and boost air temperature sensor)



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Investigate the input signal system for thermistor type

1. When an unusual signal is received, measure the #1 PCM terminal voltage.
 - If the #1 terminal voltage and the M-MDS monitor voltage are the same, proceed to the next step.
 - If there is a difference of **0.5 V or more**, inspect the following points concerning the PCM connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.
2. Measure the #2 sensor terminal voltage.
 - If there is a **0.5 V or more** difference between the sensor and M-MDS voltages, inspect the wiring harness for open or short circuits.
 - If the sensor and M-MDS voltages are the same, inspect the following points concerning the sensor connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.
 - If there are no problems, proceed to next investigation below.

Investigate the ground system for thermistor type

- Confirm that terminal sensor #3 is at **0 V**.
 - If it is at **0 V**, inspect the sensor. If necessary, replace the sensor.
 - If not, inspect for the following:
 - Open circuit in wiring harness
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.

Main Relay Operation Inspection

1. Verify that the main relay clicks when the ignition is switched to ON and then to off.
 - If there is no operation sound, inspect the following:
 - Main relay (See 09-21-17 RELAY INSPECTION.)
 - Wiring harness and connector between battery positive terminal and main relay terminal A
 - Wiring harness and connector between PCM terminal 1AT and main relay terminal B

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

01-03B

Intake Manifold Vacuum Inspection

1. Verify air intake hoses are installed properly.
2. Start the engine and run it is idling.
3. Disconnect the vacuum hose between the intake manifold and purge solenoid valve from the intake manifold side.
4. Connect a vacuum gauge to the intake manifold and measure the intake manifold vacuum.
 - If not as specified, inspect the following:

Specification

More than 60 kPa {450 mmHg, 18 inHg}

Note

- Air suction can be located by the engine speed change when lubricant is sprayed on the area where suction is occurring.
 - Air suction at throttle body, charge air cooler, intake manifold and PCV valve installation points
 - EGR valve (stuck open)
 - Engine compression (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].)

Electronic Throttle Control System Inspection

Engine coolant temperature compensation inspection

1. Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC])
 - ECT
 - IAT
 - RPM
2. Verify that the engine is cold, then start the engine.
3. Verify that the engine speed decreases as the engine warms up.
 - If the engine speed does not decrease or decreases slowly, inspect the following:
 - ECT sensor and related wiring harness (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)
 - Throttle body and related wiring harness (See 01-13B-12 THROTTLE BODY INSPECTION [L3 WITH TC].)

Load compensation inspection

1. Start the engine and run it is idling.
2. Verify that the DTC P0506:00 or P0507:00 is not displayed. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0506:00, or P0507:00 is displayed, perform the DTC inspection. (See 01-02B-199 DTC P0506:00 [L3 WITH TC].) (See 01-02B-201 DTC P0507:00 [L3 WITH TC].)
3. Access the RPM PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)

Note

- Excludes temporary idle speed drop just after the loads are turned on.

4. Verify that the engine speed is within the specification under each load condition.
 - If the load condition is not as specified, inspect the following:
 - A/C system (A/C request signal is always on or off) (See 01-03B-78 NO.23 A/C DOES NOT WORK SUFFICIENTLY [L3 WITH TC].) (See 01-03B-81 NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [L3 WITH TC].)
 - Electrical load
 - Charging system (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].)

Engine speed

Load condition	Engine speed (rpm)
	Neutral
No load	650—750
Electrical load on* ¹	650—750
A/C operating	700—800

*¹ : When the following electrical loads are on: Headlights, rear defroster, cooling fan No.1, cooling fan No.2, and the blower motor (2-step or more)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Throttle position (TP) sweep inspection

1. Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].)
2. Verify that none of the following DTCs are displayed:
 - P0122:00, P0123:00, P0222:00, P0223:00, P2100:00, P2101:00, P2107:00, P2108:00, P2119:00, P2122:00, P2123:00, P2127:00, P2128:00, P2135:00, P2138:00
 - If any one DTC is displayed, perform the DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)
3. Access the TP REL PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
4. Verify that the PID reading is within the CTP value. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If the PID reading is out of range, perform the following:
 - Remove the air duct from the throttle valve body.
 - Verify that the throttle valve opens when the accelerator pedal is depressed.
 - If the throttle valve opens, inspect the TP sensor and the related wiring harness. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].)
 - If the throttle valve does not open, inspect the throttle valve actuator control motor and the related wiring harness. (See 01-13B-12 THROTTLE BODY INSPECTION [L3 WITH TC].)
5. Gradually depress the throttle pedal and verify that the PID reading increases lineally.
 - If the PID reading drops momentarily, inspect the following:
 - TP sensor (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].)
6. Fully depress the throttle pedal and verify that the PID reading is within the WOT value. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If the PID reading is out of range, perform the following:
 - Remove the air duct from throttle body with connector connected.
 - Verify that the throttle valve opens when throttle pedal is depressed.
 - If the throttle valve opens, inspect the TP sensor and the related wiring harness. (See 01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].)
 - If the throttle valve does not open, inspect the throttle valve actuator control motor and the related wiring harness. (See 01-13B-12 THROTTLE BODY INSPECTION [L3 WITH TC].)

Variable Swirl System Operation Inspection

1. Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
2. Verify that the ECT PID is **below 0 °C {32 °F}**.
3. Start the engine.
4. Inspect the rod operation under the following conditions:

Rod operation

Engine speed	3,250 rpm	
	Below	Above
Shutter valve actuator	Operate	Not operate

If the rod operation is not specified, inspect as follows:

1. Perform the KOER self test using the M-MDS and verify that the DTCs P2004:00, P2006:00, P2009:00 or P2010:00 is not displayed. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].)
 - If the DTC P2004:00, P2006:00, P2009:00 or P2010:00 is displayed, perform DTC inspection. (See 01-02B-234 DTC P2004:00 [L3 WITH TC].) (See 01-02B-237 DTC P2006:00 [L3 WITH TC].) (See 01-02B-240 DTC P2009:00 [L3 WITH TC].) (See 01-02B-242 DTC P2010:00 [L3 WITH TC].)

If simulation function of M-MDS is used:

1. Switch the ignition to ON (engine off).
2. Turn the variable swirl solenoid valve from off to on using the IMRC PID and verify that the operation sound of the solenoid valve is heard.
 - If the operation sound is not heard, replace the variable swirl solenoid valve. (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].)
 - If the operation sound is not heard, inspect the following:
 - Vacuum hose and vacuum chamber for looseness or damage
 - Variable swirl shutter valve actuator (See 01-13B-12 VARIABLE SWIRL SHUTTER VALVE ACTUATOR INSPECTION [L3 WITH TC].)
 - Check valve is stuck open or closed.
 - Shutter valve cannot move smoothly.

If simulation function of M-MDS is not used:

1. Inspect the variable swirl solenoid valve. (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].)
 - If the variable swirl solenoid valve is not normal, replace the variable swirl solenoid valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - If the variable swirl solenoid valve is normal, inspect the following:
 - Vacuum hose and vacuum chamber for looseness or damage
 - Variable swirl shutter valve actuator (See 01-13B-12 VARIABLE SWIRL SHUTTER VALVE ACTUATOR INSPECTION [L3 WITH TC].)
 - Check valve is stuck open or closed.
 - Shutter valve cannot move smoothly.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Fuel Injector Operation Inspection

If simulation function of M-MDS is used:

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Start the engine and warm it up completely. Access the INJ_1, INJ_2, INJ_3, and INJ_4 PIDs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Turn the fuel injector from on to off using the PIDs for each cylinder. Does the engine speed drop? 	Yes Fuel injectors work properly.
		No Engine speed does not drop on any cylinder: <ul style="list-style-type: none"> Go to the next step. Engine speed drops on some cylinders: <ul style="list-style-type: none"> Go to Step 4.
2	<ul style="list-style-type: none"> Perform the Main Relay Operation Inspection. (See 01-03B-92 Main Relay Operation Inspection.) Does the main relay work properly? 	Yes Go to the next step.
		No Repair or replace the malfunctioning part according to the inspection results.
3	<ul style="list-style-type: none"> Inspect the fuel injector of the suspected cylinder. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the fuel injector. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Inspect the fuel injector power and/or ground systems related wiring harness and connectors for the suspected cylinder. <ul style="list-style-type: none"> If all items normal: <ul style="list-style-type: none"> Replace the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results.
4	<ul style="list-style-type: none"> Perform the KOER self test using the M-MDS. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Are DTCs P0201:00, P0202:00, P0203:00 and/or P0204:00 present? 	Yes Go to the applicable DTC inspection. (See 01-02B-127 DTC P0201:00 [L3 WITH TC].) (See 01-02B-129 DTC P0202:00 [L3 WITH TC].) (See 01-02B-131 DTC P0203:00 [L3 WITH TC].) (See 01-02B-133 DTC P0204:00 [L3 WITH TC].)
		No Go to the next step.
5	<ul style="list-style-type: none"> Inspect the fuel injector of the suspected cylinder. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Inspect the following for the suspected cylinder: <ul style="list-style-type: none"> PCM terminals (pulled-out pins, corrosion) Fuel injector terminals (pulled-out pins, corrosion) <ul style="list-style-type: none"> If all items are normal: <ul style="list-style-type: none"> Replace the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) If not: <ul style="list-style-type: none"> Repair or replace the malfunctioning part according to the inspection results.
		No Replace the fuel injector. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)

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If simulation function of M-MDS is not used:

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Perform the KOER self test using the M-MDS. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].) Are DTCs P0201:00, P0202:00, P0203:00 and/or P0204:00 present? 	Yes Go to the applicable DTC inspection. (See 01-02B-127 DTC P0201:00 [L3 WITH TC].) (See 01-02B-129 DTC P0202:00 [L3 WITH TC].) (See 01-02B-131 DTC P0203:00 [L3 WITH TC].) (See 01-02B-133 DTC P0204:00 [L3 WITH TC].)
		No Go to the next step.
2	<ul style="list-style-type: none"> Inspect the fuel injector for each cylinder. (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the fuel injector. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
3	<ul style="list-style-type: none"> Inspect the following for the suspected cylinder: <ul style="list-style-type: none"> Fuel injector power and/or ground system related wiring harnesses and connectors. PCM terminals (pulled-out pins, corrosion) Fuel injector terminals (pulled-out pins, corrosion) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results.
		No Replace the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Fuel Cut Control System Inspection

Note

- This inspection has to be performed after the Fuel Injector Operation Inspection.

If simulation function of M-MDS is used:

1. Warm up the engine and idle it.
2. Access the RPM and the FUELPW1 PIDs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
3. Monitor both PIDs while performing the following steps:
 - (1) Depress the accelerator pedal and increase the RPM PID to **4,000 rpm**.
 - (2) Quickly release the accelerator pedal (brake pedal is not depressed) and verify that the FUELPW1 PID is **0 msec.**, and **2—5 msec.** when the RPM PID drops **below 1,200 rpm**.
 - If not as specified, inspect the following.
 - ECT sensor No.1 and related wiring harness (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)

If simulation function of M-MDS is not used:

1. Warm up the engine and idle it.
2. Measure the fuel injector control signal wave profile using the oscilloscope while performing the following steps.
 - (1) Depress the accelerator pedal and increase the engine speed to **4,000 rpm**.
 - (2) Quickly release the accelerator pedal (brake pedal is not depressed) and verify that the wave profile constant **B+**, and the wave appears when the engine speed drops **below 1,200 rpm**. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If not as specified, inspect the following.
 - ECT sensor No.1 and related wiring harness (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)

Fuel Pump Operation Inspection

If simulation function of M-MDS is not used:

1. Remove the fuel-filler cap.
2. Switch the ignition to ON (engine off).
3. Turn the fuel pump relay from off to on using the FP PID and inspect if the operation sound of the fuel pump is heard. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If no operation sound is heard, proceed to the next step.
4. Measure the voltage at the wiring harness side fuel pump unit terminal B with the FP PID turned on.
 - If the voltage is as specified, inspect the following:
 - Fuel pump continuity
 - Fuel pump ground
 - Wiring harness between fuel pump relay and PCM terminal 1H
 - If not as specified, inspect the following:
 - Fuel pump relay
 - Fuel pump speed control relay
 - Wiring harness connector (Battery—Fuel pump relay—Fuel pump resistor—Fuel pump unit—Ground)

Specification

8.0—11.5 V (Ignition switch at ON)

If simulation function of M-MDS is not used:

Caution

- **Connecting the wrong check connector terminal may possibly cause a malfunction. Carefully connect the specified terminal only.**

1. Short the check connector terminal F/P to body ground using a jumper wire.
2. Remove the fuel-filler cap.
3. Switch the ignition to ON (engine off).
4. Verify that the fuel pump operation sound is heard.
 - If no operation sound is heard, proceed to the next step.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

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5. Measure the voltage at wiring harness side fuel pump unit connector terminal B.
 - If the voltage is as specified, inspect the following:
 - Fuel pump continuity
 - Fuel pump ground
 - Wiring harness between fuel pump relay and PCM terminal 1H
 - If not as specified, inspect the following:
 - Fuel pump relay (See 09-21-17 RELAY INSPECTION.)
 - Fuel pump speed control relay (See 09-21-17 RELAY INSPECTION.)
 - Wiring harness connector (Battery—Fuel pump relay—Fuel pump resistor—Fuel pump unit—Ground)

Specification

8.0—11.5 V (Ignition switch at on)

Fuel Pump Control System Inspection

If simulation function of M-MDS is used:

1. Switch the ignition to ON (engine off).
2. Access the FP PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
3. Turn the fuel pump relay from off to on and inspect if the operation sound of the fuel pump relay is heard.
 - If no operation sound is heard, inspect the fuel pump relay. (See 09-21-17 RELAY INSPECTION.)
 - If the fuel pump relay is normal, inspect the following:
 - Wiring harness and connectors (Ignition switch—Fuel pump relay—PCM terminal 1H) (vehicles without advanced keyless entry and push button start system)
 - Wiring harness and connectors (Relay block—Fuel pump relay—PCM terminal 1H) (vehicles with advanced keyless entry and push button start system)

If simulation function of M-MDS is not used:

1. Crank the engine and verify that the fuel pump relay operation sound is heard.
2. If the operation sound is not heard, inspect the following:
 - Fuel pump relay (See 09-21-17 RELAY INSPECTION.)
 - Wiring harness and connectors (Ignition switch—Fuel pump relay—PCM terminal 1H) (vehicles without advanced keyless entry and push button start system)
 - Wiring harness and connectors (Relay block—Fuel pump relay—PCM terminal 1H) (vehicles with advanced keyless entry and push button start system)

Fuel Pump Speed Control Inspection

If simulation function of M-MDS is used:

1. Perform the Fuel Pump Operation Inspection.
2. Connect the M-MDS to the DLC-2.
3. Remove the fuel-filler cap.
4. Start the engine and run it is idling.
5. Turn the fuel pump speed control relay from off to on using the FPRR PID and verify that the fuel pump unit operation sound frequency at FPRR PID on is higher than off. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If it cannot be verified, inspect for the following:
 - Fuel pump resistor
 - Fuel pump speed control relay (stuck on or off) (See 09-21-17 RELAY INSPECTION.)
 - Wiring harnesses and connectors (open or short to ground circuit at fuel pump relay terminal C—fuel pump speed control relay—fuel pump unit terminal B)

If simulation function of M-MDS is not used:

1. Perform the fuel pump operation inspection.
2. Remove the fuel-filler cap.
3. Verify that the fuel pump unit operation sound frequency at cranking is higher than during idle.
 - If it cannot be verified, inspect for the following:
 - Fuel pump resistor
 - Fuel pump speed control relay (stuck on or off) (See 09-21-17 RELAY INSPECTION.)
 - Wiring harnesses and connectors (open or short to ground circuit at fuel pump relay terminal C—fuel pump speed control relay—fuel pump unit terminal B)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Spark Test

1. Disconnect the fuel pump relay.
2. Verify that each ignition coil and connector is connected properly.
3. Inspect the ignition system in the following procedure.

Warning

- **High voltage in the ignition system can cause strong electrical shock which can result in serious injury. Avoid direct contact to the vehicle body during the following spark test.**

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Disconnect the ignition coil from the spark plugs. • Remove the spark plugs. (See 01-18B-3 SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC].) • Verify that the spark plugs do not have carbon deposits. • Is there any malfunction? 	Yes	Perform no-load racing at 4,000 rpm for 2 min, 2 times to burn off the carbon deposits. Repeat this step.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the spark plugs for damage, wear, and proper plug gap. (See 01-18B-3 SPARK PLUG INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the spark plugs, then go to the next step. (See 01-18B-3 SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Reconnect the spark plugs to the ignition coil. • Ground the spark plugs to the engine. • Is a strong blue spark visible at each cylinder while cranking the engine? 	Yes	Ignition system is normal.
		No	Some cylinders do not spark: <ul style="list-style-type: none"> • Go to the next step. All cylinders do not spark: <ul style="list-style-type: none"> • Go to Step 5.
4	<ul style="list-style-type: none"> • Inspect the following wiring harnesses for an open or short circuit: <ul style="list-style-type: none"> — Ignition coil No.1 terminal C—PCM terminal 2BA — Ignition coil No.2 terminal C—PCM terminal 2AW — Ignition coil No.3 terminal C—PCM terminal 2AX — Ignition coil No.4 terminal C—PCM terminal 2AT • Is there any malfunction? 	Yes	Repair or replace the suspected wiring harness, then go to Step 1.
		No	Inspect the ignition coil. (See 01-18B-2 IGNITION COIL INSPECTION [L3 WITH TC].) Replace the ignition coil if necessary. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
5	<ul style="list-style-type: none"> • Measure the voltage at the terminal A in each ignition coils. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the power supply circuit of ignition coils. Repair or replace the suspected wiring harness.
6	<ul style="list-style-type: none"> • Does the PCM connector or ignition coil connectors have poor connection? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 1.
		No	Go to the next step.
7	<ul style="list-style-type: none"> • Inspect the CKP sensor and crankshaft pulley. (See 01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Inspect for an open or short circuit in the wiring harness and connector of the CKP sensor. Repair or replace the malfunctioning part according to the inspection results.

EGR Control System Inspection

If simulation function of M-MDS is used:

1. Crank the engine and verify that the EGR valve operation (initial operation) sound is heard.
 - If the operation sound is not heard, verify that the DTC P0403:00 is shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0403:00 is shown, perform the DTC inspection. (See 01-02B-164 DTC P0403:00 [L3 WITH TC].)
2. Start the engine run it is idling.
3. Increase the step value of the EGR valve from **0 to 57** using the SEGRP PID of the simulation function. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
4. Operate the EGR valve and inspect if the engine speed becomes unstable or the engine stalls.
 - If the engine speed does not change, proceed to the following.
 - (1) Stop the engine.
 - (2) Remove the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Connect the EGR valve connector.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

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- (4) Switch the ignition to ON (engine off).
- (5) Increase the step value of EGR valve from **0 to 57** using the SEGRP PID.
- (6) Verify that the EGR valve operates according to the SEGRP PID.
 - If the EGR valve is operated, clean the EGR valve and the EGR gas passage.
 - If the EGR valve does not operate, replace the EGR valve.
5. Start the engine and warm it up completely.
6. Access the following PIDs: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - ECT, RPM, SEGRP, APP1, APP2, TP REL, VSS
7. Idle the vehicle and verify that the SEGRP value is **0**.

Caution

- **While performing this step, always operate the vehicle in a safe and lawful manner.**
- **When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later.**

8. Put the vehicle in drive.
9. Depress the accelerator pedal and verify that the SEGRP value increases.
 - If the SEGRP value does not increase, inspect the VSS, TP REL and ECT PIDs. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
10. Stop the vehicle and verify that the SEGRP value is returns to **0**.

If simulation function of M-MDS is not used:

1. Verify that EGR valve operation (initial operation) sound is heard when the ignition is switched to ON.
 - If the operation sound is not heard, verify that the DTC P0403:00 is shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0403:00 is shown, perform the DTC inspection. (See 01-02B-164 DTC P0403:00 [L3 WITH TC].)
2. Start the engine and idle it.
3. Warm up the engine to normal operating temperature.
4. Access the following PIDs using the M-MDS: (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - ECT, RPM, SEGRP, APP1, APP2, TP REL, VSS
5. Let the vehicle idle and verify that the SEGRP value is **0**.
6. Put the vehicle in drive.
7. Depress the accelerator pedal and verify that the SEGRP value is increased.
 - If the EGR valve increases, inspect the following:
 - EGR valve (stuck open or closed) (See 01-16B-9 EGR VALVE INSPECTION [L3 WITH TC].)
 - Wiring harness and connectors (Main relay—EGR valve—PCM)
 - If the SEGRP value does not increase, inspect the VSS, APP1, APP2, TP REL and ECT PIDs. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
8. Stop the vehicle and verify that the SEGRP value returns to **0**.

Purge Control System Inspection

If simulation function of M-MDS is used:

1. Start the engine.
2. Disconnect the vacuum hose between the purge solenoid valve and the charcoal canister.
3. Put a finger to the purge solenoid valve and verify that there is no vacuum applied when the engine is cold.
 - If there is a vacuum, inspect the following:
 - Wiring harness and connectors (Purge solenoid valve—PCM terminal 2AB)
 - Purge solenoid valve (stuck open) (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].)
4. Verify that the DTC P0443:00 is displayed. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0443:00 is shown, perform the DTC inspection. (See 01-02B-178 DTC P0443:00 [L3 WITH TC].)
5. Access the EVAPCP PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
6. Increase the duty value of the purge solenoid valve to **50%** and inspect if the operation sound of the valve is heard.
 - If the operation sound is heard, inspect for loose or damaged vacuum hoses. (Intake manifold—Purge solenoid valve—Charcoal canister)
 - If the operation sound is not heard, inspect the purge solenoid valve. (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].)
7. Warm up the engine to normal operating temperature.
8. Monitor the EVAPCP PID using the M-MDS, and drive the vehicle **approx. 2000 rpm for 30 s or more**.
 - If the EVAPCP PID is **0%**, inspect the following.
 - MAF, APP1, APP2, TP REL and LOAD PIDs (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

If simulation function of M-MDS is not used:

1. Start the engine.
2. Disconnect the vacuum hose between the purge solenoid valve and the charcoal canister.
3. Put a finger to the purge solenoid valve and verify that there is no vacuum applied when the engine is cold.
 - If there is vacuum, inspect the following:
 - Wiring harness and connectors (Purge solenoid valve—PCM terminal 2AB)
 - Purge solenoid valve (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].)
4. Warm up the engine to the normal operating temperature.
5. Stop the engine.
6. Verify that the DTC P0443:00 is shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0443:00 is shown, perform the DTC inspection. (See 01-02B-178 DTC P0443:00 [L3 WITH TC].)
7. Switch the ignition to ON (engine off).
8. Access the ECT PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
9. Verify that the engine coolant temperature is **above 60 °C {140 °F}**.
 - If the M-MDS indicates that the temperature is **below 60 °C {140 °F}**, Inspect the ECT sensor. (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)
10. Set the vehicle on the dynamometer or chassis roller.

Warning

- **When the dynamometer or chassis roller is operating, there is a possibility that the operator may come into contact with or be caught up in the rotating parts, leading to serious injuries or death. When performing work while the dynamometer or chassis roller is operating, be careful not to contact or be caught up in any of the rotating parts.**

11. Drive vehicle at an engine speed to **approx. 2000 rpm for 30 s or more**.
12. Put a finger to the purge solenoid valve and verify that there is no vacuum applied during Step 2.
 - If there is no vacuum, inspect the following:
 - Wiring harness and connector (Main relay—Purge solenoid valve—PCM terminal 2AB)
 - Purge solenoid valve (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].)
 - MAF, APP1, APP2, TP REL and LOAD PIDs (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If there is vacuum, inspect the following:
 - Vacuum hose (Purge solenoid valve—Charcoal canister)

A/C Cut-off Control System Inspection

1. Start the engine.
2. Turn the A/C switch and fan switch on.
3. Verify that the A/C compressor magnetic clutch actuates.
 - If it does not actuate, go to symptom troubleshooting “NO.23 A/C DOES NOT WORK SUFFICIENTLY”. (See 01-03B-78 NO.23 A/C DOES NOT WORK SUFFICIENTLY [L3 WITH TC].)
4. Fully open the throttle valve and verify that the A/C compressor magnetic clutch does not actuate for **2—5 s**.
 - If it actuates, inspect as follows:
 - A/C relay (See 09-21-17 RELAY INSPECTION.)
 - Open or short to ground circuit in the wiring harness and connectors (Ignition switch—A/C relay—PCM terminal 11)
 - A/C related parts
 - APP1, APP2 PIDs (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)

Cooling Fan Control System Inspection

1. Start the engine and warm it up to normal operating temperature.
2. Perform the KOER self test. (See 01-02B-12 KOEO/KOER SELF TEST [L3 WITH TC].)
3. Verify that the DTC P0480:00 is not shown and the cooling fan operates during the KOER self test.
 - If the DTC P0480:00 is shown, perform the DTC inspection. (See 01-02B-195 DTC P0480:00 [L3 WITH TC].)
 - If the cooling fans do not operate, proceed to the following:
 - Inspect the following parts in the indicated order in accordance with fan operation conditions.
 - Open circuit between fan control module and battery positive terminal
 - Open circuit between fan control module and ground
 - Poor connection of the fan control module connector
 - If there is no malfunction:
 - Replace the cooling fan component. (See 01-12B-14 COOLING FAN COMPONENT REMOVAL/ INSTALLATION [L3 WITH TC].)

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

Wastegate Control System Operation Inspection

If simulation function of M-MDS is used:

1. Start the engine and run it is idling.
2. Disconnect the hose between the wastegate control solenoid valve and the intake pipe.
3. Put a finger to the wastegate control solenoid valve and verify that there is no pressure applied.
 - If there is pressure, inspect the following:
 - Wiring harness and connectors (Wastegate control solenoid valve—PCM terminal 2AA)
 - Wastegate control solenoid valve (stuck open) (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].)
4. Warm up the engine to normal operating temperature.
5. Verify that the DTC P0245:00 or P0246:00 are shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0245:00 or P0246:00 are shown, perform the DTC inspection. (See 01-02B-140 DTC P0245:00 [L3 WITH TC].) (See 01-02B-142 DTC P0246:00 [L3 WITH TC].)
6. Access the WGC PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
7. Increase the duty value of the wastegate control solenoid valve and inspect if the operation sound of the solenoid valve is heard.
 - If the operation sound is heard, inspect for loose or damaged vacuum hoses. (Wastegate actuator—Wastegate control solenoid valve—Intake hose)
 - If the operation sound is not heard, inspect the wastegate control solenoid valve. (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].)
8. Warm up the engine to normal operating temperature.
9. Access the WGC and APP PIDs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
10. Run the engine with the APP PID **above 30%** and verify that the WGC PID value increases from **0%**.
 - If the WGC PID is **0%**, inspect the APP PID. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)

If simulation function of M-MDS is not used:

1. Start the engine and run it is idling.
2. Disconnect the hose between the wastegate control solenoid valve and the intake pipe.
3. Put a finger to the wastegate control solenoid valve and verify that there is no pressure applied.
 - If there is pressure, inspect the following:
 - Wiring harness and connectors (Wastegate control solenoid valve—PCM terminal 2AA)
 - Wastegate control solenoid valve (stuck open) (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].)
4. Warm up the engine to normal operating temperature.
5. Verify that the DTC P0245:00 or P0246:00 are shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P0245:00 or P0246:00 are shown, perform the DTC inspection. (See 01-02B-140 DTC P0245:00 [L3 WITH TC].) (See 01-02B-142 DTC P0246:00 [L3 WITH TC].)
6. Warm up the engine to normal operating temperature.
7. Access the WGC and APP PIDs using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
8. The hose between the wastegate control solenoid valve and intake pipe is disconnected.
9. Run the engine with the APP PID **above 30%** and verify that the WGC PID value increases from **0%** and there is pressure applied.
 - If the WGC PID is **0%**, inspect the TP REL PID. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If there is no pressure applied, inspect for the following:
 - Wastegate control solenoid valve (stuck closed) (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].)
 - Hose connection (Intake hose (turbocharger compressor downstream side)—Wastegate actuator—Intake hose (turbocharger compressor upstream side))

Variable Valve Timing Control System Operation Inspection

When idling cannot be continued

1. Remove the OCV and verify that the spool valve is at maximum retard position. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
2. Connect the OCV.
3. Switch the ignition to ON.
4. Verify that the spool valve is at the maximum retard position.
 - If the spool valve is stuck in the advance direction, inspect for the following:
 - Short circuit in wiring harnesses or connectors between the OCV and the PCM
5. Inspect the variable timing actuator.

SYMPTOM TROUBLESHOOTING [L3 WITH TC]

When idling can be continued

If simulation function of M-MDS is used:

1. Warm up the engine to normal operating temperature.
2. Verify that the DTC P2088:00 or P2089:00 are shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P2088:00 or P2089:00 are shown, perform the DTC inspection. (See 01-02B-244 DTC P2088:00 [L3 WITH TC].) (See 01-02B-246 DTC P2089:00 [L3 WITH TC].)
3. Start the engine and run it is idling.
4. Access the VT DUTY1 PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
5. Increase the OCV duty value and verify that the engine idles roughly or stalls.
 - If as specified, inspect the timing belt component (valve timing deviation).
 - If not as specified, go to the next step.
6. Remove the OCV while the connector is connected. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Switch the ignition to ON (engine off).
8. Access the VT DUTY1 PID using the M-MDS. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
9. Increase the OCV duty value and verify that the spool valve operates in the advance direction.
 - If as specified, inspect the following hydraulic passage for clogging and/or leakage.
 - Oil pressure switch—OCV
 - OCV—Camshaft
 - Camshaft internal passage
 - If not as specified, inspect the following:
 - OCV operation (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].)
10. If they are normal, replace the intake camshaft pulley (with a built-in variable valve timing actuator). (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)

If simulation function of M-MDS is not used:

1. Disconnect the OCV connector.
2. Verify that the DTC P2088:00 or P2089:00 are shown. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
 - If the DTC P2088:00 or P2089:00 are shown, perform the DTC inspection. (See 01-02B-244 DTC P2088:00 [L3 WITH TC].) (See 01-02B-246 DTC P2089:00 [L3 WITH TC].)
3. Warm up the engine and idle it.
4. Apply battery voltage to the OCV and verify that the engine idles roughly or stalls.
 - If the engine idles roughly or stalls, inspect the timing belt component (valve timing deviation).
 - If the engine does not idle roughly or stalls, go to the next step.
5. Remove the OCV and perform the spool valve operation inspection. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
 - If not as specified, inspect the following:
 - OCV (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].)
 - Harnesses and connectors between OCV and PCM have an open or short circuit.
 - If as specified, inspect the following hydraulic passages for clogging or leakage or both:
 - Oil pressure switch—OCV
 - OCV—Camshaft
 - Camshaft internal passage
6. If they are normal, replace the camshaft pulley (with built-in variable valve timing actuator). (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)

Evaporative Emission (EVAP) System Leak Inspection

- To verify that the problem has been fixed properly after repairs, the run drive cycle or EVAP system leak inspection must be performed.

EVAP system leak inspection using the M-MDS

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the EVAP system test.

EVAP system test out line

- The EVAP system test, which can substituted for the run drive cycle as an EVAP control system repair confirmation method, can detect the small/large leak or blockage without run-drive cycle.

Note

- M-MDS can not detect "VERY SMALL LEAK". To identify the leak point, please use the leak tester or ultrasonic leak detector.

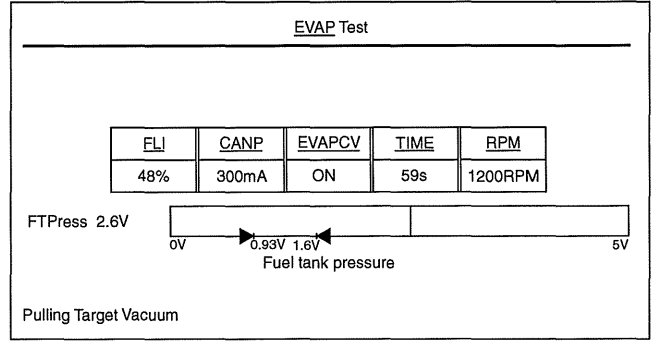
SYMPTOM TROUBLESHOOTING [L3 WITH TC]

EVAP system test description

- The EVAP system test finds gas leaks or blockage of EVAP system using the changes of the fuel tank pressure.
 - This test starts after sending an on-demand test signal from the M-MDS to the PCM.
 - This test consists of three stages, and each stage is performed automatically as follows:

Stage 1 test. (Test for large leak or blockage)

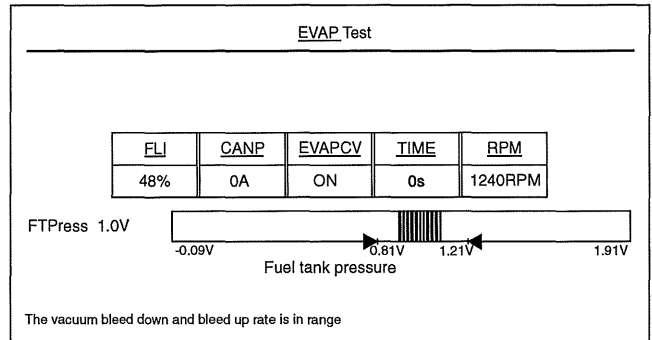
- M-MDS send the stage 1 test start signal to the PCM.
- PCM controls the CV solenoid valve and purge solenoid valve to control the tank pressure to the targeted value.
- M-MDS detect the large leak or the purge line blockage if the tank pressure does not arrive at the target vacuum in specified period.



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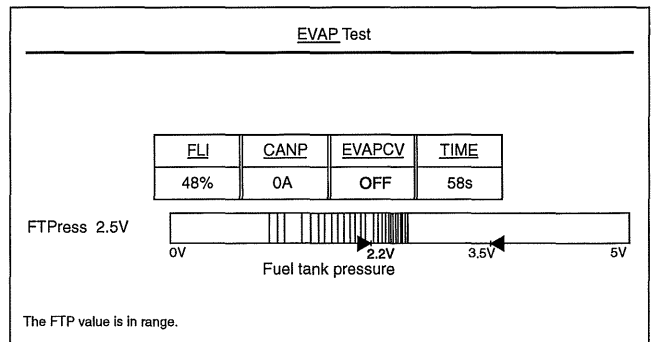
Stage 2 test. (Test for small leak)

- When fuel tank pressure arrived at the targeted pressure at stage 1 test, M-MDS send the stage 2 test signal to the PCM to turn off the purge solenoid to keep the tank pressure.
- M-MDS detect the small leak if the tank pressure can not keep within the target in specified period.



Stage 3 test. (Test for blockage)

- M-MDS send the stage 3 test signal to the PCM to turn off the CV solenoid for check the blockage of EVAP system.
- M-MDS detect blockage of the CV solenoid valve or air filter if the tank pressure does not arrive at the target (atmosphere).



SYMPTOM TROUBLESHOOTING [L3 WITH TC]

EVAP system malfunction judgment

- M-MDS detect the small/large leak or blockage based on fuel tank pressure at the end of EVAP Test.

The EVAP Test could not obtain the target vacuum. A large leak or blockage is suspect.

- This judgment means tank pressure could not arrive at target pressure at stage 1 test.
- Check for the large leakage or inspect the purge solenoid valve operation and related hoses.
- Repair or replace any malfunctioning parts.

The EVAP Test could not maintain the target vacuum. A small leak is suspect.

- This judgment means tank pressure could not stay in target pressure at stage 2 test.
- Run the EVAP Test again after Re-tighten the fuel filler cap.
- If small leak is suspected again, use the leak tester or ultrasonic leak detector for identify the leak point.
- Repair or replace any malfunctioning parts.

Blockage in EVAP system.

- This judgment means tank pressure could not return to atmosphere at stage 3 test.
- Inspect the CV solenoid, Air filter, Charcoal canister and related hoses for blockage.

No large leaks or blockage have been detected in the EVAP system at this time.

- M-MDS can not detect "VERY SMALL LEAK".
- To identify the leak point, please use the leak tester or ultrasonic leak detector.

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Evaporative system test procedure

1. Verify that all PIDs within the following specifications.

Note

- To successfully perform this procedure, all PIDs must be within the specifications before proceeding to the next step.

2. Select the following items from the initialization screen of the M-MDS.

1. Select the "Powertrain".
2. Select the "Fuel".
3. Select the "EVAP Test".

- Verify that ECT and IAT are within the specifications at the confirmation screen. To successfully perform this procedure, ECT and IAT must be within the spec before proceeding to the next step.
- Fuel Level must be maintained within **15%—85%**. PCM will cancel the EVAP Test If the Fuel Level is **lower than 15% or higher than 85%**.

3. Verify the test results described on the M-MDS and follow the instructions.

Specification

PID	PID Range
BARO	74.9 kPa {562 mmHg, 22.1 inHg} or more
FLI	15—85 %
ECT	ECT minus IAT -10—25 °C {-5.6—13.9 °F}
IAT	

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SYMPTOM TROUBLESHOOTING [L3 WITH TC]

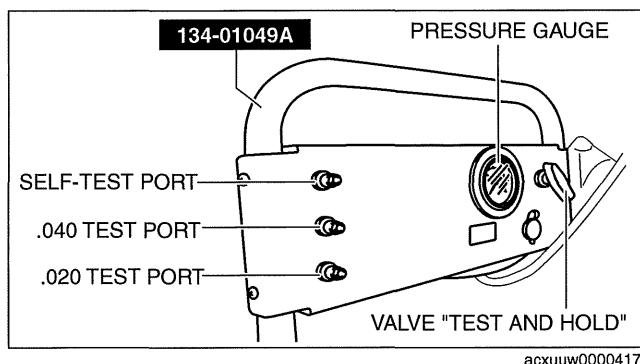
EVAP system leak inspection using leak tester

1. Perform the following **SST** (EVAP System Tester 134-01049A) self-test:

Note

- If the tester does not work correctly during the self-test, refer to the tester operators manual for a more detailed self-test procedure.

- (1) Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve.
- (2) Connect the vehicle interface hose (part of the **SST**) to the SELF-TEST port located on the control panel. Hand tighten the fitting. (Do not overtighten.)
- (3) Turn the control valve to the TEST position.
- (4) The gauge should read **331—381 mm {13—15 in}** of water.
 - If the gauge is not reading in this range, adjust the pressure by turning the black knob on the low pressure regulator at the nitrogen bottle.
- (5) Turn the control valve to the HOLD position.
- (6) Verify that the gauge holds pressure and that the flow meter reads no flow.
 - If there is no drop in pressure and no flow, the tester passes the self-test.
 - If the gauge leaks down, refer to the tester operators manual.



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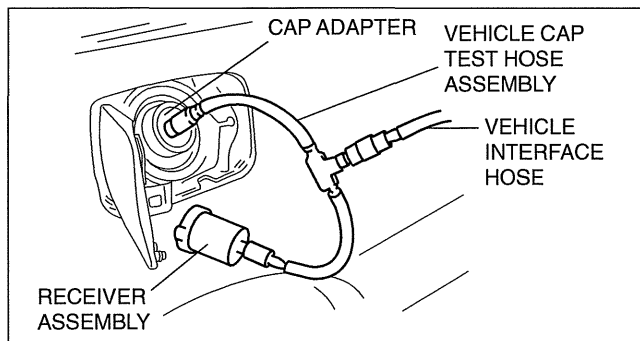
2. Connect the **SST** to the vehicle.

- (1) Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve.
- (2) Remove the fuel-filler cap from the vehicle.
 - If the fuel-filler cap is not a MAZDA part or equivalent, replace it.

Note

- **INSPECT FUEL FILLER CAP AND FILLER NECK**
 - Visually inspect for damage, insufficient sealing, rust, cracks or warps for filler cap and filler neck.
 - Repair or replace if necessary.

- (3) Connect the receiver assembly (**SST**: 134-01059) to the vehicle cap test hose assembly (part of the **SST**) and the fuel-filler cap from the vehicle.
- (4) Connect the cap adaptor (**SST**: 134-01058) to the vehicle cap test hose assembly (part of the **SST**) and to the fuel-filler neck.
- (5) Connect the vehicle interface hose (part of the **SST**) to the center fitting of the vehicle cap test hose assembly (part of the **SST**).



3. Connect the M-MDS to the DLC-2.
4. Switch the ignition to ON (engine off).
5. Request the PCM on-board device control (Mode 08) using the M-MDS to close the canister vent valve.

Note

- The canister vent valve is closed for **10 min** unless the following any actions are done:
 - The engine is started.
 - The ignition switch is turned off position.

6. Make sure the control valve on the 134-01049A is in the HOLD position and that the valve on the cylinder of nitrogen gas is open.
7. Turn the control valve to the open position and let the system fill. You should note a drop in the gauge pressure along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses.
8. If the gauge and the flow meter do not settle to a measurable level after **2—3 min**, then refer to the Mazda Workshop Manual to verify that the canister vent valve is properly closed. If canister vent valve is properly closed. The EVAP system has large leakage. Check for leakage and repair as necessary.

01-03B-105

9. Verify the pressure gauge and flow meter reading to determine if there is an evaporative emissions leak:

NO EVAPORATIVE LEAK:

- The flow meter registers “zero flow” and the pressure gauge returns to the pre-set pressure of **356 mm {14 in}** of water (H₂O).

EVAPORATIVE LEAK:

- The pressure does not return to the preset level of **356 mm {14 in}** of water (H₂O) when measuring the flow. See “SETTING LEAK STANDARD FOR TESTING” (.020 to .040 inch H₂O) of the Evaporative Emissions Tester operators manual (134-01067).

Note

- Turn the control valve to the HOLD position then disconnect the **SST**.

01-10A MECHANICAL [LF, L5]

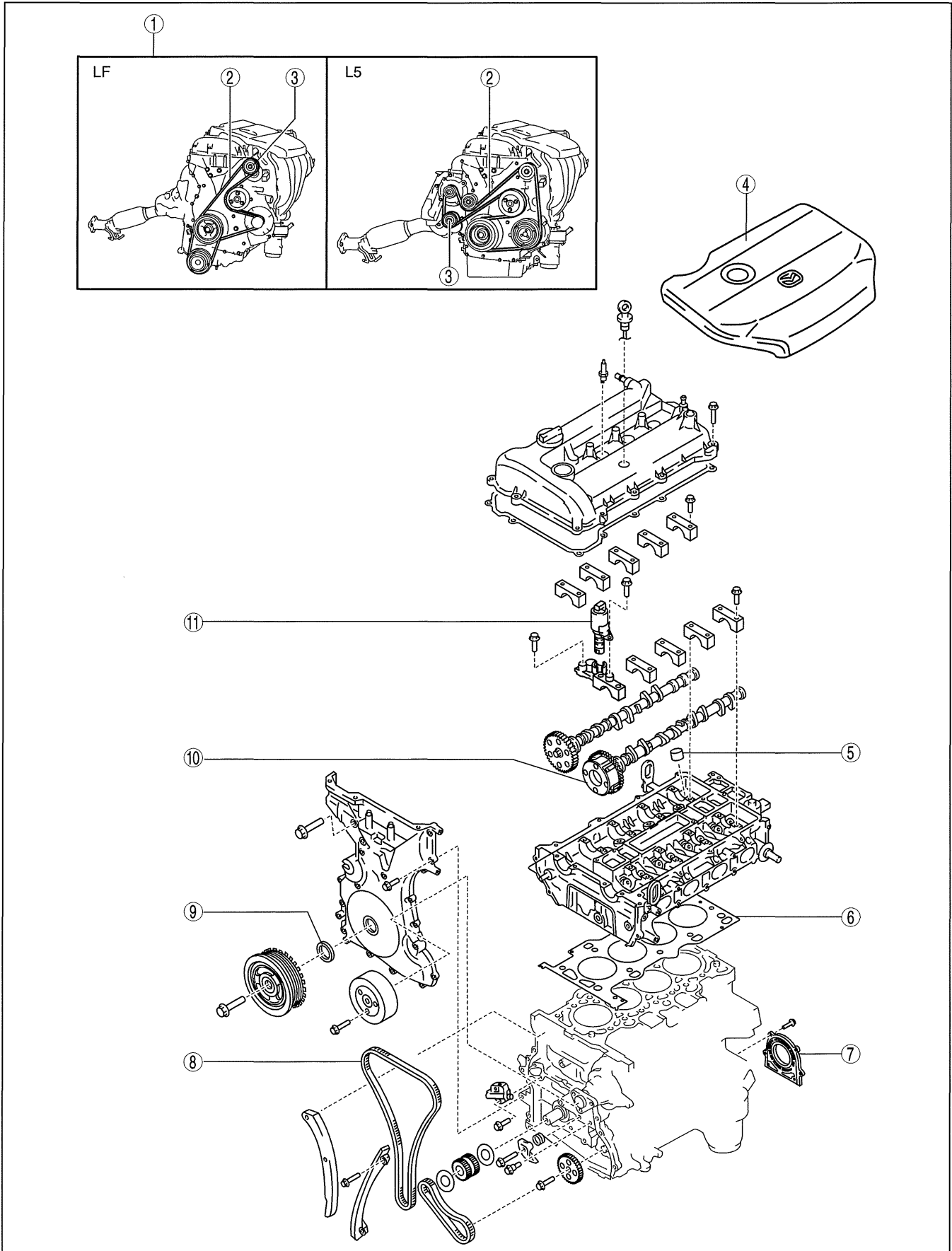
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Idle Mixture Inspection.	01-10A-4	Removal/Installation Note	01-10A-26
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MECHANICAL [LF, L5]

ENGINE LOCATION INDEX [LF, L5]

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MECHANICAL [LF, L5]

1	Engine (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].) (See 01-10A-39 ENGINE REMOVAL/ INSTALLATION [LF, L5].) (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
2	Drive belt (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) (See 01-10A-6 DRIVE BELT REMOVAL/ INSTALLATION [LF, L5].)
3	Drive belt auto tensioner (See 01-10A-9 DRIVE BELT AUTO TENSIONER INSPECTION [LF, L5].) (See 01-10A-45 ENGINE DISASSEMBLY/ ASSEMBLY [LF, L5].)
4	Plug hole plate (See 01-10A-5 PLUG HOLE PLATE REMOVAL/ INSTALLATION [LF, L5].)
5	Tappet (See 01-10A-10 VALVE CLEARANCE INSPECTION [LF, L5].) (See 01-10A-11 VALVE CLEARANCE ADJUSTMENT [LF, L5].)

6	Cylinder head gasket (See 01-10A-30 CYLINDER HEAD GASKET REPLACEMENT [LF, L5].)
7	Rear oil seal (See 01-10A-38 REAR OIL SEAL REPLACEMENT [LF, L5].)
8	Timing chain (See 01-10A-21 TIMING CHAIN REMOVAL/ INSTALLATION [LF, L5].)
9	Front oil seal (See 01-10A-34 FRONT OIL SEAL REPLACEMENT [LF, L5].)
10	Variable valve timing actuator (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5].)
11	OCV (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].) (See 01-10A-19 OIL CONTROL VALVE (OCV) INSPECTION [LF, L5].)

01-10A

ENGINE TUNE-UP [LF, L5]

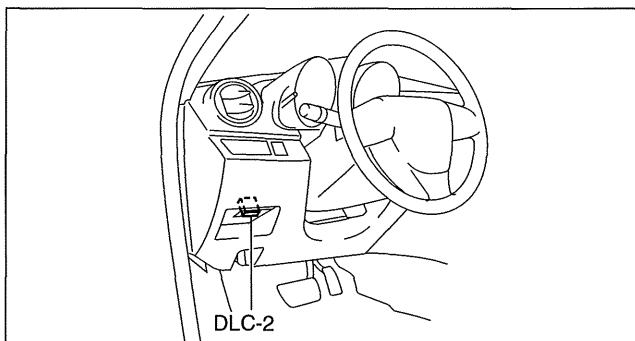
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Note

- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the fuel cut control operation, which prevents overheating, and it does not indicate a malfunction.

Engine Tune-up Preparation

1. Verify the following:
 - MTX: Shift lever is in neutral position.
 - ATX: Selector lever is in P or N position.
2. Warm up the engine to normal operating temperature.
 - (1) Increase the engine speed to **2,500—3,000 rpm** until the cooling fan starts running.
 - (2) When the cooling fan starts running, release the accelerator pedal and wait until the cooling fan stops running.
3. Turn off all electrical loads.
4. Connect the M-MDS to the DLC-2.



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Idle Speed Inspection

Note

- Idle speed is not adjustable.
- Idle speed verification requires M-MDS.

1. Complete the engine tune-up preparation. (See 01-10A-3 Engine Tune-up Preparation.)
2. Verify that the idle speed (M-MDS: RPM) is within the specification. (See 01-40A-8 PCM INSPECTION [LF, L5].)

Idle speed (MTX: Neutral position, ATX: P, N position)
600—700 rpm (MTX), 650—750 (ATX)

Ignition Timing Inspection

Note

- The ignition timing cannot be adjusted.
- The M-MDS is required to verify the ignition timing.

1. Complete the engine tune-up preparation. (See 01-10A-3 Engine Tune-up Preparation.)
2. Verify the ignition timing (M-MDS: SPARKADV) using the PID/data monitor function of the M-MDS. (See 01-40A-8 PCM INSPECTION [LF, L5].)

Ignition timing

LF: Approx. BTDC 8°
L5: Approx. BTDC 12°

3. Verify that ignition timing advances when the engine speed increases gradually.

Idle Mixture Inspection

1. Verify that the idle speed and ignition timing are within the specification. (See 01-10A-4 Idle Speed Inspection.) (See 01-10A-4 Ignition Timing Inspection.)
2. Insert an exhaust gas analyzer into the tailpipe.
3. Verify that the CO and HC concentrations are within regulation.

CO concentration

Within the regulation

HC concentration

Within the regulation

Idle-up Speed Control Inspection

Note

- Idle speed is not adjustable.
- Idle speed verification requires M-MDS.

1. Complete the engine tune-up preparation. (See 01-10A-3 Engine Tune-up Preparation.)
2. Verify that the engine speed (M-MDS: RPM) is within the specification when each load is applied. (The speed decrease just after the load is applied is not considered.) (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If the engine speed is not within the specification when a specified load is applied, inspect the related input parts, wiring harnesses, and connectors.

Idle-up speed (MTX: Neutral position, ATX: P, N position)
A/C on: 700—800 rpm (MTX), 650—770 (ATX)
Electrical loads on: 650—800 rpm

MECHANICAL [LF, L5]

PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5]

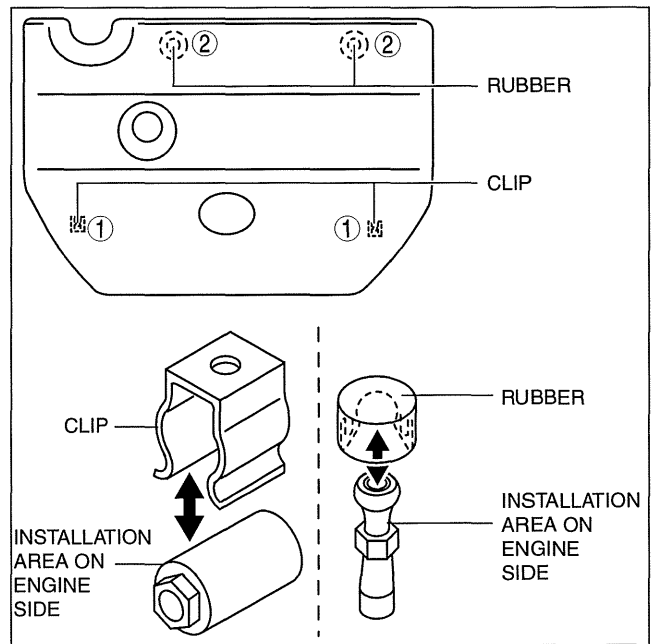
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1. Remove the plug hole plate in the order indicated in the figure.

Note

- Lift off and remove the plug hole plate from the installation areas as shown in the figure.

2. Install the plug hole plate in the reverse order of removal.



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DRIVE BELT INSPECTION [LF, L5]

LF

A/C drive belt

Note

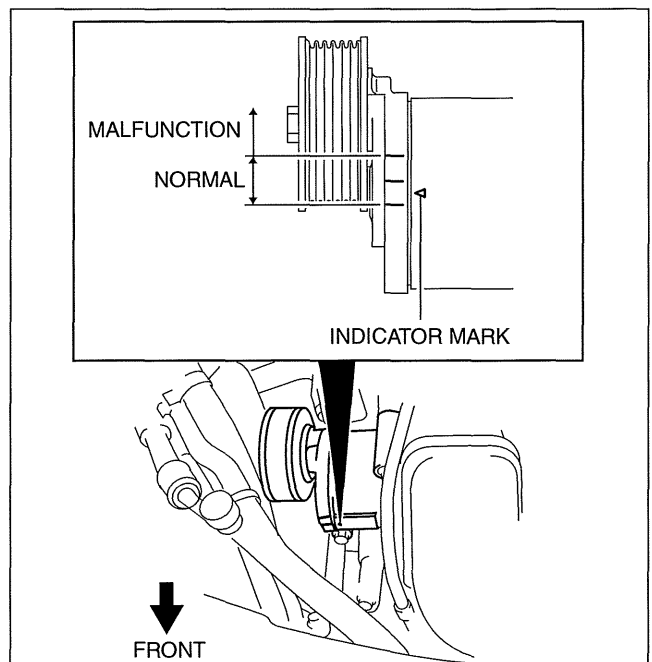
- Drive belt deflection/tension inspection is not necessary because of the use of the maintenance-free type A/C drive belt.
- Replace the drive belt if it is found to be damaged during visual inspection, or if there is a malfunction or noise in the A/C compressor. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)

Generator drive belt

Note

- Drive belt deflection/tension inspection is not necessary because of the use of the drive belt auto tensioner.

1. Verify that the drive belt auto tensioner indicator mark does not exceed the limit.
 - If it exceeds the limit, replace the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)



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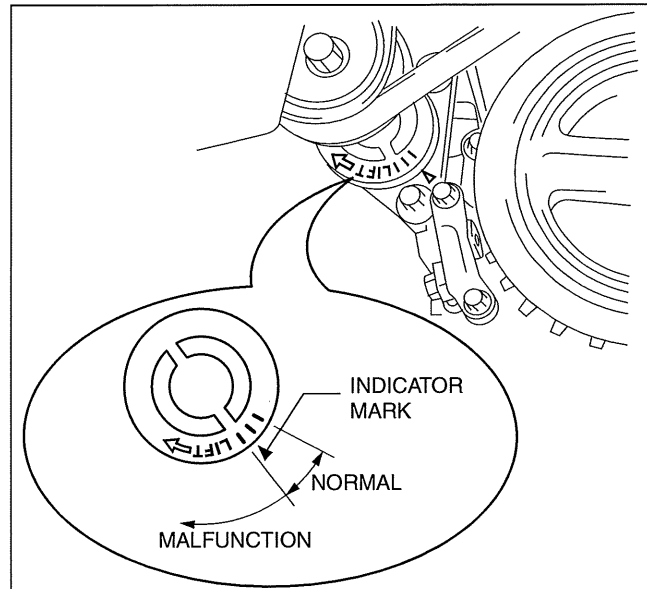
01-10A

L5

Note

- Drive belt deflection/tension inspection is not necessary because of the use of the drive belt auto tensioner.

1. Verify that the drive belt auto tensioner indicator mark does not exceed the limit.
 - If it exceeds the limit, replace the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)



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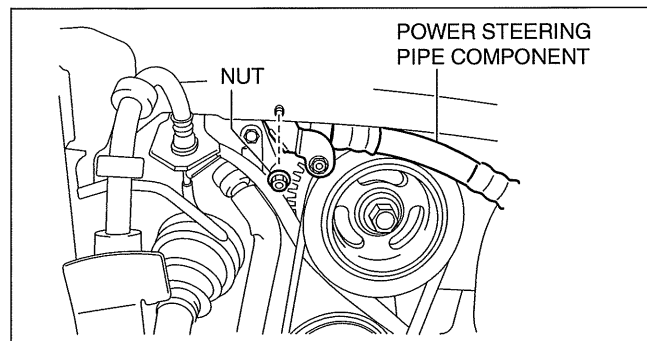
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DRIVE BELT REMOVAL/INSTALLATION [LF, L5]

LF

A/C drive belt removal

1. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
2. Remove the nut shown in the figure and set the power steering pipe component out of the way.

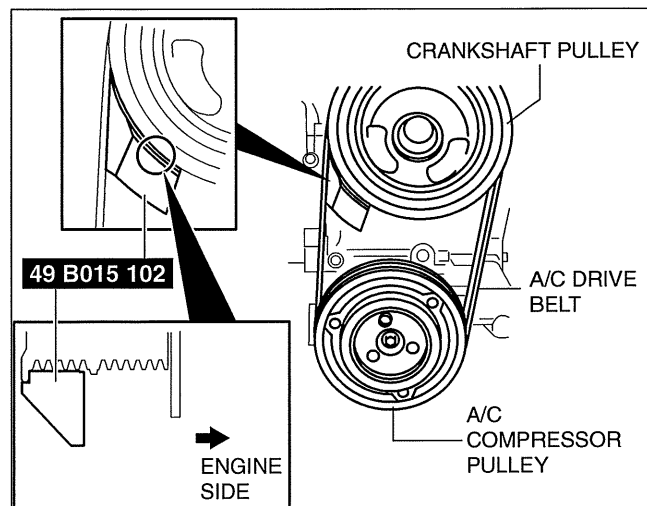


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3. Set the SST as shown in the figure.

Note

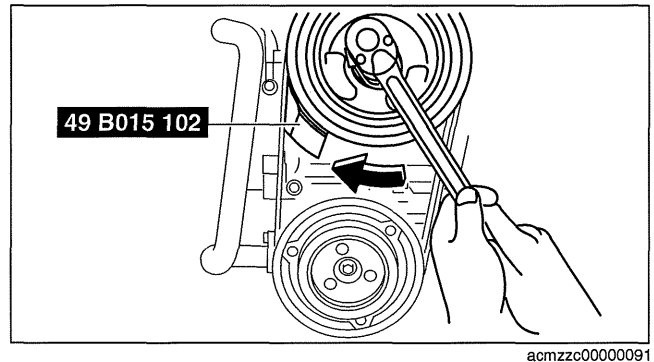
- Hold the **SST** by hand until it fits between the A/C drive belt and the crankshaft pulley.



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MECHANICAL [LF, L5]

4. Rotate the crankshaft pulley clockwise using a wrench and remove the A/C drive belt.



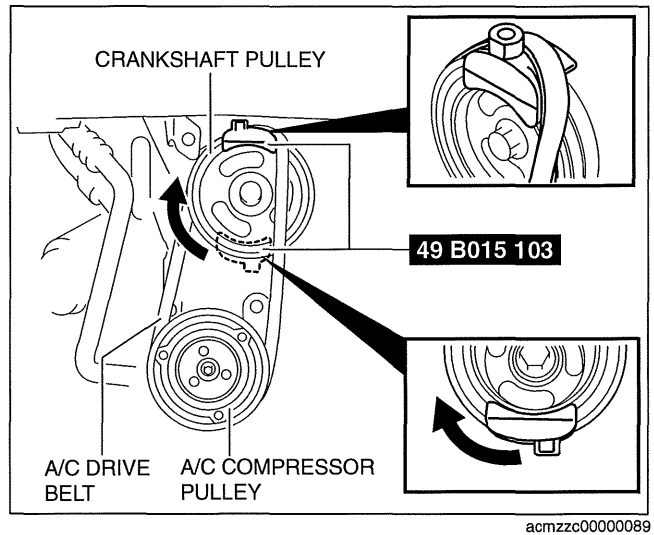
01-10A

A/C drive belt installation

1. Set the SST to the crankshaft pulley as shown in the figure.

Note

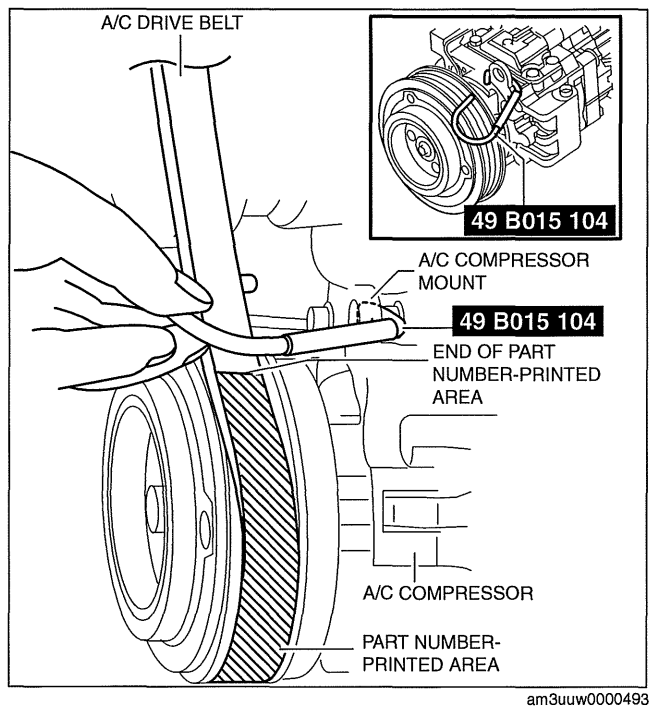
- Hang the A/C drive belt on to the A/C compressor pulley, then move the **SST** upward along the crankshaft pulley.



2. Set the SST to the A/C compressor mount as shown in the figure.

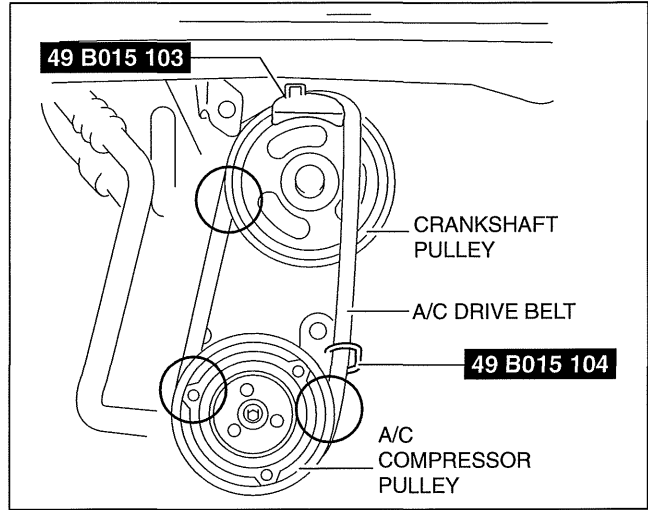
Note

- During the A/C drive belt installation, if the **SST** touches the part number-printed area on the back of the A/C drive belt, the **SST** may not be able to slide smoothly and the A/C drive belt will be pulled inward excessively. This will make it impossible to correctly install the A/C drive belt to the groove of the A/C compressor pulley. To prevent this, adjust the A/C drive belt to the position shown in the figure, then start the procedure.



MECHANICAL [LF, L5]

3. After setting the **SST**, verify that the three parts of A/C drive belt shown in the figure are hung on each pulley.

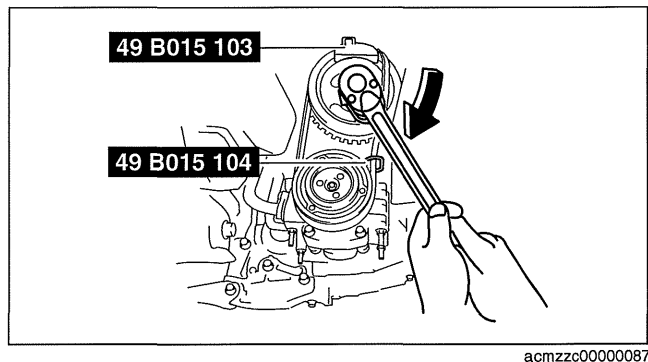


4. Rotate the crankshaft pulley clockwise using a wrench and install the A/C drive belt.

Caution

- Remove the SST (49 B015 103) immediately after it reaches the lower side to prevent it from falling down and being damaged.

5. Remove the **SST (49 B015 104)**
6. Rotate the crankshaft pulley clockwise one time or more to verify that the A/C drive belt is installed correctly.

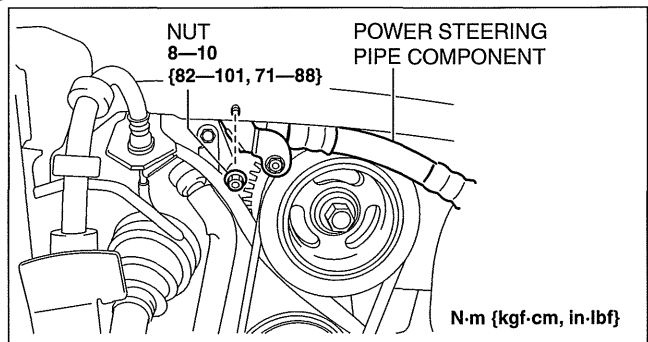


Caution

- Do not turn the crankshaft pulley counter clockwise, otherwise the crankshaft pulley bolt could loosen and the timing could change causing engine damage.

- If the A/C belt is not seated properly, push/pull the belt with a suitable tool in the direction where it would be seated properly and then rotate the crank pulley clockwise until the belt is correctly seated. If this does not correct the problem, remove the belt and install it again.

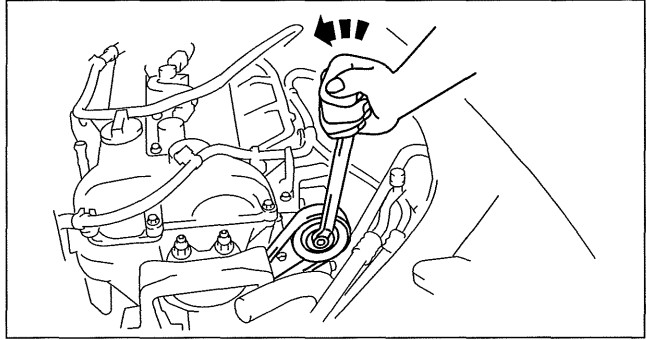
7. Install the nut shown in the figure.
8. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)



MECHANICAL [LF, L5]

Generator drive belt removal

1. Remove the A/C drive belt. (See 01-10A-6 A/C drive belt removal.)
2. Turn the center of the auto tensioner pulley counterclockwise to release tension to the drive belt tension.
3. Remove the generator drive belt.



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01-10A

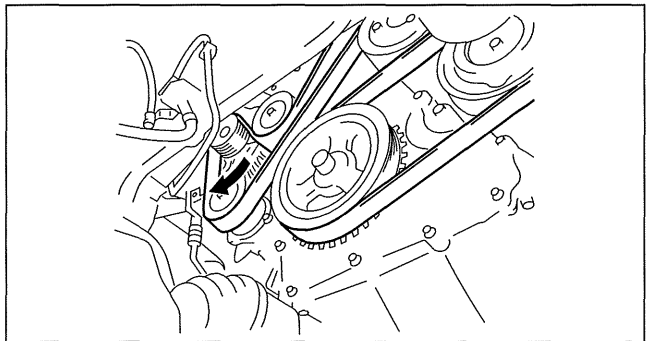
Generator drive belt installation

1. Install a generator drive belt.
2. Install the A/C drive belt. (See 01-10A-6 A/C drive belt removal.)

L5

Removal

1. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
2. Rotate the drive belt auto tensioner in the direction shown in the figure and remove the drive belt.



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Installation

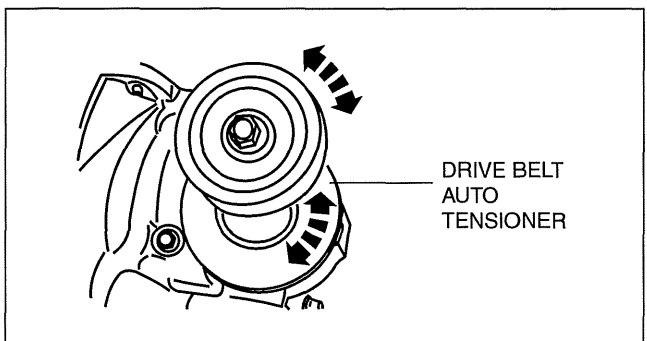
1. Install the drive belt.
2. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)

DRIVE BELT AUTO TENSIONER INSPECTION [LF, L5]

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LF

1. Remove the generator drive belt with the A/C drive belt still installed and set it out of the way. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
2. Verify that the drive belt auto tensioner moves smoothly in the operational direction.
 - If it does not move smoothly, replace the drive belt auto tensioner. (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
3. Turn the drive belt auto tensioner pulley by hand and verify that it rotates smoothly.
 - If it does not move smoothly, replace the drive belt auto tensioner. (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
4. Install the generator drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)

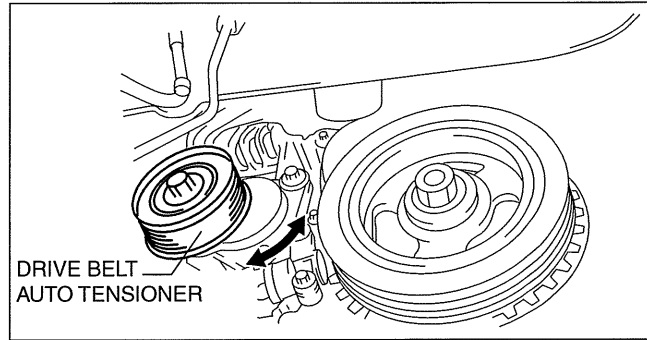


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MECHANICAL [LF, L5]

L5

1. Remove the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
2. Verify that the drive belt auto tensioner moves smoothly in the operational direction.
 - Replace the drive belt auto tensioner if necessary. (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
3. Rotate the drive belt auto tensioner pulley by hand and verify that it rotates smoothly.
 - Replace the drive belt auto tensioner if necessary. (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
4. Install the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)



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VALVE CLEARANCE INSPECTION [LF, L5]

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1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the oil level gauge.
9. Remove the cylinder head cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
10. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Measure the valve clearance.

Note

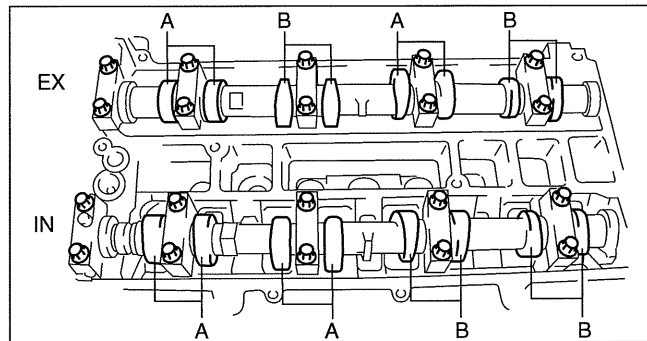
- Make sure to note down the measured values for choosing the suitable replacement tappets.

- (1) Turn the crankshaft clockwise so that the No.1 piston is at top dead center (TDC) of the compression stroke.
- (2) Measure the valve clearance at A in the figure.

Valve clearance [Engine cold]

IN: 0.22—0.28 mm {0.009—0.011 in}
EX: 0.27—0.33 mm {0.011—0.012 in}

- (3) If the valve clearance is out of the standard value, adjust it. (See 01-10A-11 VALVE CLEARANCE ADJUSTMENT [LF, L5].)
- (4) Turn the crankshaft **360°** clockwise so that the No.4 piston is at TDC of the compression stroke.
- (5) Measure the valve clearance at B in the figure.



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Valve clearance [Engine cold]

IN: 0.22—0.28 mm {0.009—0.011 in}
EX: 0.27—0.33 mm {0.011—0.012 in}

- (6) If the valve clearance is out of the standard value, adjust it. (See 01-10A-11 VALVE CLEARANCE ADJUSTMENT [LF, L5].)
12. Install in the reverse order of removal.

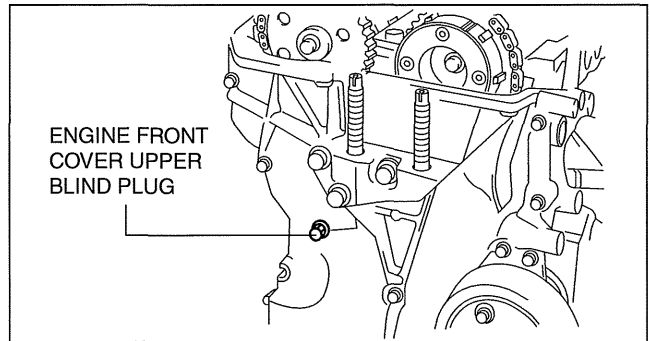
MECHANICAL [LF, L5]

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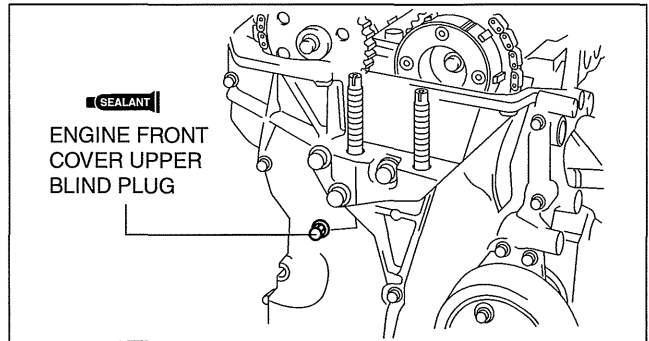
VALVE CLEARANCE ADJUSTMENT [LF, L5]

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the oil level gauge.
9. Remove the cylinder head cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
10. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Remove the generator drive belt with the A/C drive belt still installed and set it out of the way. (LF) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
12. Remove the drive belt. (L5) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
13. Remove the engine front cover lower blind plug.

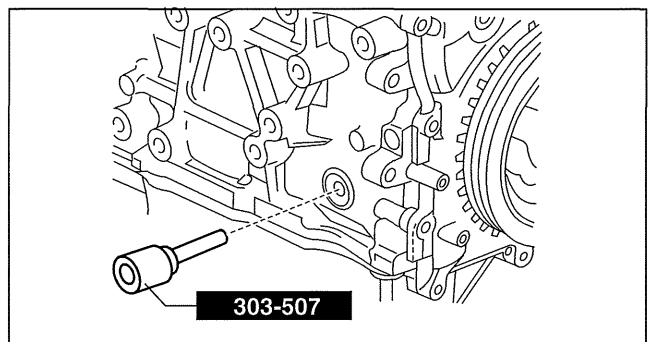
01-10A



14. Remove the engine front cover upper blind plug.
15. Disconnect the drive shaft (RH) from joint shaft, set the drive shaft (RH) out of the way. (MTX) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)



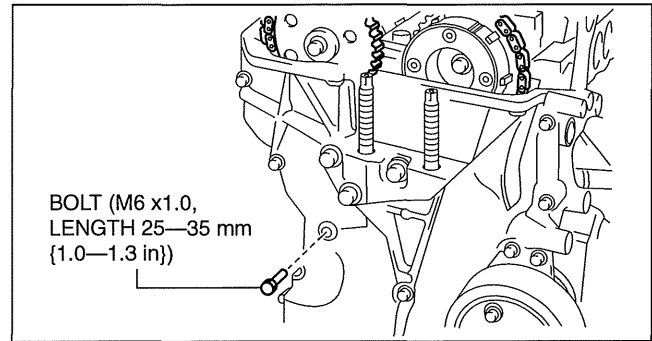
16. Remove the cylinder block lower blind plug, and install the **SST**.
17. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at top dead center (TDC) of the compression stroke. (Until the counterweight contacts **SST** and stops.)



MECHANICAL [LF, L5]

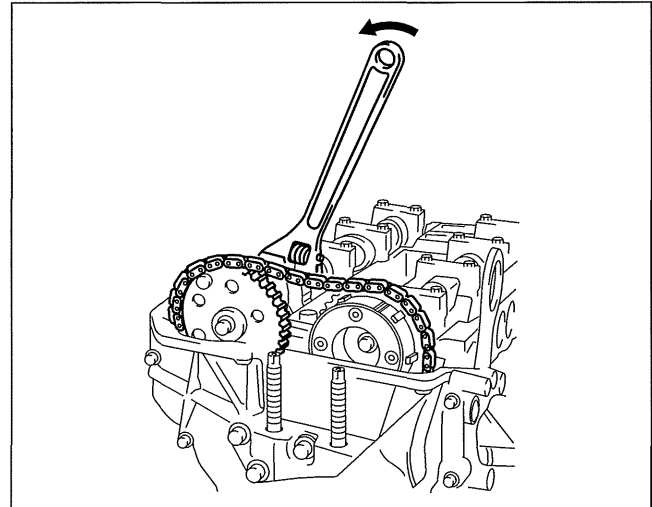
18. Loosen the timing chain using the following procedure.

- (1) Insert a suitable bolt (**M6 X 1.0, length 25—35 mm {1.0—1.3 in}**) into the engine front cover upper blind plug and tighten it until it contacts the chain tensioner arm, and then rotate it back one turn. (Set the bolt slightly away from the chain tensioner arm so that it does not contact it.)

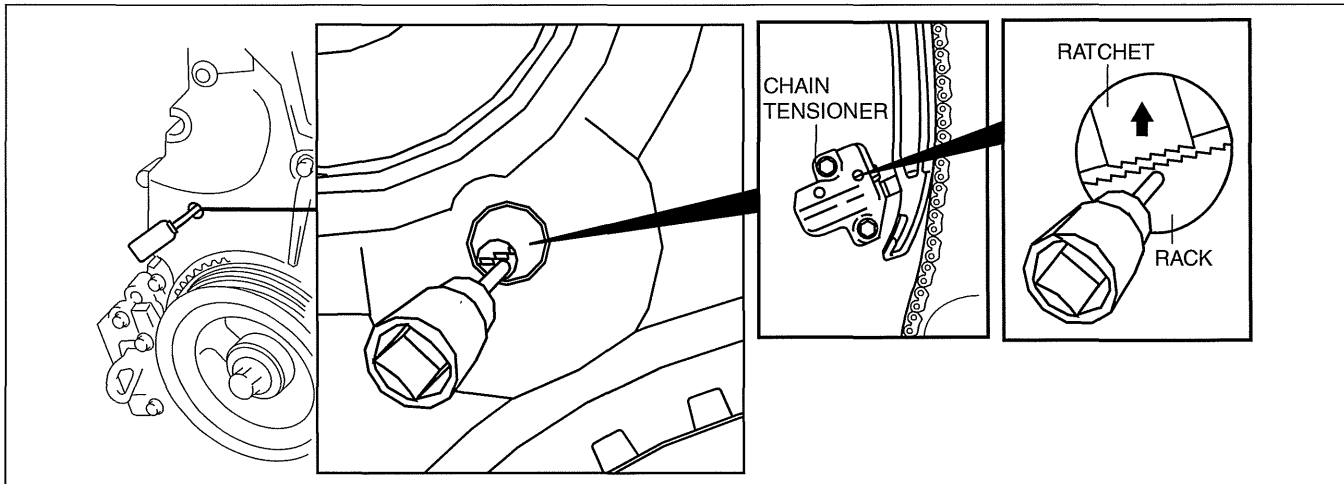


am3uuw0000217

- (2) Using the cast hexagon on the exhaust camshaft, apply force counterclockwise to facilitate unlocking the chain tensioner ratchet.
- (3) Using a Hex bit socket (**2.5 mm {0.098 in}**) or T15 Torx bit socket, unlock the chain tensioner ratchet so that it can be lifted up.



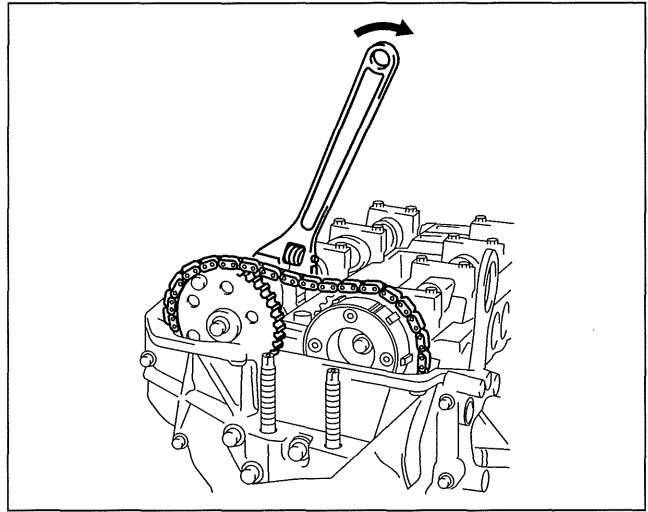
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MECHANICAL [LF, L5]

- (4) Using the cast hexagon on the exhaust camshaft, apply force in the direction of the engine rotation to increase tension on the chain.



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01-10A

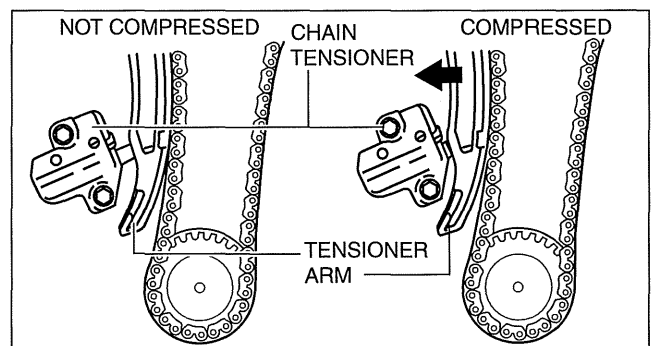
Note

- The chain tensioner rack is compressed using the chain tension generated by applying force to the exhaust camshaft in the direction of the engine rotation.

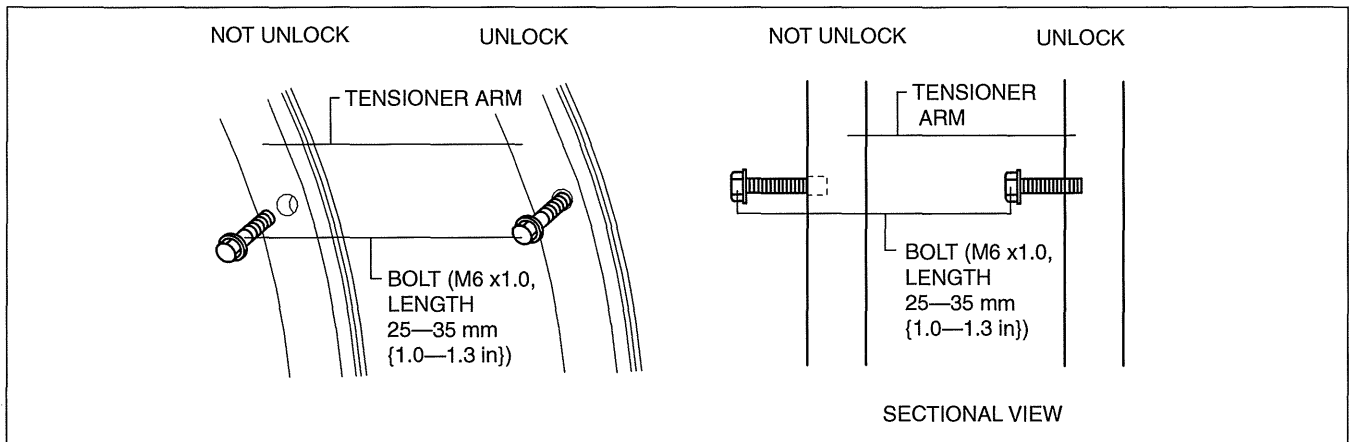
- (5) Screw in the bolt set in Step 1 approx. 5 mm {0.2 in} and secure the tensioner arm with the rack compressed.

Note

- The ratchet has not been unlocked if the bolt cannot be pressed in approx. 5 mm {0.2 in}.



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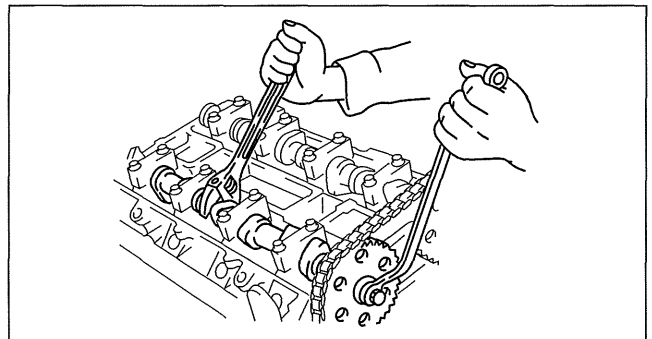
am3uuw0000303

- If the tensioner arm cannot be secured, return the bolt to its original position and repeat the procedure from Step 3.

19. Fix the exhaust camshaft using a wrench on the cast hexagon, and loosen the camshaft sprocket bolt.
20. Remove the exhaust camshaft sprocket bolt, exhaust camshaft sprocket, and washer as a single unit.

Caution

- Perform the work carefully so that the washer does not drop out.



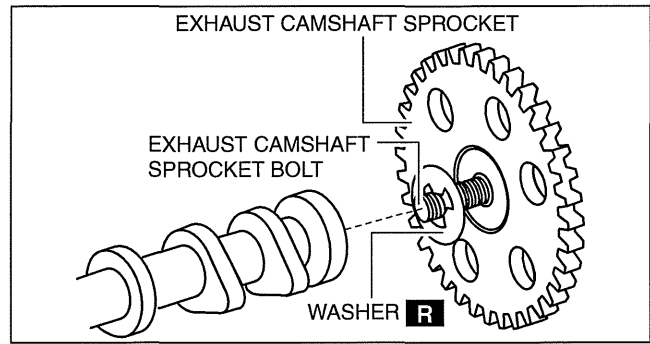
acxuuw0000161

MECHANICAL [LF, L5]

21. Remove the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [LF, L5].)
22. Loosen the camshaft cap bolts in two or three steps in the order shown in the figure and remove the camshaft cap.

Note

- The camshaft caps are to be kept ordered for correct reassembly in their original positions. Do not mix the caps.



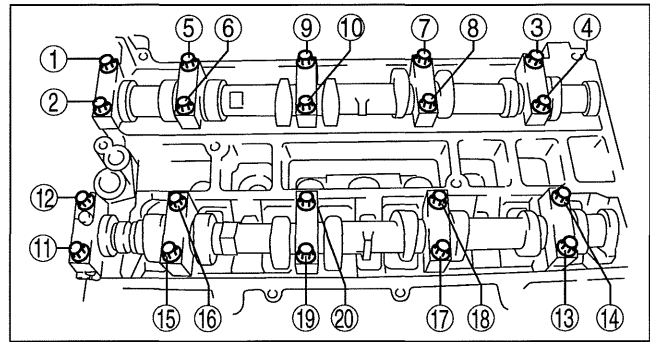
am3uuw0000217

23. Remove the camshafts for the intake and exhaust sides.
24. Remove the tappet.
25. Install an appropriate tappet based on the results of the valve clearance inspection.
Selected tappet = Removed tappet thickness + Measured valve clearance - Standard valve clearance

Valve clearance [Engine cold]

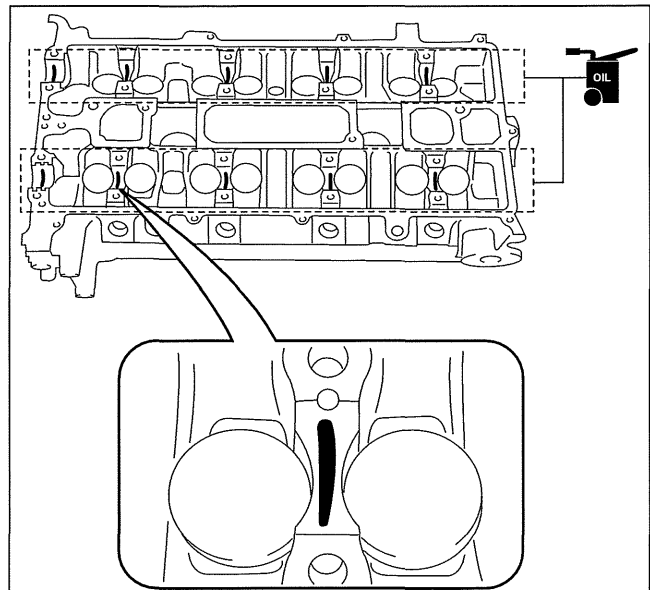
IN: 0.22—0.28 mm {0.009—0.011 in}

EX: 0.27—0.33 mm {0.011—0.012 in}



abatjw00000719

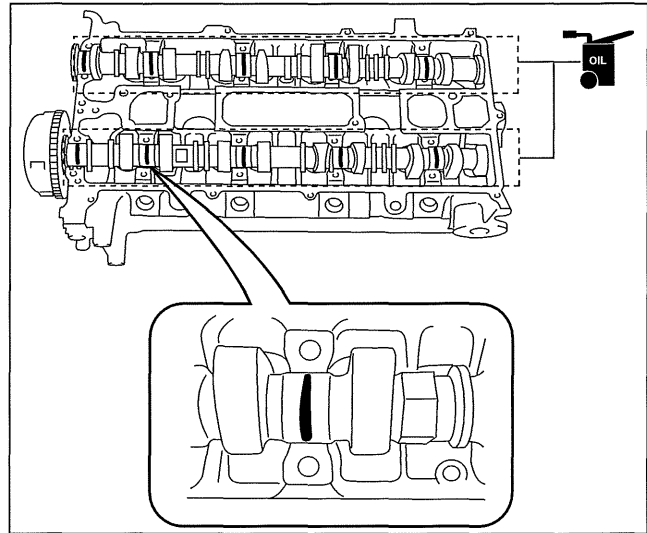
26. Verify that No.1 cylinder is at TDC of the compression stroke. (Position counterweight contacts **SST**.)
27. Apply the gear oil (SAE No.90 or equivalent) to each journal of the cylinder head as shown in the figure.
28. Install the camshaft with No.1 cylinder aligned with the TDC position.



aprijw00003402

MECHANICAL [LF, L5]

29. Apply the gear oil (SAE No.90 or equivalent) to each journal of the camshaft as shown in the figure.
30. Temporarily tighten the camshaft cap bolts evenly in 2—3 steps.



aprijw00003403

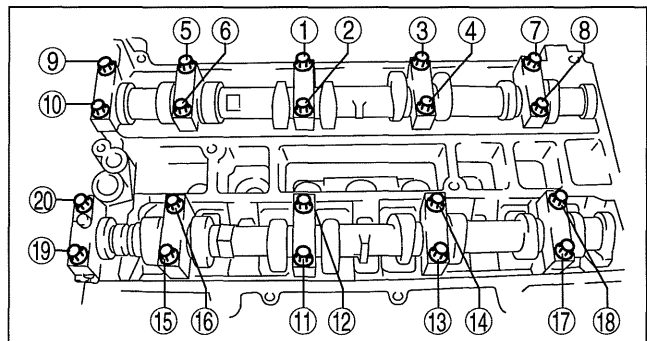
31. Tighten the camshaft cap bolts in the order shown in the following two steps.

Tightening procedure

Step 1: 5.0—9.0 N·m {51—91 kgf·cm, 45—79 in·lbf}

Step 2: 14—17 N·m {1.5—1.7 kgf·m, 11—12 ft·lbf}

32. Install the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)

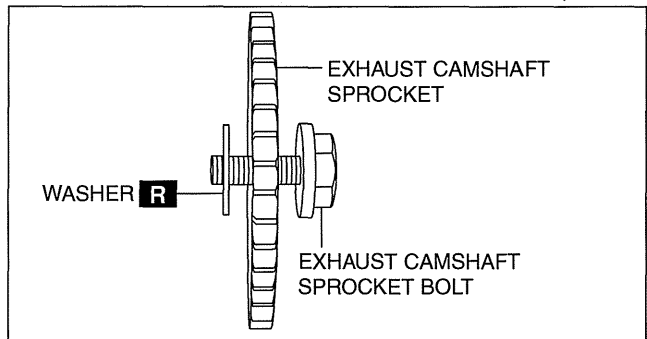


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33. Install the exhaust camshaft sprocket bolt, exhaust camshaft sprocket, and a new washer as a single unit.

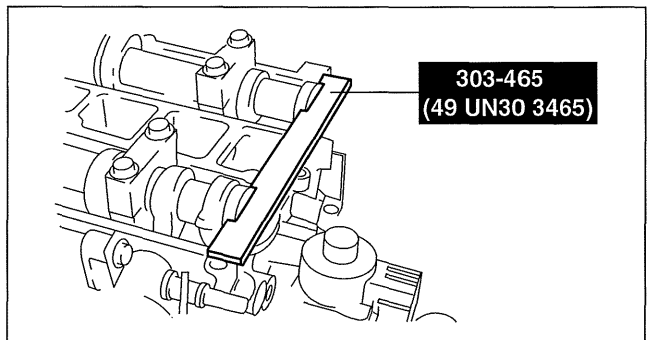
Caution

- Install a washer to the fourth or fifth thread of the exhaust camshaft sprocket bolt being careful not to drop the washer.
- Do not tighten the camshaft sprocket bolt at this stage. Verify the valve timing before performing the bolt tightening.



am3uuw0000217

34. Install the SST on the camshaft as shown in the figure.
35. Remove the installation bolt for the engine front cover upper blind plug (M6 X 1.0 length 25—35mm {1.0—1.3 in}), and apply tension to the timing chain.



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01-10A

MECHANICAL [LF, L5]

36. Fix the exhaust camshaft using a wrench on the cast hexagon, and tighten the sprocket bolt.

Tightening torque

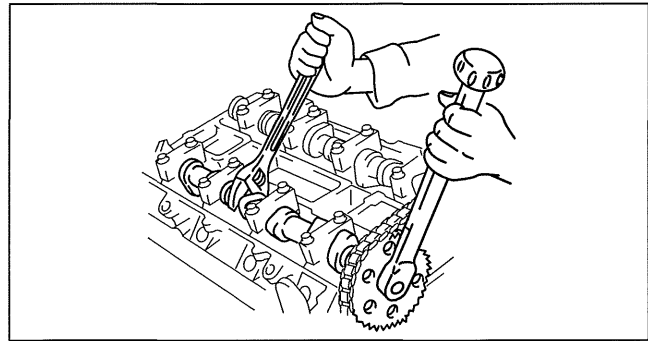
69—75 N·m {7.1—7.6 kgf·m, 51—55 ft·lbf}

37. Remove the **SST** from the camshaft.
38. Remove the **SST** installed in the cylinder block lower blind plug hole.
39. Rotate the crankshaft clockwise two turns and inspect the valve timing.
• If not aligned, loosen the camshaft sprocket bolt and repeat the procedure from Step 34.
40. Install the cylinder block lower blind plug.

Tightening torque

18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}

41. Connect the drive shaft (RH) to joint shaft. (MTX)
(See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)



am8rrw0002546

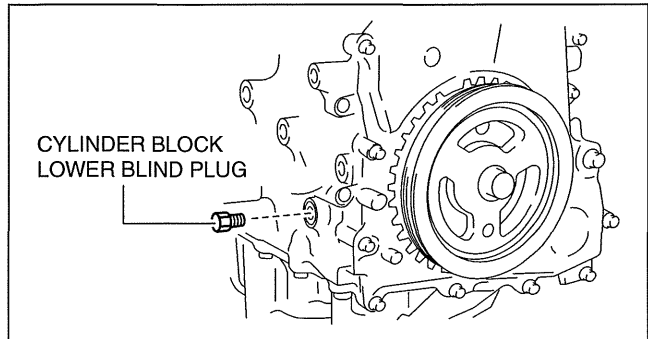
42. Apply the silicone sealant and install the engine front cover upper blind plug.

Caution

- Install the engine front cover upper blind plug before the applied silicone sealant starts to harden.

Tightening torque

8—11 N·m {82—117 kgf·cm, 71—101 in·lbf}



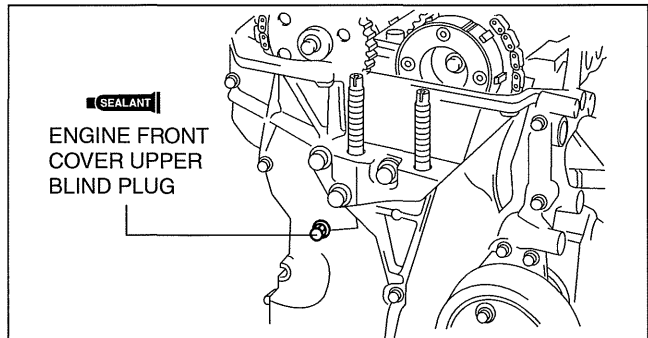
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43. Install a new engine front cover lower blind plug.

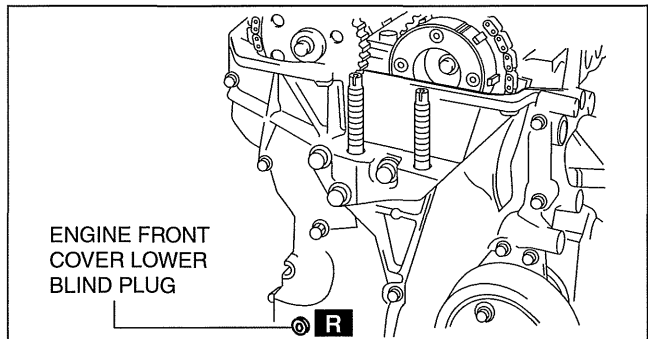
Tightening torque

10—14 N·m {102—142 kgf·cm, 89—123 in·lbf}

44. Install the drive belt. (L5) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
45. Install the generator drive belt. (LF) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
46. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
47. Install the cylinder head cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
48. Install the oil level gauge.
49. Install the ventilation hose.
50. Install the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
51. Install the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
52. Connect the wiring harness.
53. Install the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
54. Connect the negative battery cable.
55. Install the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)



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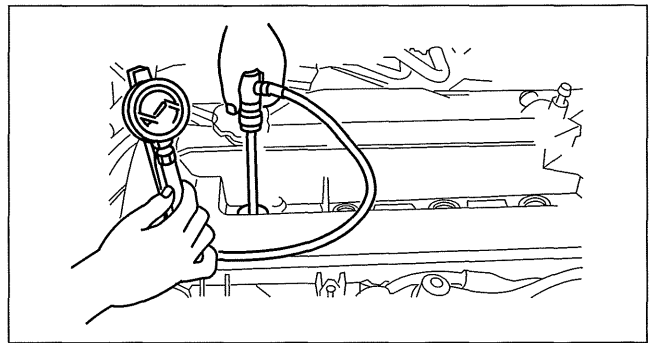


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Warning

- Hot engines and oil can cause severe burns. Be careful not to burn yourself during removal/installation of each component.
- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)

1. Verify that the battery is fully charged. (See 01-17A-4 BATTERY INSPECTION [LF, L5].)
 - Recharge it if necessary. (See 01-17A-5 BATTERY RECHARGING [LF, L5].)
2. Warm up the engine to the normal operating temperature.
3. Perform "Fuel Line Safety Procedures". Leave the fuel pump relay removed. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
4. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Connect a compression gauge into the spark plug hole.
8. Fully depress the accelerator pedal and crank the engine.
9. Note down the maximum gauge reading.
10. Inspect each cylinder as above.



ampjjw00001269

Compression [LF]

Standard: 1,400 kPa {14.28 kgf/cm², 203.1 psi} [300 rpm]

Minimum: 980 kPa {10.0 kgf/cm², 142.2 psi} [300 rpm]

Maximum difference between cylinders:
196.1 kPa {2.0 kgf/cm², 28.5 psi}

Compression [L5]

Standard: 1,324 kPa {13.50 kgf/cm², 192.0 psi} [300 rpm]

Minimum: 927 kPa {9.45 kgf/cm², 134 psi} [300 rpm]

Maximum difference between cylinders: 196.1 kPa {2.0 kgf/cm², 28.5 psi}

- If the measured value is less than the limited value, or there is a cylinder whose compression value varies from that of other cylinders by **196.1 kPa {2.0 kgf/cm², 28.5 psi}** or more, add a small amount of engine oil through the spark plug hole. Then measure the compression pressure and perform the respective operations for the following cases.
 - If the compression increases, the piston, the piston rings, or cylinder wall may be worn and overhaul is required.
 - If the compression stays low, a valve may be stuck or improperly seated and overhaul is required.
 - If the compression in adjacent cylinders stays low, the cylinder head gasket may be damaged or the cylinder head distorted and overhaul is required.

11. Disconnect the compression gauge.

12. Install the following parts.

- (1) Spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
- (2) Ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
- (3) Plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
- (4) Fuel pump relay. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)

MECHANICAL [LF, L5]

VARIABLE VALVE TIMING ACTUATOR INSPECTION [LF, L5]

id0110a7801200

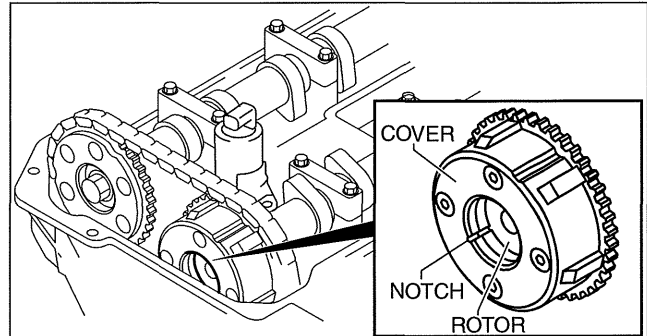
Caution

- Variable valve timing actuator can not be disassembled because it is a precision unit.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the oil level gauge.
9. Remove the cylinder head cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
10. Confirm that notch of the rotor and notch of the cover at the variable valve timing actuator are aligned and fitted.

- If the notch of the rotor and notch of the cover are not aligned, turn the crankshaft clockwise two rotations. Verify that notch of the rotor and notch of the cover are aligned.
- If the both notches are still not aligned, replace the variable valve timing actuator. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)
- If, when turning the crankshaft, there is a hitting noise from the variable valve timing actuator each time the cam passes the fully lifted position, it means that the actuator is not secured. Replace the actuator. (See 01-10A-18 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5].)

11. Install in the reverse order of removal.



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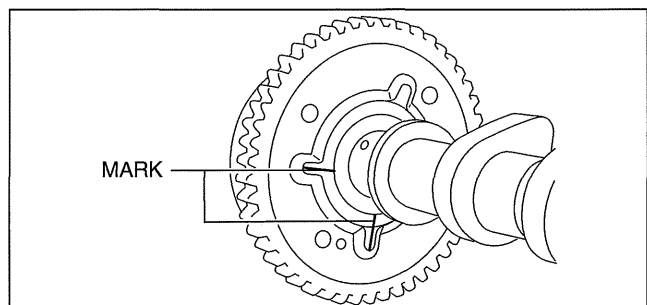
VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [LF, L5]

id0110a7801100

Note

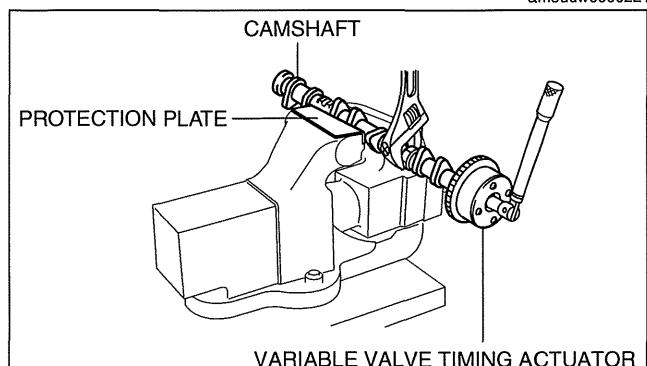
- Variable valve timing actuator can not be disassembled because it is a precision unit.
- Intake camshaft sprocket is integrated with the variable valve timing actuator and cannot be disassembled.

1. Refer to the "VALVE CLEARANCE ADJUSTMENT" procedure and remove the variable valve timing actuator and the camshaft on the intake side as a single unit. (See 01-10A-11 VALVE CLEARANCE ADJUSTMENT [LF, L5].)
2. Remove the variable valve timing actuator.
 - (1) Mark the camshaft and variable valve timing actuator as shown in the figure to make sure they are installed in their original position.



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- (2) Secure the camshaft in a vise.
- (3) Loosen the variable valve timing actuator tightening bolt.



VARIABLE VALVE TIMING ACTUATOR

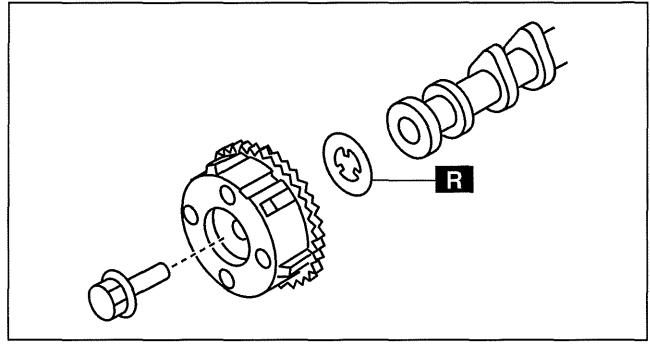
am3uuw0000222

3. Install a new washer.
4. Install the variable valve timing actuator.

Note

- When the variable valve timing actuator is replaced with a new one, mark it in the same location as the old one.

- (1) Secure the camshaft in a vise.
- (2) Align the marks of the camshaft and variable valve timing actuator.
- (3) Tighten variable valve timing actuator tightening bolt.



am3uuw0000222

01-10A

Tightening torque

69—75 N·m {7.1—7.6 kgf·m, 51—55 ft·lbf}

5. Refer to the “VALVE CLEARANCE ADJUSTMENT” procedure and install the variable valve timing actuator and the camshaft on the intake side as a single unit. (See 01-10A-11 VALVE CLEARANCE ADJUSTMENT [LF, L5].)

Note

- If the alignment marks on the variable valve timing actuator are not available, refer to the “TIMING CHAIN ASSEMBLY” in the engine workshop manual and perform the sprocket position alignment again.

OIL CONTROL VALVE (OCV) INSPECTION [LF, L5]

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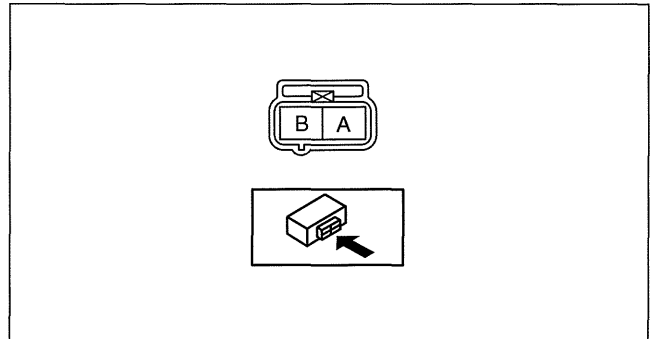
Coil Resistance Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the OCV connector.
5. Measure the resistance between terminals A and B using an ohmmeter.

OCV coil resistance

6.9—7.9 ohms [20°C {68°F}]

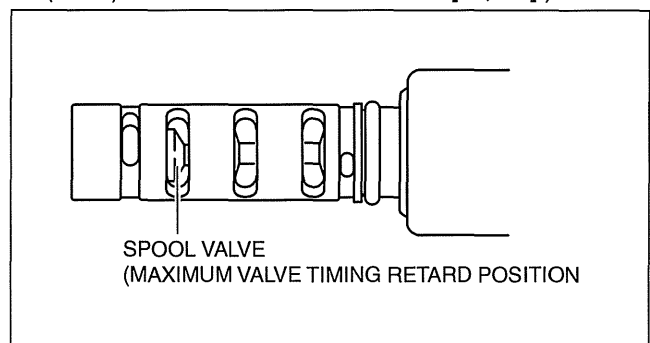
- If not as specified, replace the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
6. Install in the reverse order of removal.



am6zzw0000178

Spool Valve Operation Inspection

1. Remove the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)
2. Verify that the spool valve in the OCV is in the maximum valve timing retard position as indicated in the figure.
 - If not as specified, replace the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)



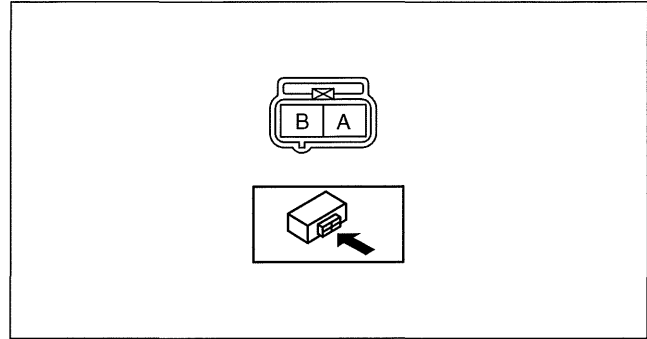
am3uuw0000226

MECHANICAL [LF, L5]

3. Verify that the battery is fully charged. (See 01-17A-4 BATTERY INSPECTION [LF, L5].)
 - If not as specified, recharge the battery. (See 01-17A-5 BATTERY RECHARGING [LF, L5].)

Note

- When applying battery positive voltage between the OCV terminals, the connection can be either of the following:
 - Positive battery cable to terminal A, negative battery cable to terminal B
 - Positive battery cable to terminal B, negative battery cable to terminal A



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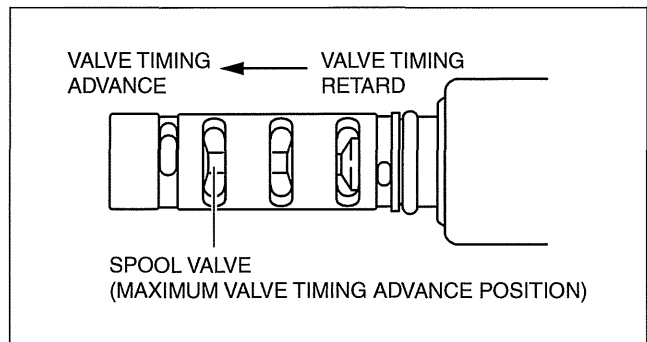
4. Apply battery positive voltage between the OCV terminals and verify that the spool valve operates and moves to the maximum valve timing advance position.

- If not as specified, replace the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)

5. Stop applying battery positive voltage and verify that the spool valve returns to the maximum valve timing retard position.

- If not as specified, replace the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)

6. Install the OCV. (See 01-10A-20 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5].)



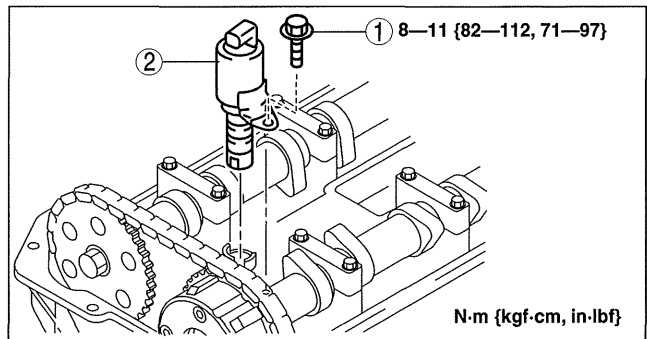
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OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [LF, L5]

id0110a7801300

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the ventilation hose.
7. Remove the oil level gauge.
8. Remove the cylinder head cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
9. Remove in the order indicated in the table.
10. Install in the reverse order of removal.

1	OCV installation bolt
2	OCV



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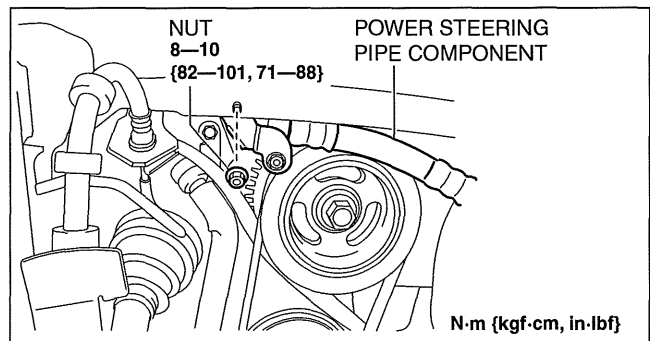
MECHANICAL [LF, L5]

TIMING CHAIN REMOVAL/INSTALLATION [LF, L5]

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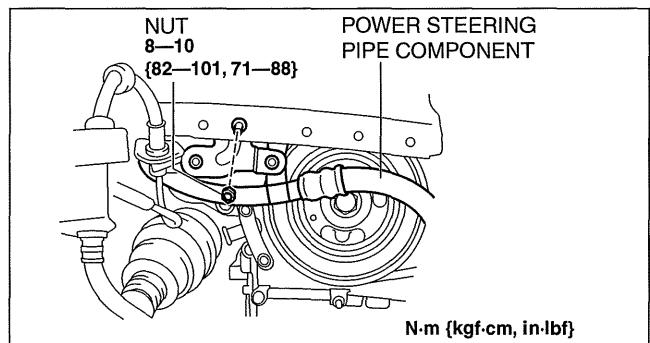
1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the coolant reserve tank with the hose still connected and set it out of the way. (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5].)
9. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
10. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Remove the nut shown in the figure and set the power steering pipe component out of the way.

LF



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L5

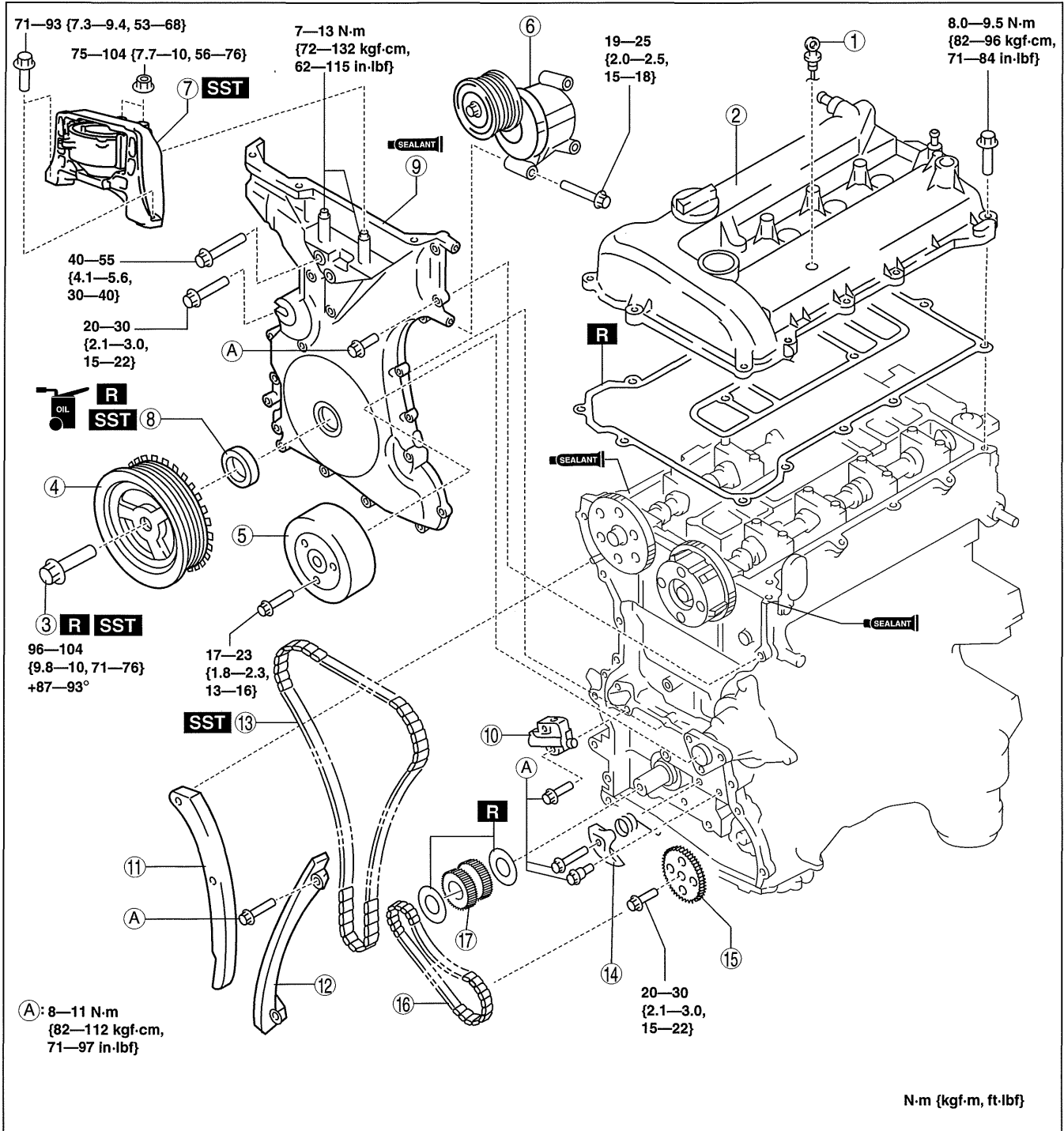


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12. Remove the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
13. Remove the crankshaft position (CKP) sensor. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
14. Remove the A/C compressor with the cooler hose still connected and secure it using wire or rope so that it is out of the way. (LF) (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
15. Disconnect the drive shaft (RH) from joint shaft, set the drive shaft (RH) out of the way. (MTX) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
16. Remove in the order indicated in the table.
17. Install in the reverse order of removal.
18. Start the engine. And inspect and adjust the following:
 - Leakage of engine oil. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)
 - Runout and contact of pulley and belt.
 - Verify the ignition timing, idle speed and idle mixture. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)

MECHANICAL [LF, L5]

LF



am3uuw0000296

1	Dipstick
2	Cylinder head cover (See 01-10A-24 Cylinder Head Cover Removal Note.) (See 01-10A-30 Cylinder Head Cover Installation Note.)
3	Crankshaft pulley lock bolt (See 01-10A-24 Crankshaft Pulley Lock Bolt Removal Note.) (See 01-10A-29 Crankshaft Pulley Lock Bolt Installation Note.)
4	Crankshaft pulley
5	Water pump pulley
6	Drive belt auto tensioner

7	No.3 engine mount (See 01-10A-25 No.3 Engine Mount Removal Note.) (See 01-10A-28 No.3 Engine Mount Installation Note.)
8	Front oil seal (See 01-10A-34 FRONT OIL SEAL REPLACEMENT [LF, L5].)
9	Engine front cover (See 01-10A-27 Engine Front Cover Installation Note.)
10	Chain tensioner (See 01-10A-26 Chain Tensioner Removal Note.)
11	Tensioner arm

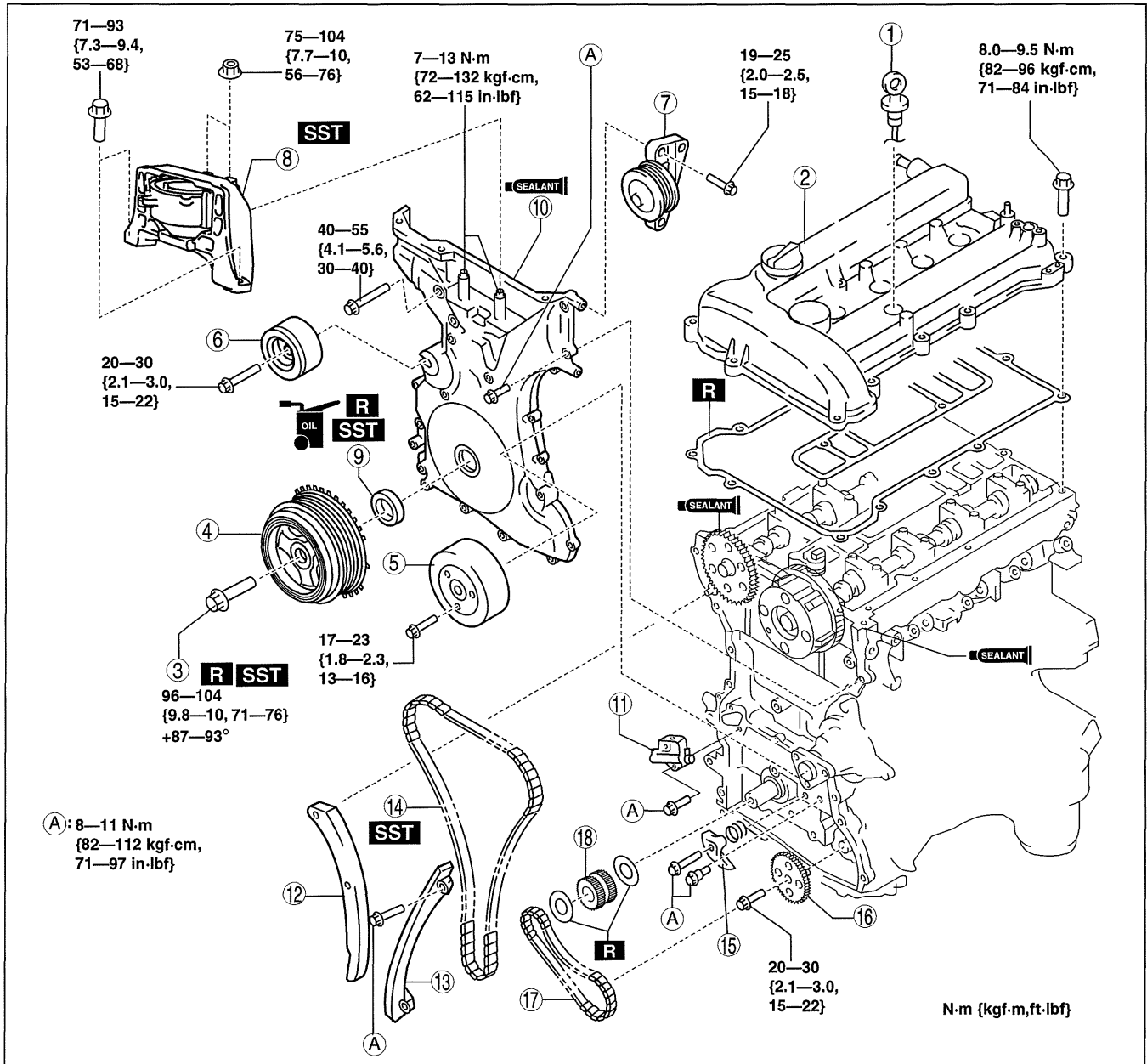
01-10A-22

MECHANICAL [LF, L5]

12	Chain guide
13	Timing chain (See 01-10A-26 Timing Chain Installation Note.)
14	Oil pump chain tensioner

15	Oil pump sprocket (See 01-10A-26 Oil Pump Sprocket Removal/Installation Note.)
16	Oil pump chain
17	Crankshaft sprocket

L5



am3uuw000296

1	Dipstick
2	Cylinder head cover (See 01-10A-24 Cylinder Head Cover Removal Note.) (See 01-10A-30 Cylinder Head Cover Installation Note.)
3	Crankshaft pulley lock bolt (See 01-10A-24 Crankshaft Pulley Lock Bolt Removal Note.) (See 01-10A-29 Crankshaft Pulley Lock Bolt Installation Note.)
4	Crankshaft pulley
5	Water pump pulley

6	Idler pulley
7	Idler pulley
8	No.3 engine mount (See 01-10A-25 No.3 Engine Mount Removal Note.) (See 01-10A-28 No.3 Engine Mount Installation Note.)
9	Front oil seal (See 01-10A-34 FRONT OIL SEAL REPLACEMENT [LF, L5].)
10	Engine front cover (See 01-10A-27 Engine Front Cover Installation Note.)

01-10A-23

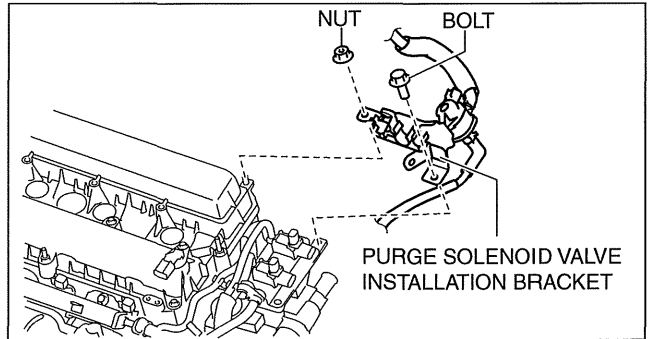
MECHANICAL [LF, L5]

11	Chain tensioner (See 01-10A-26 Chain Tensioner Removal Note.)
12	Tensioner arm
13	Chain guide
14	Timing chain (See 01-10A-26 Timing Chain Installation Note.)

15	Oil pump chain tensioner
16	Oil pump sprocket (See 01-10A-26 Oil Pump Sprocket Removal/ Installation Note.)
17	Oil pump chain
18	Crankshaft sprocket

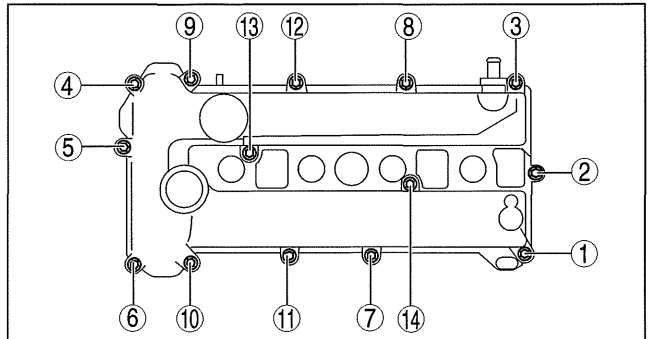
Cylinder Head Cover Removal Note

1. Remove the purge solenoid valve installation bracket with the evaporative hose still connected and set it out of the way.



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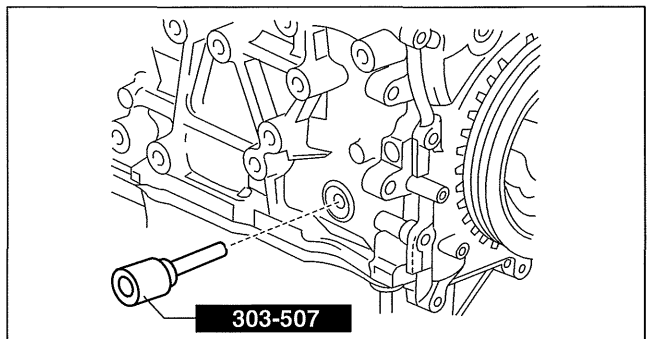
2. Loosen the cylinder head cover bolts in the order shown in the figure.



am6xuw0000235

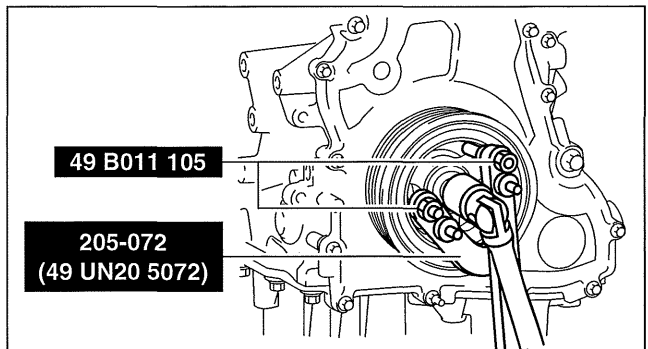
Crankshaft Pulley Lock Bolt Removal Note

1. Rotate the crankshaft in the direction of the engine rotation and remove the cylinder block lower blind plug when the No. 1 cylinder is at the point prior to top dead center (TDC) of compression, then install the **SST**.
2. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the counterweight contacts **SST** and stops.)



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3. Hold the crankshaft pulley by using the **SSTs**.



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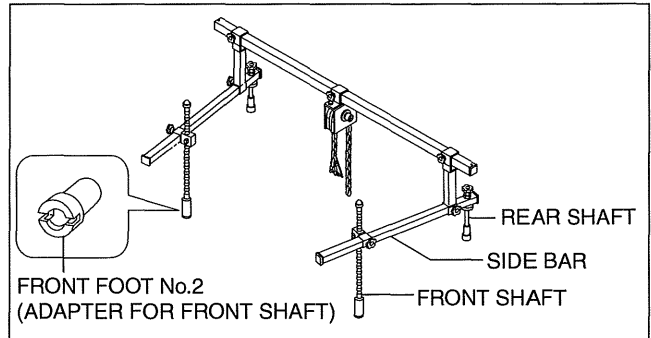
MECHANICAL [LF, L5]

No.3 Engine Mount Removal Note

1. Remove the air cleaner. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
2. Install the SST using the following procedures.

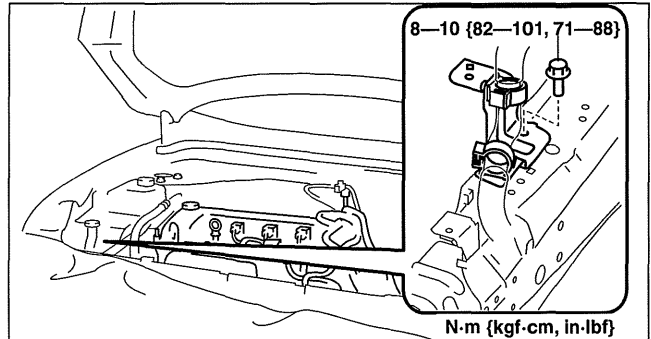
Caution

- Refer to the SST instruction manual for the basic handling procedure.



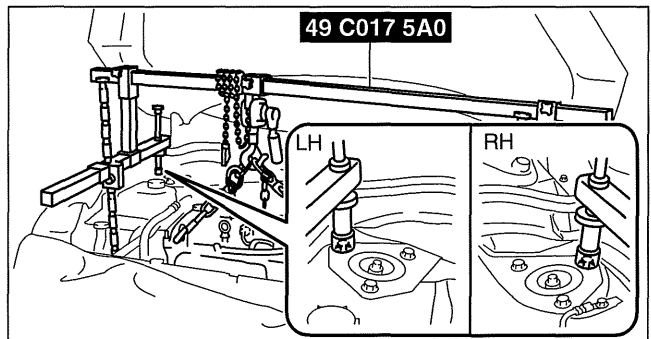
am6xuw000068

- (1) Remove the installation bolt for the bracket securing the lower radiator hose.
- (2) Set the bracket securing the lower radiator hose aside to prevent it from interfering with the front shaft of the SST (right side)



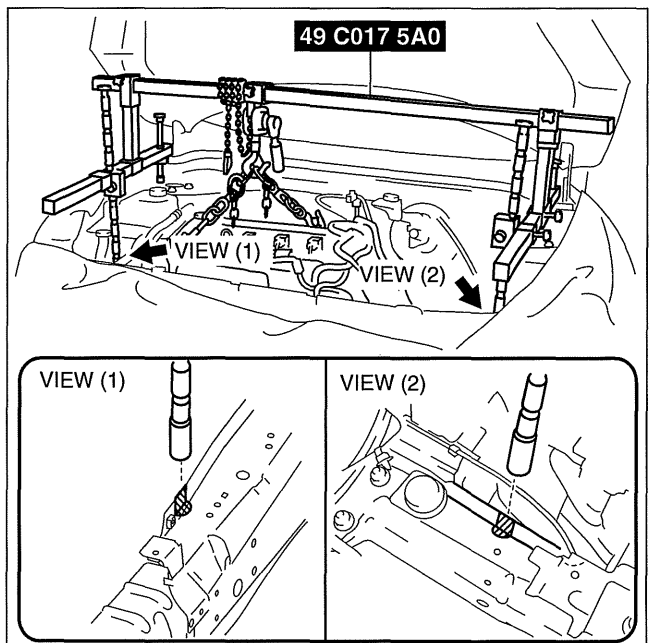
am3uuw0000508

- (3) As shown in the figure, set the rear shafts of the SST to the left and right shock absorber bolts.



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- (4) Install front foot No.2 to the left/right front shaft of the SST, then align the groove of the front shaft of the SST with the folded up part of the vehicle as shown in the figure.

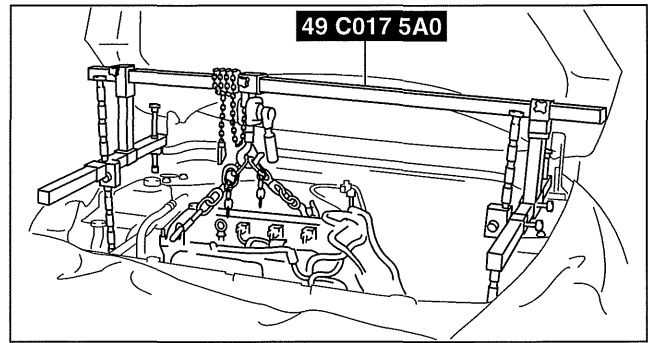


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01-10A

MECHANICAL [LF, L5]

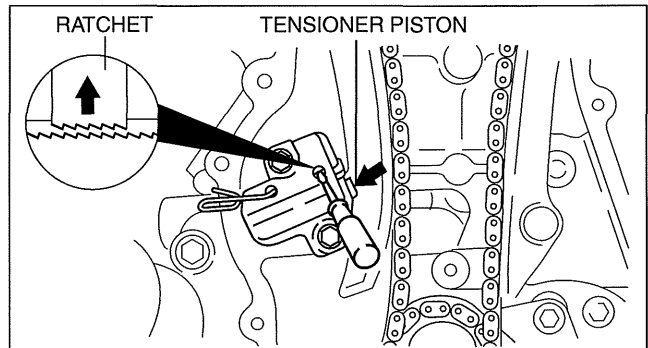
- (5) Adjust the positions of the SST side bars so that they are the same height (left and right) and horizontal. Make sure each joint is securely tightened.



am3uuw0000529

Chain Tensioner Removal Note

1. Using a thin screwdriver, hold the chain tensioner ratchet lock mechanism away from the ratchet stem.
2. Slowly compress the tensioner piston.
3. Hold the tensioner piston using a 1.5 mm {0.059 in} wire or paper clip.



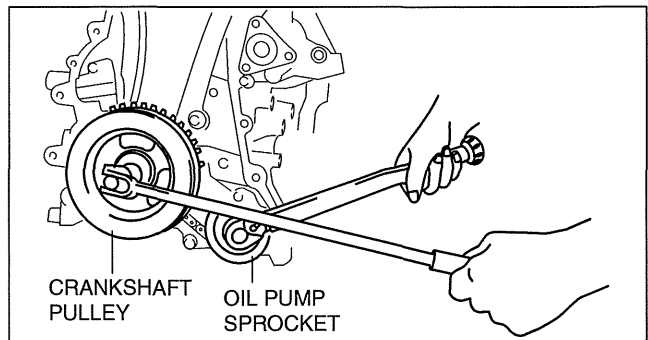
am3uuw0000227

Oil Pump Sprocket Removal/Installation Note

1. Temporarily install the crankshaft pulley and crankshaft pulley lock bolt to the crankshaft, and lock the oil pump against rotation as shown in figure.
2. Remove/install the oil pump sprocket, and then remove the crankshaft pulley and crankshaft pulley lock bolt.

Tightening torque

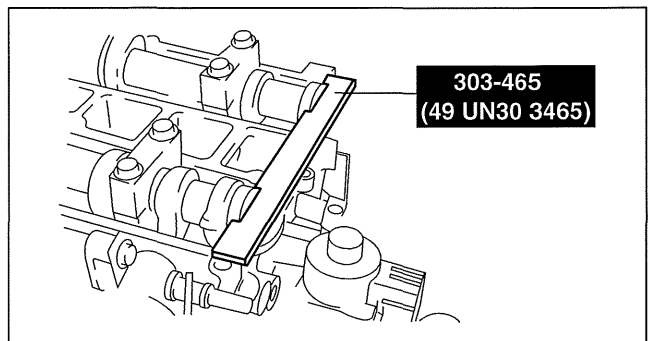
20—30 N·m {2.1—3.0 kgf·m, 15—22 ft·lbf}



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Timing Chain Installation Note

1. Install the SST to the camshaft as shown.
2. Install the timing chain.
3. Remove the retaining wire or paper clip from the auto tensioner to apply tension to the timing chain.



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MECHANICAL [LF, L5]

Engine Front Cover Installation Note

1. Apply silicone sealant to the engine front cover as shown.

Caution

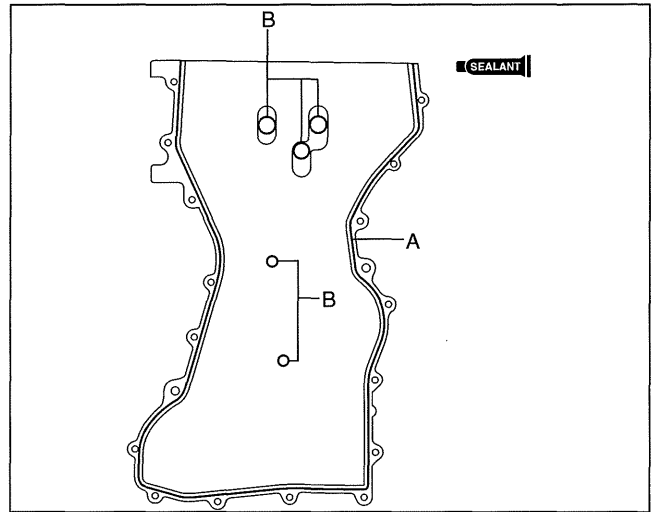
- Install the engine front cover before the applied silicone sealant starts to harden.
- Verify that there is no oil or dust on the seal.

LF

Thickness

A: 2.2—3.2 mm {0.087—0.125 in}

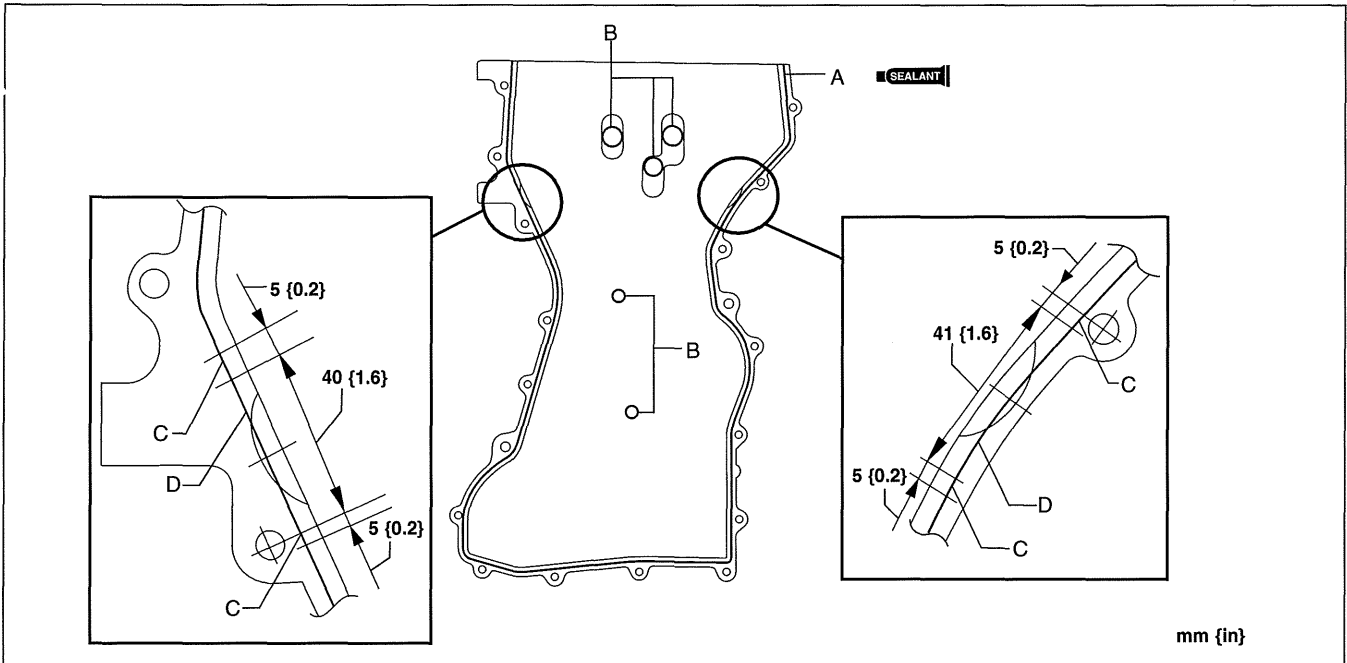
B: 1.5—2.5 mm {0.059—0.098 in}



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01-10A

L5



am3uuw0000530

Thickness

A: 2.2—3.2 mm {0.09—0.12 in}

B: 1.5—2.5 mm {0.06—0.098 in}

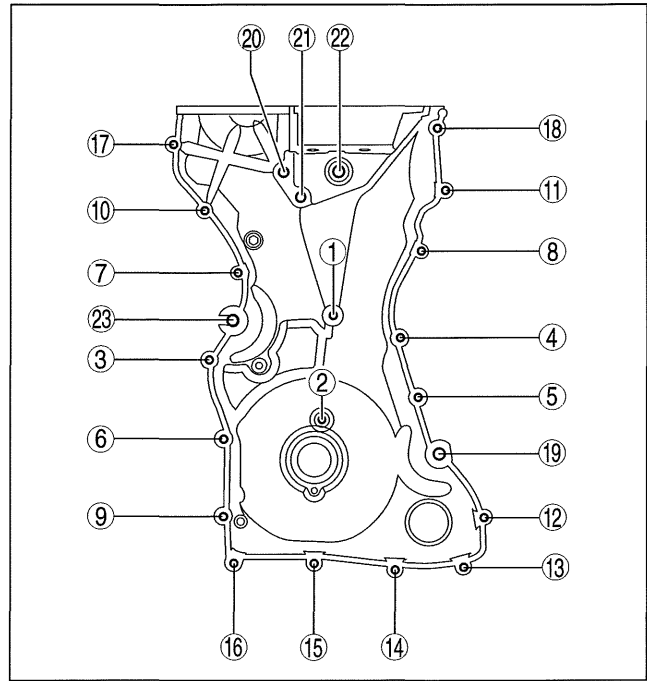
C: 2.2—4.3 mm {0.09—0.16 in}

D: 3.3—4.3 mm {0.13—0.16 in}

MECHANICAL [LF, L5]

2. Install the engine front cover bolts in the order as shown.

No.	Tightening torque
1—18	8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}
19—22	40—55 N·m {4.1—5.6 kgf·m, 30—40 ft·lbf}
23 (LF)	20—30 N·m {2.1—3.0 kgf·m, 15—22 ft·lbf}



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No.3 Engine Mount Installation Note

Note

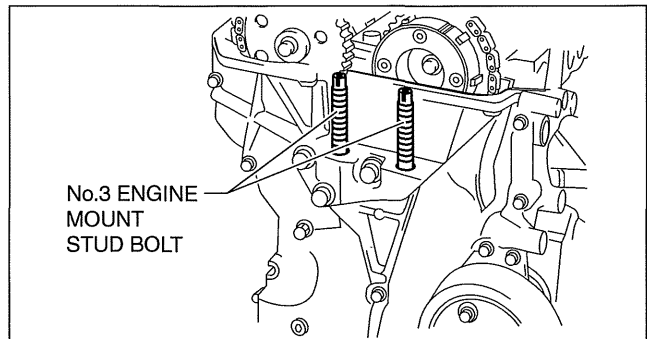
- If the No.3 engine mount bracket and the engine are removed, retighten the No.3 engine mount stud bolts.

1. Tighten the No.3 engine mount stud bolts.

Tightening torque

7—13 N·m {72—132 kgf·cm, 62—115 in·lbf}

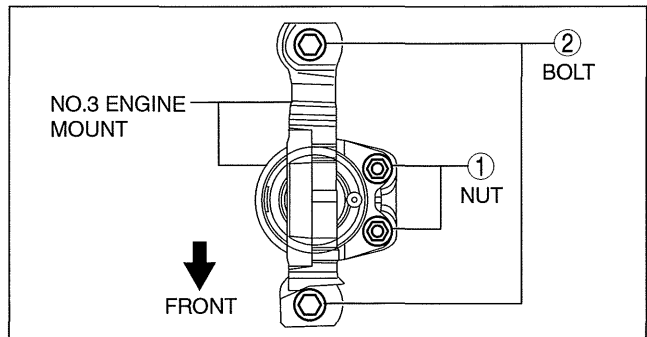
2. Temporarily tighten the No.3 engine mount installation bolts and nuts.



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3. Tighten the No.3 engine mount installation bolts and nuts in the order shown in the figure.

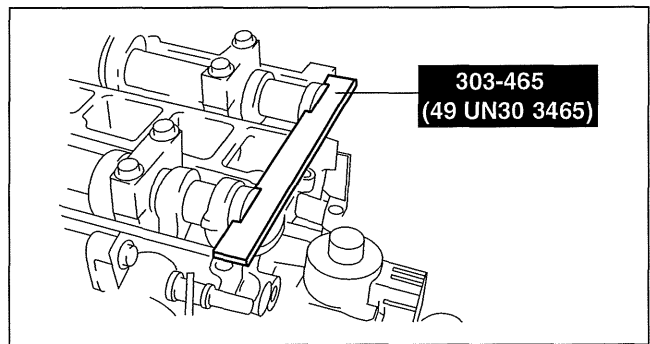
No.	Tightening torque
1	75—104 N·m {7.7—10 kgf·m, 56—76 ft·lbf}
2	71—93 N·m {7.3—9.4 kgf·m, 53—68 ft·lbf}



am3uuw0000303

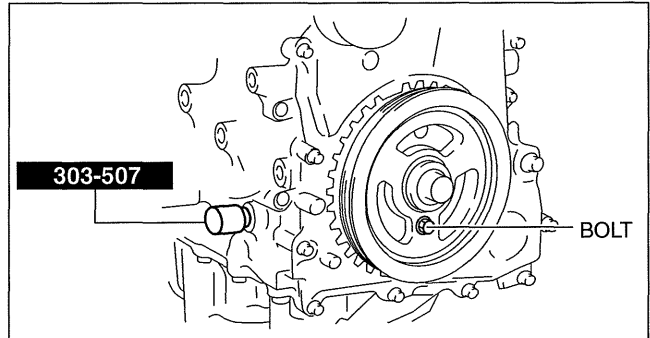
Crankshaft Pulley Lock Bolt Installation Note

1. Install the **SST** to the camshaft as shown.
2. Verify that No.1 cylinder is at TDC of the compression stroke. (Position counterweight contacts **SST**.)



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3. To position the crankshaft pulley, temporarily tighten it and, using a suitable bolt (**M6 X 1.0**), fix the crankshaft pulley to the engine front cover.



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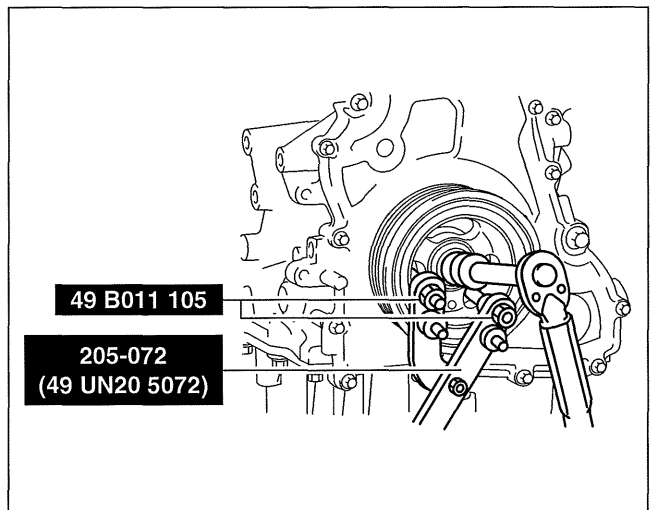
4. Hold the crankshaft pulley using the **SSTs**.
5. Tighten the crankshaft pulley lock bolt in the order shown in the following two steps using the **SST** (49 D032 316).

Tightening procedure

Step 1: 96—104 N·m {9.8—10 kgf·m, 71—76 ft·lbf}

Step 2: 87—93°

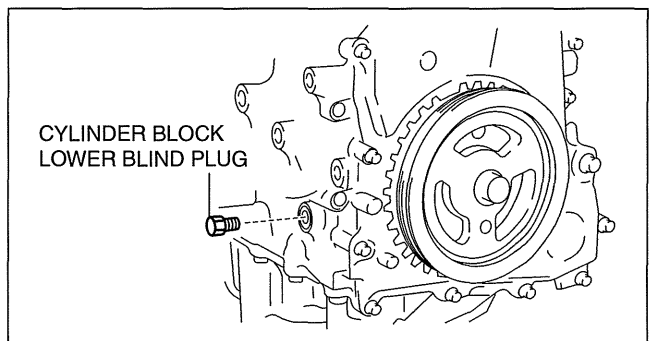
6. Remove the bolt (**M6 X 1.0**) installed to the crankshaft pulley.
7. Remove the **SST** from the camshaft.
8. Remove the **SST** from the cylinder block lower blind plug hole.
9. Rotate the crankshaft clockwise two turns and inspect the valve timing.
 - If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 1.
10. Install the cylinder block lower blind plug.



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Tightening torque

18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}



am3uuw0000222

MECHANICAL [LF, L5]

Cylinder Head Cover Installation Note

1. Apply silicone sealant to the mating faces as shown.

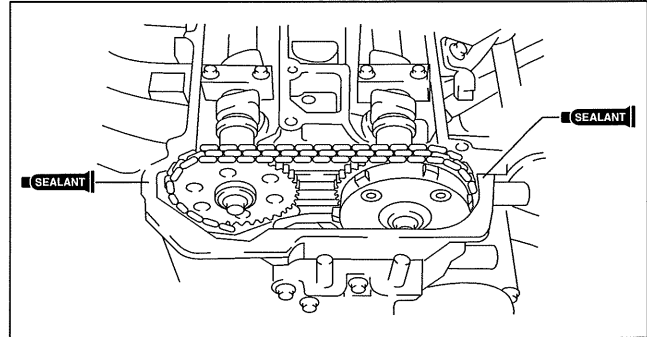
Caution

- Install the cylinder head cover before the applied silicone sealant starts to harden.

Thickness

4.0—7.0 mm {0.16—0.27 in}

2. Install the cylinder head cover with a new gasket.

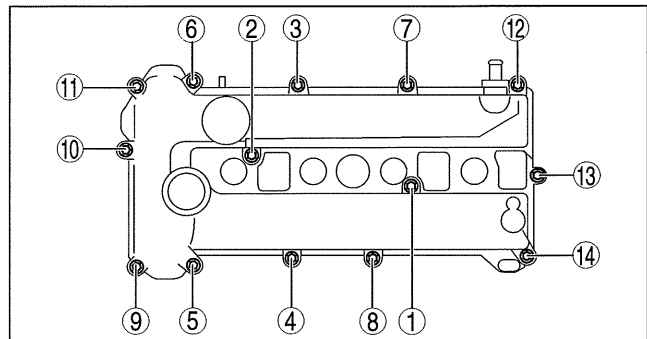


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3. Tighten the bolts in the order shown.

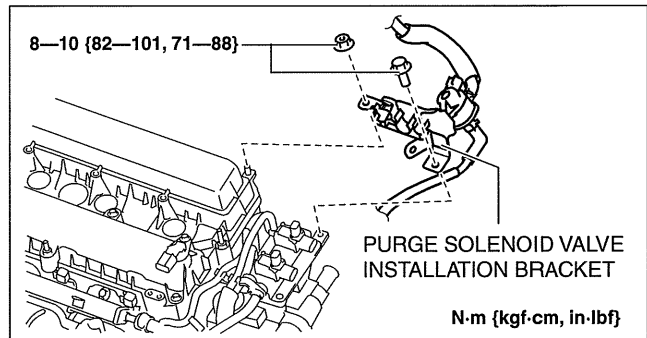
Tightening torque

8.0—9.5 N·m {82—96 kgf·cm, 71—84 in·lbf}



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4. Install the purge solenoid valve installation bracket.



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CYLINDER HEAD GASKET REPLACEMENT [LF, L5]

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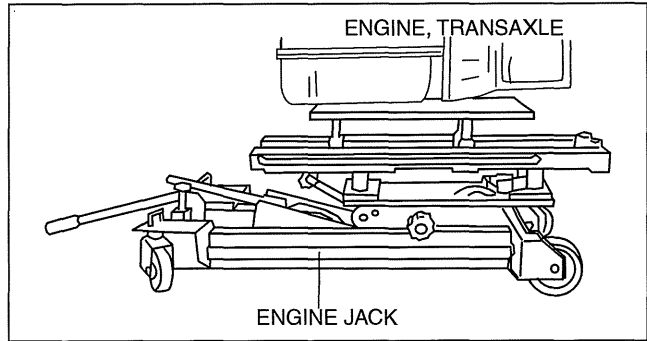
Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)

1. Remove the timing chain. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
2. Remove the generator, but do not remove it from the vehicle. Fix the generator using a rope to prevent it from falling. (L5) (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].)
3. Remove the exhaust manifold. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Remove the intake manifold. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
6. Disconnect the upper radiator hose. (See 01-12A-8 RADIATOR REMOVAL/INSTALLATION [LF, L5].)
7. Disconnect the water hose. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)
8. Disconnect the heater hose. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
9. Disconnect the wiring harness.

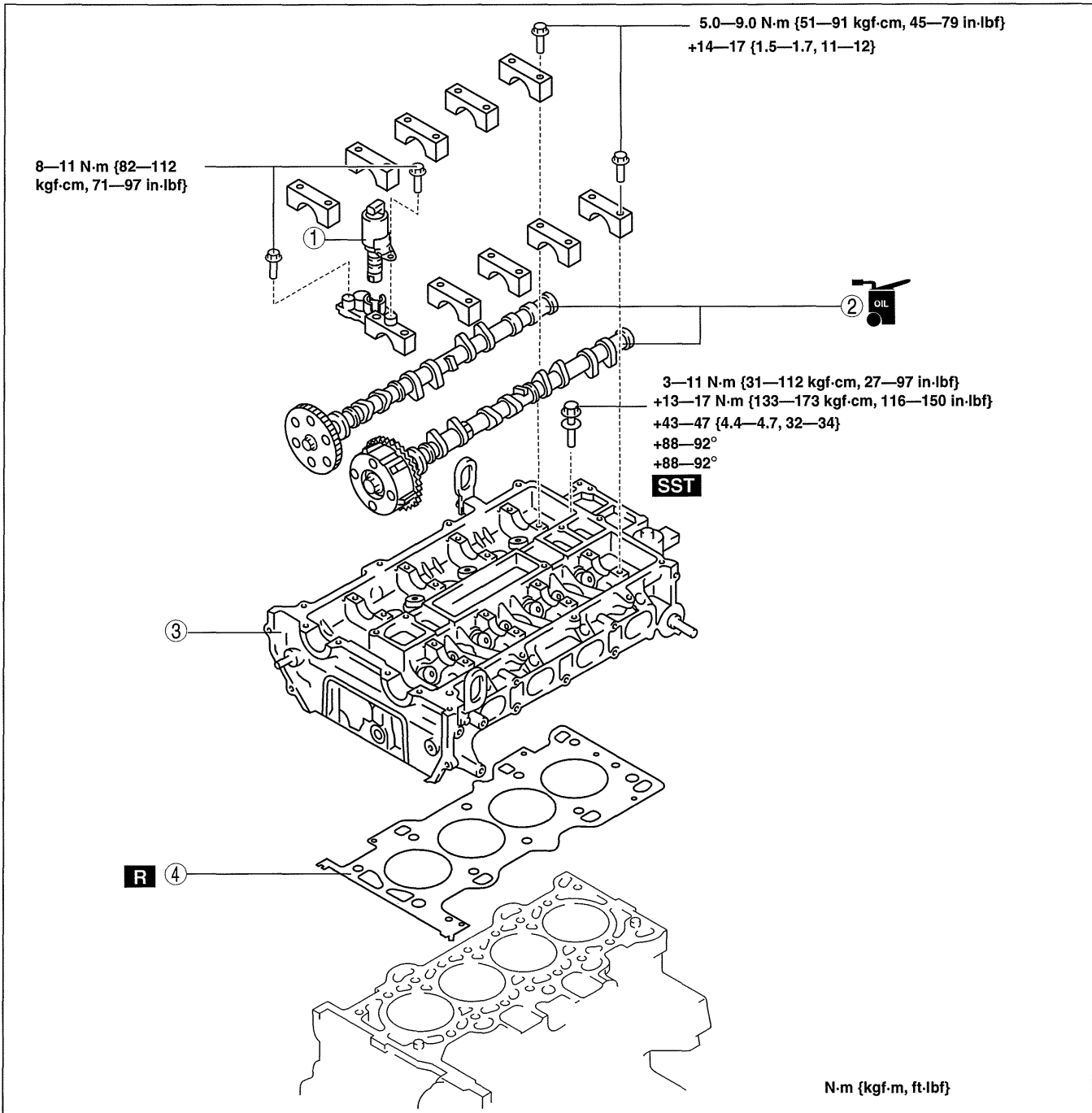
MECHANICAL [LF, L5]

10. To firmly support the engine, first set the engine jack to the oil pan.
11. Remove in the order indicated in the table.
12. Install in the reverse order of removal.
13. Bleed the air from the cooling system. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
14. Inspect the compression. (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)



01-10A

am6zzw0000198



am3uuw0000239

1	OCV
2	Camshaft (See 01-10A-32 Camshaft Removal Note.) (See 01-10A-33 Camshaft Installation Note.)

3	Cylinder head (See 01-10A-32 Cylinder Head Removal Note.) (See 01-10A-32 Cylinder Head Installation Note.)
4	Cylinder head gasket

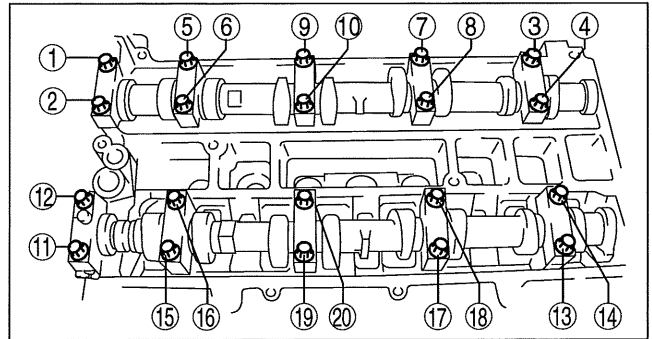
MECHANICAL [LF, L5]

Camshaft Removal Note

Note

- The cylinder head and the camshaft caps are numbered to be reassembled in their original position correctly. When removed, keep the caps with the cylinder head they were removed from. Do not mix the caps.

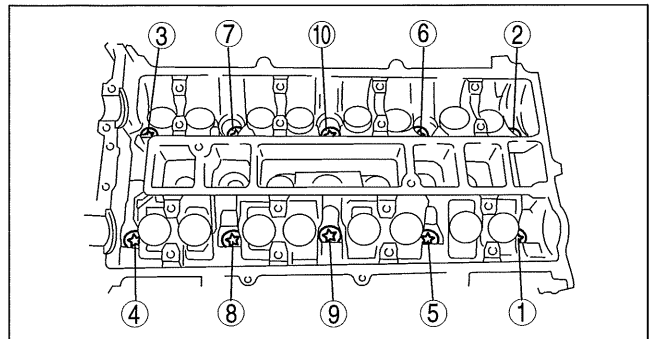
1. Loosen the camshaft cap bolts in 2—3 steps in the order shown in the figure.



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Cylinder Head Removal Note

1. Loosen the cylinder head bolts in 2—3 steps in the order shown in the figure.



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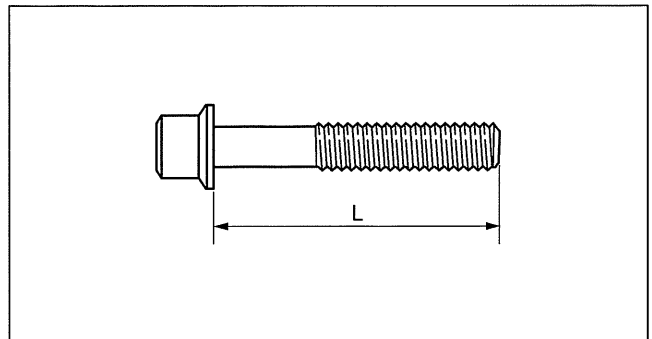
Cylinder Head Installation Note

1. Measure the length of each cylinder head bolt.

Cylinder Head Bolt Length L
145.2—145.8 mm {5.717—5.740 in}

Cylinder Head Bolt Maximum
146.5 mm {5.767 in}

- Replace any that exceeds maximum length.



am3zzw0000245

2. Tighten the cylinder head bolts in the order shown in the following 5 steps using the SST (49 D032 316).

Tightening torque

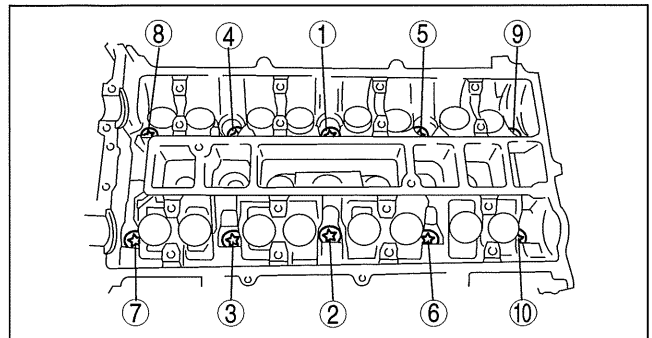
Step 1: 3—11 N·m {31—112 kgf·cm, 27—97 in·lbf}

Step 2: 13—17 N·m {133—173 kgf·cm, 116—150 in·lbf}

Step 3: 43—47 N·m {4.4—4.7 kgf·m, 32—34 ft·lbf}

Step 4: 88—92°

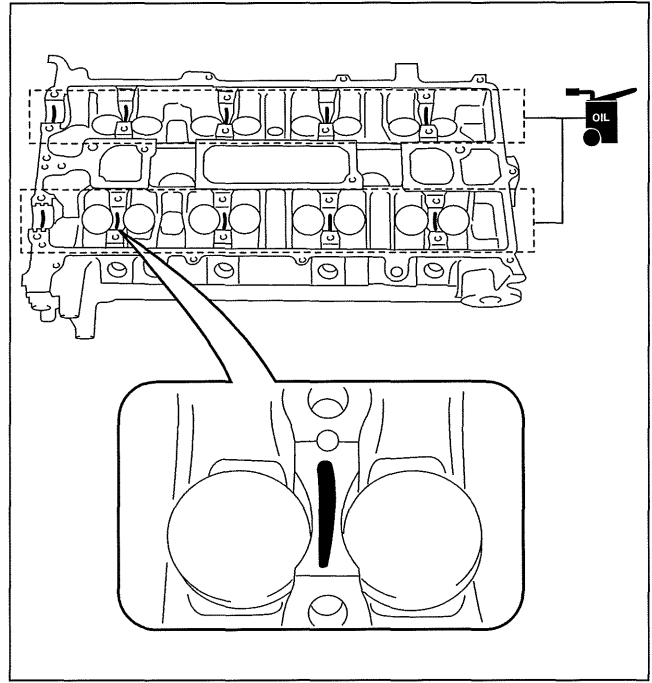
Step 5: 88—92°



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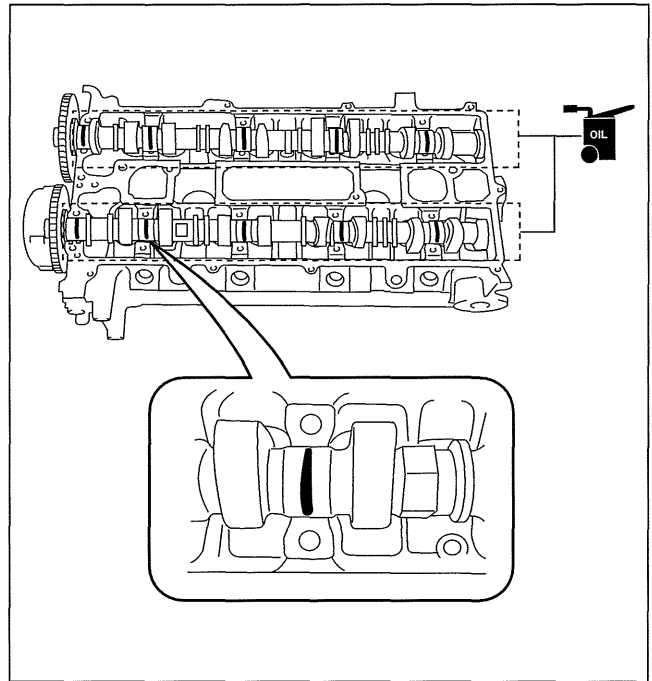
Camshaft Installation Note

1. Apply the gear oil (SAE No.90 or equivalent) to each journal of the cylinder head as shown in the figure.
2. Set the cam position of No.1 cylinder at the top dead center (TDC) and install the camshaft.



am6zzw0000218

3. Apply the gear oil (SAE No.90 or equivalent) to each journal of the camshaft as shown in the figure.
4. Temporarily tighten the camshaft cap bolts evenly in 2—3 steps.



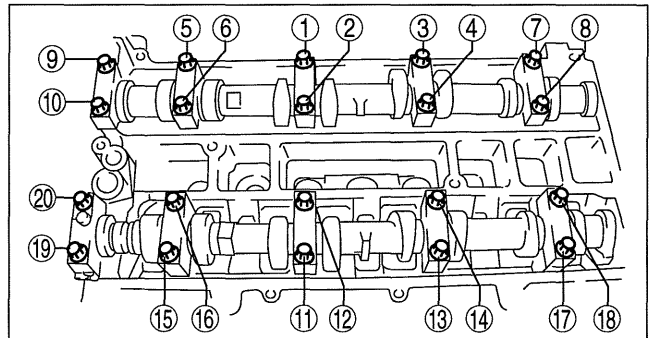
am6zzw0000217

5. Tighten the camshaft cap bolts in the order shown in the following two steps.

Tightening torque

Step 1: 5.0—9.0 N·m {51—91 kgf·cm, 45—79 in·lbf}

Step 2: 14—17 N·m {1.5—1.7 kgf·m, 11—12 ft·lbf}



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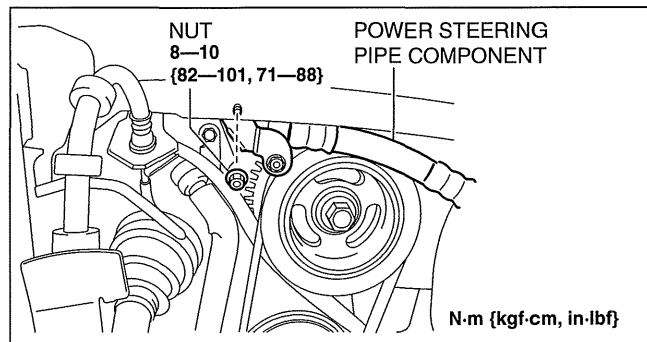
MECHANICAL [LF, L5]

FRONT OIL SEAL REPLACEMENT [LF, L5]

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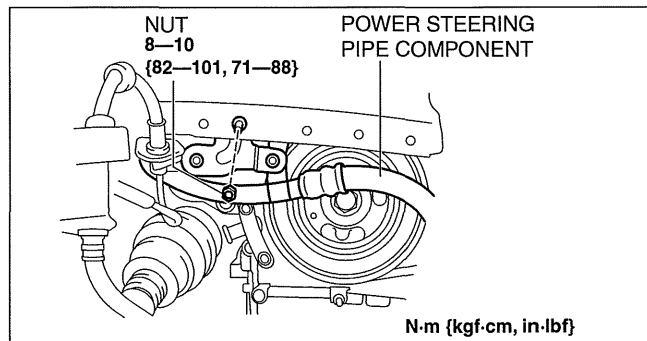
1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the oil level gauge.
9. Remove the cylinder head cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
10. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
11. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
12. Remove the nut shown in the figure and set the power steering pipe component out of the way.

LF



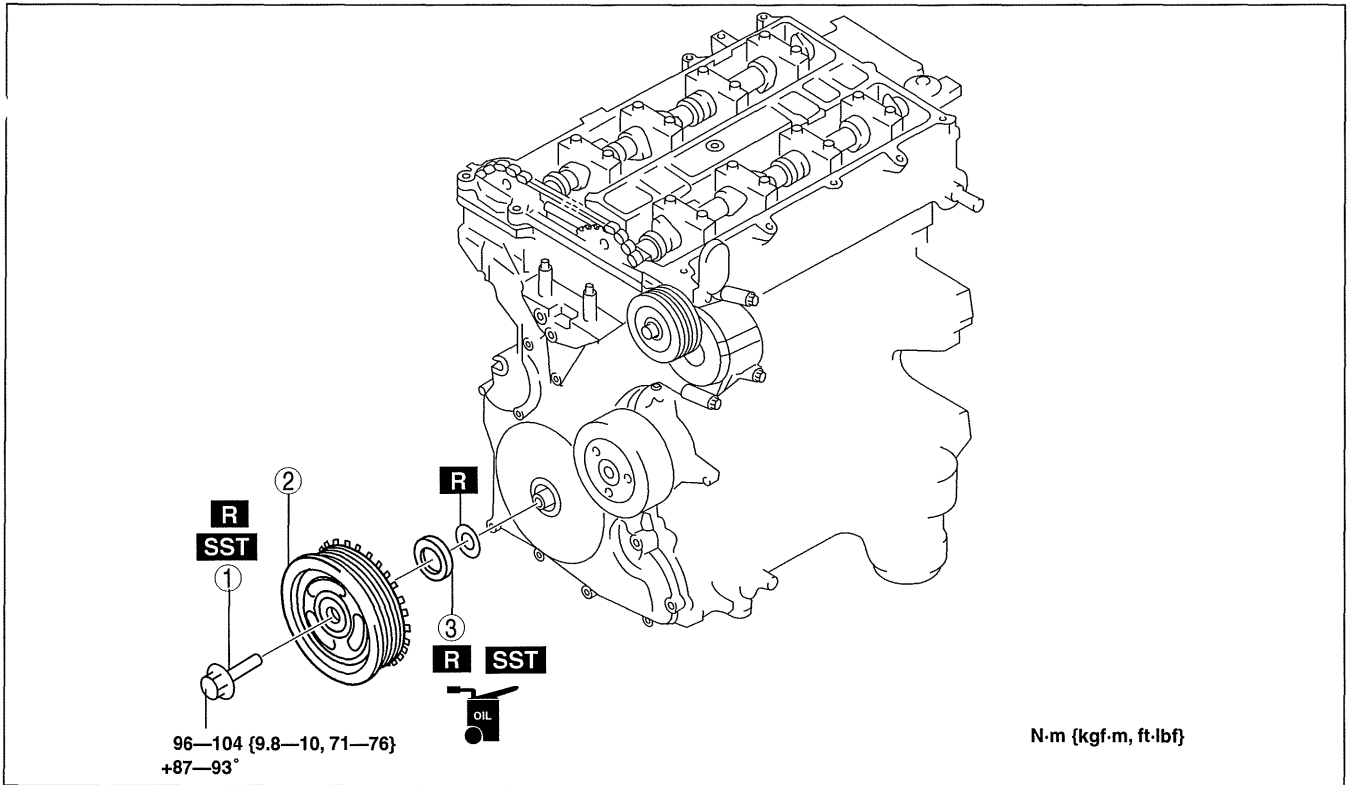
am3uuw0000279

L5



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13. Remove the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
14. Disconnect the drive shaft (RH) from joint shaft, set the drive shaft (RH) out of the way. (MTX) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
15. Remove in the order indicated in the table.
16. Install in the reverse order of removal.



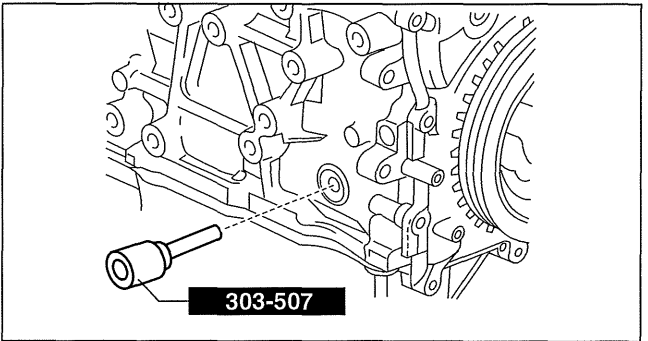
am3uuw0000240

1	Crankshaft pulley lock bolt (See 01-10A-35 Crankshaft Pulley Lock Bolt Removal Note.) (See 01-10A-36 Crankshaft Pulley Lock Bolt Installation Note.)
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2	Crankshaft pulley
3	Front oil seal (See 01-10A-36 Front Oil Seal Removal Note.) (See 01-10A-36 Front Oil Seal Installation Note.)

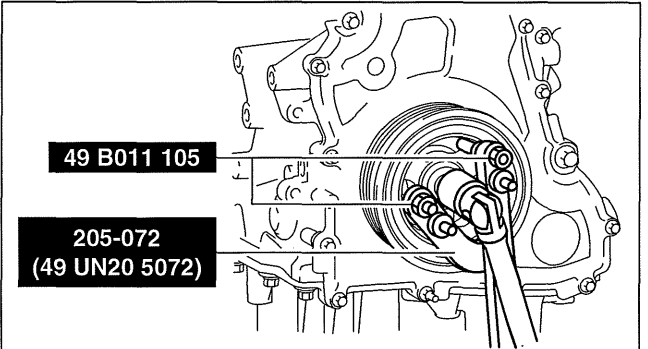
Crankshaft Pulley Lock Bolt Removal Note

1. Remove the cylinder block lower blind plug.
2. Install the **SST**.
3. Turn the crankshaft clockwise until the crankshaft is in the No.1 cylinder top dead center (TDC) position (until the balance weight is attached to the **SST**).



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4. Hold the crankshaft pulley using the **SSTs**.

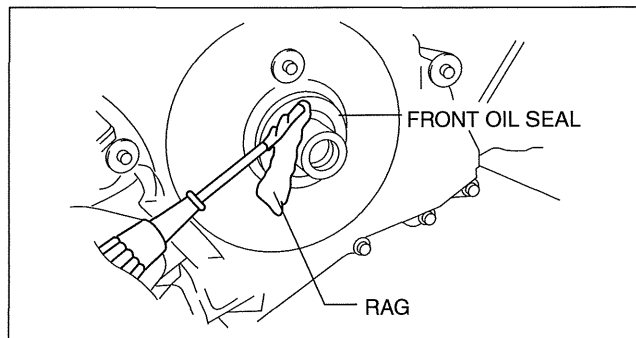


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MECHANICAL [LF, L5]

Front Oil Seal Removal Note

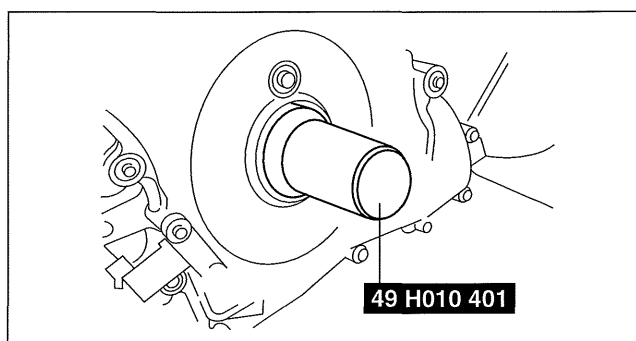
1. Cut the oil seal lip using a utility knife.
2. Remove the oil seal using a screwdriver wrapped with a rag.



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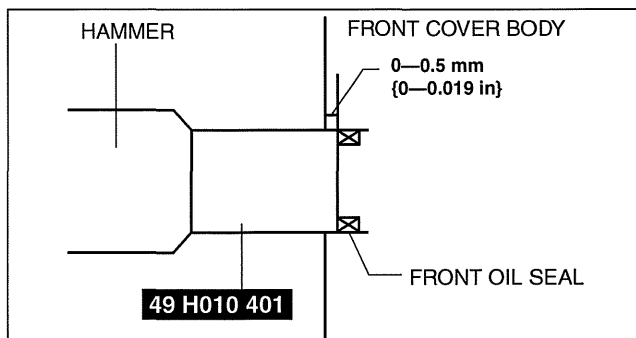
Front Oil Seal Installation Note

1. Apply clean engine oil to the oil seal lip.
2. Push the oil seal slightly in by hand.
3. Tap the oil seal in evenly using the **SST** and a hammer.



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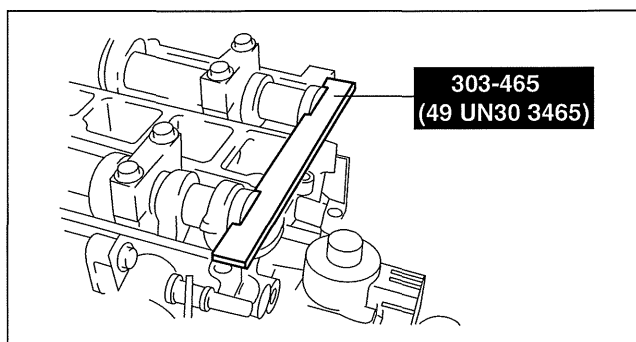
Front oil seal press-in amount
0—0.5 mm {0—0.019 in}



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Crankshaft Pulley Lock Bolt Installation Note

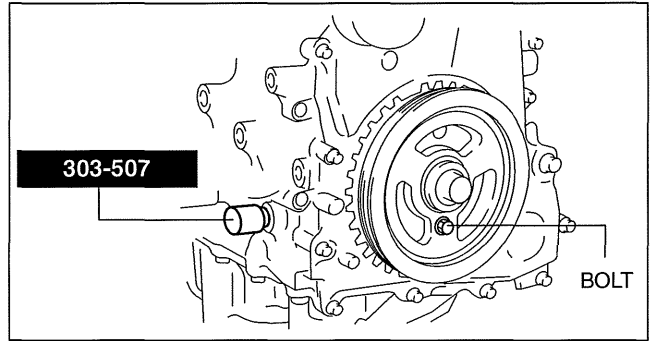
1. Install the **SST** on the camshaft as shown in the figure.
2. Verify that No.1 cylinder is at TDC of the compression stroke. (Position counterweight contacts **SST**.)



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MECHANICAL [LF, L5]

- To position the crankshaft pulley, temporarily tighten it and, using a suitable bolt (**M6 X 1.0**), fix the crankshaft pulley to the engine front cover.



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01-10A

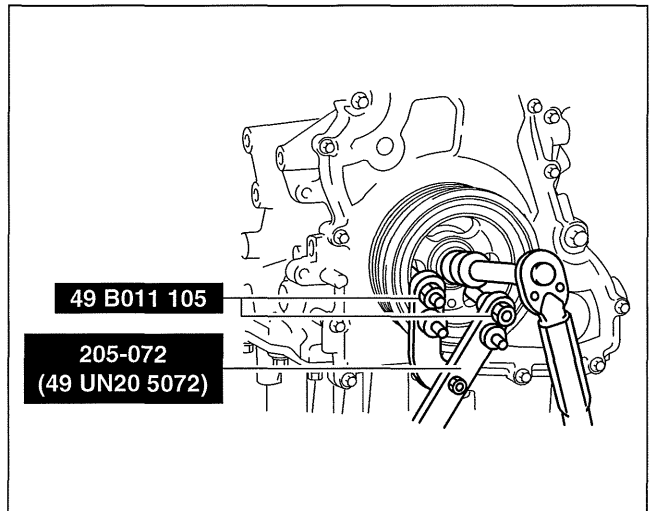
- Hold the crankshaft pulley using the **SSTs**.
- Tighten the crankshaft pulley lock bolt in the order shown in the following two steps.

Tightening torque

Step 1: 96—104 N·m {9.8—10 kgf·m, 71—76 ft·lbf}

Step 2: 87—93°

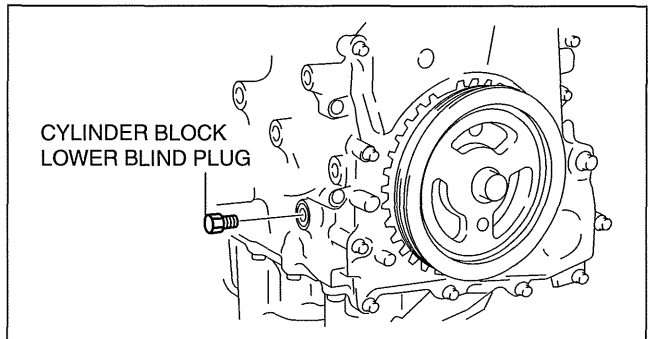
- Remove the **M6 x 1.0** bolt.
- Remove the **SST** from the camshaft.
- Remove the **SST** from the cylinder block lower blind plug hole.
- Verify that the teeth of the crankshaft pulley pulse wheel and the detection area of the crankshaft position sensor are installed to the correct positions. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
- Rotate the crankshaft clockwise 2 turns until the TDC position.
 - If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 1.
- Install the cylinder block lower blind plug.



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Tightening torque

18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}



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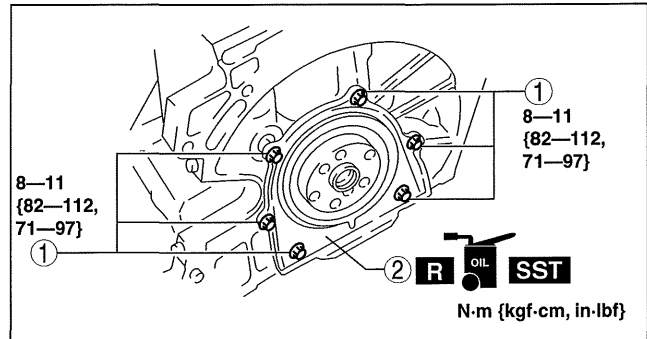
MECHANICAL [LF, L5]

REAR OIL SEAL REPLACEMENT [LF, L5]

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1. Remove the transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R] (5MTX).) (See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R] (6MTX).) (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL] (ATX).)
2. Remove the flywheel (MTX) or the drive plate (ATX). (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R] (MTX).) (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R] (MTX).) (See 05-17-46 DRIVE PLATE REMOVAL/INSTALLATION [FS5A-EL] (ATX).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.

1	Bolt
2	Rear oil seal (See 01-10A-38 Rear Oil Seal Installation Note.)



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Rear Oil Seal Installation Note

1. Apply silicone sealant to the mating faces as shown in the figure.

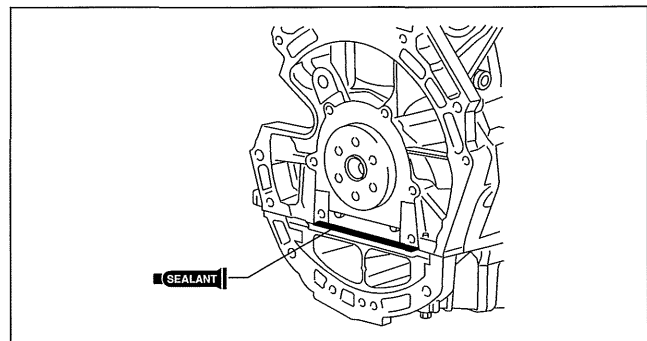
Caution

- Install the rear oil seal before the applied silicone sealant starts to harden.

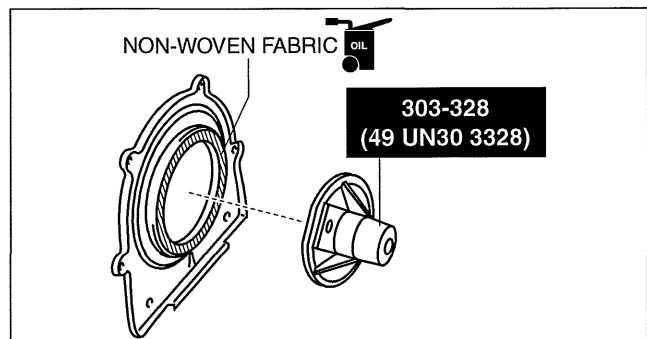
Thickness

2.2—3.2 mm {0.09—0.12 in}

2. Apply clean engine oil to the new oil seal lip.
3. Install the **SST** to the non-woven fabric side of the rear oil seal.

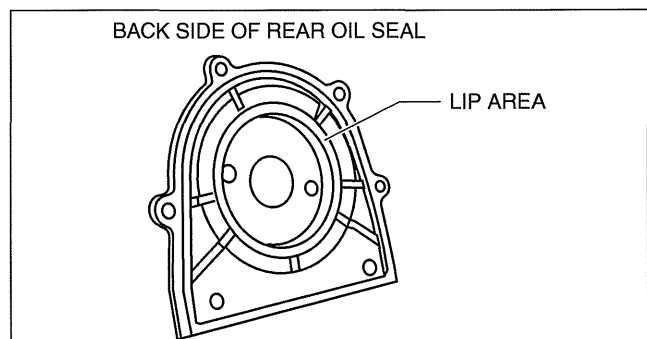


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am3uuw0000531

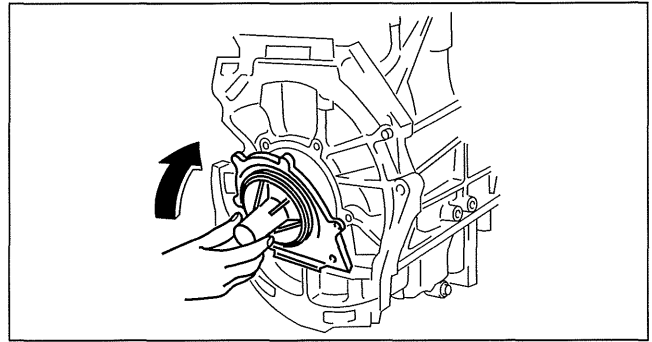
4. From the back side of the rear oil seal, verify that there is no damage or separation in the lip area of the rear oil seal.



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MECHANICAL [LF, L5]

5. Install the rear oil seal to the engine as shown in the figure.



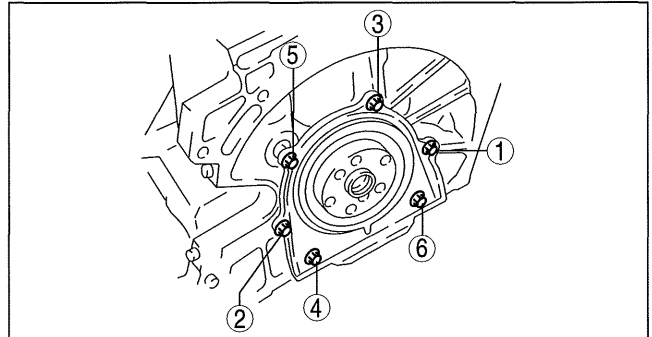
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01-10A

6. Tighten the rear oil seal bolts in the order as shown in the figure.

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



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ENGINE REMOVAL/INSTALLATION [LF, L5]

Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

Note

- Perform the engine and transaxle component removal/installation from below the vehicle.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the PCM cover No.1. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
5. Disconnect the PCM connector. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
6. Remove the battery tray and PCM component. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
7. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
8. Remove the front wheels and tires. (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
9. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
10. Drain the transaxle oil (MTX) or ATF (ATX). (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R] (5MTX).) (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R] (6MTX).) (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL] (ATX).)
11. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
12. Remove the coolant reserve tank. (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5].)
13. Disconnect the fuel hose. (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
14. Disconnect the evaporative hose. (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
15. Disconnect the brake vacuum hose. (See 04-11-4 VACUUM HOSE REMOVAL/INSTALLATION [LF, L5].)

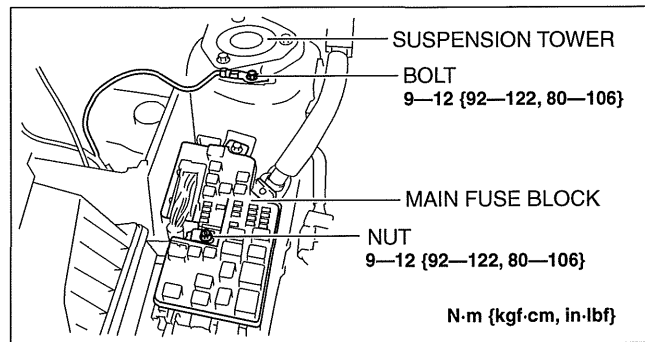
MECHANICAL [LF, L5]

16. Disconnect the radiator hose (upper and lower). (See 01-12A-8 RADIATOR REMOVAL/INSTALLATION [LF, L5].)
17. Disconnect the water hose. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)
18. Disconnect the heater hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)
19. Disconnect the oil hose. (ATX type B) (See 05-17-47 OIL COOLER REMOVAL/INSTALLATION [FS5A-EL].)
20. Disconnect the power steering pipe component and then drain the power steering fluid. (See 06-10-1 GENERAL PROCEDURES (STEERING).)
21. Disconnect the shift cable and wiring harness. (MTX) (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R] (5MTX).) (See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R] (6MTX).)
22. Remove the clutch release cylinder with the pipe still connected. (MTX) (See 05-10-13 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [G35M-R, G66M-R].) (See 05-10-14 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [A26M-R].)
23. Disconnect the selector cable. (ATX) (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
24. Remove the crossmember bracket. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
25. Remove the TWC. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
26. Disconnect the drive shafts from the engine side, set the drive shafts out of the way. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
27. Remove the A/C compressor with the cooler hose still connected and secure it using wire or rope so that it is out of the way. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
28. Remove the wiring harness installation bolt and nut shown in the figure.
29. Disconnect the ground cable from the No.3 engine mount side.

Tightening torque

9—12 N·m {92—122 kgf·cm, 80—108 in·lbf}

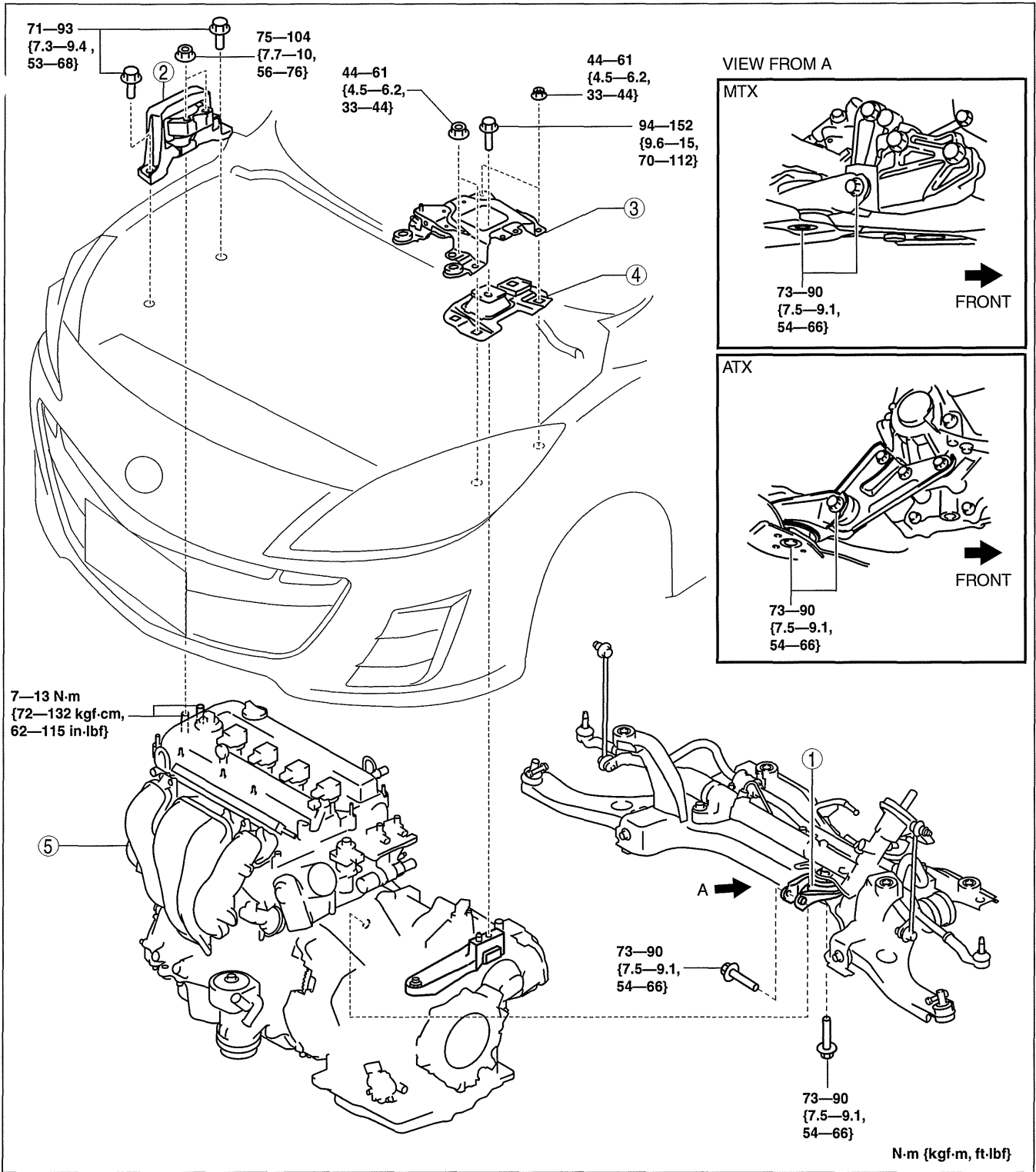
30. Disconnect the connectors and the wiring harnesses related to the engine removal/installation.
31. Remove in the order indicated in the table.
32. Install in the reverse order of removal.
33. Start the engine. And inspect and adjust the following:
 - Front wheel alignment (See 02-11-1 FRONT WHEEL ALIGNMENT.)
 - Power steering fluid air bleeding (See 06-14-3 AIR BLEEDING.)
 - Leakage of engine oil, engine coolant, ATF, transaxle oil, and fuel.
 - Runout and contact of pulley and belt.
 - Verify the ignition timing, idle speed and idle mixture. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
 - Engine-driven accessories operation.



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MECHANICAL [LF, L5]

01-10A



1	No.1 engine mount rubber, front crossmember component (See 01-10A-42 No.1 Engine Mount Rubber, Front Crossmember Component Removal Note.) (See 01-10A-43 Engine Mount Installation Note.)
2	No.3 engine mount (See 01-10A-43 No.3 Engine Mount, No.4 Engine Mount Rubber Removal Note.) (See 01-10A-43 Engine Mount Installation Note.)

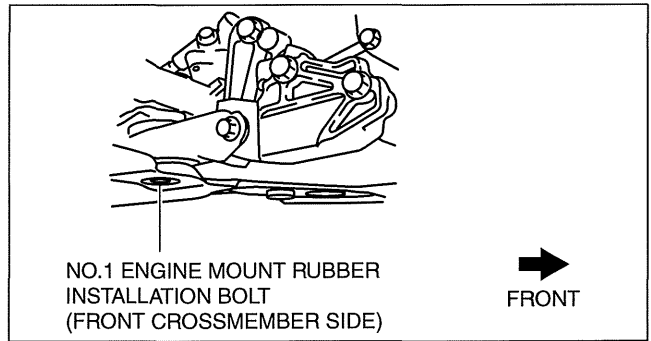
3	Battery tray bracket (See 01-10A-43 Engine Mount Installation Note.)
4	No.4 engine mount rubber (See 01-10A-43 No.3 Engine Mount, No.4 Engine Mount Rubber Removal Note.) (See 01-10A-43 Engine Mount Installation Note.)
5	Engine, transaxle

MECHANICAL [LF, L5]

No.1 Engine Mount Rubber, Front Crossmember Component Removal Note

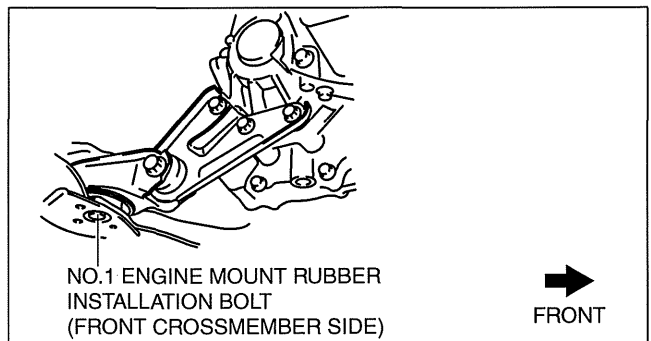
1. Loosen the No.1 engine mount rubber installation bolt (front crossmember side) shown in the figure.

MTX



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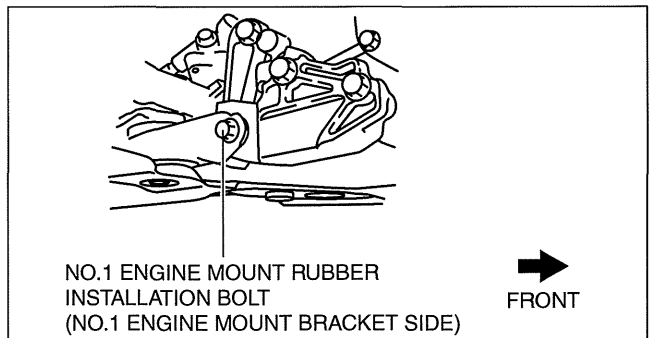
ATX



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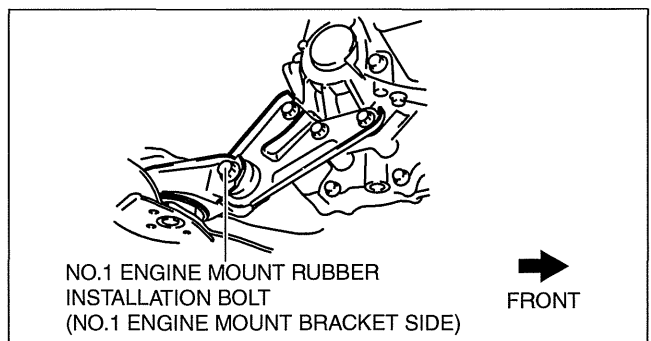
2. Remove the No.1 engine mount rubber installation bolt (No.1 engine mount bracket side) shown in the figure.

MTX



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ATX

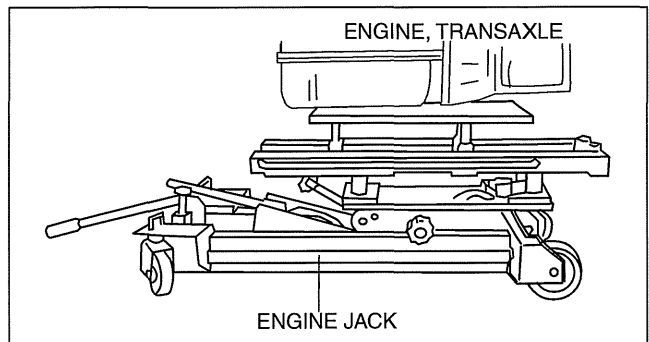


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3. Remove the No.1 engine mount rubber and the front crossmember component as a single unit. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)

No.3 Engine Mount, No.4 Engine Mount Rubber Removal Note

1. Secure the engine and transaxle using an engine jack.



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01-10A

Engine Mount Installation Note

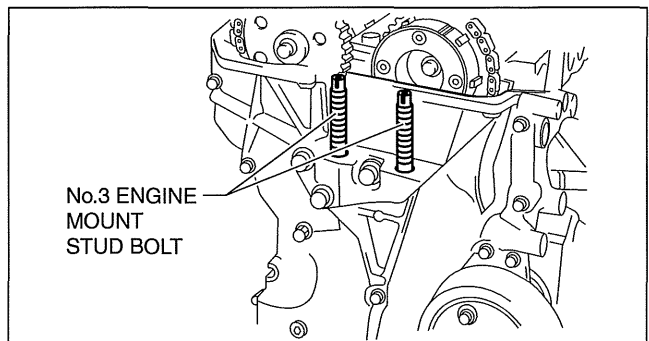
Note

- If the No.3 engine mount bracket and the engine are removed, retighten the No.3 engine mount stud bolts.

1. Tighten the No. 3 engine mount stud bolts.

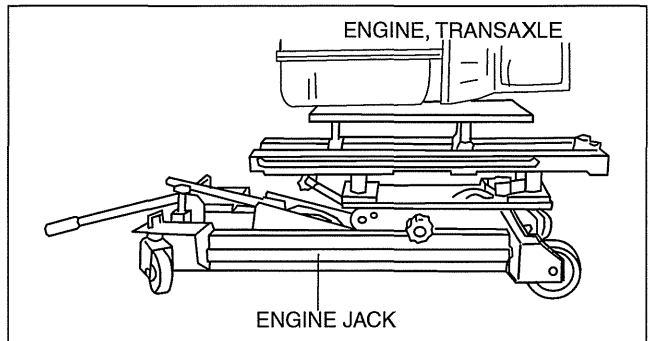
Tightening torque

7—13 N·m {72—132 kgf·cm, 62—115 in·lbf}



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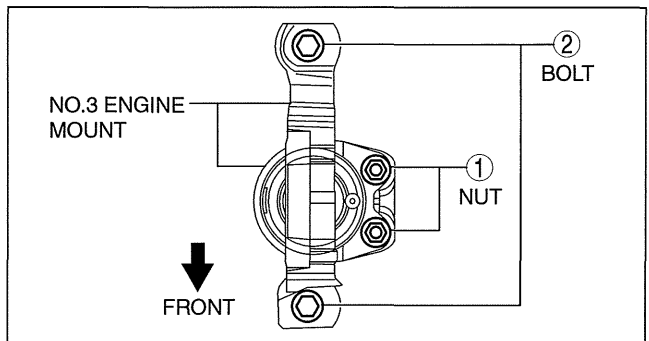
2. Secure the engine and transaxle using an engine jack.
3. Temporarily tighten the No.3 engine mount installation bolts and nuts.



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4. Tighten the No.3 engine mount installation bolts and nuts in the order shown in the figure.

No.	Tightening torque
1	75—104 N·m {7.7—10 kgf·m, 56—76 ft·lbf}
2	71—93 N·m {7.3—9.4 kgf·m, 53—68 ft·lbf}



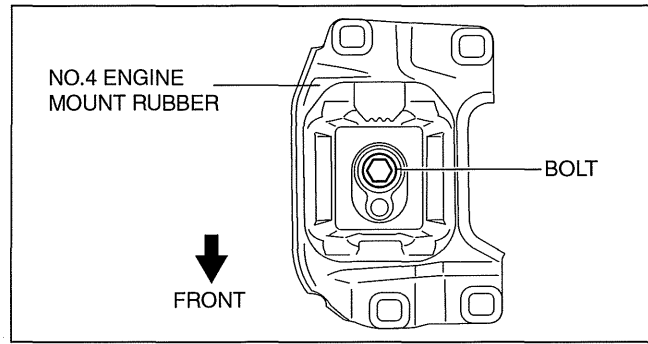
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MECHANICAL [LF, L5]

5. Tighten the No.4 engine mount rubber installation bolt.

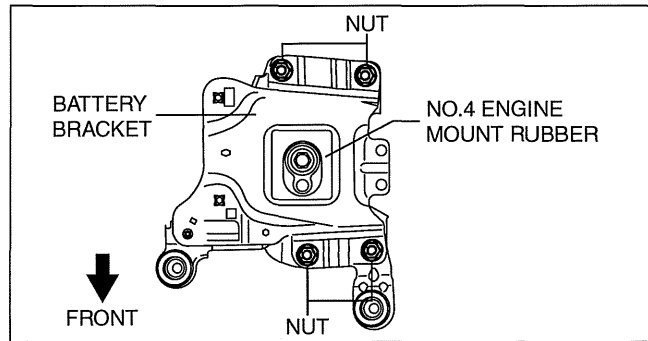
Tightening torque

94—152 N·m {9.6—15 kgf·m, 69—112 ft·lbf}



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6. Temporarily tighten the No.4 engine mount rubber and battery tray bracket installation nuts as shown in the figure.
 7. Install the No.1 engine mount rubber and the front crossmember component as a single unit. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
 8. Temporarily tighten the No.1 engine mount rubber installation bolts.



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Caution

- Tighten the bolts in the order shown in the figure to prevent abnormal noise and vibration after assembly.
- Tighten the bolts while being careful of their length to prevent interference between the steering gear housing and bolt.

Bolt stem length

Front crossmember side: 62mm {2.4 in}

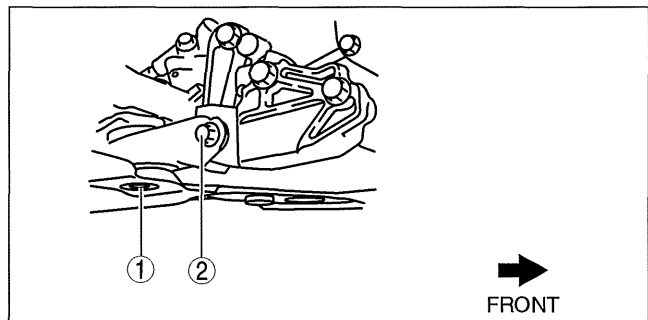
No.1 engine mount bracket side: 65mm {2.6 in}

9. Tighten the No.1 engine mount rubber installation bolts in the order shown.

Caution

- Tighten the bolts in the order shown in the figure to prevent abnormal noise and vibration after assembly.

MTX

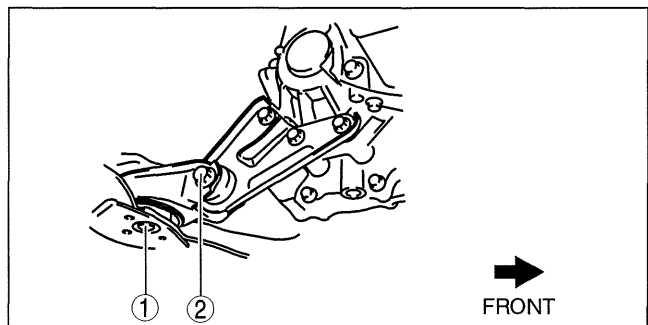


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ATX

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}



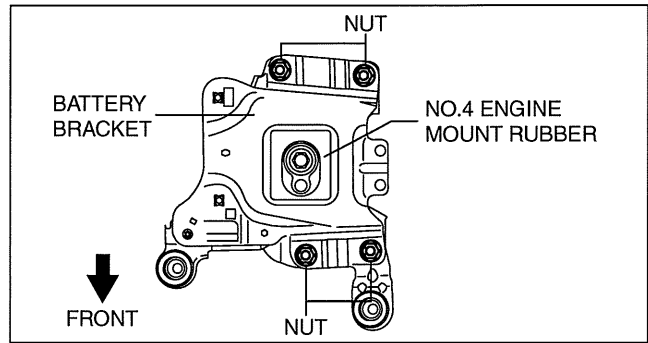
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MECHANICAL [LF, L5]

10. Tighten the No.4 engine mount rubber and battery tray bracket installation nuts as shown in the figure.

Tightening torque

44—61 N·m {4.5—6.2 kgf·m, 33—44 ft·lbf}



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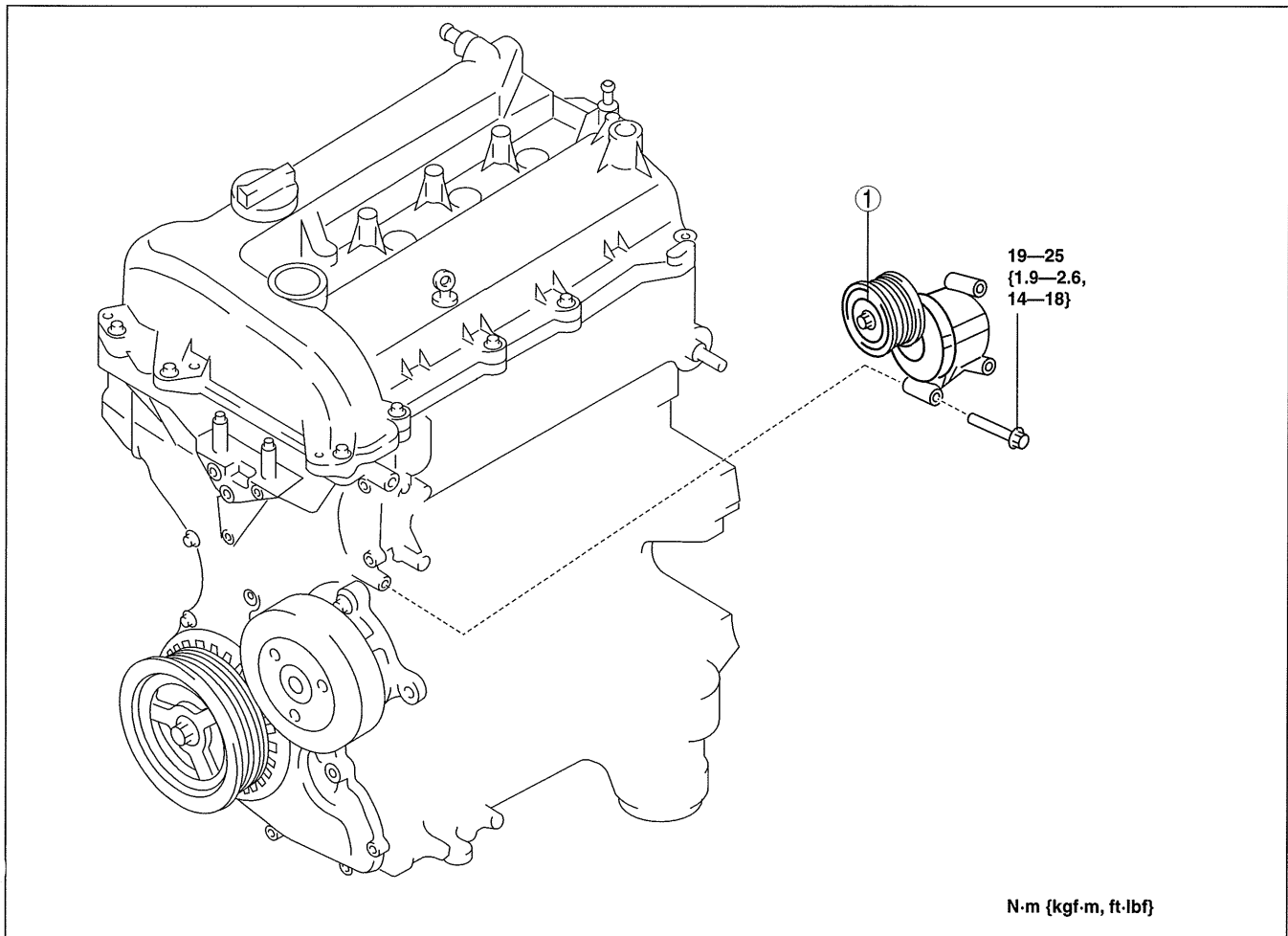
01-10A

ENGINE DISASSEMBLY/ASSEMBLY [LF, L5]

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1. Remove the engine from the transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R] (5MTX).) (See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R] (6MTX).) (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL] (ATX).)
2. Remove the generator. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].)
3. Remove the exhaust system. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Remove the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].)
5. Remove the intake-air system. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
6. Remove the fuel injectors. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
8. Remove the crankshaft position (CKP) sensor. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
9. Disassemble in the order indicated in the table.
10. Assemble in the reverse order of disassembly.

LF



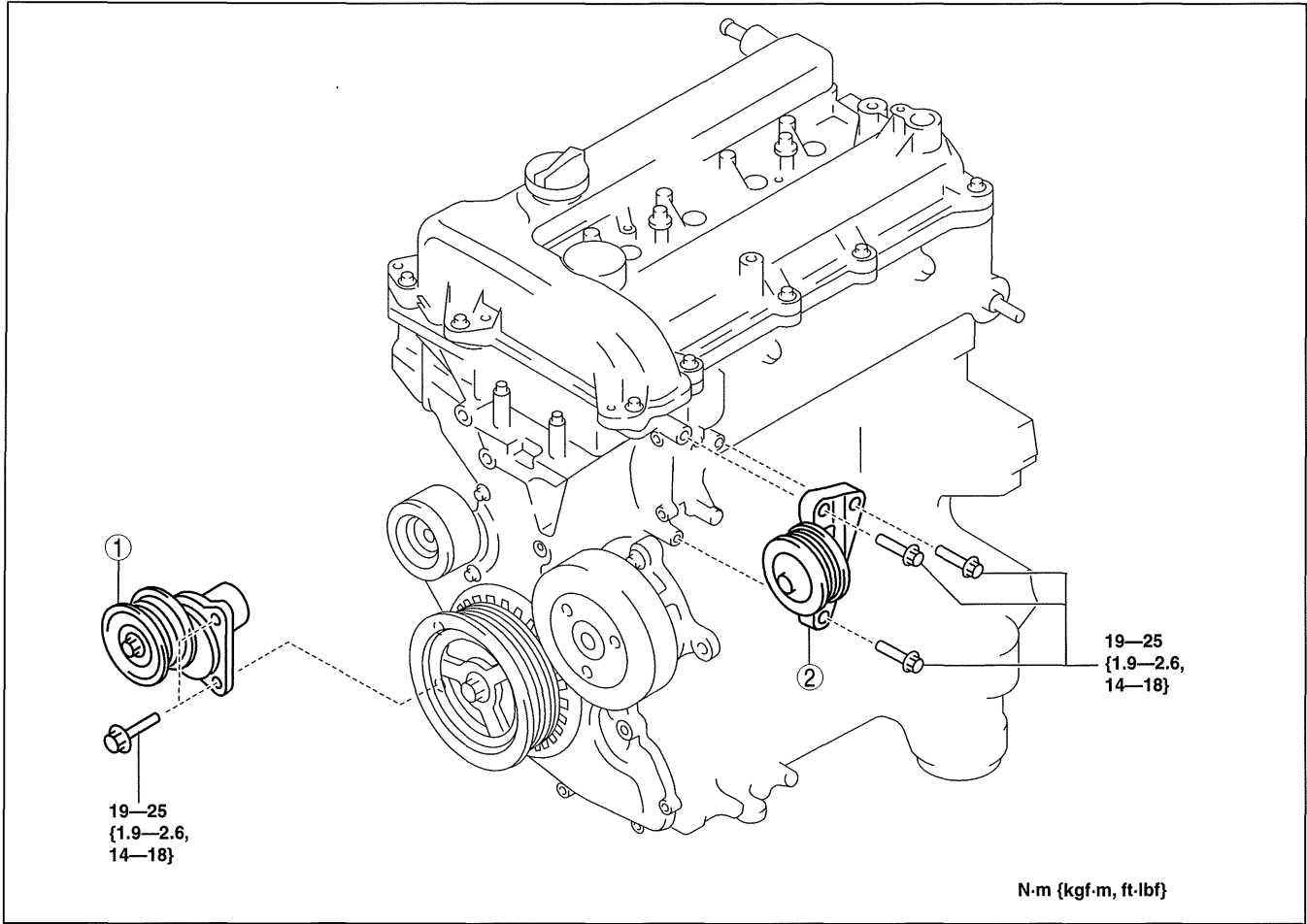
N·m {kgf·m, ft·lbf}

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1 Drive belt auto tensioner

01-10A-45

L5



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1	Drive belt auto tensioner
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2	Idler pulley
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01-10B MECHANICAL [L3 WITH TC]

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Idle Speed Inspection 01-10B-3

Idle Mixture Inspection 01-10B-4

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OIL CONTROL VALVE (OCV)

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TIMING CHAIN

REMOVAL/INSTALLATION

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Engine Front Cover

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No.3 Engine Mount

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FRONT OIL SEAL REPLACEMENT

[L3 WITH TC] 01-10B-37

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Crankshaft Pulley Lock Bolt

Installation Note 01-10B-40

REAR OIL SEAL REPLACEMENT

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Rear Oil Seal Installation Note 01-10B-41

ENGINE REMOVAL/INSTALLATION

[L3 WITH TC] 01-10B-42

No.1 Engine Mount Rubber,

Front Crossmember Component

Removal Note 01-10B-45

No.3 Engine Mount, No.4 Engine

Mount Rubber Removal Note 01-10B-45

Engine Mount Installation Note 01-10B-45

ENGINE DISASSEMBLY/ASSEMBLY

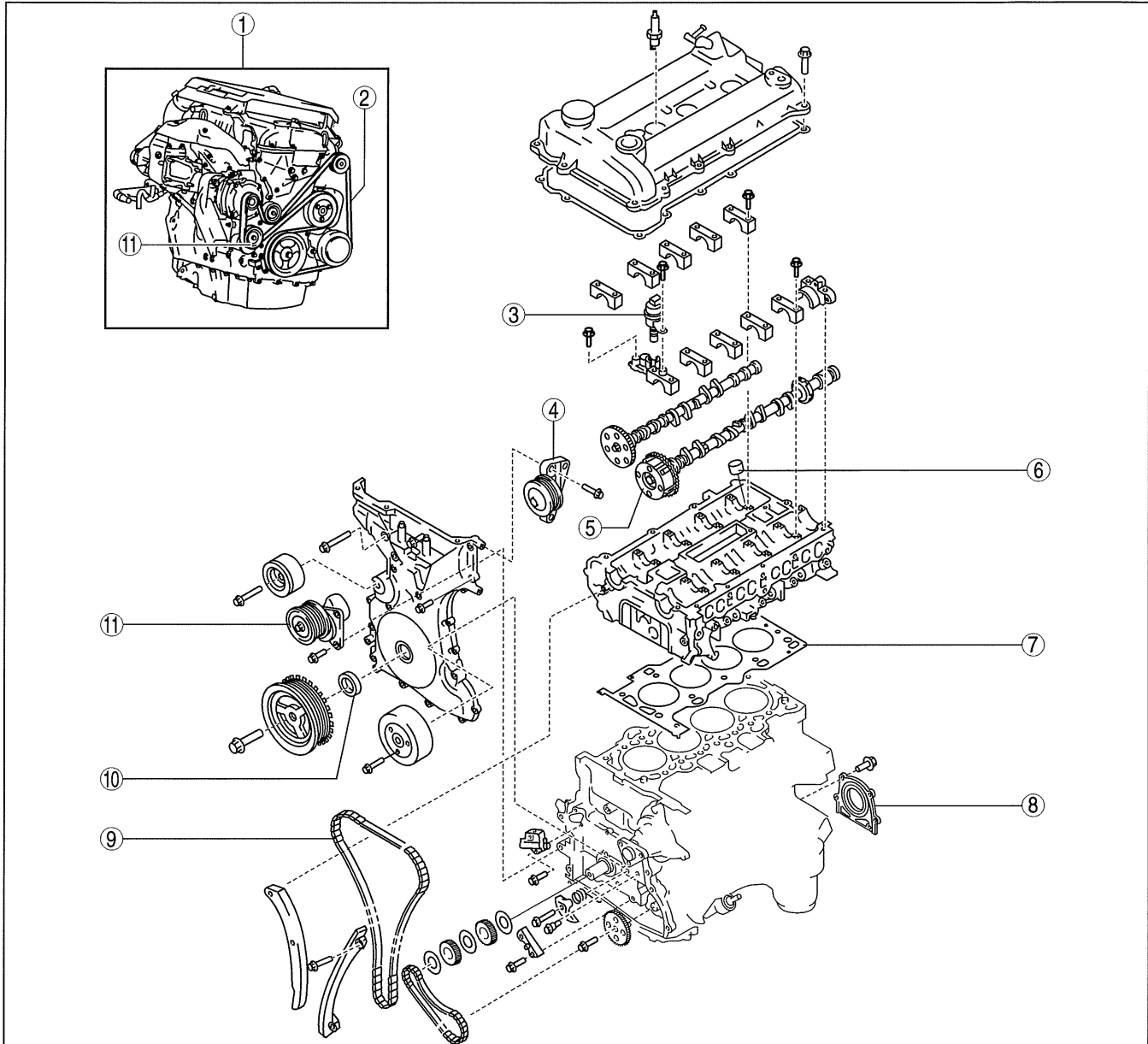
[L3 WITH TC] 01-10B-48

01-10B

MECHANICAL [L3 WITH TC]

ENGINE LOCATION INDEX [L3 WITH TC]

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1	<p>Engine (See 01-10B-3 ENGINE TUNE-UP [L3 WITH TC].) (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].) (See 01-10B-42 ENGINE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-10B-48 ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC].)</p>
2	<p>Drive belt (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)</p>
3	<p>OCV (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-10B-22 OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC].)</p>
4	<p>Drive belt idler pulley (See 01-10B-48 ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC].)</p>

5	<p>Variable valve timing actuator (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-10B-13 VARIABLE VALVE TIMING ACTUATOR INSPECTION [L3 WITH TC].)</p>
6	<p>Tappet (See 01-10B-5 VALVE CLEARANCE INSPECTION [L3 WITH TC].) (See 01-10B-6 VALVE CLEARANCE ADJUSTMENT [L3 WITH TC].)</p>
7	<p>Cylinder head gasket (See 01-10B-33 CYLINDER HEAD GASKET REPLACEMENT [L3 WITH TC].)</p>
8	<p>Rear oil seal (See 01-10B-41 REAR OIL SEAL REPLACEMENT [L3 WITH TC].)</p>
9	<p>Timing chain (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)</p>

MECHANICAL [L3 WITH TC]

10	Front oil seal (See 01-10B-37 FRONT OIL SEAL REPLACEMENT [L3 WITH TC].)
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11	Drive belt auto tensioner (See 01-10B-5 DRIVE BELT AUTO TENSIONER INSPECTION [L3 WITH TC].) (See 01-10B-48 ENGINE DISASSEMBLY/ ASSEMBLY [L3 WITH TC].)
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ENGINE TUNE-UP [L3 WITH TC]

id011039800600

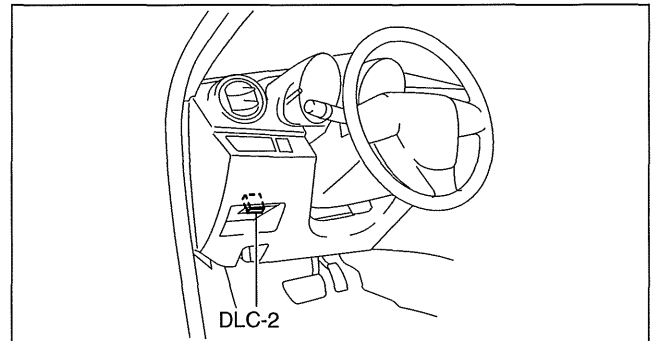
01-10B

Note

- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the fuel cut control operation, which prevents overheating, and it does not indicate a malfunction.

Engine Tune-up Preparation

1. Verify that the shift lever is in neutral position.
2. Connect the M-MDS to the DLC-2.
3. Verify that no DTCs are available.
4. Warm up the engine (ECT is **approx. 80°C {176 °F} or more**).
5. Turn off all electrical loads.
6. Wait until the cooling fan stops.



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Ignition Timing Inspection

Note

- The ignition timing cannot be adjusted.
- The M-MDS is required to verify the ignition timing.

1. Complete the engine tune-up preparation. (See 01-10B-3 Engine Tune-up Preparation.)
2. Verify the ignition timing (M-MDS: SPARKADV) using the PID/data monitor function of the M-MDS. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)

Ignition timing

Approx. BTDC 10°

3. Verify that ignition timing advances when the engine speed increases gradually.
 - If there is malfunction, refer to "ENGINE SYMPTOM TROUBLESHOOTING". (See 01-03B-4 SYMPTOM DIAGNOSTIC INDEX [L3 WITH TC].)

Idle Speed Inspection

Note

- The idle speed cannot be adjusted.
- The M-MDS is required to verify the idle speed.

1. Complete the engine tune-up preparation. (See 01-10B-3 Engine Tune-up Preparation.)
2. Verify that the idle speed (M-MDS: RPM PID) is within the specification using the M-MDS. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If there is malfunction, refer to "ENGINE SYMPTOM TROUBLESHOOTING". (See 01-03B-4 SYMPTOM DIAGNOSTIC INDEX [L3 WITH TC].)

Idle speed

No load: 650—750 rpm

Electrical load on*1: 650—750 rpm

A/C on: 700—800 rpm

- *1. When the following electrical loads are on: Headlights, rear defroster, cooling fan, and the blower motor (2-step or more.)

MECHANICAL [L3 WITH TC]

Idle Mixture Inspection

1. Verify that the idle speed and ignition timing are within the specification. (See 01-10B-3 Idle Speed Inspection.) (See 01-10B-3 Ignition Timing Inspection.)
2. Insert an exhaust gas analyzer to the tailpipe.
3. Verify that the CO and HC concentrations are within the regulation.

Idle mixture

HC concentration: Within the regulation

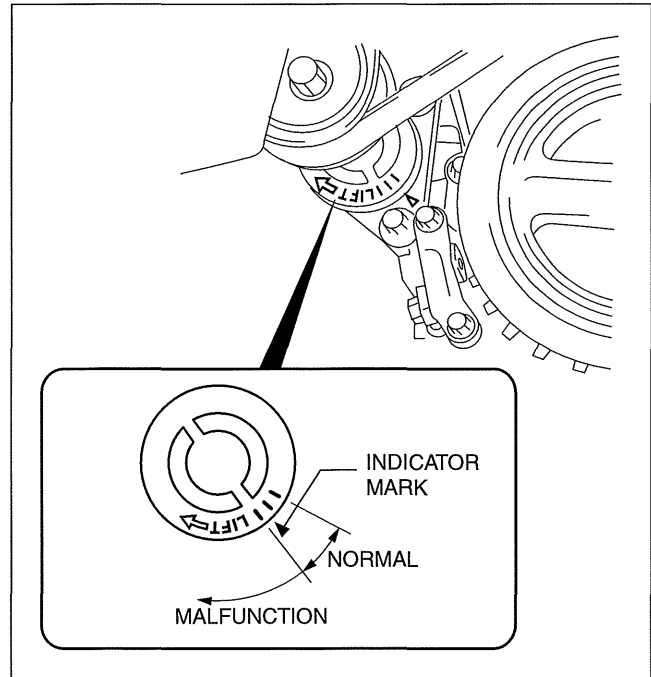
CO concentration: Within the regulation

DRIVE BELT INSPECTION [L3 WITH TC]

id011039801500

Note

- Drive belt deflection/tension inspection is not necessary because of the use of the drive belt auto tensioner.
1. Verify that the drive belt auto tensioner indicator mark does not exceed the limit.
 - If it exceeds the limit, replace the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)

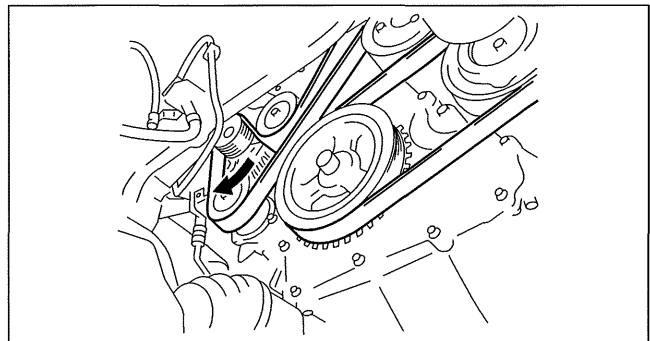


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DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC]

id011039801600

1. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
2. Rotate the drive belt auto tensioner in the direction shown in the figure and remove the drive belt.
3. Install the drive belt.
4. Verify that the drive belt auto tensioner indicator mark does not exceed the limit. (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].)
5. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)



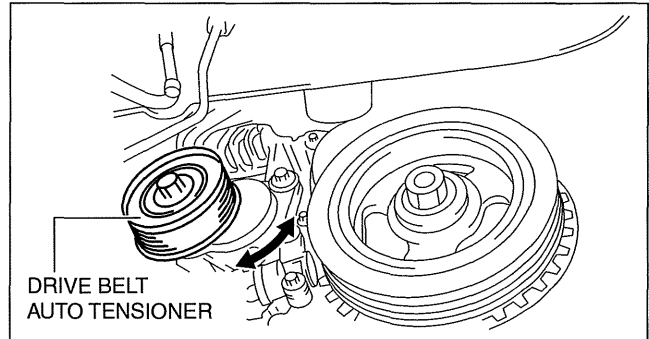
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MECHANICAL [L3 WITH TC]

DRIVE BELT AUTO TENSIONER INSPECTION [L3 WITH TC]

id011039801700

1. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
2. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
3. Verify that the drive belt auto tensioner moves smoothly in the operational direction.
 - Replace the drive belt auto tensioner if necessary. (See 01-10B-48 ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC].)
4. Rotate the drive belt auto tensioner pulley by hand and verify that it rotates smoothly.
 - Replace the drive belt auto tensioner if necessary. (See 01-10B-48 ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC].)
5. Install the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
6. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)



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01-10B

VALVE CLEARANCE INSPECTION [L3 WITH TC]

id011039803400

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
5. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the splash shield (RH). (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
8. Measure the valve clearance.

Note

- Make sure to note down the measured values for choosing the suitable replacement tappets.

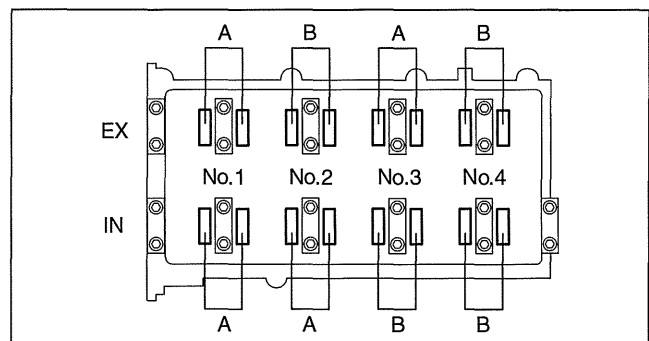
- (1) Turn the crankshaft clockwise so that the No.1 piston is at top dead center (TDC) of the compression stroke.
- (2) Measure the valve clearance at A in the figure.

Standard valve clearance [Engine cold]

IN: 0.22—0.28 mm {0.009—0.011 in}

EX: 0.27—0.33 mm {0.011—0.012 in}

- (3) If the valve clearance is out of the standard value, adjust it. (See 01-10B-6 VALVE CLEARANCE ADJUSTMENT [L3 WITH TC].)
- (4) Turn the crankshaft **360°** clockwise so that the No.4 piston is at TDC of the compression stroke.
- (5) Measure the valve clearance at B in the figure.



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Standard valve clearance [Engine cold]

IN: 0.22—0.28 mm {0.009—0.011 in}

EX: 0.27—0.33 mm {0.011—0.012 in}

- (6) If the valve clearance is out of the standard value, adjust it. (See 01-10B-6 VALVE CLEARANCE ADJUSTMENT [L3 WITH TC].)
9. Install in the reverse order of removal.

MECHANICAL [L3 WITH TC]

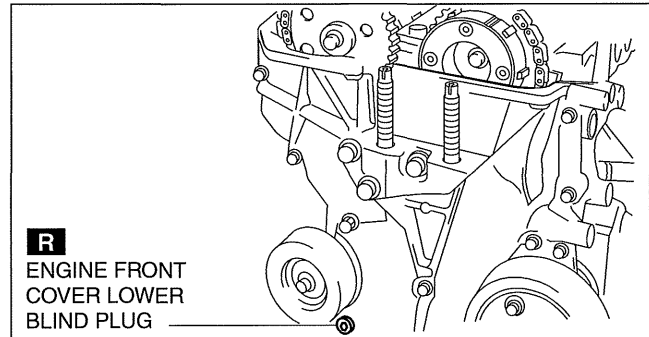
VALVE CLEARANCE ADJUSTMENT [L3 WITH TC]

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Warning

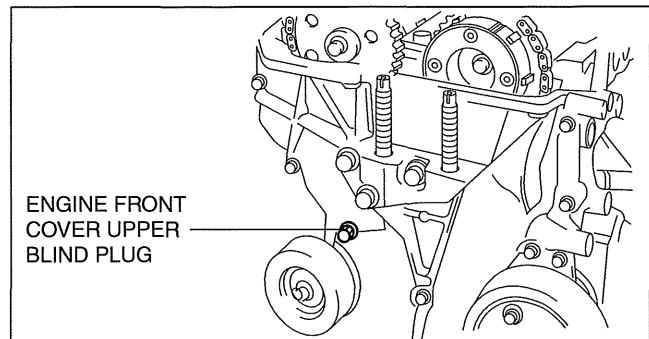
- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
6. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
9. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
10. Remove the engine front cover lower blind plug.



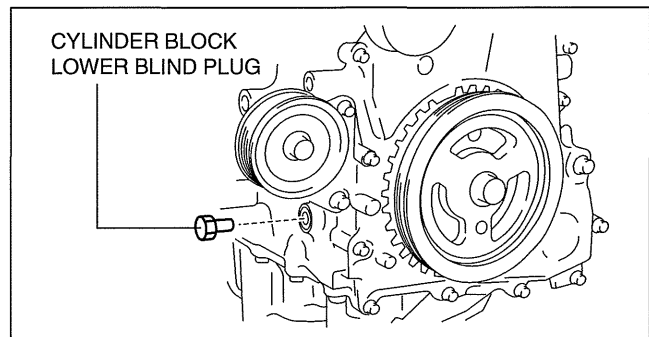
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11. Remove the engine front cover upper blind plug.



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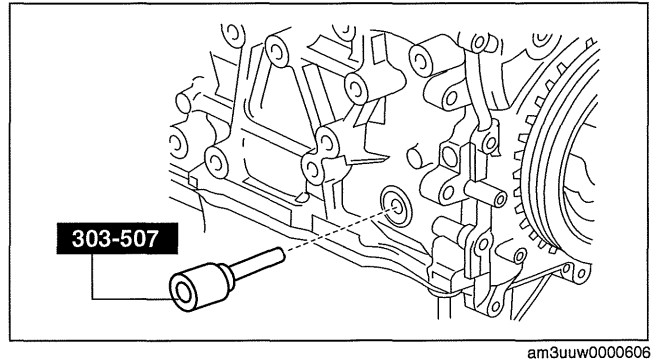
12. Remove the cylinder block lower blind plug.
13. Rotate the crankshaft in the direction of the engine rotation until the No. 1 piston is at the point prior to top dead center (TDC) of the compression stroke.



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MECHANICAL [L3 WITH TC]

14. Install the **SST**.
15. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the counterweight contacts the **SST** and stops.)



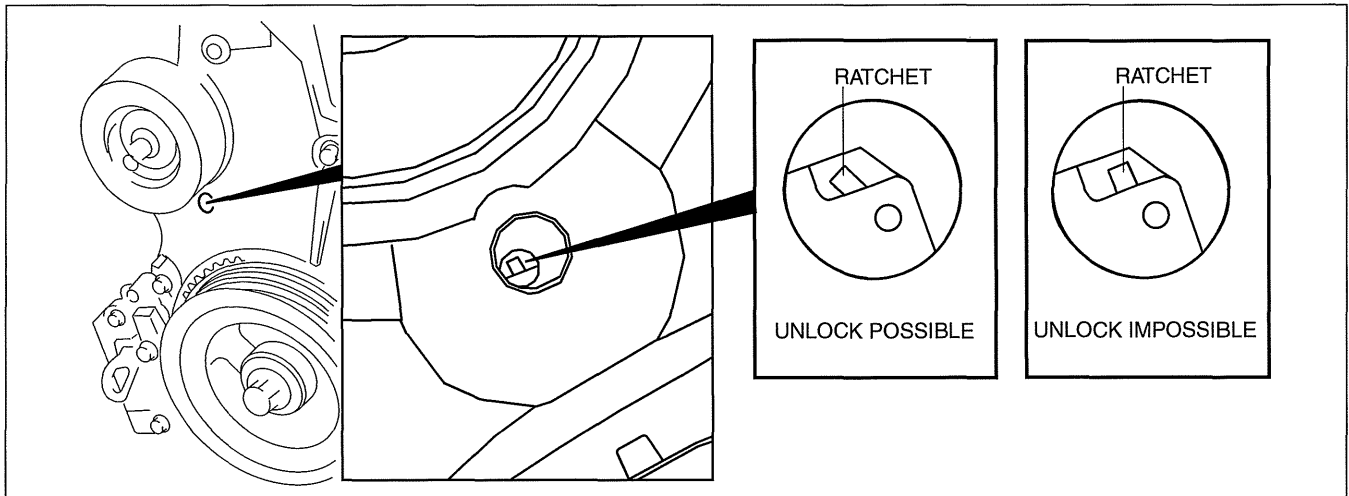
01-10B

16. Loosen the timing chain using the following procedure.

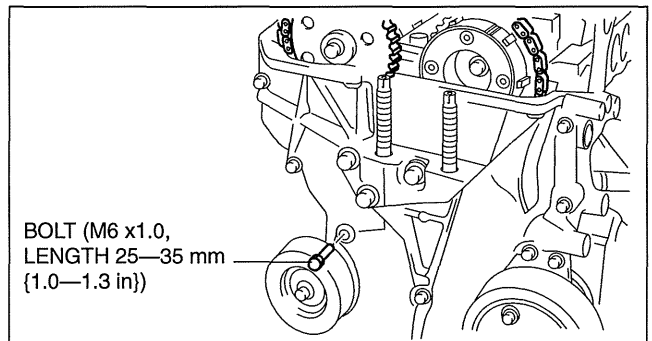
Note

- Verify the ratchet position using the mirror before servicing. If the ratchet is not tilted, remove the engine front cover before performing the procedure. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
- If the timing chain tension cannot be released with the ratchet tilted, remove the engine front cover before performing the procedure. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)

Ratchet unlock position

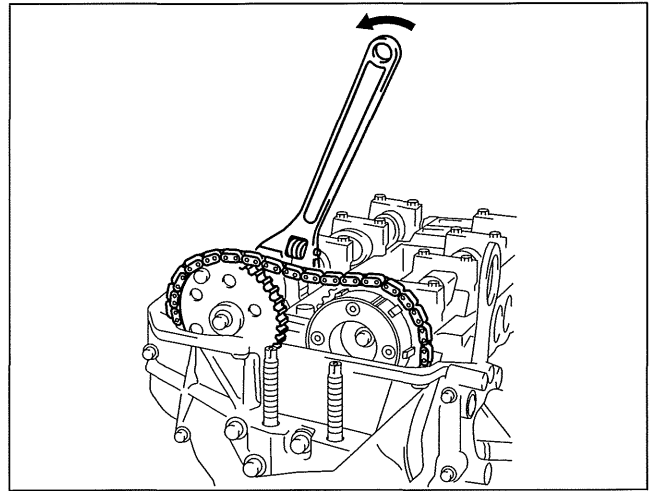


- (1) Insert a suitable bolt (**M6 X 1.0, length 25—35 mm {1.0—1.3 in}**) into the engine front cover upper blind plug hole and tighten it until it contacts the chain tensioner arm, and then rotate it back one turn. (Set the bolt slightly away from the chain tensioner arm so that it does not contact it.)

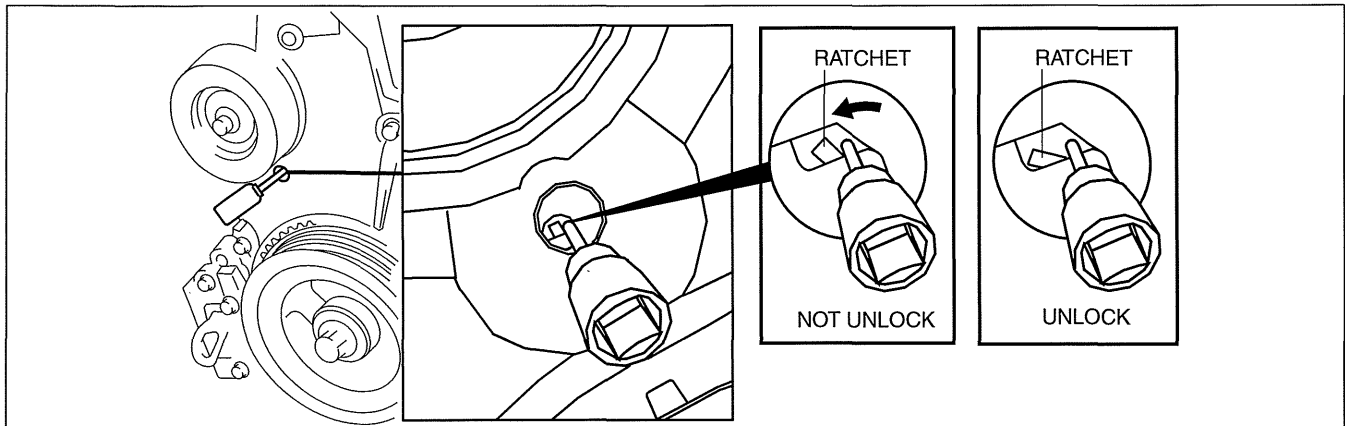


MECHANICAL [L3 WITH TC]

- (2) Using the cast hexagon on the exhaust camshaft, apply force counterclockwise to facilitate unlocking the chain tensioner ratchet.
- (3) Using a Hex bit socket (2.5 mm {0.098 in}) or T15 Torx bit socket, unlock the chain tensioner ratchet so that it can be lifted up.

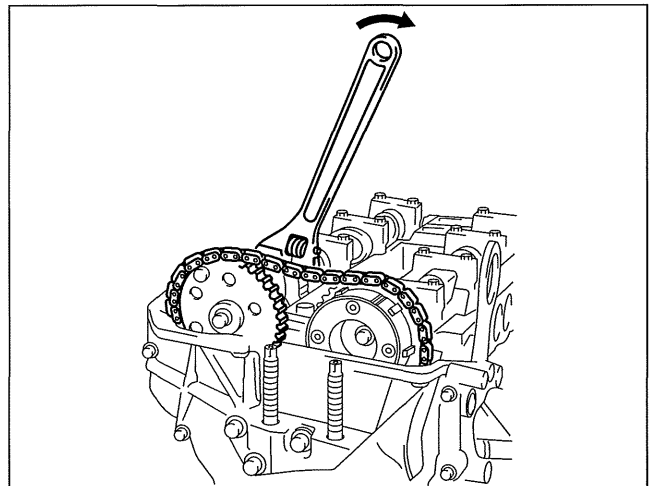


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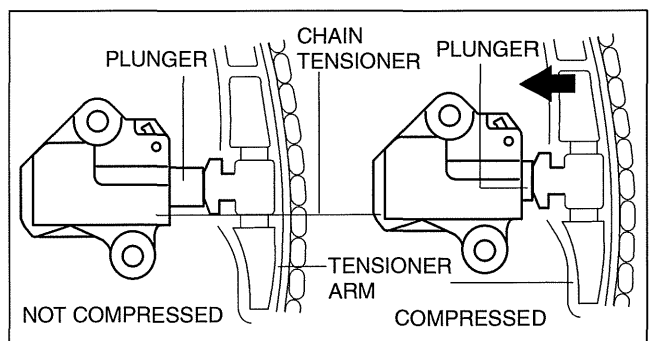
- (4) Using the cast hexagon on the exhaust camshaft, apply force in the direction of the engine rotation to increase tension on the chain.



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Note

- The chain tensioner rack is compressed using the chain tension generated by applying force to the exhaust camshaft in the direction of the engine rotation.



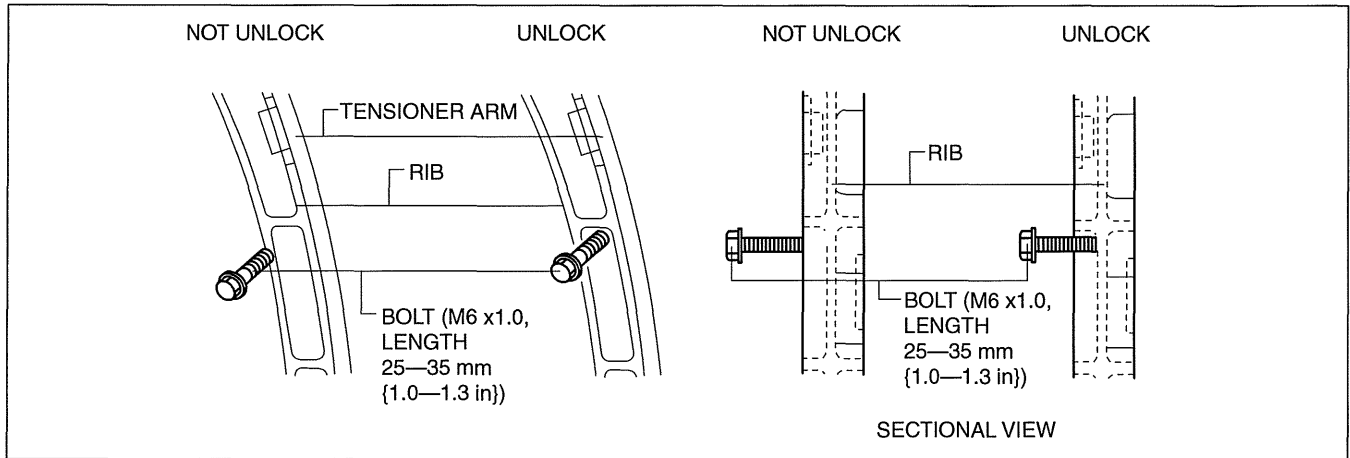
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MECHANICAL [L3 WITH TC]

- (5) Screw in the bolt set in Step (1) approx. 5 mm {0.2 in} and secure the tensioner arm with the rack compressed.

Note

- The ratchet has not been unlocked if the bolt cannot be pressed in **approx. 5 mm {0.2 in}**.



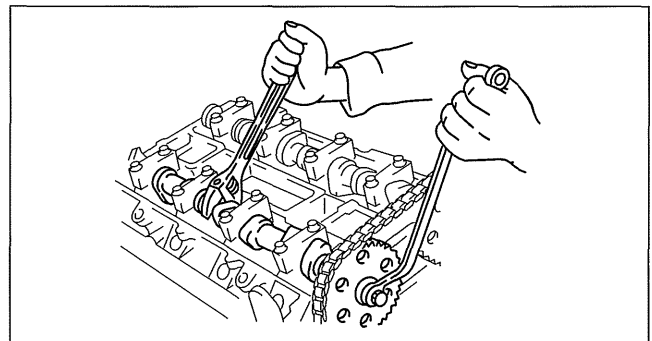
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- If the tensioner arm cannot be secured, return the bolt to its original position and repeat the procedure from Step (2).

17. Fix the exhaust camshaft using a wrench on the cast hexagon, and loosen the camshaft sprocket bolt.

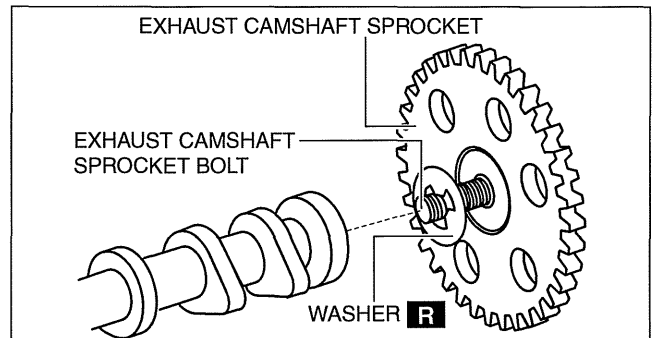
Caution

- Perform the work carefully so that the washer does not drop out.



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18. Remove the exhaust camshaft sprocket bolt, exhaust camshaft sprocket, and washer as a single unit.
19. Remove the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [L3 WITH TC].)



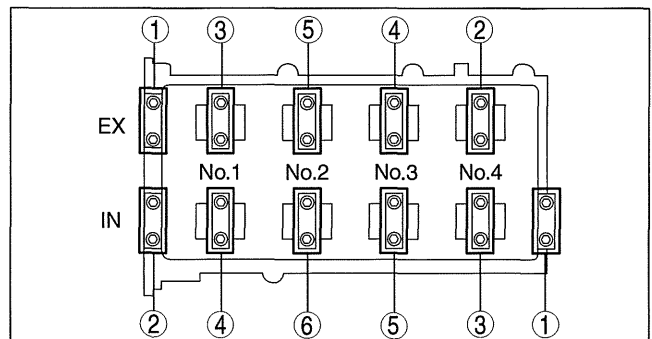
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20. Loosen the camshaft cap bolts in two or three steps in the order shown in the figure and remove the camshaft cap.

Note

- The camshaft caps are to be kept ordered for correct reassembly in their original positions. Do not mix the caps.

21. Remove the camshafts for the intake and exhaust sides.
22. Remove the tappet.



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01-10B

MECHANICAL [L3 WITH TC]

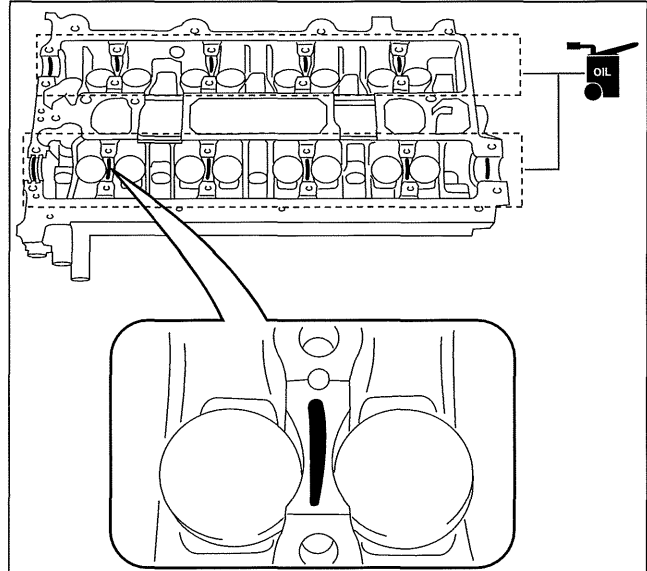
23. Install an appropriate tappet based on the results of the valve clearance inspection.
- Selected tappet = Removed tappet thickness + Measured valve clearance - Standard valve clearance

Standard valve clearance [Engine cold]

IN: 0.22—0.28 mm {0.009—0.011 in}

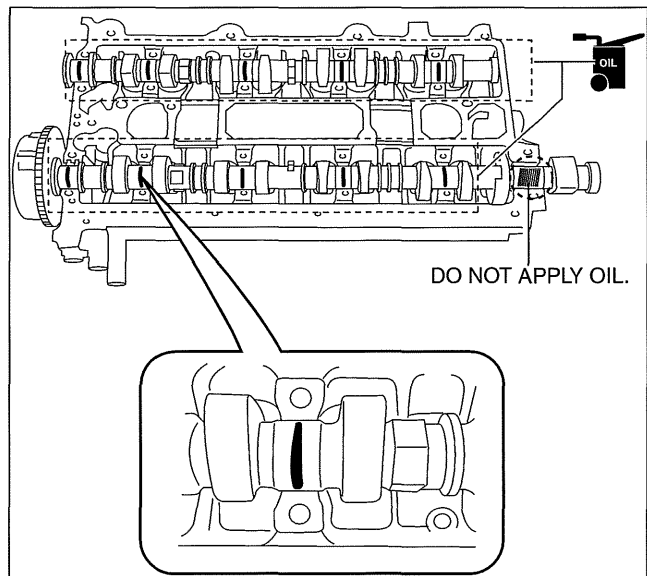
EX: 0.27—0.33 mm {0.011—0.012 in}

24. Verify that the No.1 piston is at TDC of the compression stroke. (The position counterweight contacts the **SST**.)
25. Apply the gear oil (SAE No. 90 or equivalent) to each journal of the cylinder head as shown in the figure.
26. With No.1 cylinder cam aligned at TDC of the compression stroke, install the camshafts.



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27. Apply the gear oil (SAE No. 90 or equivalent) to each journal of the camshaft as shown in the figure. However, do not apply it to the end journal of the intake camshaft.



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28. Carefully apply adhesive agent (Loctite 518 or 962T) to the area indicated in the figure so that it does not leak into the sliding part, then apply the gear oil (SAE No. 90 or equivalent) to the journal.

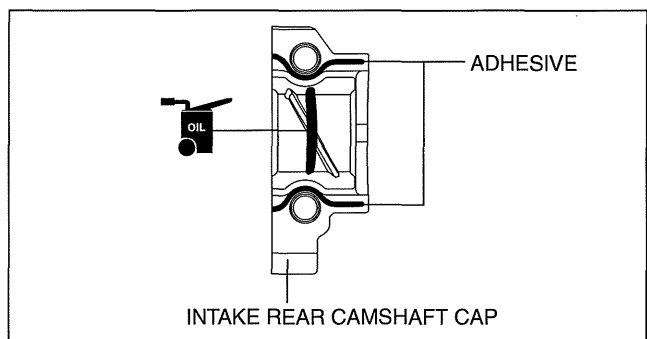
Adhesive agent thickness

0.5—1.5 mm {0.02—0.05 in}

29. Temporarily tighten the camshaft cap bolts evenly in 2—3 steps.

Note

- Do not tighten the bolts during this step.



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MECHANICAL [L3 WITH TC]

30. Tighten the camshaft cap bolts in two steps in the order shown in the figure.

Tightening torque

Step 1: 5.0—9.0 N·m {51—91 kgf·cm, 45—79 in·lbf}

Step 2: 14—17 N·m {1.5—1.7 kgf·m, 11—12 ft·lbf}

31. Install the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)

32. Install the exhaust camshaft sprocket bolt, exhaust camshaft sprocket, and a new washer as a single unit.

Caution

- Install a new washer to the fourth or fifth thread of the exhaust camshaft sprocket bolt being careful not to drop the washer.
- Do not tighten the camshaft sprocket bolt at this stage. Verify the valve timing before performing the bolt tightening.

33. Install the **SST** on the camshaft as shown in the figure.

34. Remove the bolt (**M6 X 1.0, length 25—35mm {1.0—1.3 in}**) from the engine front cover upper blind plug hole, and apply tension to the timing chain.

35. Verify that the No.1 piston is at TDC of the compression stroke. (The position counterweight contacts the **SST**.)

36. Fix the exhaust camshaft using a wrench on the cast hexagon, and tighten the camshaft sprocket bolt.

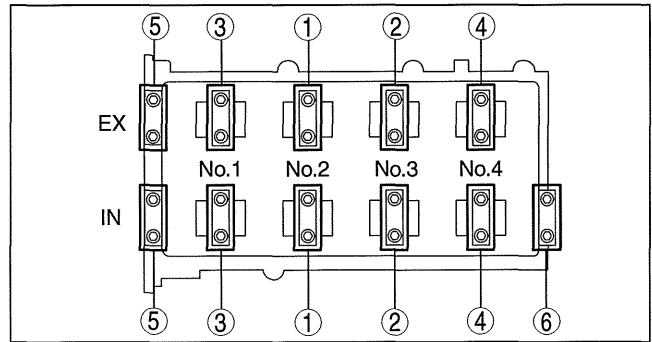
Tightening torque

69—75 N·m {7.1—7.6 kgf·m, 51—55 ft·lbf}

37. Remove the **SST** from the camshaft.
38. Remove the **SST** installed to the cylinder block lower blind plug hole.
39. Rotate the crankshaft clockwise two turns and inspect the valve timing.
- If not aligned, loosen the camshaft sprocket bolt and repeat the procedure from Step 33.
40. Install the cylinder block lower blind plug.

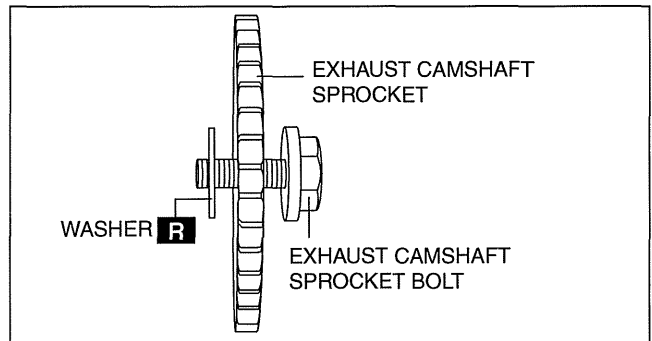
Tightening torque

18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}

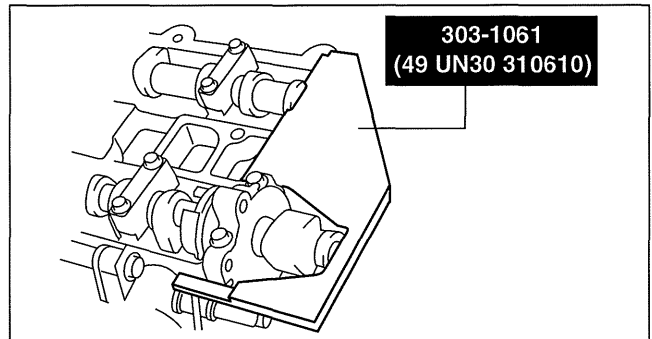


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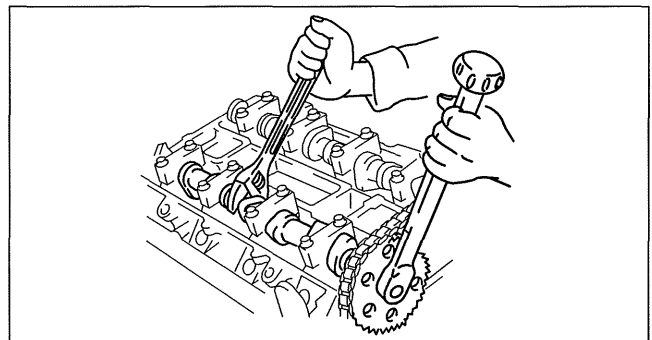
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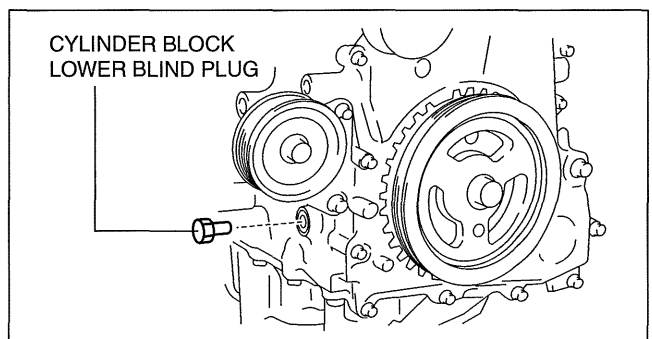
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am8rrw00002546



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MECHANICAL [L3 WITH TC]

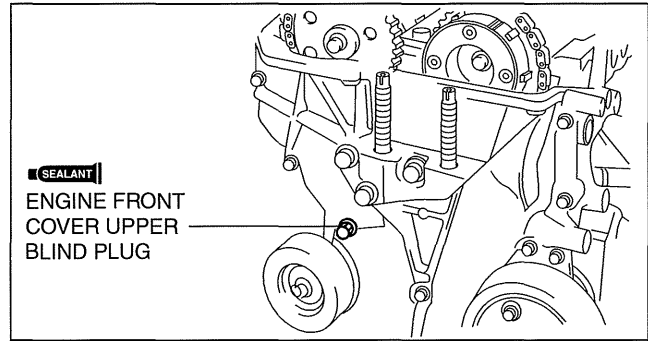
41. Apply the silicone sealant and install the engine front cover upper blind plug.

Caution

- **Install the engine front cover upper blind plug before the applied silicone sealant starts to harden.**

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}

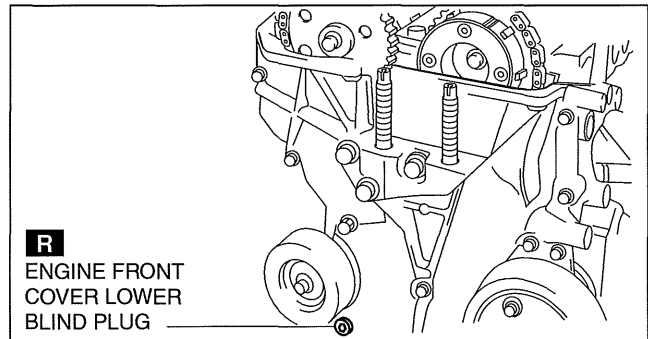


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42. Install a new engine front cover lower blind plug.

Tightening torque

10—14 N·m {102—142 kgf·cm, 89—123 in·lbf}



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43. Install the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
44. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
45. Install the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
46. Connect the ventilation hose. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
47. Install the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
48. Install the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
49. Install the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
50. Connect the negative battery cable.
51. Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

COMPRESSION INSPECTION [L3 WITH TC]

id011039800300

Warning

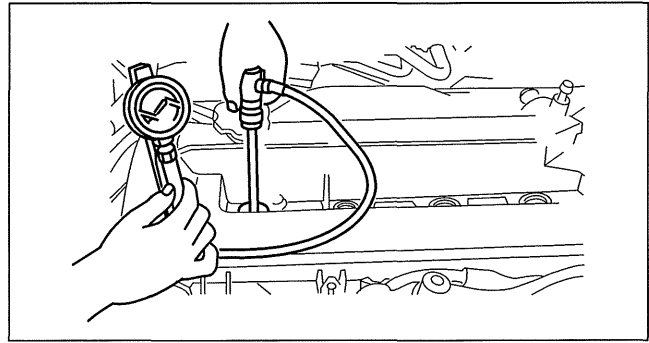
- **Hot engines and oil can cause severe burns. Be careful not to burn yourself during removal/installation of each component.**
- **Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.**
- **Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)**

1. Verify that the battery is fully charged. (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].)
 - Recharge it if necessary. (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].)
2. Warm up the engine to normal operating temperature.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove all the spark plugs. (See 01-18B-3 SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the fuel pump relay. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
7. Remove the fuel injector relay.

MECHANICAL [L3 WITH TC]

8. Measure the compression pressure using the following procedure.

- (1) Press a compression gauge into the spark plug hole.
- (2) Fully depress the accelerator pedal and crank the engine.
- (3) Note down the maximum gauge reading.
- (4) Perform Steps (1) to (3) for all cylinders.



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01-10B

Compression

Standard: 1,280 kPa {13.05 kgf/cm², 185.6 psi} [250 rpm]

Minimum: 896 kPa {9.14 kgf/cm², 130 psi} [250 rpm]

Maximum difference between cylinders:

196.1 kPa {2.000 kgf/cm², 28.44 psi}

- (5) If the measured value is less than the minimum value, or there is a cylinder whose compression value varies from that of other cylinders by **196.1 kPa {2.000 kgf/cm², 28.44 psi}** or more, add a small amount of engine oil through the spark plug hole. Then measure the compression pressure and perform the respective operations for the following cases.
 - If the compression increases, the piston, the piston rings, or cylinder wall may be worn and overhaul is required.
 - If the compression stays low, a valve may be stuck or improperly seated and overhaul is required.
 - If the compression in adjacent cylinders stays low, the cylinder head gasket may be damaged or the cylinder head distorted and overhaul is required.
9. Install the fuel injector relay.
10. Install the fuel pump relay. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
11. Install the spark plugs. (See 01-18B-3 SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC].)
12. Install the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
13. Install the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

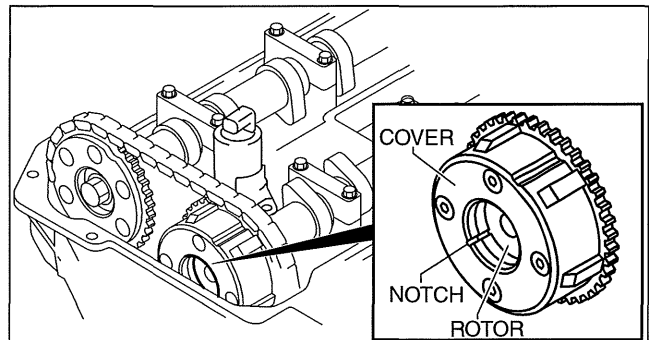
VARIABLE VALVE TIMING ACTUATOR INSPECTION [L3 WITH TC]

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Caution

- Variable valve timing actuator cannot be disassembled because it is a precision unit.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
5. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
7. Confirm that notch of the rotor and notch of the cover at the variable valve timing actuator are aligned and fitted.
 - If the notch of the rotor and notch of the cover are not aligned, turn the crankshaft clockwise two rotations. Verify that notch of the rotor and notch of the cover are aligned.
 - If the both notches are still not aligned, replace the variable valve timing actuator. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - If, when turning the crankshaft, there is a hitting noise from the variable valve timing actuator each time the cam passes the fully lifted position, it means that the actuator is not secured. Replace the variable valve timing actuator. (See 01-10B-14 VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC].)
8. Install the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
9. Connect the ventilation hose. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)



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MECHANICAL [L3 WITH TC]

10. Install the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
11. Install the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
12. Connect the negative battery cable.
13. Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

VARIABLE VALVE TIMING ACTUATOR REMOVAL/INSTALLATION [L3 WITH TC]

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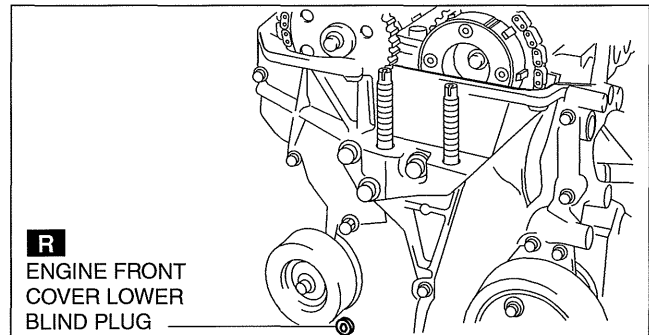
Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

Caution

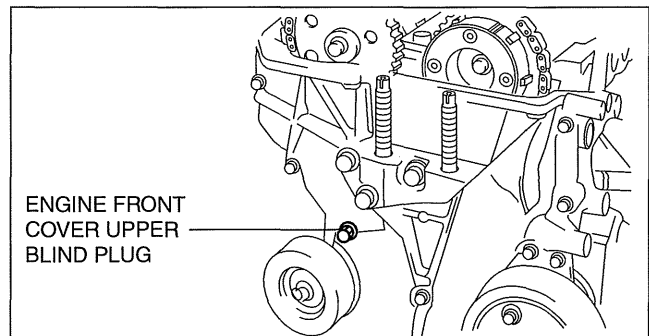
- Variable valve timing actuator cannot be disassembled because it is a precision unit.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
6. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
9. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
10. Remove the engine front cover lower blind plug.



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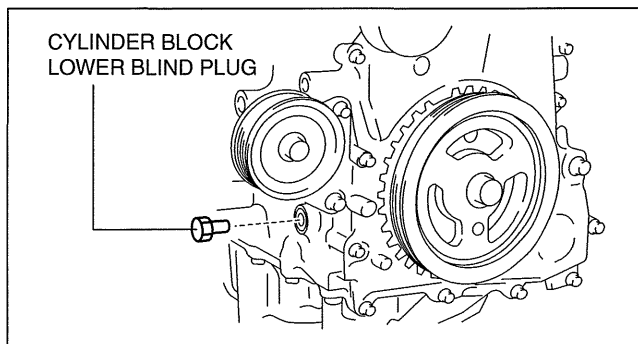
11. Remove the engine front cover upper blind plug.



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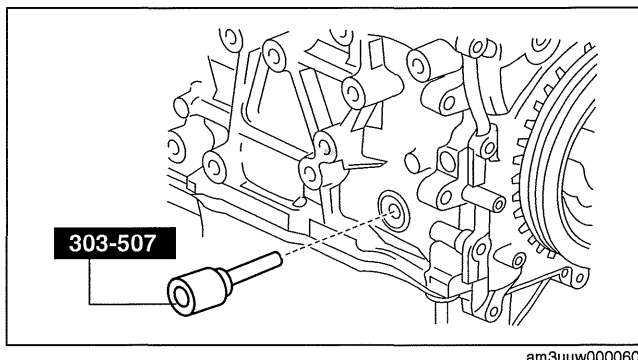
MECHANICAL [L3 WITH TC]

12. Remove the cylinder block lower blind plug.
13. Rotate the crankshaft in the direction of the engine rotation until the No. 1 piston is at the point prior to top dead center (TDC) of the compression stroke.



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14. Install the **SST**.
15. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the counterweight contacts the **SST** and stops.)

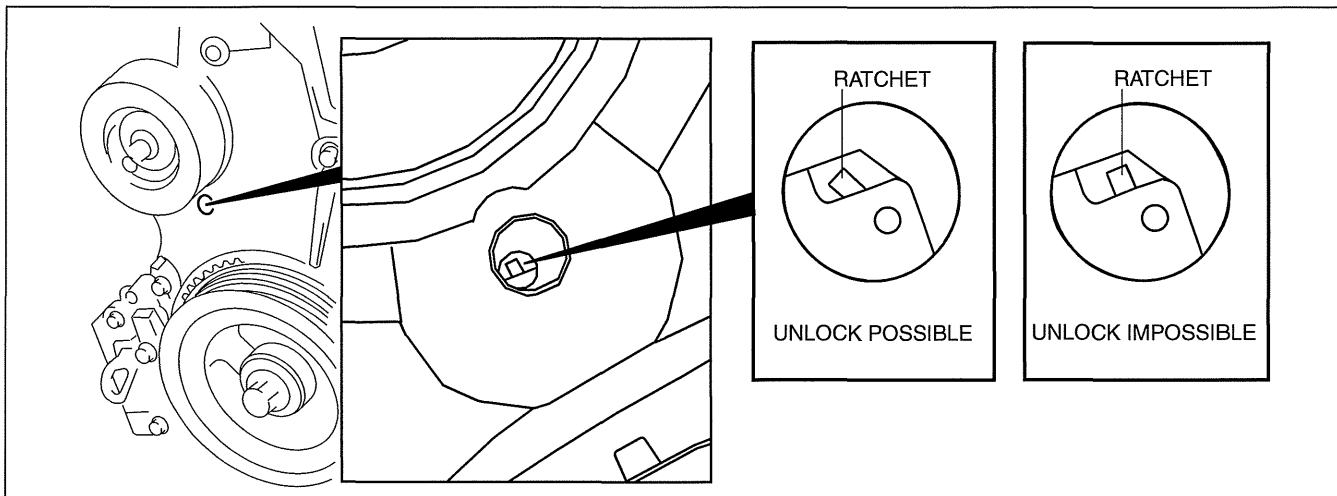


16. Loosen the timing chain using the following procedure.

Note

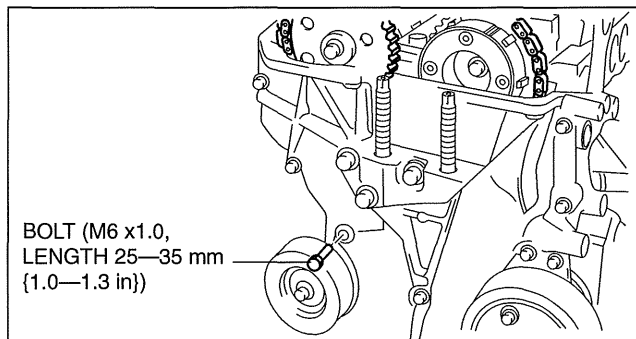
- Verify the ratchet position using the mirror before servicing. If the ratchet is not tilted, remove the engine front cover before performing the procedure. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
- If the timing chain tension cannot be released with the ratchet tilted, remove the engine front cover before performing the procedure. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)

Ratchet unlock position

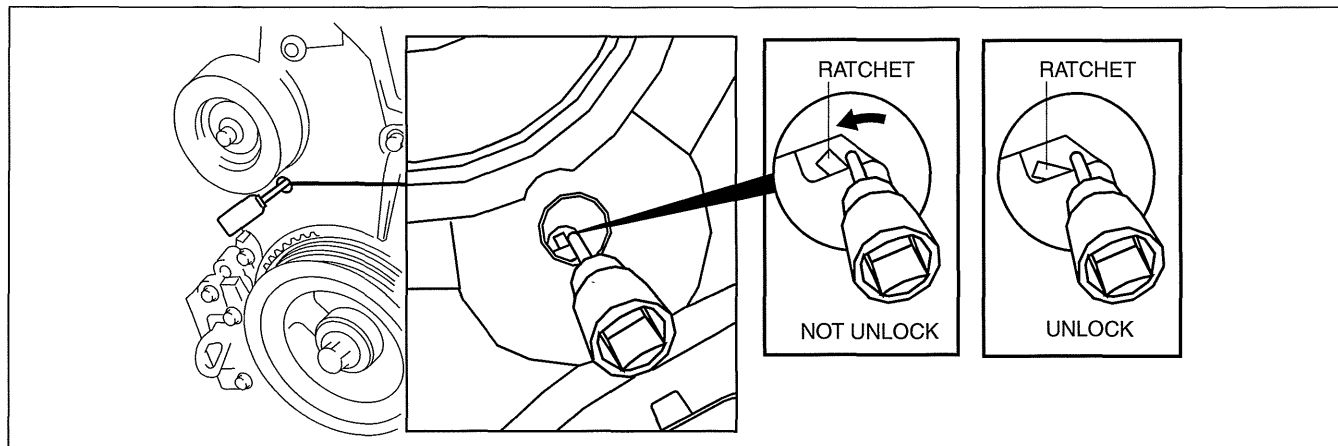
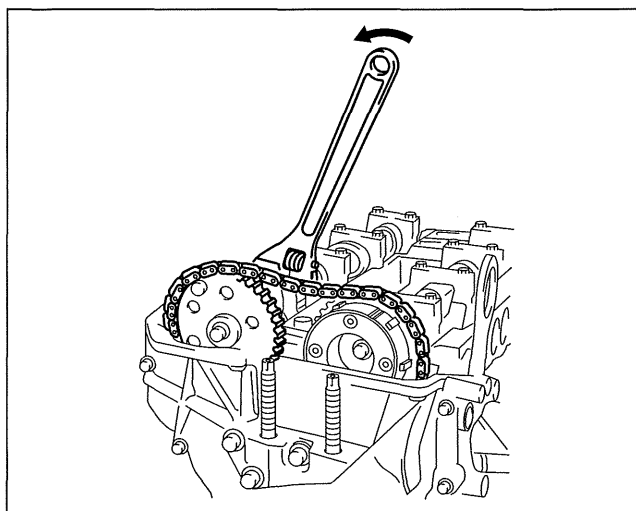


MECHANICAL [L3 WITH TC]

- (1) Insert a suitable bolt (**M6 X 1.0, length 25—35 mm {1.0—1.3 in}**) into the engine front cover upper blind plug hole and tighten it until it contacts the chain tensioner arm, and then rotate it back one turn. (Set the bolt slightly away from the chain tensioner arm so that it does not contact it.)

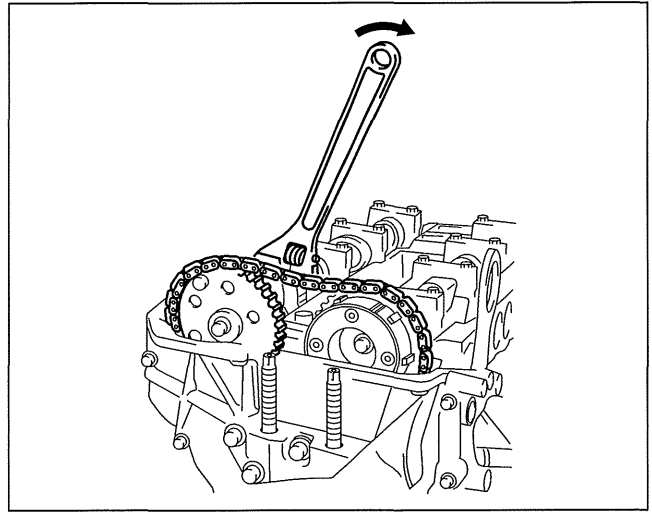


- (2) Using the cast hexagon on the exhaust camshaft, apply force counterclockwise to facilitate unlocking the chain tensioner ratchet.
- (3) Using a Hex bit socket (**2.5 mm {0.098 in}**) or T15 Torx bit socket, unlock the chain tensioner ratchet so that it can be lifted up.



MECHANICAL [L3 WITH TC]

- (4) Using the cast hexagon on the exhaust camshaft, apply force in the direction of the engine rotation to increase tension on the chain.



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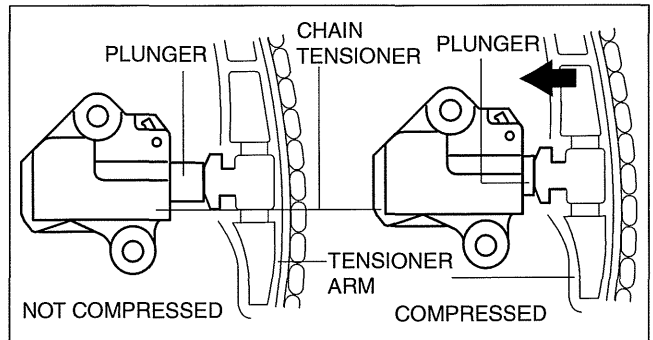
Note

- The chain tensioner rack is compressed using the chain tension generated by applying force to the exhaust camshaft in the direction of the engine rotation.

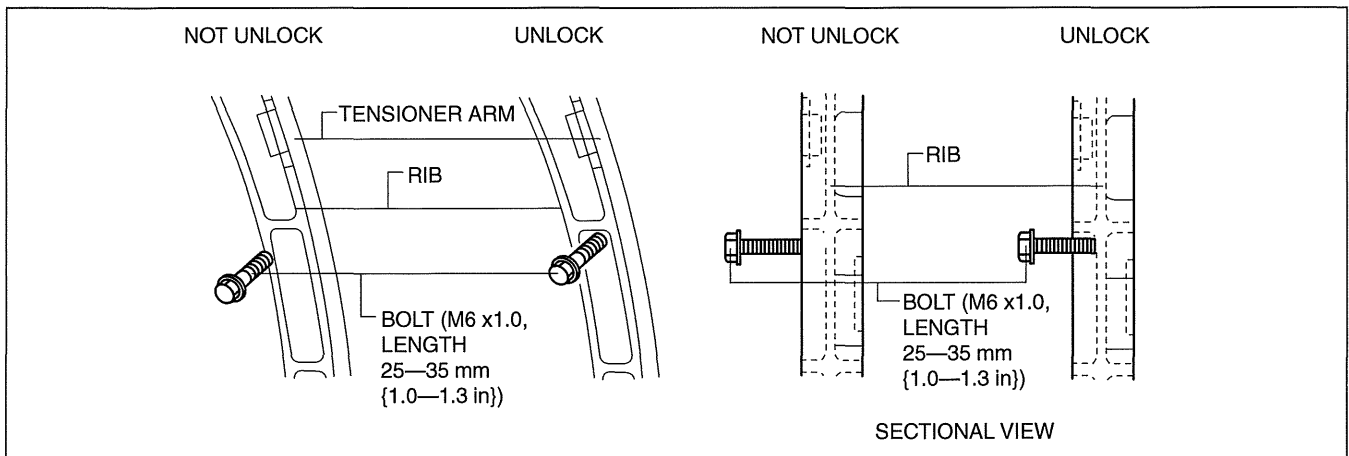
- (5) Screw in the bolt set in Step (1) **approx. 5 mm {0.2 in}** and secure the tensioner arm with the rack compressed.

Note

- The ratchet has not been unlocked if the bolt cannot be pressed in **approx. 5 mm {0.2 in}**.



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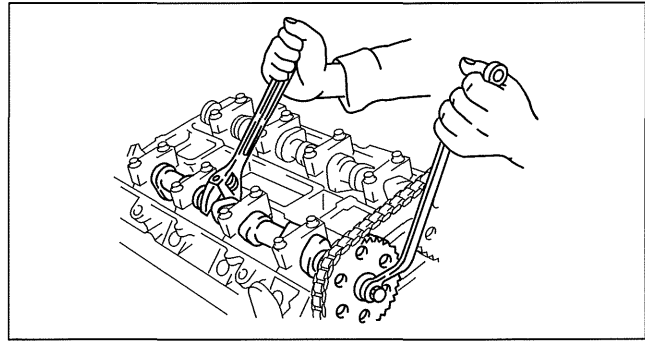
- If the tensioner arm cannot be secured, return the bolt to its original position and repeat the procedure from Step (2).

MECHANICAL [L3 WITH TC]

17. Fix the exhaust camshaft using a wrench on the cast hexagon, and loosen the camshaft sprocket bolt.

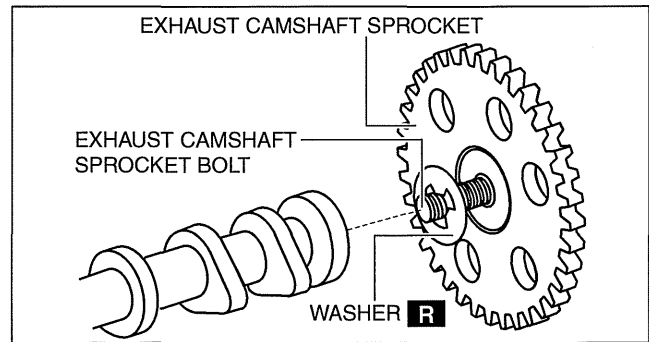
Caution

- Perform the work carefully so that the washer does not drop out.



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18. Remove the exhaust camshaft sprocket bolt, exhaust camshaft sprocket, and washer as a single unit.
19. Remove the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/ INSTALLATION [L3 WITH TC].)



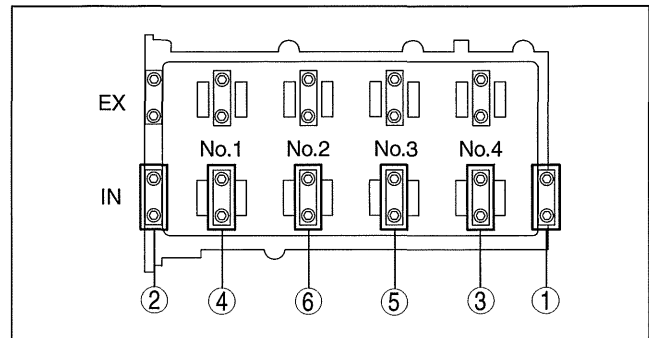
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20. Loosen the camshaft cap bolts in two or three steps in the order shown in the figure and remove the camshaft cap.

Note

- The camshaft caps are to be kept ordered for correct reassembly in their original positions. Do not mix the caps.

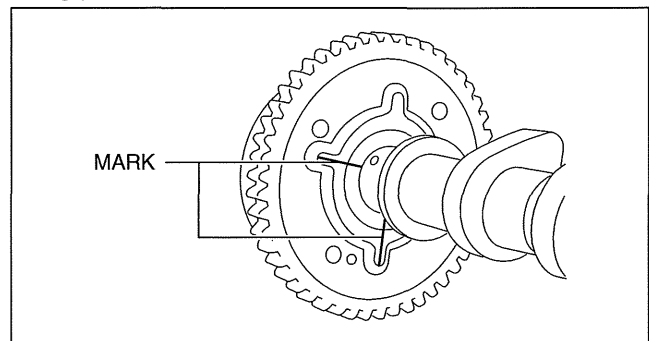
21. Remove the variable valve timing actuator and intake camshaft as a single unit.



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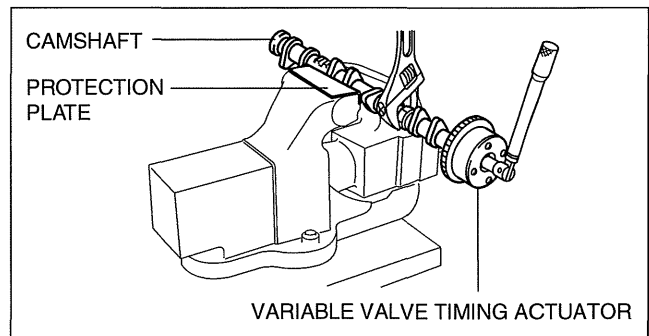
22. Remove the variable valve timing actuator using the following procedures.

- (1) Mark the camshaft and variable valve timing actuator as shown in the figure to make sure they are installed in their original position.



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- (2) Secure the camshaft in a vise.
- (3) Loosen the variable valve timing actuator installation bolt.



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MECHANICAL [L3 WITH TC]

23. Install the variable valve timing actuator using the following procedures.

Caution

- When the variable valve timing actuator is replaced with a new one, mark it in the same location as the old one.

- (1) Secure the camshaft in a vise.
- (2) Install a new washer.
- (3) Align the marks of the camshaft and the variable valve timing actuator.

Note

- If the alignment marks on the variable valve timing actuator are not available, refer to the "TIMING CHAIN ASSEMBLY" in the engine workshop manual and perform the sprocket position alignment again.

- (4) Tighten the variable valve timing actuator installation bolt.

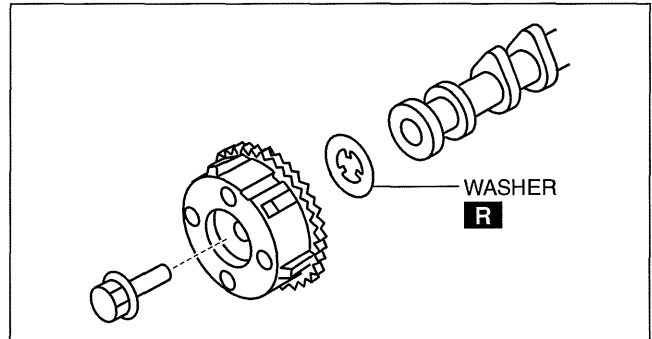
Tightening torque

69—75 N·m {7.1—7.6 kgf·m, 51—55 ft.lbf}

24. Verify that the No.1 piston is at TDC of the compression stroke. (The position counterweight contacts the SST.)

25. Apply the gear oil (SAE No. 90 or equivalent) to each journal of the cylinder head as shown in the figure.

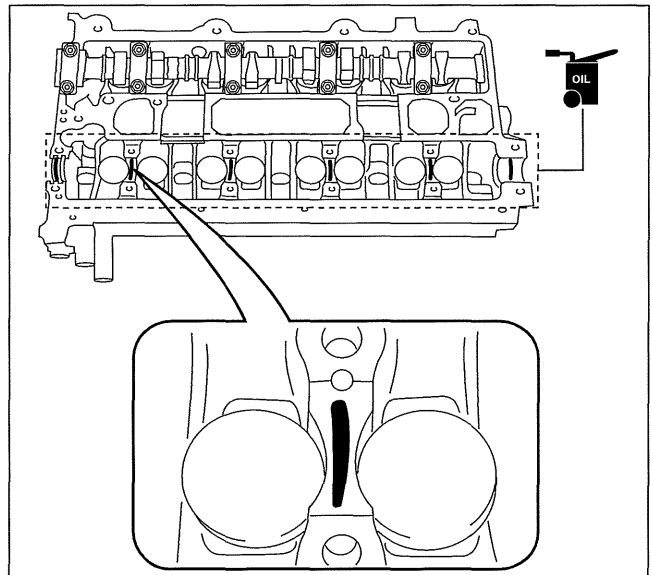
26. With No.1 cylinder cam aligned at TDC of the compression stroke, install the variable valve timing actuator and the camshaft on the intake air side as a single unit.



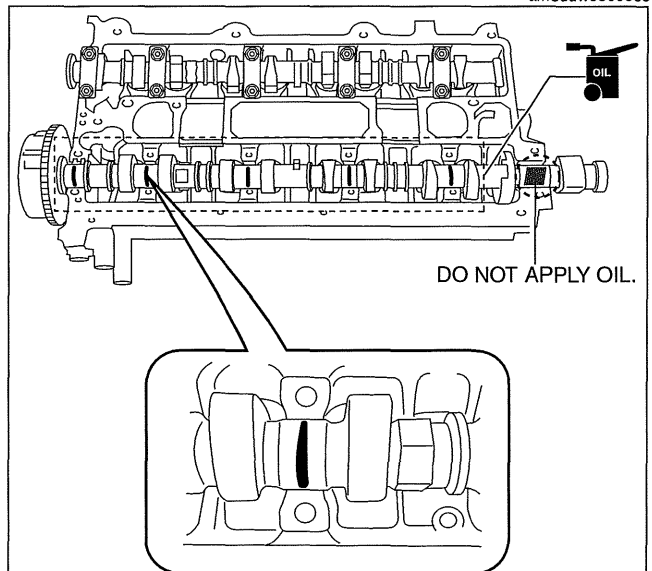
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01-10B

27. Apply the gear oil (SAE No. 90 or equivalent) to each journal of the camshaft as shown in the figure. However, do not apply it to the end journal of the intake camshaft.



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MECHANICAL [L3 WITH TC]

28. Carefully apply adhesive agent (Loctite 518 or 962T) to the area indicated in the figure so that it does not leak into the sliding part, then apply the gear oil (SAE No. 90 or equivalent) to the journal.

Adhesive agent thickness
0.5—1.5 mm {0.02—0.05 in}

29. Temporarily tighten the camshaft cap bolts evenly in 2—3 steps.

Note

- Do not tighten the bolts during this step.

30. Tighten the camshaft cap bolts in two steps in the order shown in the figure.

Tightening torque

Step 1: 5.0—9.0 N·m {51—91 kgf·cm, 45—79 in·lbf}

Step 2: 14—17 N·m {1.5—1.7 kgf·m, 11—12 ft·lbf}

31. Install the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)

32. Install the exhaust camshaft sprocket bolt, exhaust camshaft sprocket, and a new washer as a single unit.

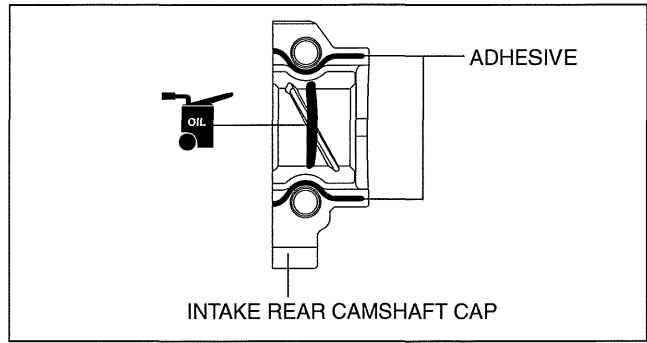
Caution

- Install a new washer to the fourth or fifth thread of the exhaust camshaft sprocket bolt being careful not to drop the washer.
- Do not tighten the camshaft sprocket bolt at this stage. Verify the valve timing before performing the bolt tightening.

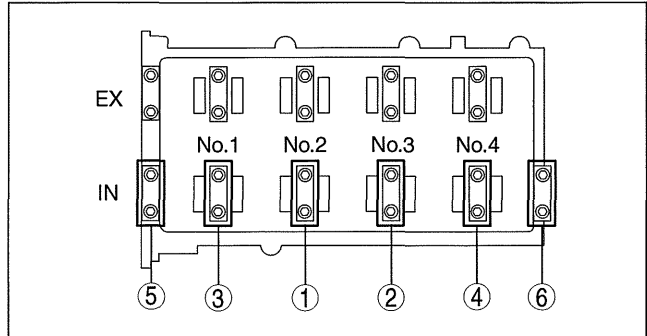
33. Install the **SST** on the camshaft as shown in the figure.

34. Remove the bolt (M6 X 1.0, length 25—35mm {1.0—1.3 in}) from the engine front cover upper blind plug hole, and apply tension to the timing chain.

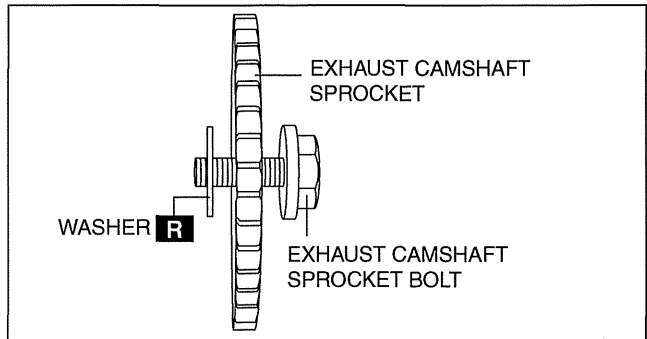
35. Verify that the No.1 piston is at TDC of the compression stroke. (The position counterweight contacts the **SST**.)



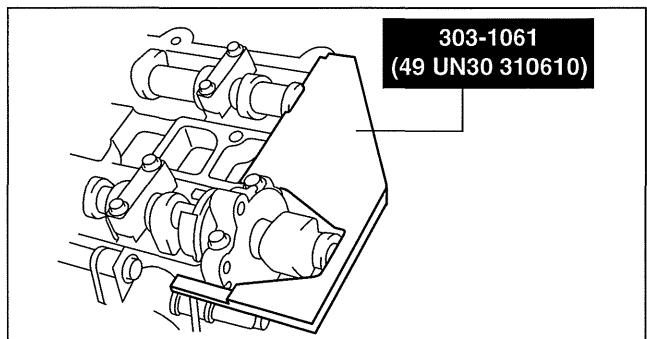
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MECHANICAL [L3 WITH TC]

36. Fix the exhaust camshaft using a wrench on the cast hexagon, and tighten the camshaft sprocket bolt.

Tightening torque

69—75 N·m {7.1—7.6 kgf·m, 51—55 ft·lbf}

37. Remove the **SST** from the camshaft.
38. Remove the **SST** installed to the cylinder block lower blind plug hole.
39. Rotate the crankshaft clockwise two turns and inspect the valve timing.
• If not aligned, loosen the camshaft sprocket bolt and repeat the procedure from Step 33.
40. Install the cylinder block lower blind plug.

Tightening torque

18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}

41. Apply the silicone sealant and install the engine front cover upper blind plug.

Caution

- Install the engine front cover upper blind plug before the applied silicone sealant starts to harden.

Tightening torque

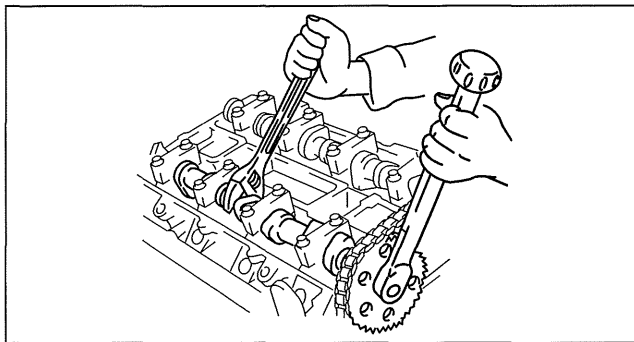
8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}

42. Install a new engine front cover lower blind plug.

Tightening torque

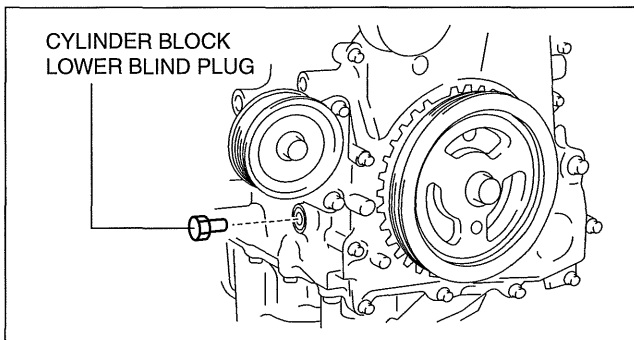
10—14 N·m {102—142 kgf·cm, 89—123 in·lbf}

43. Install the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
44. Install the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
45. Install the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
46. Connect the ventilation hose. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
47. Install the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
48. Install the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
49. Install the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
50. Connect the negative battery cable.
51. Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

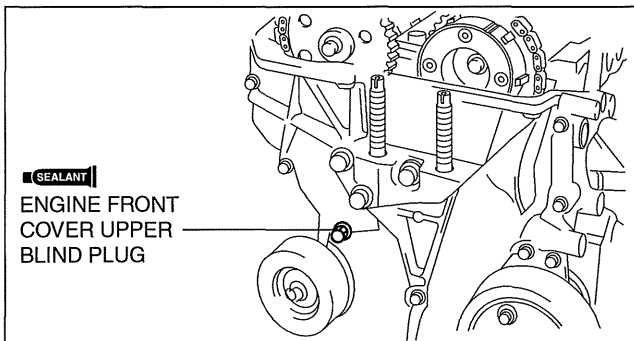


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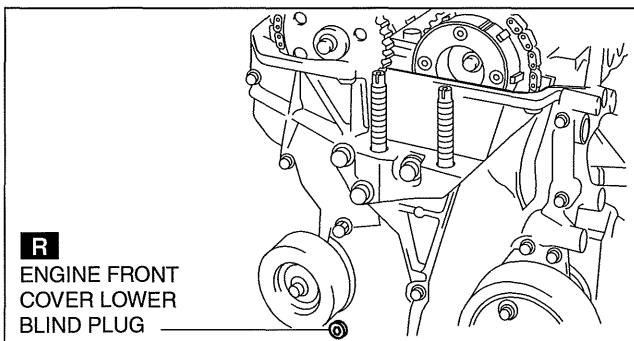
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MECHANICAL [L3 WITH TC]

OIL CONTROL VALVE (OCV) INSPECTION [L3 WITH TC]

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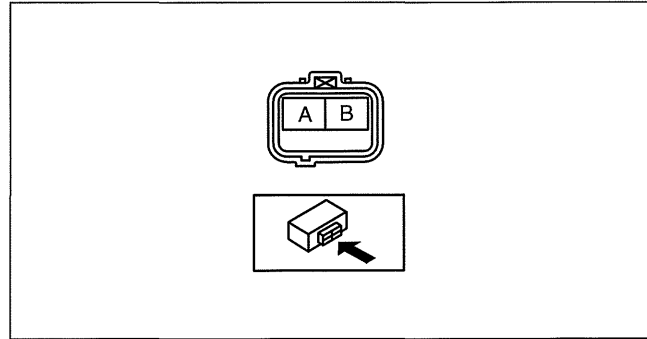
Coil Resistance Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the OCV connector.
4. Measure the coil resistance between terminals A and B using a tester.
 - If not as specified, replace the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)

OCV coil resistance

6.9—7.9 ohms [20°C {68°F}]

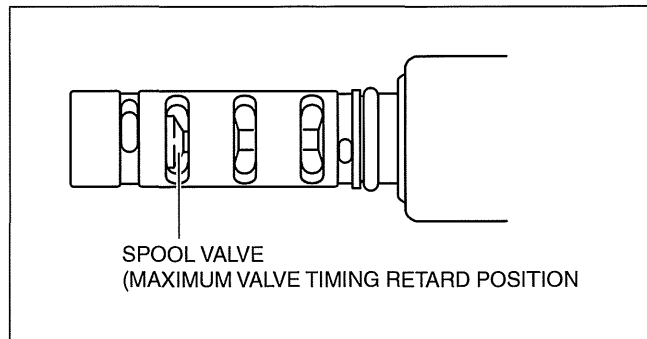
5. Install in the reverse order of removal.



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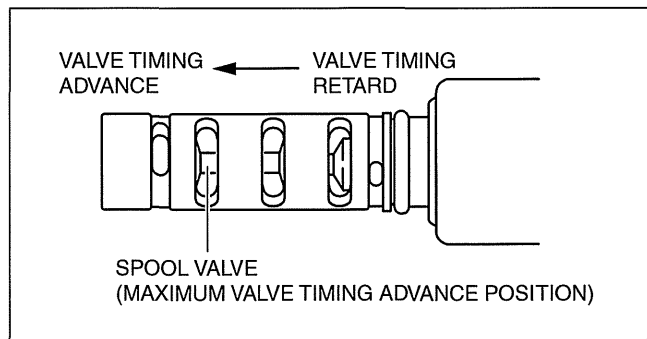
Spool Valve Operation Inspection

1. Remove the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
2. Verify that the spool valve in the OCV is in the maximum valve timing retard position as shown in the figure.
 - If not as specified, replace the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
3. Verify that the battery is fully charged. (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].)
 - Recharge it if necessary. (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].)



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4. Apply battery positive voltage between the OCV terminals and verify that the spool valve operates and moves to the maximum valve timing advance position.
 - If not as specified, replace the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)

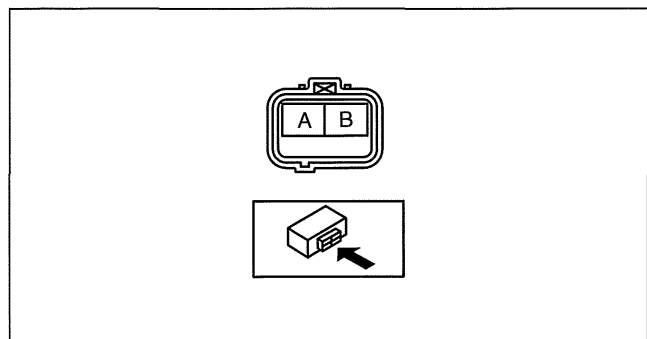


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Note

- When applying battery positive voltage between the OCV terminals, the connection can be either of the following:
 - Positive battery cable to terminal A, negative battery cable to terminal B
 - Positive battery cable to terminal B, negative battery cable to terminal A

5. Stop applying battery positive voltage and verify that the spool valve returns to the maximum valve timing retard position.
 - If not as specified, replace the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)
6. Install the OCV. (See 01-10B-23 OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC].)



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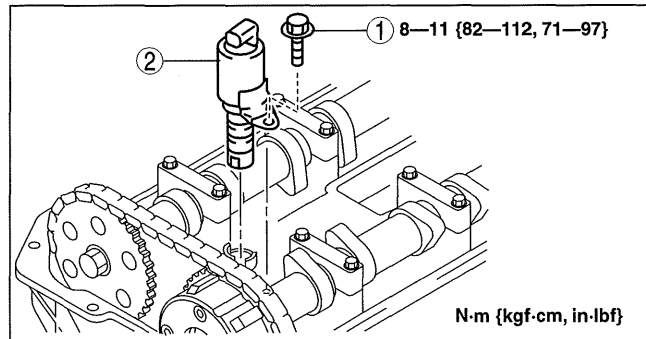
MECHANICAL [L3 WITH TC]

OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [L3 WITH TC]

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1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
5. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.

1	OCV installation bolt
2	OCV



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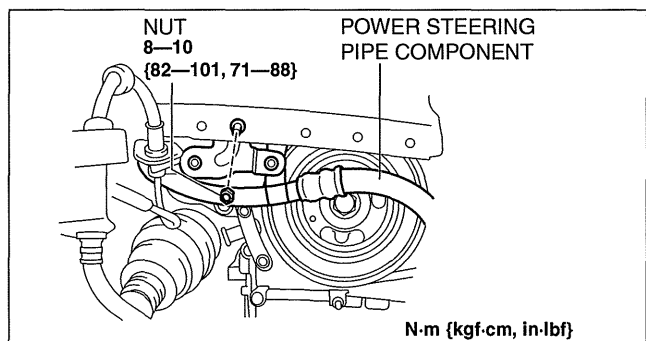
TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC]

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Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
6. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the coolant reserve tank with the hose still connected and set it out of the way. (See 01-12B-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
9. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
10. Remove the nut shown in the figure and set the power steering pipe component out of the way.
11. Loosen the water pump pulley bolts before removing the drive belt.
12. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
13. Remove the crankshaft position (CKP) sensor. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
14. Remove in the order indicated in the table.
15. Install in the reverse order of removal.
16. Start the engine. And inspect and adjust the following:
 - Leakage of engine oil. (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].)
 - Runout and contact of pulley and belt.



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01-10B

MECHANICAL [L3 WITH TC]

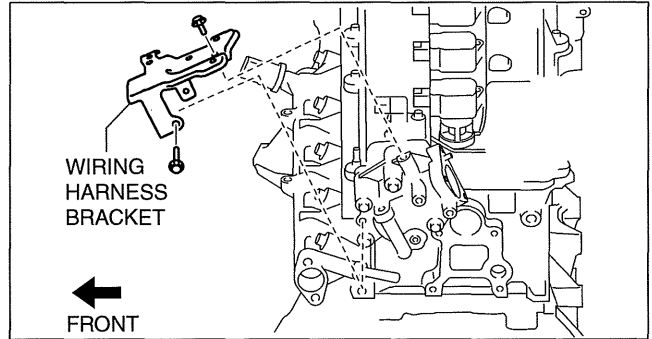
14	Oil pump chain tensioner
15	Oil pump chain guide
16	Oil pump driven sprocket (See 01-10B-29 Oil Pump Driven Sprocket Removal/Installation Note.)

17	Oil pump chain
18	Crankshaft sprocket
19	Oil pump drive sprocket (See 01-10B-29 Oil Pump Drive Sprocket Installation Note.)

01-10B

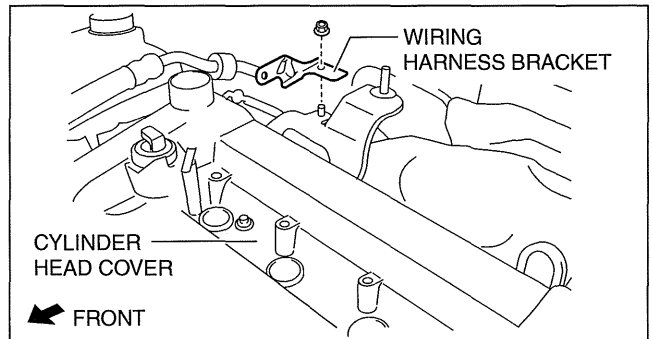
Cylinder Head Cover Removal Note

1. Set the wiring harness out of the way.
2. Remove the wiring harness bracket with the wiring harness still connected and set it out of the way.



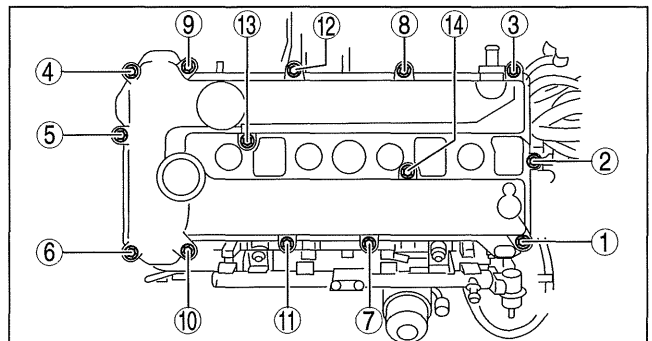
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3. Remove the wiring harness bracket.



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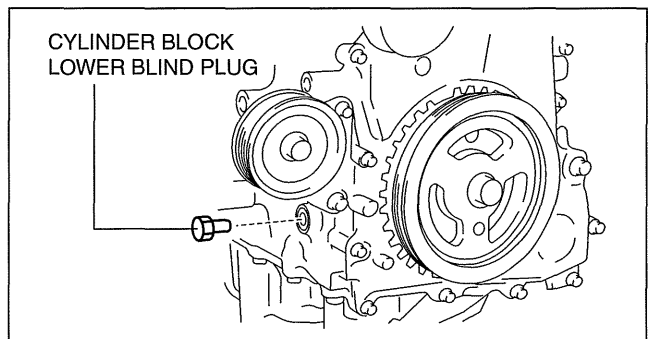
4. Loosen the cylinder head cover bolts in the order shown in the figure.



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Crankshaft Pulley Lock Bolt Removal Note

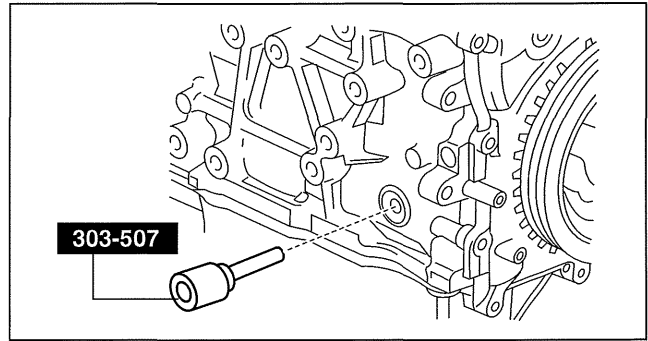
1. Remove the cylinder block lower blind plug.
2. Rotate the crankshaft in the direction of the engine rotation until the No. 1 piston is at the point prior to top dead center (TDC) of the compression stroke.



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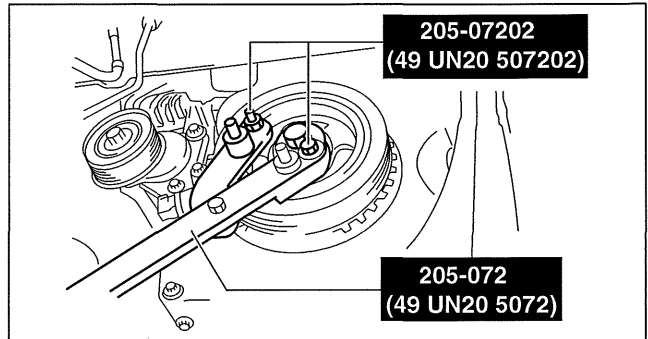
MECHANICAL [L3 WITH TC]

3. Install the **SST**.
4. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the counterweight contacts the **SST** and stops.)



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5. Hold the crankshaft pulley using the **SSTs**.



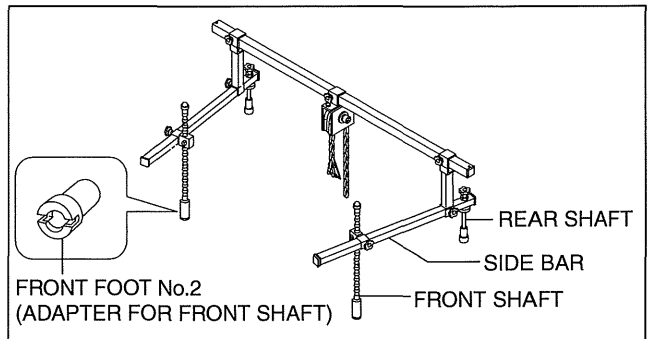
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No.3 Engine Mount Removal Note

1. Remove the air cleaner. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Install the **SST** using the following procedures.

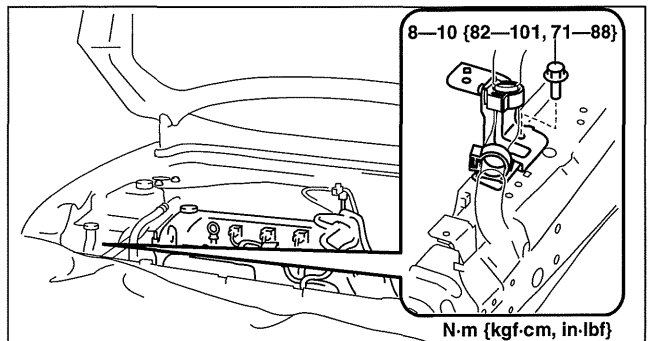
Caution

- Refer to the **SST instruction manual for the basic handling procedure.**



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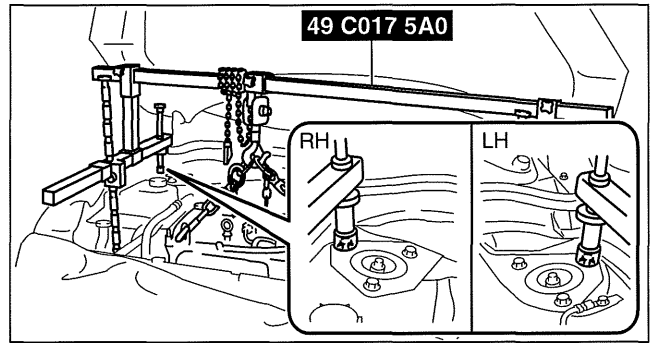
- (1) Remove the installation bolt for the bracket securing the lower radiator hose.
- (2) Set the bracket securing the lower radiator hose aside to prevent it from interfering with the front shaft of the **SST** (right side)



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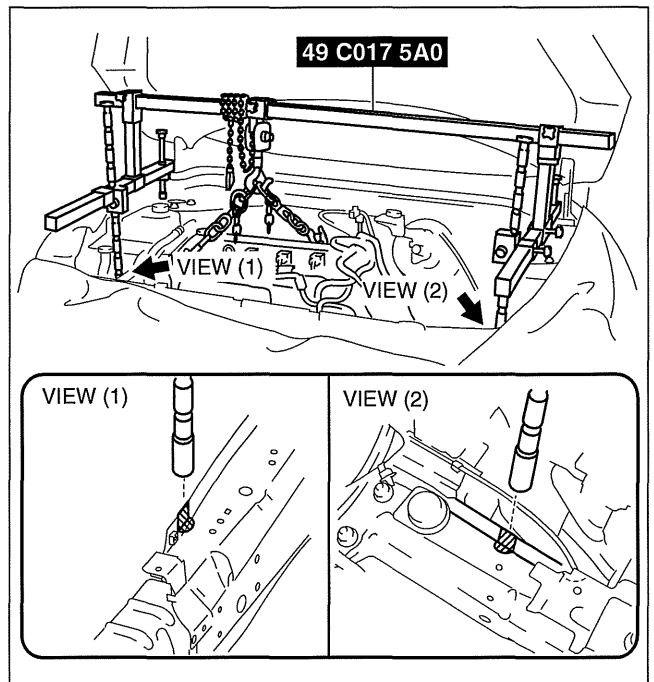
MECHANICAL [L3 WITH TC]

- (3) As shown in the figure, set the rear shafts of the **SST** to the left and right shock absorber bolts.

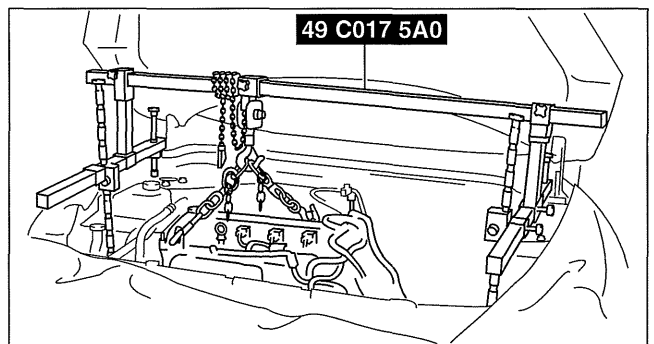


01-10B

- (4) Install front foot No.2 to the left/right front shaft of the **SST**, then align the groove of the front shaft of the **SST** with the folded up part of the vehicle as shown in the figure.



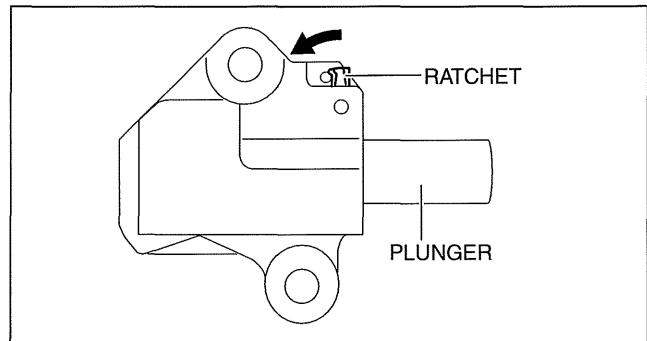
- (5) Adjust the positions of the **SST** side bars so that they are the same height (left and right) and horizontal. Make sure each joint is securely tightened.



MECHANICAL [L3 WITH TC]

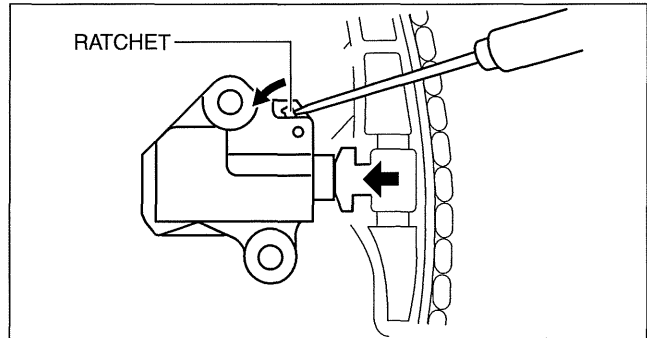
Chain Tensioner Removal Note

1. Press the timing chain tensioner ratchet to the left using a thin flathead screwdriver (precision screwdriver) to unlock the plunger.



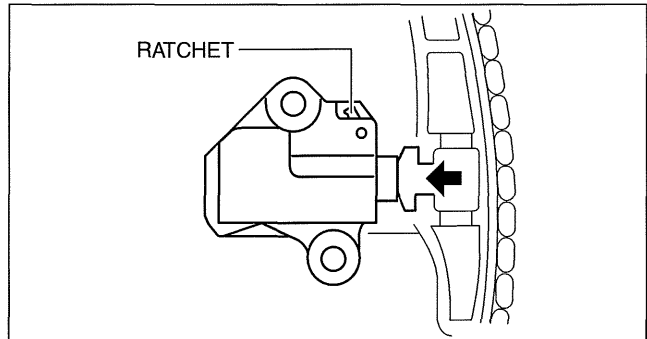
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2. Slowly press the plunger back in the direction shown in the figure while pressing the ratchet.



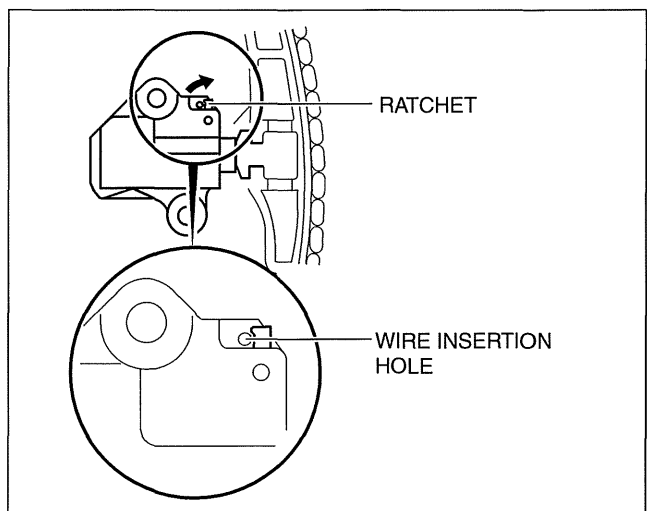
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3. Release the ratchet with the plunger still pressed down.



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4. Press-in the plunger until the ratchet position is as indicated in the figure, and then insert the wire or paper clip to lock the plunger.



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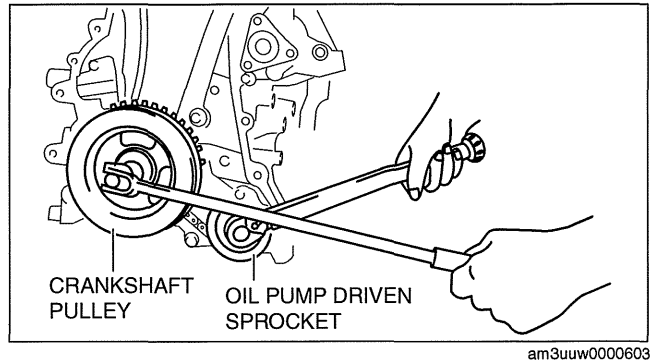
MECHANICAL [L3 WITH TC]

Oil Pump Driven Sprocket Removal/Installation Note

1. Temporarily install the crankshaft pulley and crankshaft pulley lock bolt to the crankshaft, and lock the oil pump against rotation as shown in figure.
2. Remove/install the oil pump driven sprocket, and then remove the crankshaft pulley and crankshaft pulley lock bolt.

Tightening torque

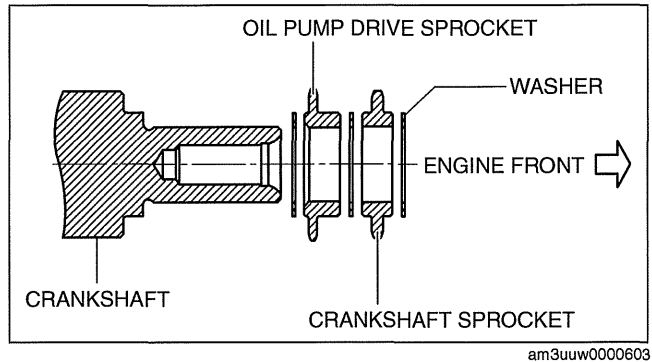
20—30 N·m {2.1—3.0 kgf·m, 15—22 ft·lbf}



01-10B

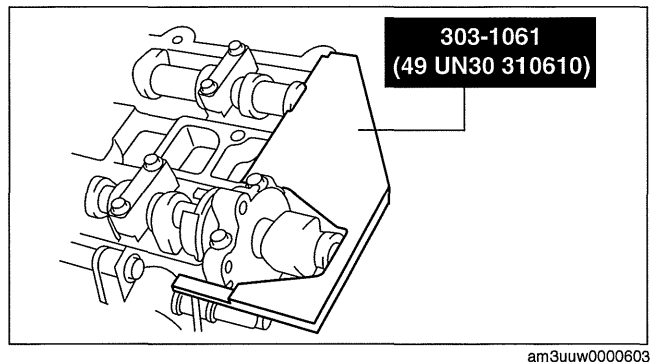
Oil Pump Drive Sprocket Installation Note

1. Assemble the oil pump drive sprocket as shown in the figure.



Timing Chain Installation Note

1. Install the **SST** to the camshaft as shown in the figure.
2. Install the timing chain.
3. Remove the wire or paper clip from the chain tensioner and apply tension to the timing chain.



MECHANICAL [L3 WITH TC]

Engine Front Cover Installation Note

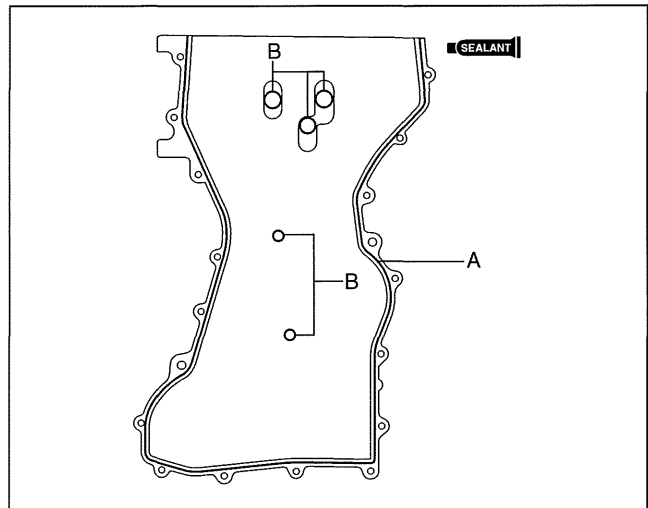
1. Apply silicone sealant to the engine front cover as shown in the figure.

Caution

- Install the engine front cover before the applied silicone sealant starts to harden.
- Verify that there is no oil or dust on the seal.

Thickness

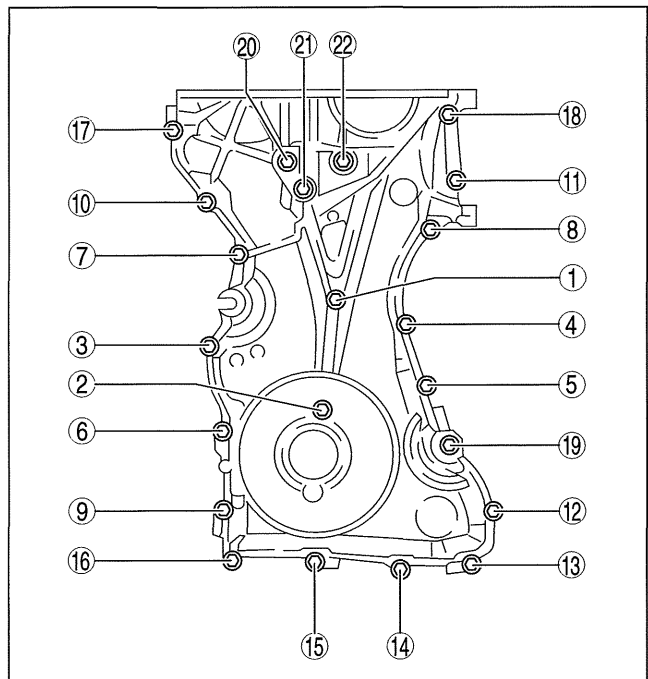
- A:** 2.2—3.2 mm {0.09—0.12 in}
B: 1.5—2.5 mm {0.06—0.098 in}



am3uuw000615

2. Tighten the engine front cover installation bolts in the order as shown in the figure.

No.	Tightening Torque
1—18	8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}
19—22	40—55 N·m {4.1—5.6 kgf·m, 30—40 ft·lbf}



am3uuw000603

No.3 Engine Mount Installation Note

Note

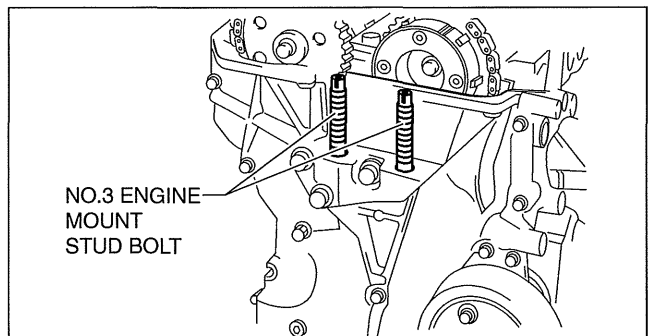
- Retighten the No.3 engine mount stud bolts when the No.3 engine mount nuts are loosened.

1. Tighten the No.3 engine mount stud bolts.

Tightening torque

7—13 N·m {72—132 kgf·cm, 62—115 in·lbf}

2. Temporarily tighten the No.3 engine mount installation bolts and nuts.

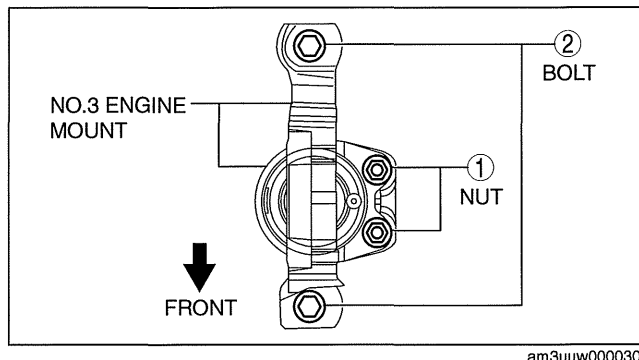


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MECHANICAL [L3 WITH TC]

3. Tighten the No.3 engine mount installation bolts and nuts in the order as shown in the figure.

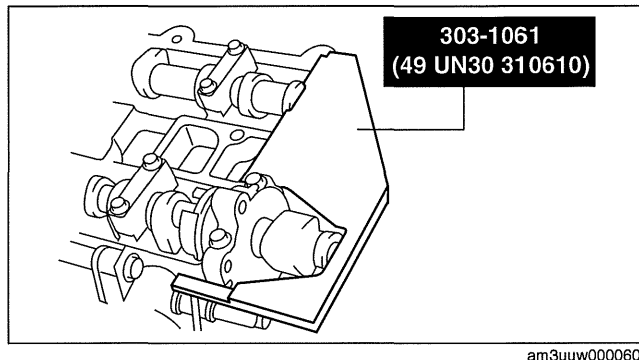
No.	Tightening torque
1	75—104 N·m {7.7—10 kgf·m, 56—76 ft·lbf}
2	71—93 N·m {7.3—9.4 kgf·m, 53—68 ft·lbf}



01-10B

Crankshaft Pulley Lock Bolt Installation Note

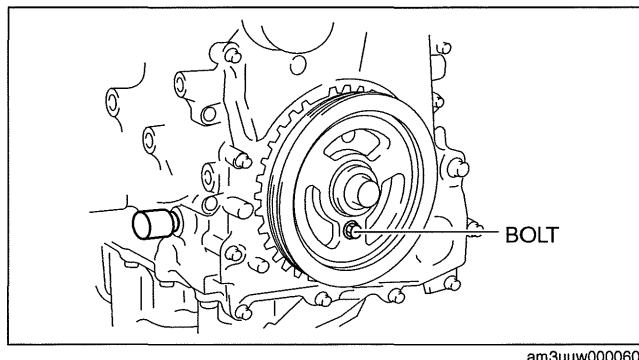
1. Install the **SST** to the camshaft as shown in the figure.
2. Verify that the No.1 piston is at TDC of the compression stroke. (The position counterweight contacts the **SST**.)



3. To position the crankshaft pulley, temporarily tighten it and, using a suitable bolt (**M6 X 1.0**), fix the crankshaft pulley to the engine front cover.

Note

- Do not tighten the crankshaft pulley lock bolt during this step.



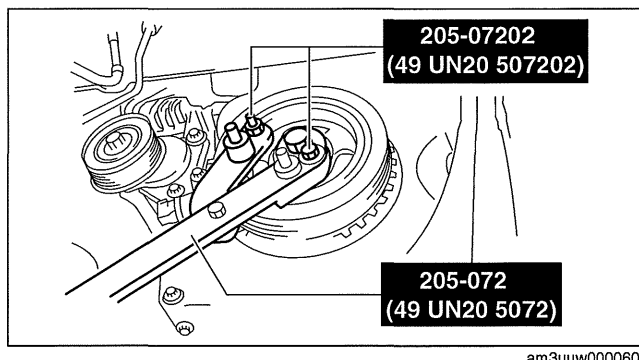
4. Hold the crankshaft pulley using the **SSTs**.
5. Tighten the crankshaft pulley lock bolt in the following two steps using the **SST (49 D032 316)**.

Tightening torque

Step 1: 96—104 N·m {9.8—10 kgf·m, 71—76 ft·lbf}

Step 2: 87—93°

6. Remove the bolt (**M6 X 1.0**) installed to the crankshaft pulley.
7. Remove the **SST** from the camshaft.
8. Remove the **SST** installed to the cylinder block lower blind plug hole.
9. Rotate the crankshaft clockwise two turns and inspect the valve timing.
 - If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 1.

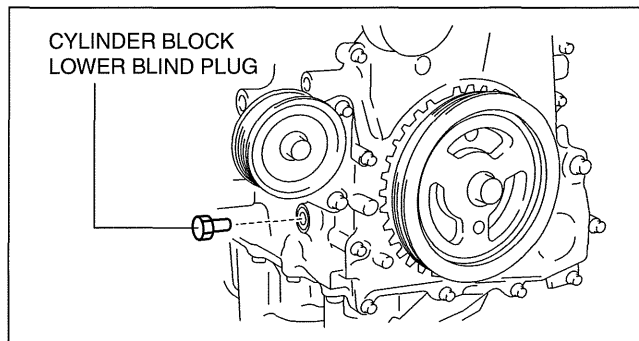


MECHANICAL [L3 WITH TC]

10. Install the cylinder block lower blind plug.

Tightening torque

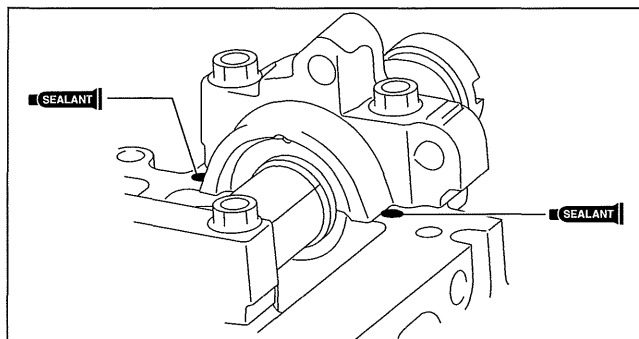
18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}



am3uuw0000602

Cylinder Head Cover Installation Note

1. Apply silicone sealant to the mating faces as shown in the figure.



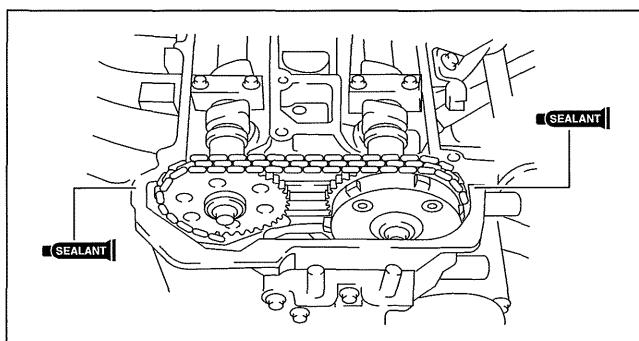
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Caution

- Install the cylinder head cover before the applied silicone sealant starts to harden.

Thickness

5.0 mm {0.20 in}

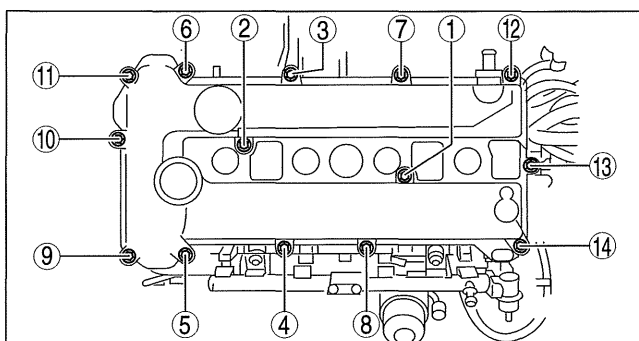


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2. Tighten the cylinder head cover bolts in the order shown in the figure.

Tightening torque

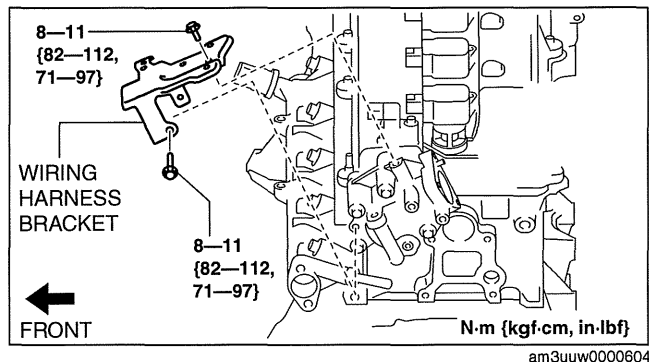
8.0—9.5 N·m {82—96 kgf·cm, 71—84 in·lbf}



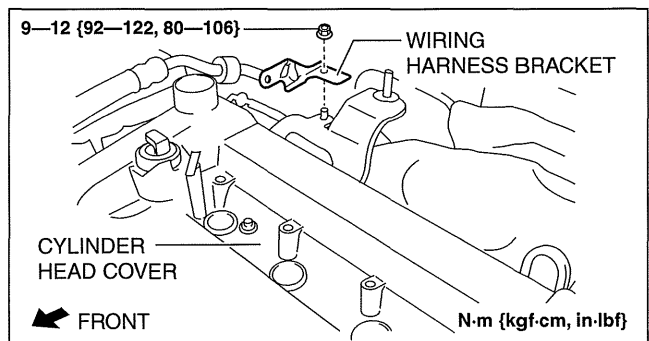
am3uuw0000604

MECHANICAL [L3 WITH TC]

3. Install the wiring harness bracket.



01-10B



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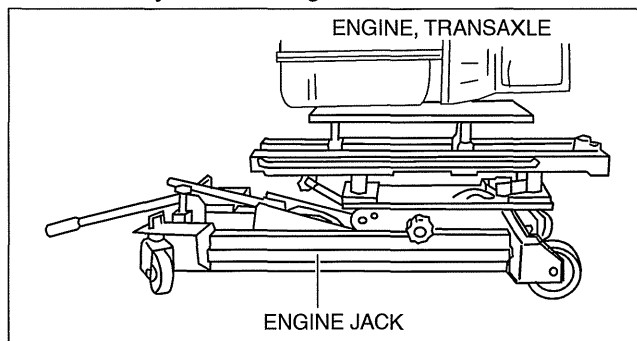
CYLINDER HEAD GASKET REPLACEMENT [L3 WITH TC]

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Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

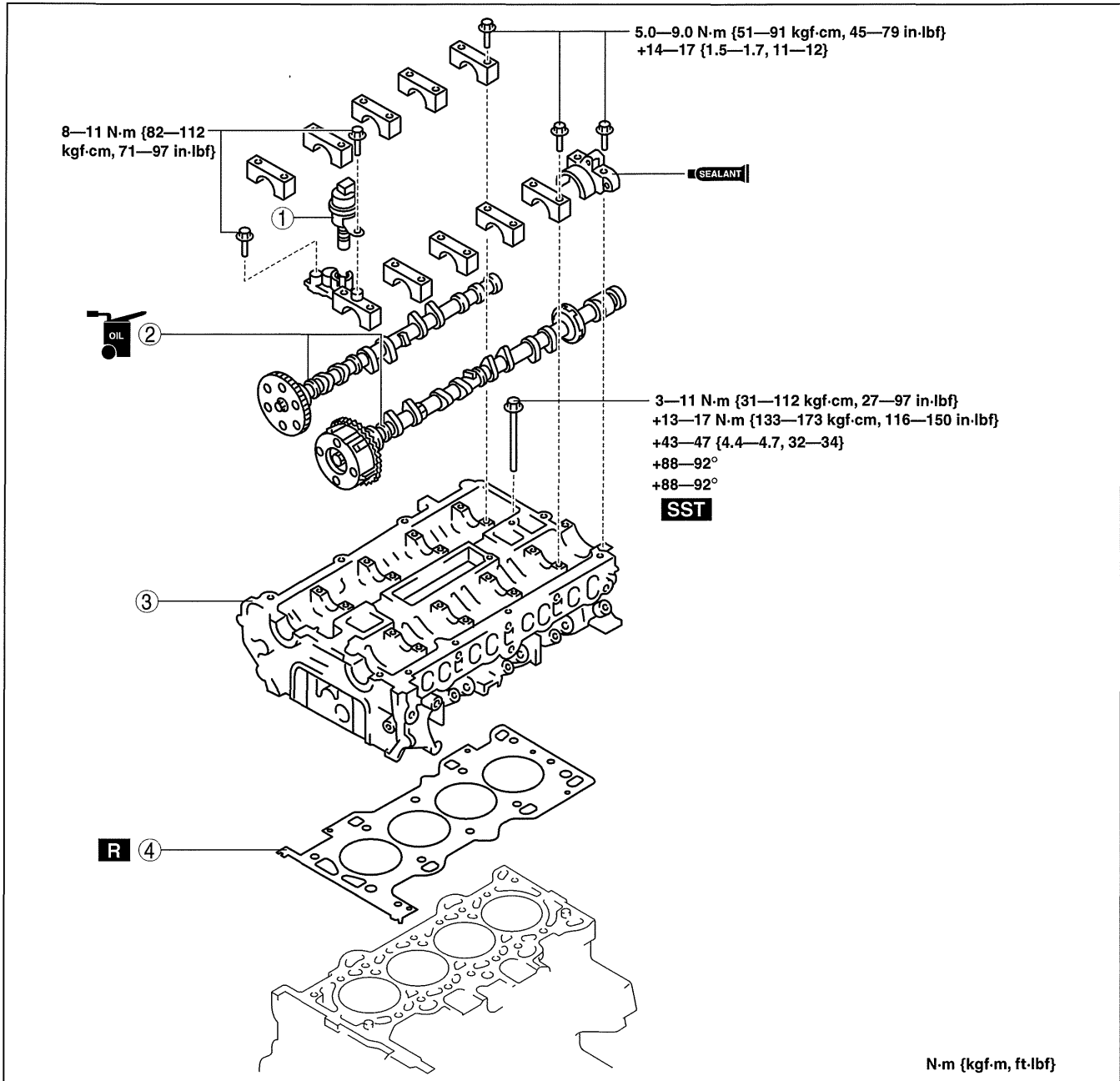
1. Remove the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the exhaust manifold. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the generator. (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the heater hose. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
5. Disconnect the upper radiator hose. (See 01-12B-8 RADIATOR REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the timing chain. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
7. Disconnect the connectors and the wiring harnesses related to the cylinder head gasket removal/installation.
8. To firmly support the engine, first set the engine jack to the oil pan.
9. Remove in the order indicated in the table.
10. Install in the reverse order of removal.
11. Bleed the air from the cooling system. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)



am3uuw0000600

MECHANICAL [L3 WITH TC]

12. Inspect the compression. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].)



am3uuw0000600

1	OCV
2	Camshaft (See 01-10B-35 Camshaft Removal Note.) (See 01-10B-36 Camshaft Installation Note.)

3	Cylinder head (See 01-10B-35 Cylinder Head Removal Note.) (See 01-10B-35 Cylinder Head Installation Note.)
4	Cylinder head gasket

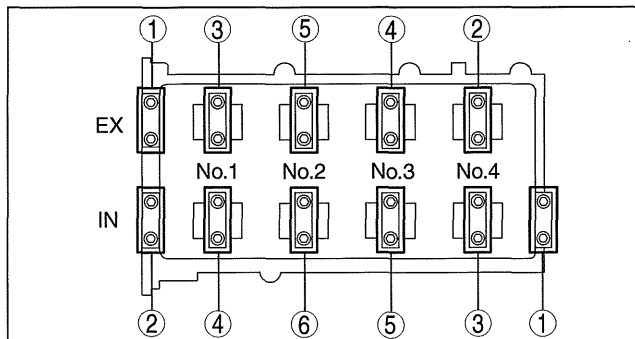
MECHANICAL [L3 WITH TC]

Camshaft Removal Note

1. Loosen the camshaft cap bolts in 2—3 steps in the order shown in the figure.

Note

- The camshaft caps are to be kept ordered for correct reassembly in their original positions. Do not mix the caps.

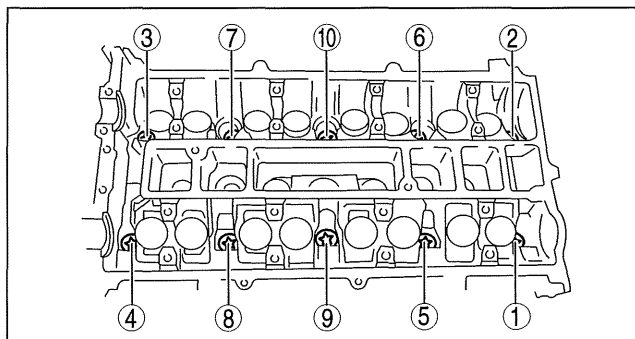


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01-10B

Cylinder Head Removal Note

1. Loosen the cylinder head bolts in 2—3 steps in the order shown in the figure.



am3uuw0000600

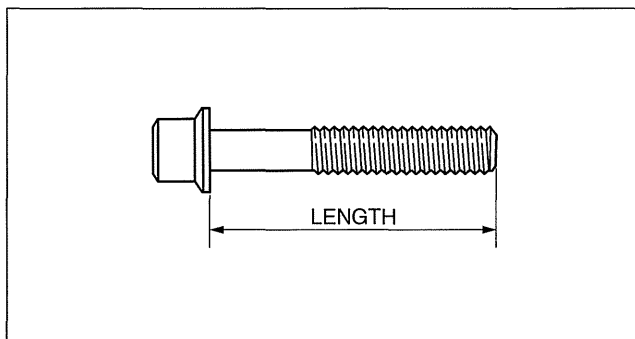
Cylinder Head Installation Note

1. Measure the length of each cylinder head bolt.
 - Replace any cylinder head bolts that exceed the maximum length.

Cylinder head bolt stem length

Standard: 144.7—145.3 mm {5.697—5.720 in}

Maximum: 146 mm {5.74 in}



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2. Tighten the cylinder head bolts in 5 steps in the order shown in the figure using the **SST (49 D032 316)**.

Tightening torque

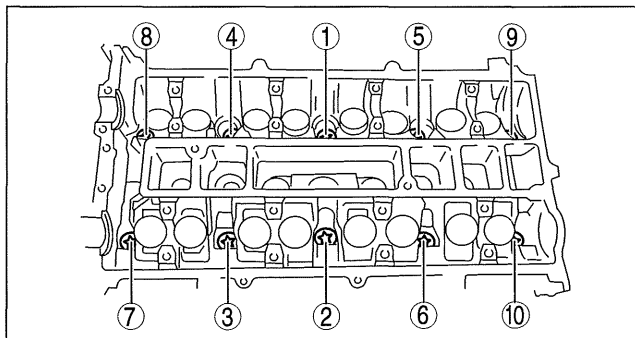
Step 1: 3—11 N·m {31—112 kgf·cm, 27—97 in·lbf}

Step 2: 13—17 N·m {133—173 kgf·cm, 116—150 in·lbf}

Step 3: 43—47 N·m {4.4—4.7 kgf·m, 32—34 ft·lbf}

Step 4: 88—92°

Step 5: 88—92°

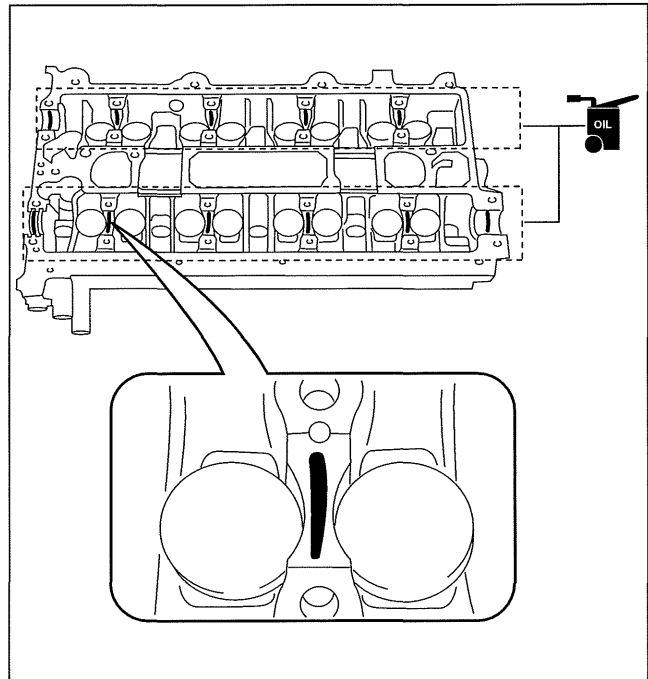


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MECHANICAL [L3 WITH TC]

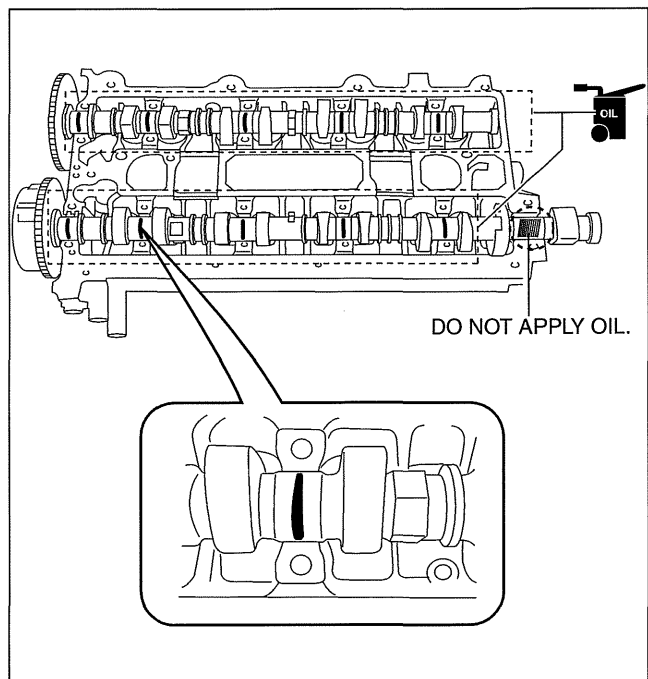
Camshaft Installation Note

1. Apply the gear oil (SAE No. 90 or equivalent) to each journal of the cylinder head as shown in the figure.
2. With No.1 cylinder cam aligned at TDC of the compression stroke, install the camshafts.



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3. Apply the gear oil (SAE No. 90 or equivalent) to each journal of the camshaft as shown in the figure. However, do not apply it to the end journal of the intake camshaft.



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4. Carefully apply adhesive agent (Loctite 518 or 962T) to the area indicated in the figure so that it does not leak into the sliding part, then apply the gear oil (SAE No. 90 or equivalent) to the journal.

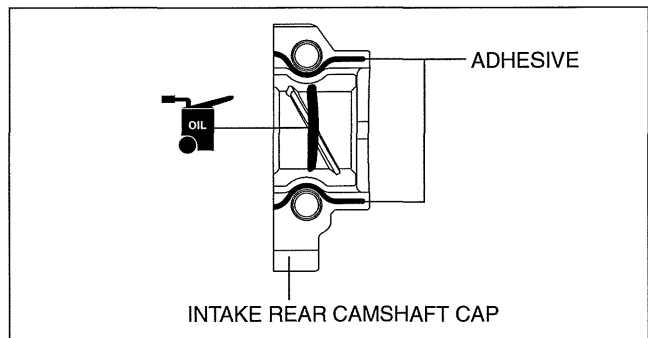
Adhesive agent thickness

0.5—1.5 mm {0.02—0.05 in}

5. Temporarily tighten the camshaft cap bolts evenly in 2—3 steps.

Note

- Do not tighten the bolts during this step.



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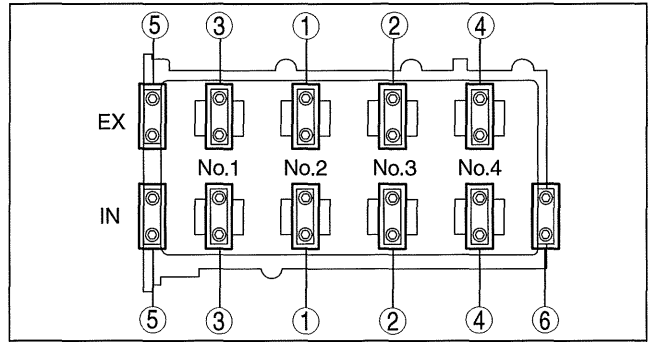
MECHANICAL [L3 WITH TC]

6. Tighten the camshaft cap bolts in two steps in the order shown in the figure.

Tightening torque

Step 1: 5.0—9.0 N·m {51—91 kgf·cm, 45—79 in·lbf}

Step 2: 14—17 N·m {1.5—1.7 kgf·m, 11—12 ft·lbf}



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01-10B

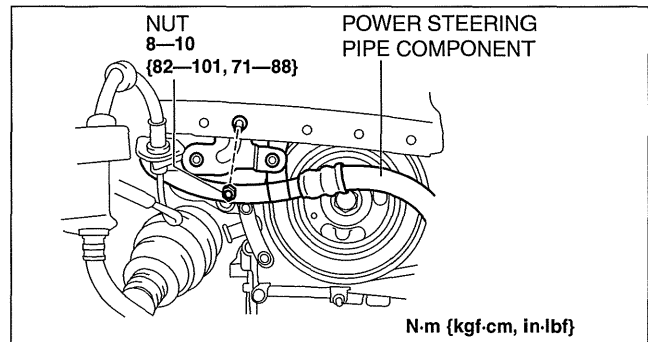
FRONT OIL SEAL REPLACEMENT [L3 WITH TC]

id011039800800

Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

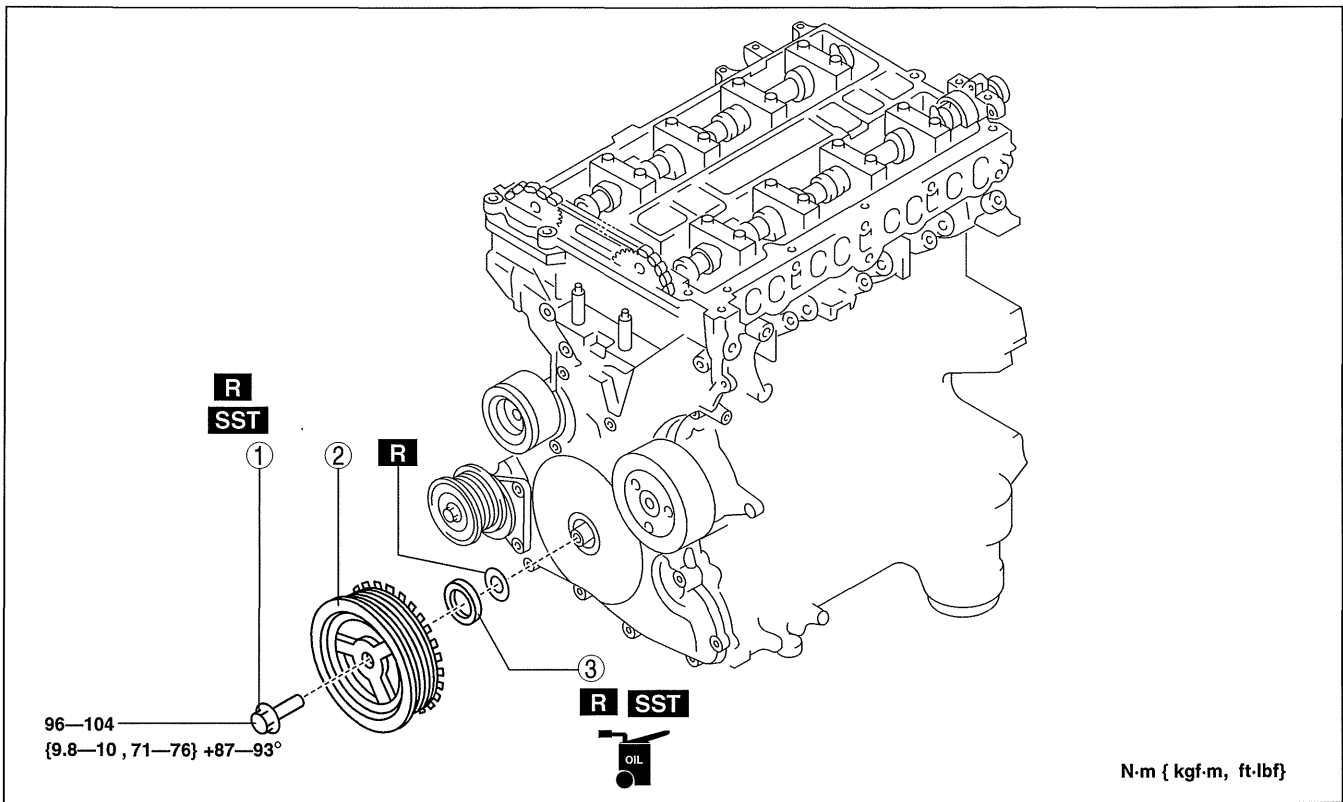
1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
6. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove cylinder head cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
9. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
10. Remove the nut shown in the figure and set the power steering pipe component out of the way.
11. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
12. Remove in the order indicated in the table.
13. Install in the reverse order of removal.



N·m {kgf·cm, in·lbf}

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MECHANICAL [L3 WITH TC]



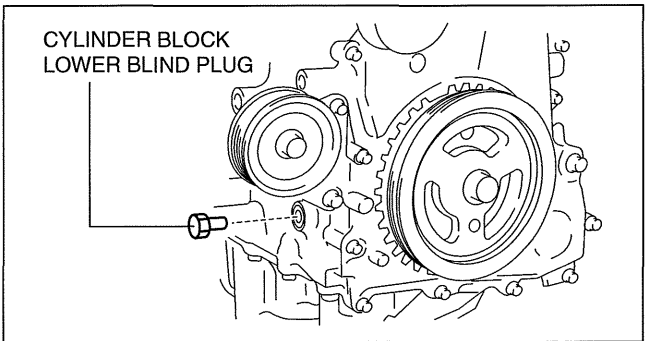
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1	<p>Crankshaft pulley lock bolt (See01-10B-38 Crankshaft Pulley Lock Bolt Removal Note.) (See01-10B-40 Crankshaft Pulley Lock Bolt Installation Note.)</p>
---	---

2	<p>Crankshaft pulley (See01-10B-39 Front Oil Seal Removal Note.) (See01-10B-39 Front Oil Seal Installation Note.)</p>
3	<p>Front oil seal (See01-10B-39 Front Oil Seal Removal Note.) (See01-10B-39 Front Oil Seal Installation Note.)</p>

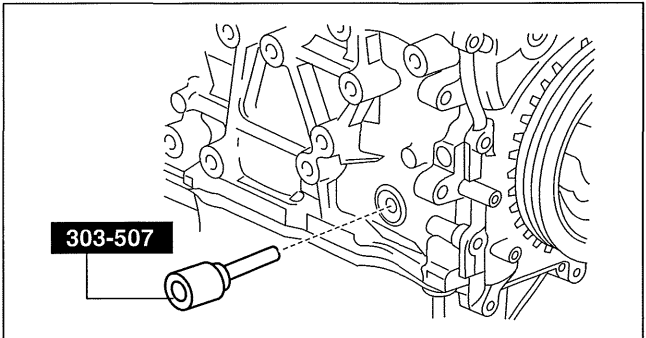
Crankshaft Pulley Lock Bolt Removal Note

1. Remove the cylinder block lower blind plug.
2. Rotate the crankshaft in the direction of the engine rotation until the No. 1 piston is at the point prior to top dead center (TDC) of the compression stroke.



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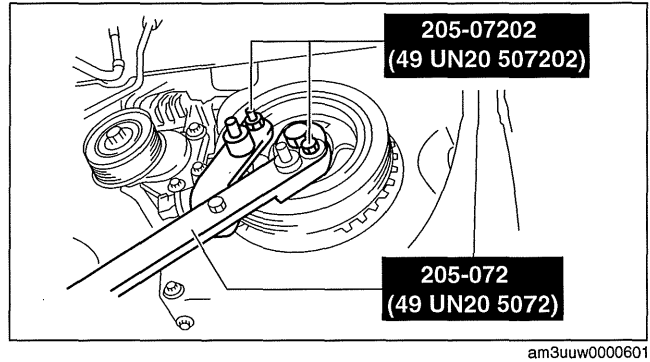
3. Install the **SST**.
4. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the counterweight contacts **SST** and stops.)



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MECHANICAL [L3 WITH TC]

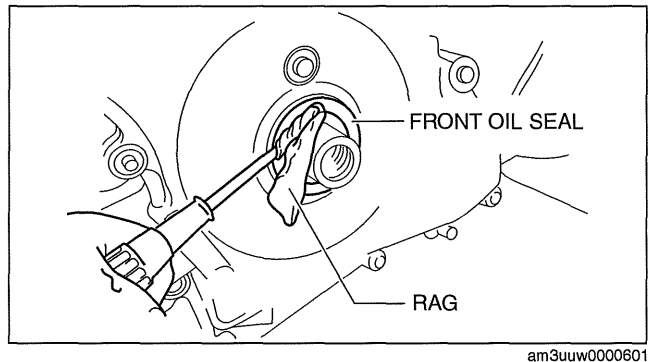
5. Hold the crankshaft pulley using the **SSTs**.



01-10B

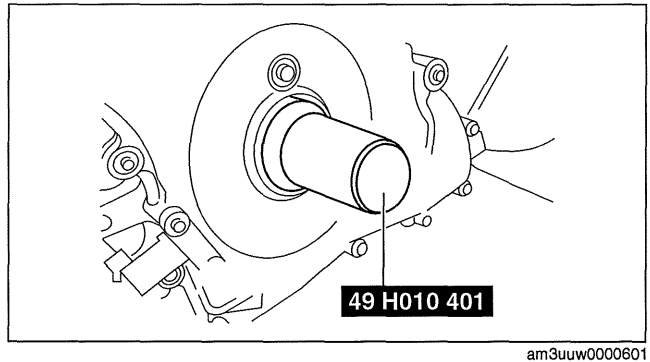
Front Oil Seal Removal Note

1. Cut the oil seal lip using a utility knife.
2. Remove the oil seal using a screwdriver wrapped with a rag.

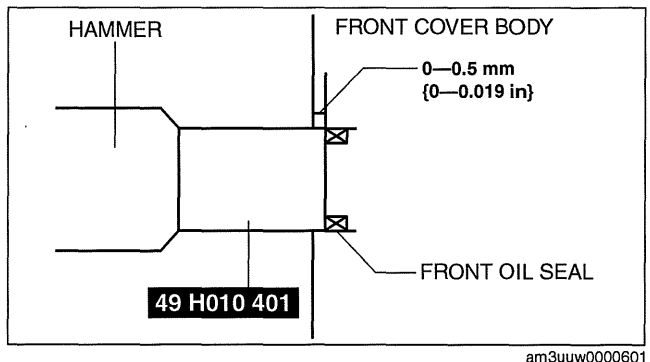


Front Oil Seal Installation Note

1. Apply clean engine oil to the oil seal lip.
2. Push the oil seal slightly in by hand.
3. Tap the oil seal in evenly using the **SST** and a hammer.



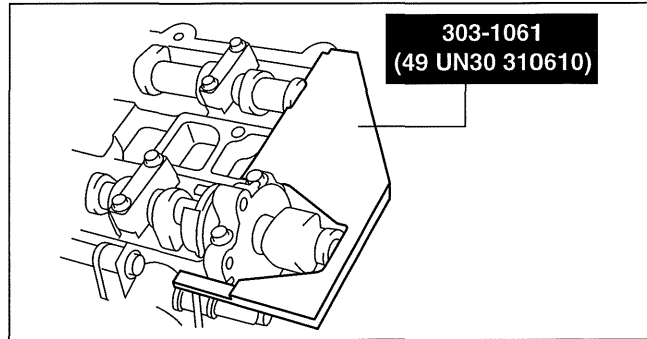
Front oil seal press-in amount
0—0.5 mm {0—0.019 in}



MECHANICAL [L3 WITH TC]

Crankshaft Pulley Lock Bolt Installation Note

1. Install the **SST** to the camshaft as shown in the figure.
2. Verify that the No.1 piston is at TDC of the compression stroke. (The position counterweight contacts the **SST**.)

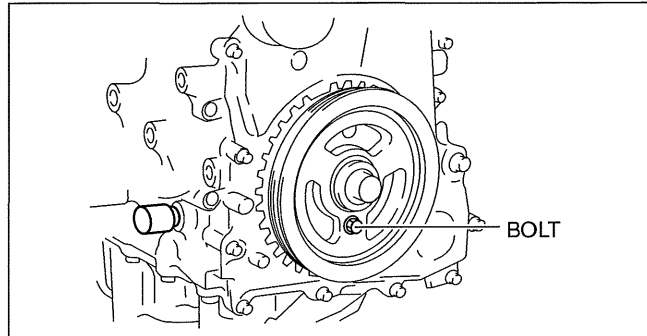


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3. To position the crankshaft pulley, temporarily tighten it and, using a suitable bolt (**M6 X 1.0**), fix the crankshaft pulley to the engine front cover.

Note

- Do not tighten the crankshaft pulley lock bolt during this step.



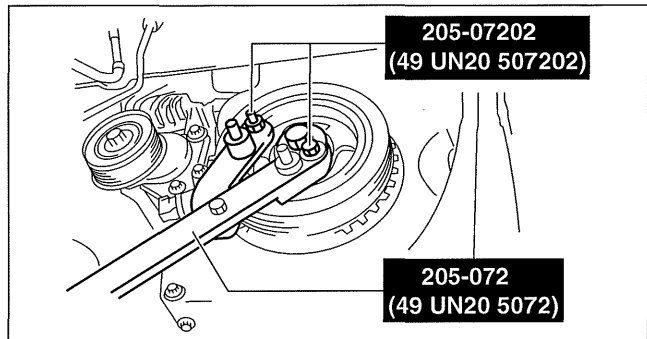
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4. Hold the crankshaft pulley using the **SSTs**.
5. Tighten the crankshaft pulley lock bolt in the following two steps using the **SST (49 D032 316)**.

Tightening torque

Step 1: 96—104 N·m {9.8—10 kgf·m, 71—76 ft·lbf}

Step 2: 87—93°

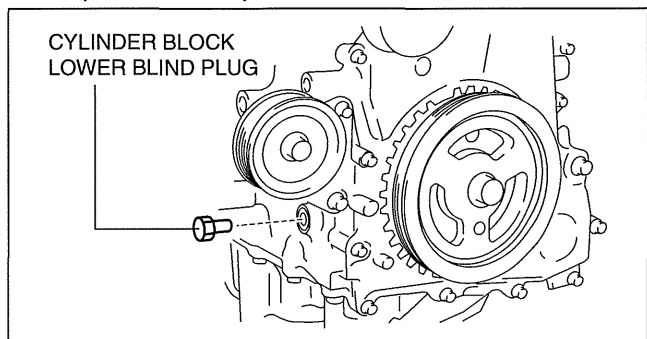


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6. Remove the bolt (**M6 X 1.0**) installed to the crankshaft pulley.
7. Remove the **SST** from the camshaft.
8. Remove the **SST** installed to the cylinder block lower blind plug hole.
9. Verify that the teeth of the crankshaft pulley pulse wheel and the detection area of the crankshaft position sensor are installed to the correct positions. (See 01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].)
10. Rotate the crankshaft clockwise two turns and inspect the valve timing.
 - If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 1.
11. Install the cylinder block lower blind plug.

Tightening torque

18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}



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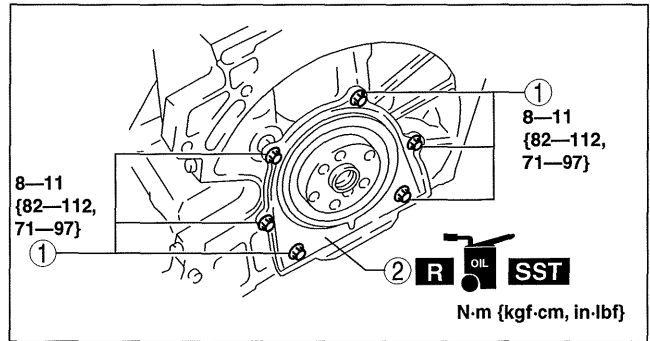
MECHANICAL [L3 WITH TC]

REAR OIL SEAL REPLACEMENT [L3 WITH TC]

id011039800900

1. Remove the transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
2. Remove the flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.

1	Bolt
2	Rear oil seal (See 01-10B-41 Rear Oil Seal Installation Note.)



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01-10B

Rear Oil Seal Installation Note

1. Apply silicone sealant to the mating faces as shown in the figure.

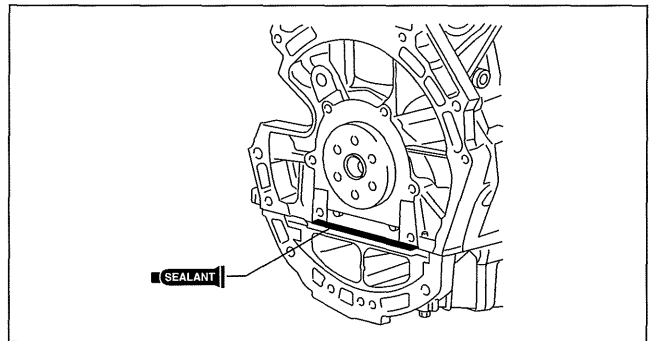
Caution

- Install the rear oil seal before the applied silicone sealant starts to harden.

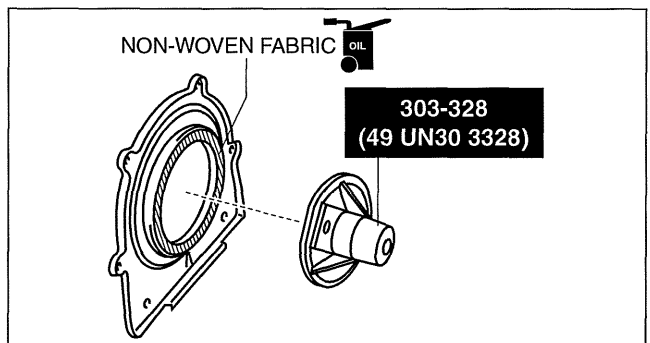
Thickness

2.2—3.2 mm {0.09—0.12 in}

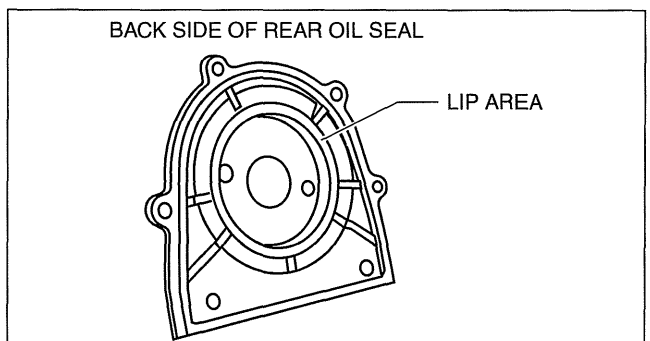
2. Apply clean engine oil to the new oil seal lip.
3. Install the **SST** to the non-woven fabric side of the rear oil seal.
4. From the back side of the rear oil seal, verify that there is no damage or separation in the lip area of the rear oil seal.



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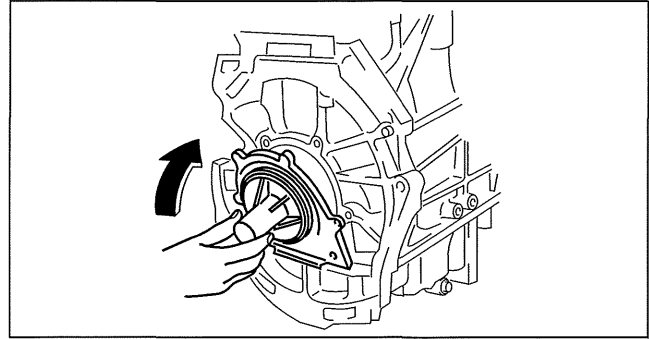
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MECHANICAL [L3 WITH TC]

5. Install the rear oil seal to the engine as shown in the figure.

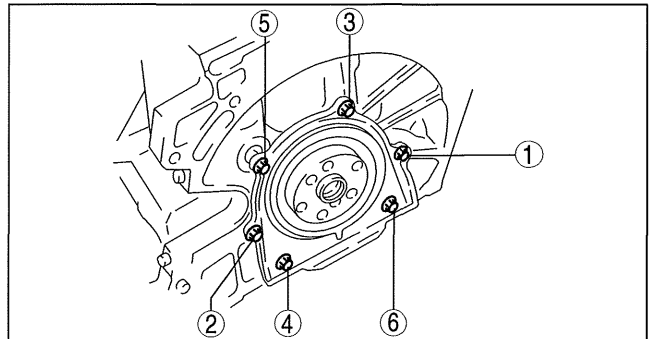


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6. Tighten the rear oil seal bolts in the order as shown in the figure.

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



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ENGINE REMOVAL/INSTALLATION [L3 WITH TC]

id011039800400

Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

Caution

- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

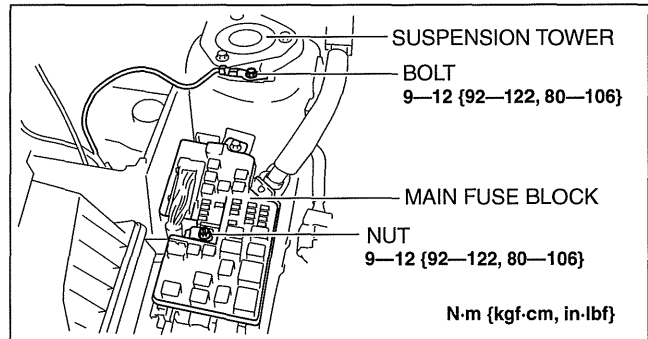
Note

- Perform the engine and transaxle component removal/installation from below the vehicle.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler cover. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the PCM cover No.1. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
5. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the battery tray and PCM component. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the air cleaner component. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the front wheels and tires. (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
9. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
10. Drain the transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
11. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
12. Remove the coolant reserve tank. (See 01-12B-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [L3 WITH TC].)
13. Disconnect the upper radiator hose. (See 01-12B-8 RADIATOR REMOVAL/INSTALLATION [L3 WITH TC].)
14. Remove the lower radiator hose and pipe component. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-12B-8 RADIATOR REMOVAL/INSTALLATION [L3 WITH TC].)
15. Disconnect the heater hose. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)

MECHANICAL [L3 WITH TC]

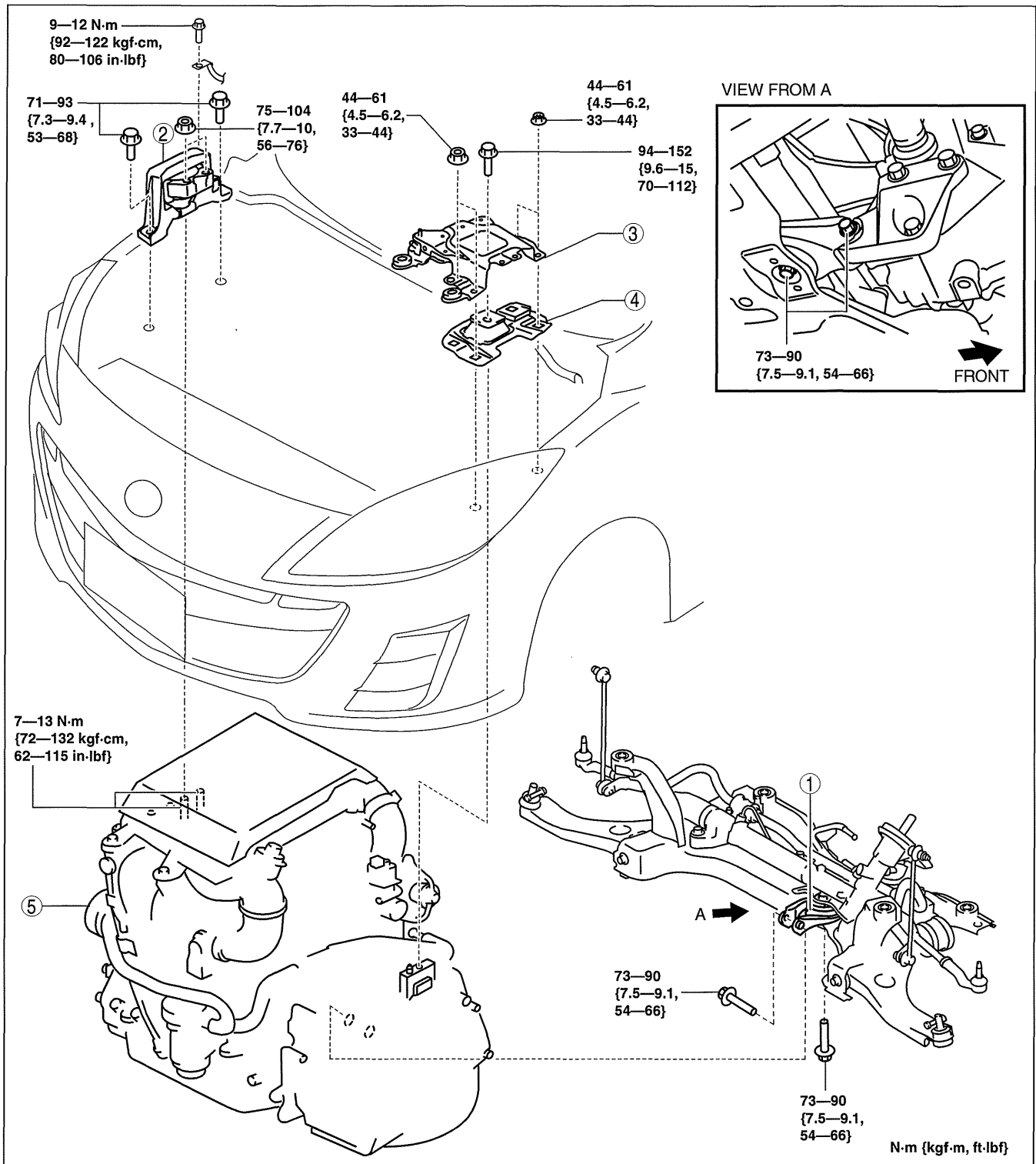
16. Disconnect the fuel hose. (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
17. Disconnect the evaporative hose. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
18. Disconnect the brake vacuum hose. (See 04-11-6 VACUUM HOSE REMOVAL/INSTALLATION [L3 WITH TC].)
19. Disconnect the power steering pipe component and then drain the power steering fluid. (See 06-10-1 GENERAL PROCEDURES (STEERING).)
20. Disconnect the shift cable. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
21. Remove the clutch release cylinder with the pipe still connected. (See 05-10-14 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [A26M-R].)
22. Remove the TWC. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
23. Disconnect the front drive shafts from the engine side, set the drive shafts out of the way. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
24. Remove the A/C compressor with the cooler hose still connected and secure it using wire or rope so that it is out of the way. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
25. Remove the wiring harness installation bolt and nut shown in the figure.
26. Disconnect the connectors and the wiring harnesses related to the engine removal/installation.
27. Remove in the order indicated in the table.
28. Install in the reverse order of removal.
29. Start the engine, and inspect and adjust the following:
 - Front wheel alignment (See 02-11-1 FRONT WHEEL ALIGNMENT.)
 - Power steering fluid air bleeding (See 06-14-3 AIR BLEEDING.)
 - Cooling system air bleeding (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
 - Leakage of engine oil, engine coolant, transaxle oil, and fuel.
 - Runout and contact of pulley and belt.
 - Verify the ignition timing, idle speed and idle mixture. (See 01-10B-3 ENGINE TUNE-UP [L3 WITH TC].)
 - Engine-driven accessories operation.



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01-10B

MECHANICAL [L3 WITH TC]



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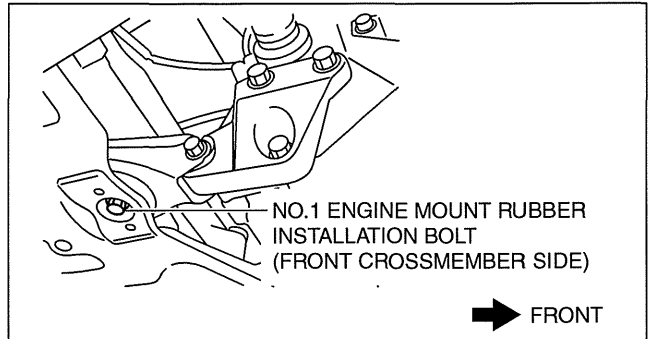
1	No.1 engine mount rubber, front crossmember component (See 01-10B-45 No.1 Engine Mount Rubber, Front Crossmember Component Removal Note.) (See 01-10B-45 Engine Mount Installation Note.)
2	No.3 engine mount (See 01-10B-45 No.3 Engine Mount, No.4 Engine Mount Rubber Removal Note.) (See 01-10B-45 Engine Mount Installation Note.)

3	Battery tray bracket (See 01-10B-45 Engine Mount Installation Note.)
4	No.4 engine mount rubber (See 01-10B-45 No.3 Engine Mount, No.4 Engine Mount Rubber Removal Note.) (See 01-10B-45 Engine Mount Installation Note.)
5	Engine, transaxle

MECHANICAL [L3 WITH TC]

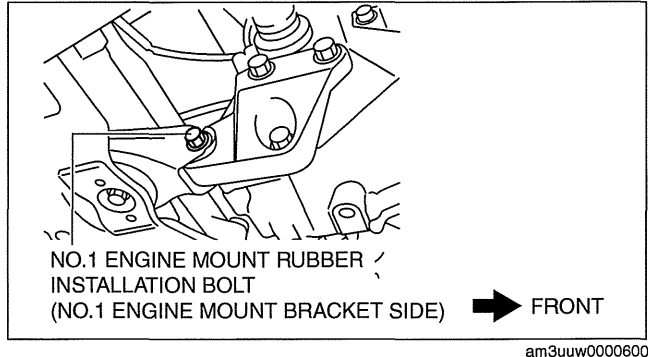
No.1 Engine Mount Rubber, Front Crossmember Component Removal Note

1. Loosen the No.1 engine mount rubber installation bolt (front crossmember side) shown in the figure.



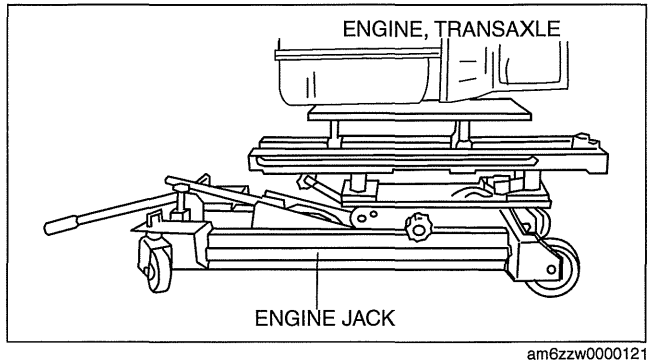
01-10B

2. Remove the No.1 engine mount rubber installation bolt (No.1 engine mount bracket side) shown in the figure.
3. Remove the No.1 engine mount rubber and the front crossmember component as a single unit. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)



No.3 Engine Mount, No.4 Engine Mount Rubber Removal Note

1. Secure the engine and the transaxle using an engine jack.



Engine Mount Installation Note

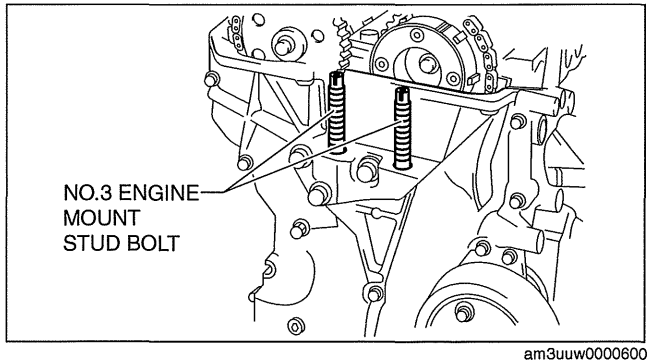
Note

- Retighten the No.3 engine mount stud bolts when the No.3 engine mount nuts are loosened.

1. Tighten the No. 3 engine mount stud bolts.

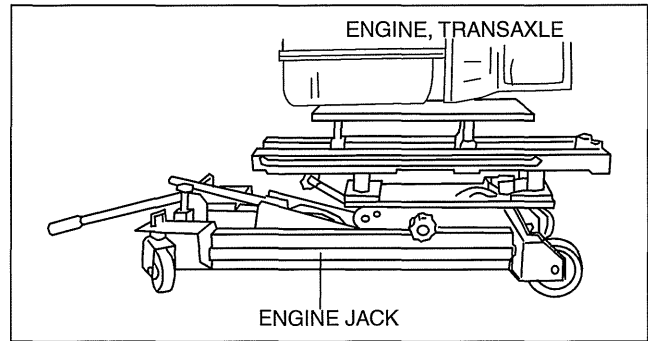
Tightening torque

7—13 N·m {72—132 kgf·cm, 62—115 in·lbf}



MECHANICAL [L3 WITH TC]

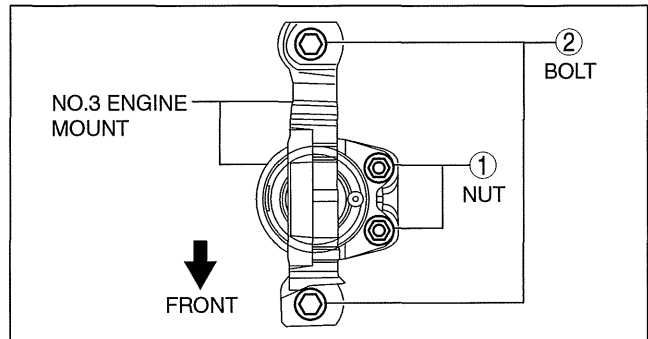
- Secure the engine and transaxle using an engine jack.
- Temporarily tighten the No.3 engine mount installation bolts and nuts.



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- Tighten the No.3 engine mount installation bolts and nuts in the order shown in the figure.

No.	Tightening torque
1	75—104 N·m {7.7—10 kgf·m, 56—76 ft·lbf}
2	71—93 N·m {7.3—9.4 kgf·m, 53—68 ft·lbf}

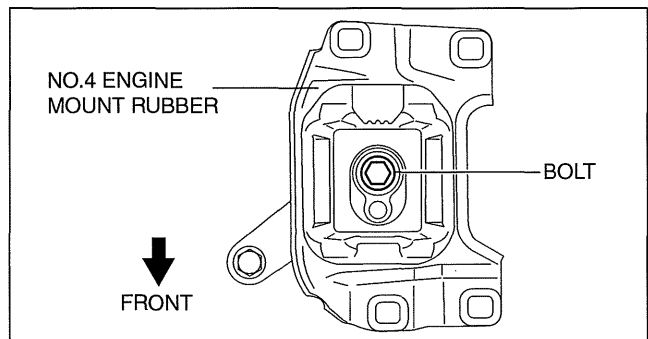


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- Tighten the No.4 engine mount rubber installation bolt.

Tightening torque

94—152 N·m {9.6—15 kgf·m, 70—112 ft·lbf}



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- Temporarily tighten the No.4 engine mount rubber and battery tray bracket installation nuts as shown in the figure.
- Install the No.1 engine mount rubber and the front crossmember component as a single unit. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
- Temporarily tighten the No.1 engine mount rubber installation bolts.

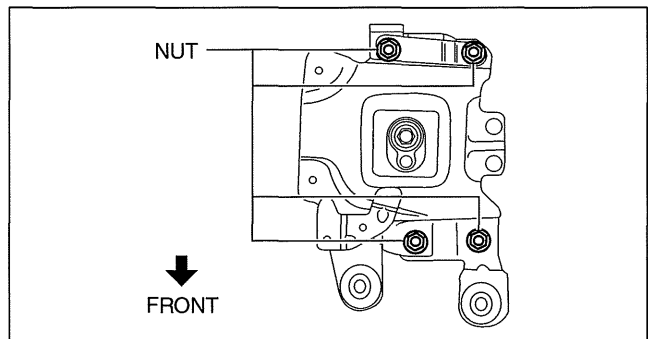
Caution

- Install the bolts while being careful of their length to prevent interference between the steering gear housing and bolt.

Bolt stem length

Front crossmember side: 62mm {2.4 in}

No.1 engine mount bracket side: 65mm {2.6 in}



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MECHANICAL [L3 WITH TC]

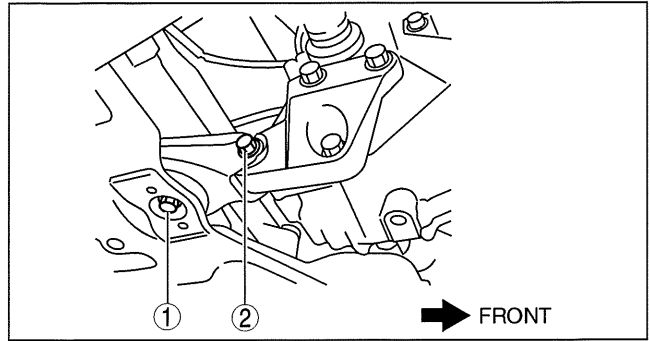
9. Tighten the No.1 engine mount rubber installation bolts in the order shown in the figure.

Caution

- Tighten the bolts in the order shown in the figure to prevent abnormal noise and vibration after assembly.

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}

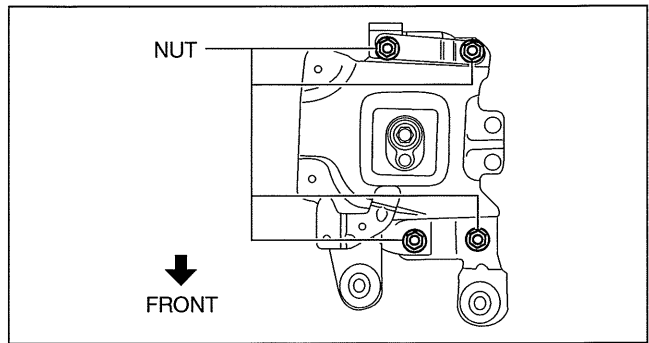


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10. Tighten the No.4 engine mount rubber and battery tray bracket installation nuts to the specified tightening torque.

Tightening torque

44—61 N·m {4.5—6.2 kgf·m, 33—44 ft·lbf}



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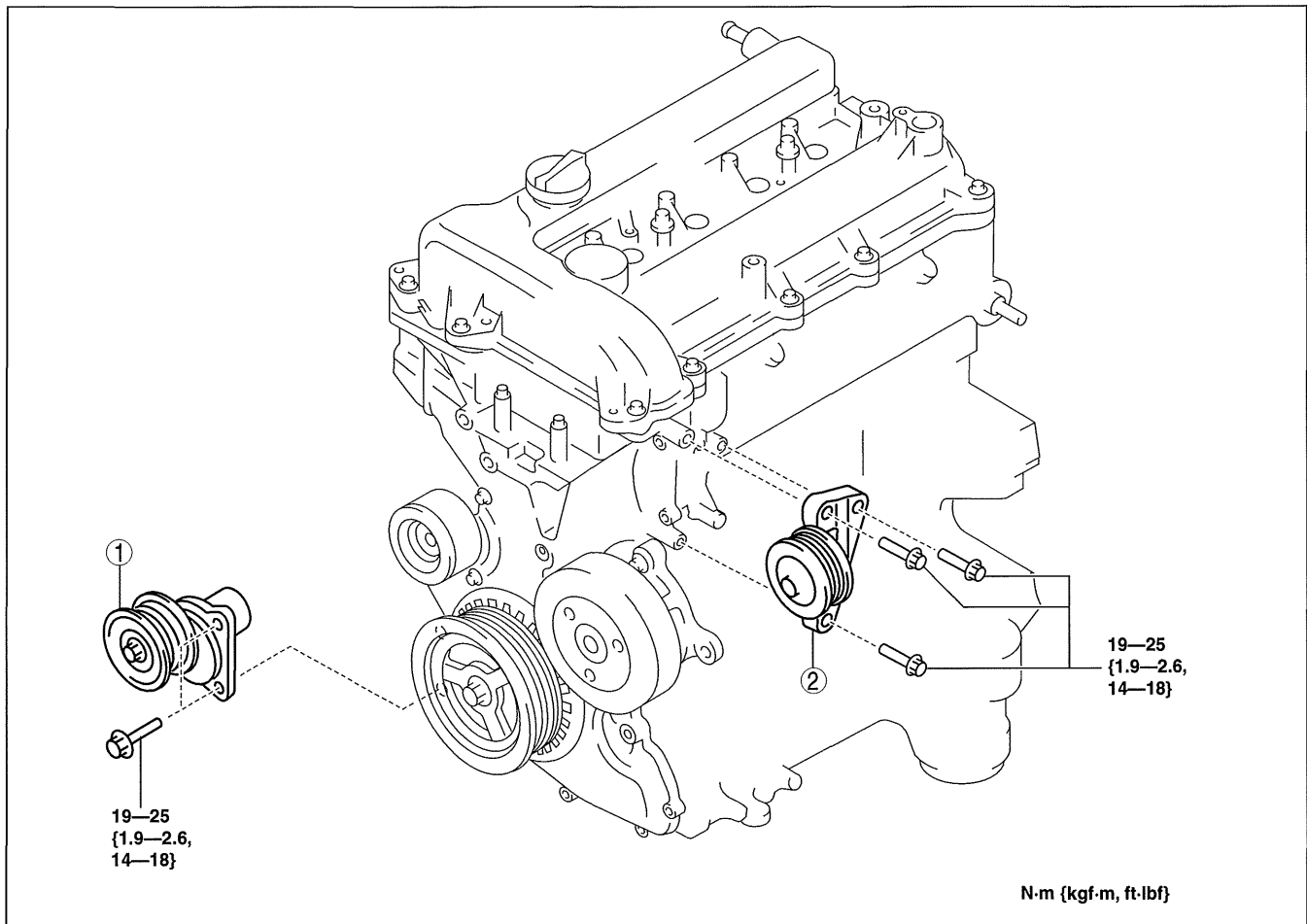
01-10B

MECHANICAL [L3 WITH TC]

ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC]

id011039800500

1. Remove the engine from the transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
2. Remove the intake-air system. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the exhaust system. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the generator. (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the fuel injectors. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
9. Remove the crankshaft position (CKP) sensor. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
10. Disassemble in the order indicated in the table.
11. Assemble in the reverse order of disassembly.



1	Drive belt auto tensioner
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2	Drive belt idler pulley
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01-11A LUBRICATION [LF, L5]

LUBRICATION SYSTEM

LOCATION INDEX [LF, L5]	01-11A-2
ENGINE OIL LEVEL INSPECTION [LF, L5]	01-11A-3
ENGINE OIL REPLACEMENT [LF, L5]	01-11A-3
OIL FILTER REPLACEMENT [LF, L5]	01-11A-4
OIL PRESSURE INSPECTION [LF, L5]	01-11A-5

OIL COOLER

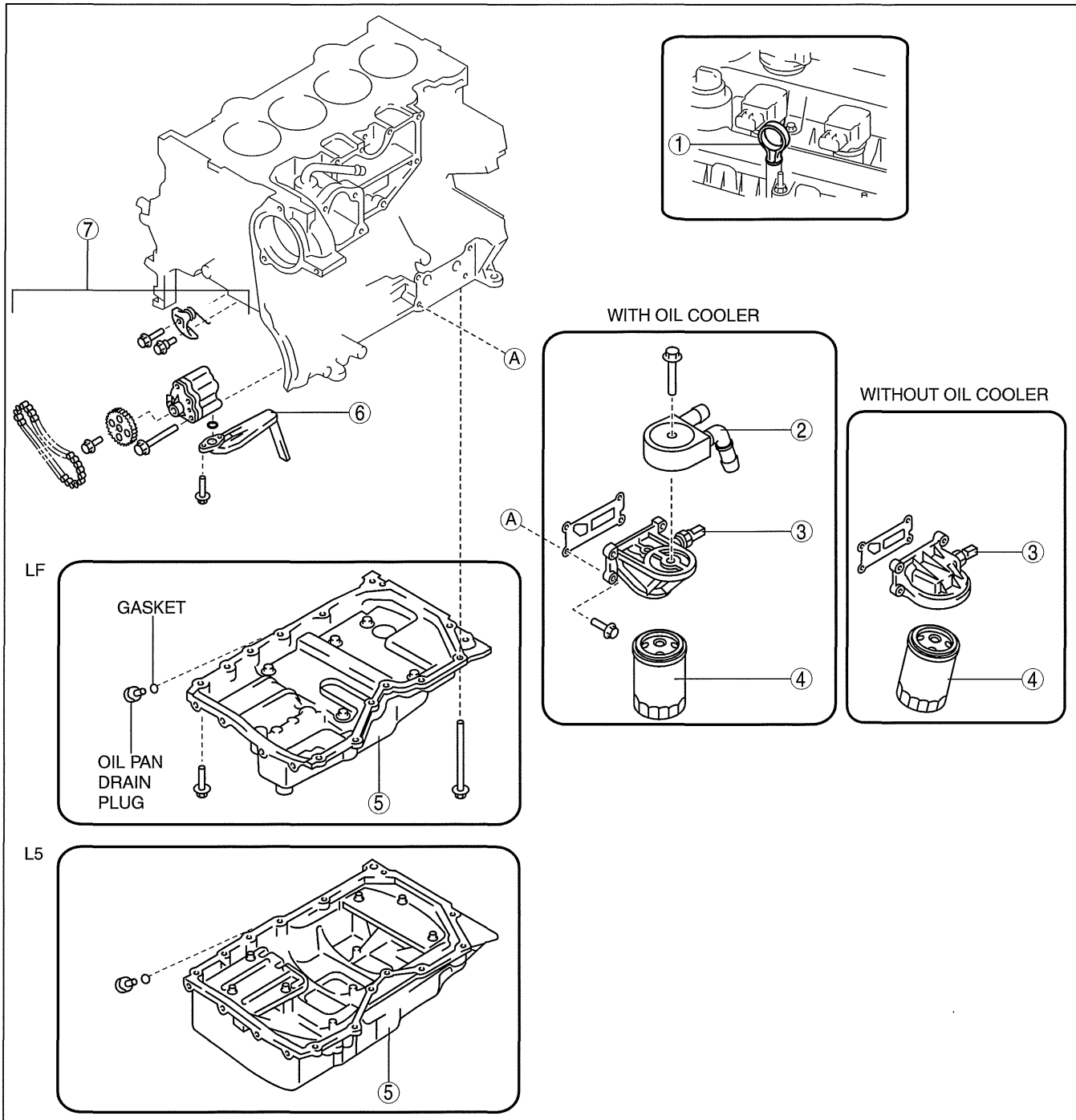
REMOVAL/INSTALLATION [LF, L5]	01-11A-7
OIL PAN REMOVAL/INSTALLATION [LF, L5]	01-11A-7
Oil Pan Removal Note	01-11A-10
Oil Pan Installation Note	01-11A-10
OIL PUMP REMOVAL/INSTALLATION [LF, L5]	01-11A-11
Oil Pump Sprocket Removal/Installation Note	01-11A-13
Oil Pump Installation Note	01-11A-13

01-11A

LUBRICATION [LF, L5]

LUBRICATION SYSTEM LOCATION INDEX [LF, L5]

id0111c4800100



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1	Dipstick (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].) (See 01-11A-3 ENGINE OIL REPLACEMENT [LF, L5].)
2	Oil cooler (See 01-11A-7 OIL COOLER REMOVAL/INSTALLATION [LF, L5].)
3	Oil pressure switch (See 01-11A-5 OIL PRESSURE INSPECTION [LF, L5].)

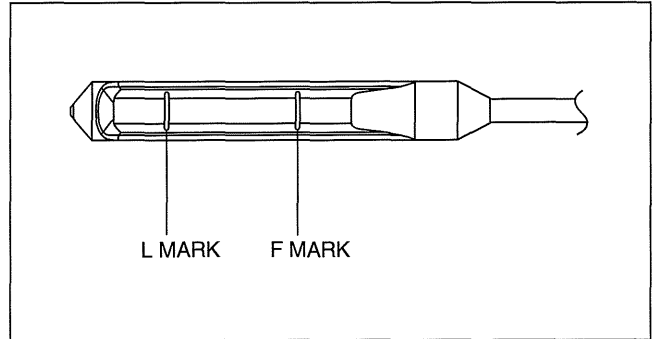
4	Oil filter (See 01-11A-4 OIL FILTER REPLACEMENT [LF, L5].)
5	Oil pan (See 01-11A-7 OIL PAN REMOVAL/INSTALLATION [LF, L5].)
6	Oil strainer (See 01-11A-11 OIL PUMP REMOVAL/INSTALLATION [LF, L5].)
7	Oil pump component (See 01-11A-11 OIL PUMP REMOVAL/INSTALLATION [LF, L5].)

LUBRICATION [LF, L5]

ENGINE OIL LEVEL INSPECTION [LF, L5]

id0111c4800500

1. Position the vehicle on level ground.
2. Warm up the engine.
3. Stop the engine and allow **at least 5 min** before continuing.
4. Remove the dipstick, wipe it cleanly, and reinstall it fully.
5. Remove the dipstick and verify that the oil level is between the F and L marks on the dipstick.
 - If the oil level is below the L mark, add engine oil.



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01-11A

ENGINE OIL REPLACEMENT [LF, L5]

id0111c4800400

Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

Caution

- If engine oil is spilled on the exhaust system, wipe it off completely. If you fail to wipe the spilled engine oil, it will produce fumes because of the heat.

1. Position the vehicle on level ground.
2. Remove the oil filler cap.
3. Remove the oil pan drain plug.
4. Drain the engine oil into a container.
5. Install the oil pan drain plug with a new gasket.

Oil pan drain plug tightening torque

30—41 N·m {3.1—4.1 kgf·m, 23—30 ft·lbf}



Note

- The amount of residual oil in the engine can vary according to factors such as the replacement method and oil temperature. Verify the oil level after engine oil replacement.

LUBRICATION [LF, L5]

6. Refill with the following type and amount of the engine oil.

Engine oil specification

Item	U.S.A. and CANADA	Except U.S.A. and CANADA
Engine oil grade	 (ILSAC)	 API SM or ILSAC
Engine oil viscosity	5W-20	5W-20 (If SAE 5W-20 engine oil is not available in your market, use SAE 5W-30 engine oil.)

Engine oil capacity [LF] (approx. quantity)

- Oil replacement: 3.9 L {4.1 US qt, 3.4 Imp qt}
- Oil and oil filter replacement: 4.3 L {4.5 US qt, 3.8 Imp qt}
- Total (dry engine): 4.6 L {4.9 US qt, 4.0 Imp qt}

Engine oil capacity [L5] (approx. quantity)

- Oil replacement: 4.6 L {4.9 US qt, 4.0 Imp qt}
- Oil and oil filter replacement: 5.0 L {5.3 US qt, 4.4 Imp qt}
- Total (dry engine): 5.5 L {5.8 US qt, 4.8 Imp qt}

7. Install the oil filler cap.
8. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
9. Inspect the oil level. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)

OIL FILTER REPLACEMENT [LF, L5]

id0111c4800700

Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

Caution

- If engine oil is spilled on the exhaust system, wipe it off completely. If you fail to wipe the spilled engine oil, it will produce fumes because of the heat.

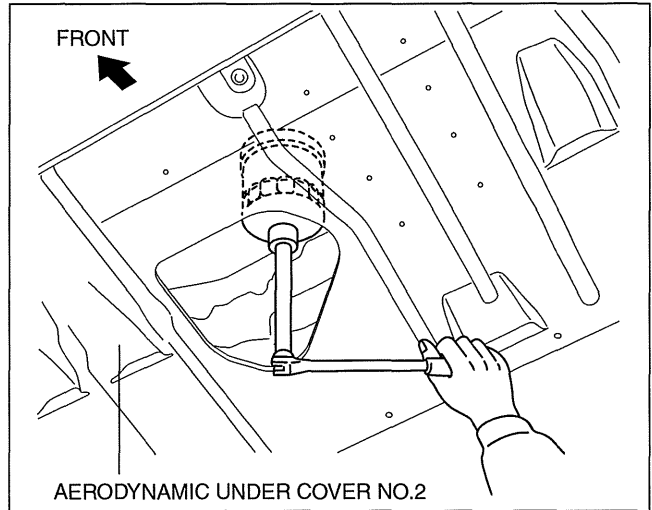
LUBRICATION [LF, L5]

1. Remove the oil filter using a commercially available, cup-type oil filter wrench (**76 mm {3.0 in} diameter, 15 sided**).
2. Use a clean rag to wipe off the mounting surface.
3. Apply clean engine oil to the O-ring of a new oil filter.
4. Tighten the oil filter according to the instructions on the package or side of the oil filter.

Tightening torque (reference value)

15—20 N·m {1.6—2.0 kgf·m, 12—14 ft·lbf}

5. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
6. Inspect the oil level. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)



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01-11A

OIL PRESSURE INSPECTION [LF, L5]

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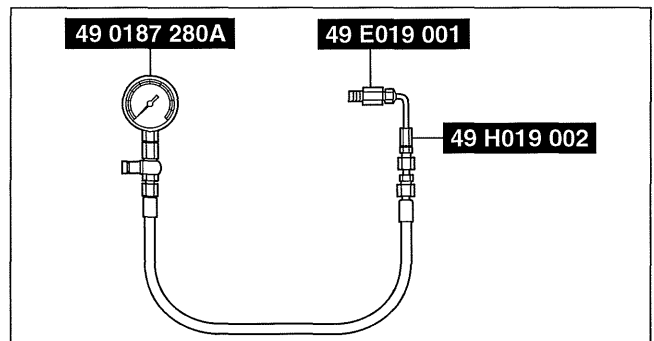
Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove the oil pressure switch.

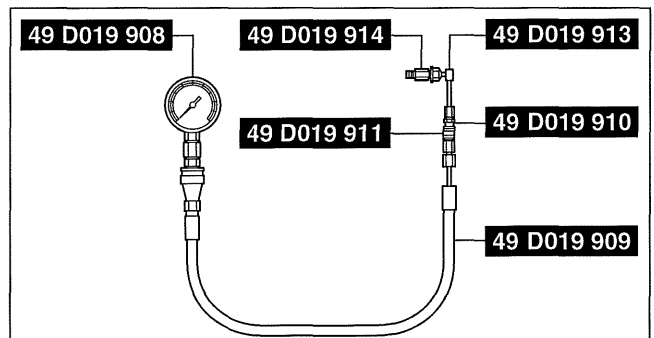
Note

- This inspection can be performed using a combination of **SSTs 49 0187 280A** (oil pressure gauge), **49 E019 001** (adapter) and **49 H019 002** (adapter), or using the following combination of the **SSTs**.



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- **49 D019 908** (gauge), **49 D019 909** (hose), **49 D019 910** (adapter), **49 D019 911** (adapter), **49 D019 913** (adapter), and **49 D019 914** (adapter)



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LUBRICATION [LF, L5]

5. Install the **SSTs** to the oil pressure switch installation hole using the following procedure.
Using SSTs 49 0187 280A, 49 E019 001 and 49 H019 002
 - a. Assemble **SSTs 49 0187 280A** and **49 H019 002** outside of the engine compartment beforehand.
 - b. Install **SST 49 E019 001** to the oil pressure switch installation hole.
 - c. Install **SST 49 H019 002** to the **SST 49 E019 001**.**Using SSTs 49 D019 908, 49 D019 909, 49 D019 910, 49 D019 911, 49 D019 913, and 49 D019 914**
 - a. Assemble **SSTs 49 D019 910**, **49 D019 913** and **49 D019 914** outside of the engine compartment beforehand.
 - b. Assemble **SSTs 49 D019 908**, **49 D019 909** and **49 D019 911** outside of the engine compartment beforehand.
 - c. Install **SST 49 D019 914** to the oil pressure switch installation hole.
 - d. Install **SST 49 D019 911** to the **SST 49 D019 910**.
6. Connect the negative battery cable.
7. Warm up the engine to normal operating temperature.
8. Run the engine at the specified speed, and note the gauge readings.
 - If not within the specification, inspect for the cause and repair or replace if necessary.

Note

- The oil pressure can vary with oil viscosity and temperature.

Oil pressure (reference value) [oil temperature: 100 °C {212 °F}]

LF: 234—521 kPa {2.39—5.31 kgf/cm², 34.0—75.5 psi} [3,000 rpm]

L5: 395—649 kPa {4.03—6.61 kgf/cm², 57.3—94.1 psi} [3,000 rpm]

9. Stop the engine and wait until it is cool.
10. Disconnect the negative battery cable.
11. Remove the **SSTs**.

Caution

- **Be sure there is no sealant between 1.0—2.0 mm {0.040—0.078 in} from the end of the oil pressure switch to prevent a possible operation malfunction.**

12. Apply silicone sealant to the oil pressure switch threads as shown in the figure.

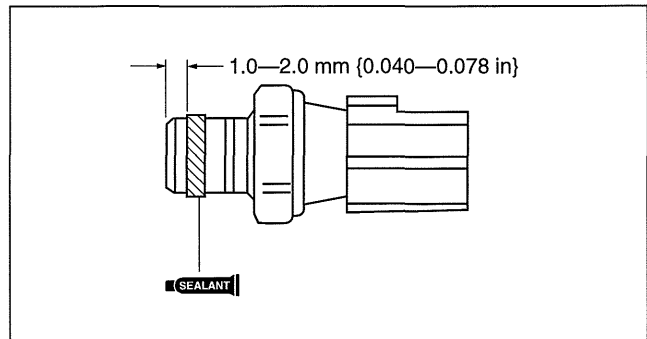
Caution

- **Install the oil pressure switch before the applied sealant starts to harden.**

13. Install the oil pressure switch.

Tightening torque

12—18 N·m {123—183 kgf·cm, 107—159 in·lbf}



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14. Connect the negative battery cable.
15. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
16. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
17. Install the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)

LUBRICATION [LF, L5]

OIL COOLER REMOVAL/INSTALLATION [LF, L5]

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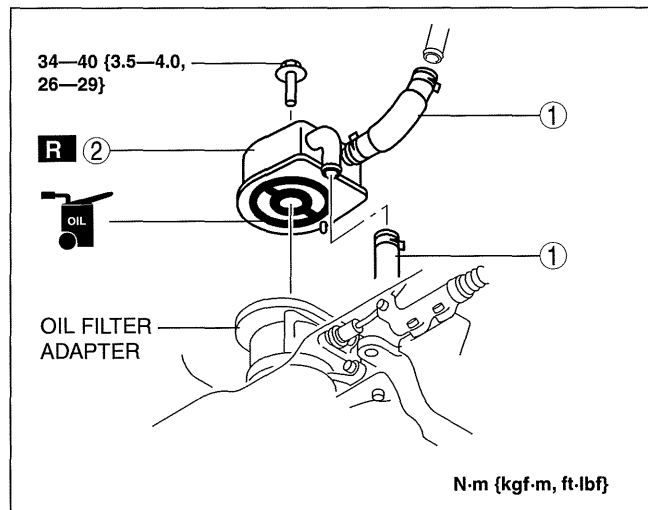
Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

01-11A

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
5. Remove in the order indicated in the table.
6. Use a clean rag to wipe off the mounting surface on the oil filter adapter and the oil cooler.
7. Install in the reverse order of the removal.
8. Refill the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
9. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
10. Inspect the oil level. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)
11. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)

1	Water hose
2	Oil cooler



am3uuw0000520

OIL PAN REMOVAL/INSTALLATION [LF, L5]

id0111c4800200

Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

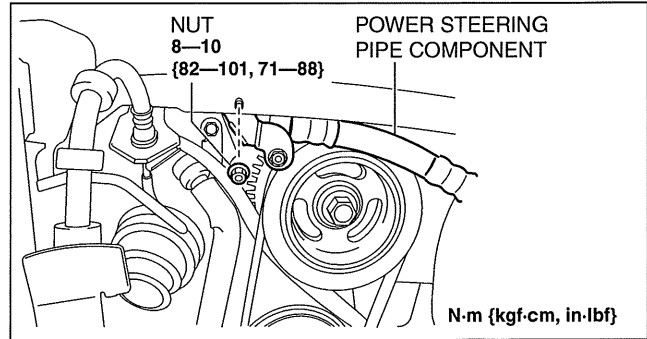
1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the coolant reserve tank with the hose still connected and set it out of the way. (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5].)
9. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)

01-11A-7

LUBRICATION [LF, L5]

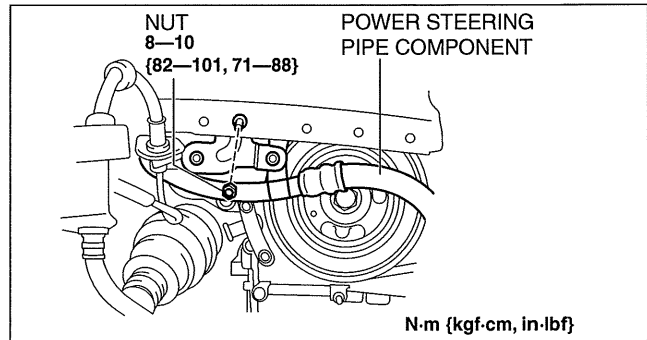
10. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)(See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Drain the engine oil. (See 01-11A-3 ENGINE OIL REPLACEMENT [LF, L5].)
12. Remove the nut shown in the figure and set the power steering pipe component out of the way.

LF



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L5

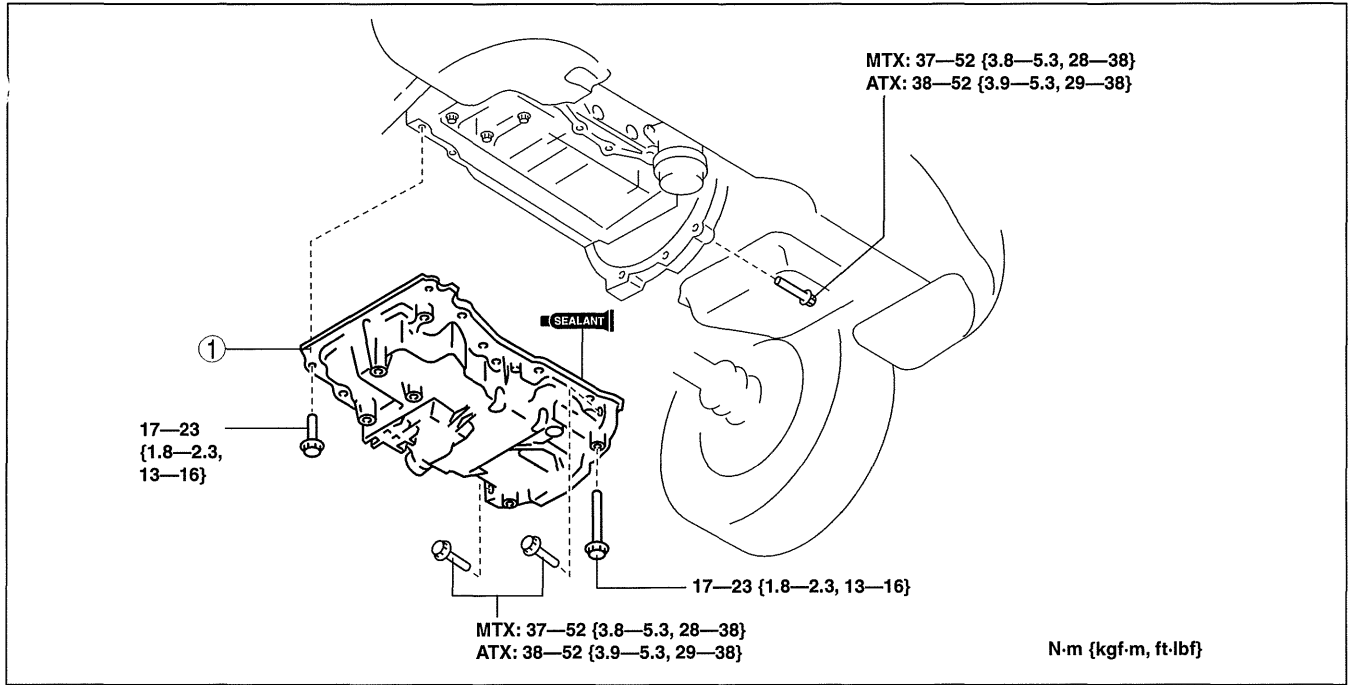


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13. Remove the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
14. Remove the crankshaft position (CKP) sensor. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
15. Remove the A/C compressor with the cooler hose still connected and secure it using wire or rope so that it is out of the way. (LF) (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
16. Disconnect the drive shaft (RH) from joint shaft, set the drive shaft (RH) out of the way. (MTX) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
17. Remove the engine front cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
18. Remove in the order indicated in the table.
19. Install in the reverse order of removal.
20. Refill with the specified type and amount of the engine oil. (See 01-11A-3 ENGINE OIL REPLACEMENT [LF, L5].)
21. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
22. Inspect the oil level. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)
23. Inspect for the ignition timing and idle speed. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)

LUBRICATION [LF, L5]

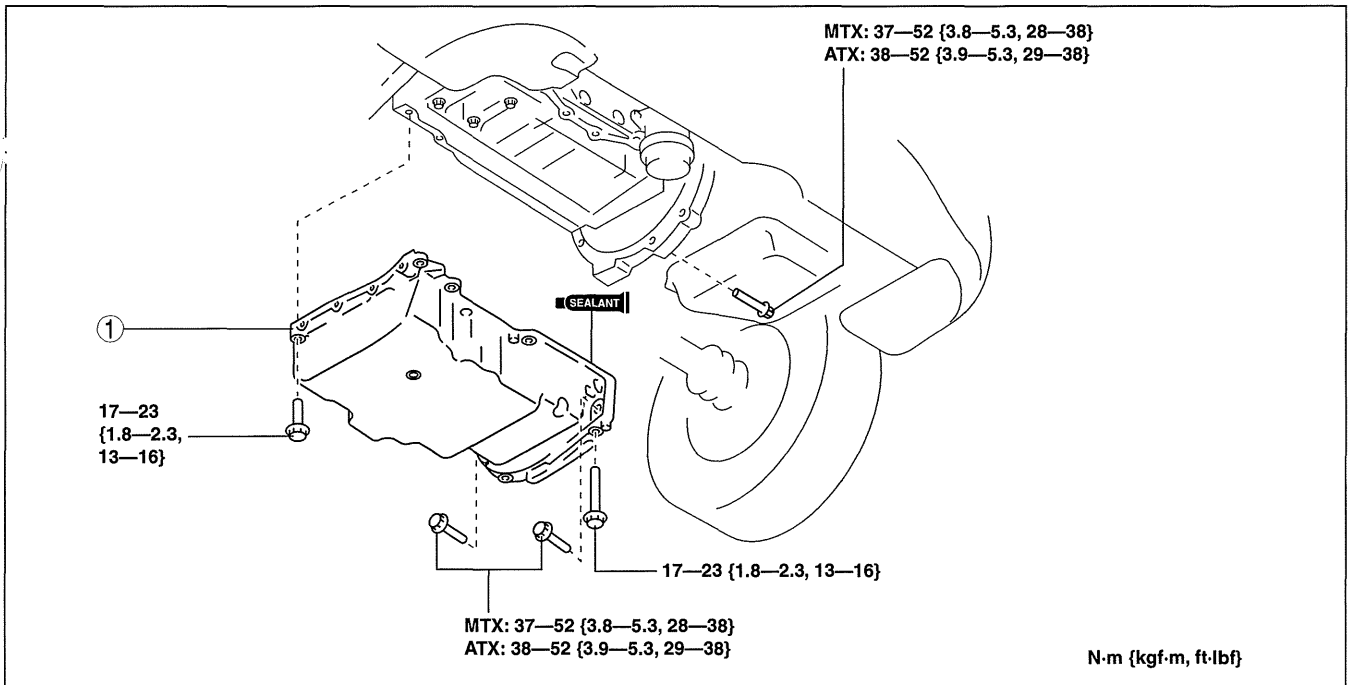
LF



01-11A

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L5



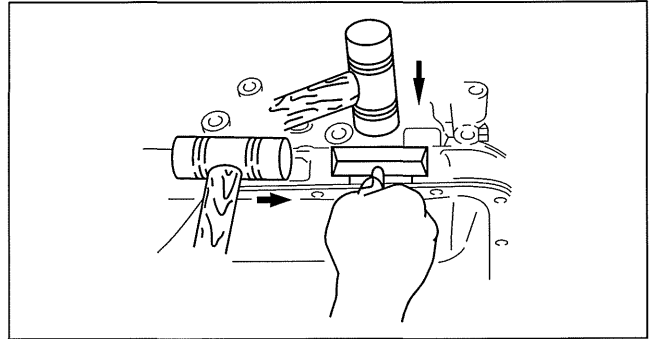
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1	Oil pan (See 01-11A-10 Oil Pan Removal Note.) (See 01-11A-10 Oil Pan Installation Note.)
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LUBRICATION [LF, L5]

Oil Pan Removal Note

1. Remove the oil pan using a separator tool.



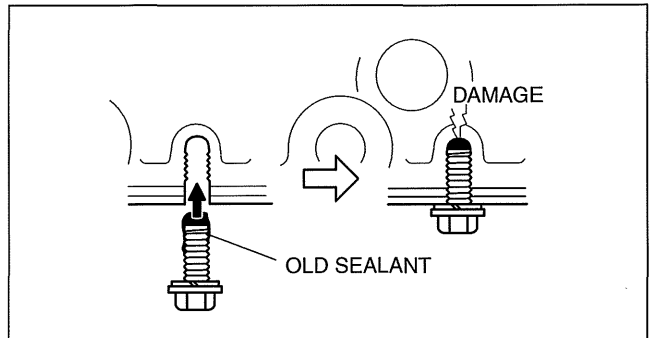
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Oil Pan Installation Note

Caution

- Apply the silicon sealant in a single, unbroken line.
- Install the oil pan before the applied sealant starts to harden.
- Using bolts with the old seal adhering could cause cracks in the cylinder block.

1. Completely clean and remove any oil, dirt, sealant or other foreign material that may be adhering to the cylinder block and oil pan.
2. When reusing the oil pan installation bolts, clean any old sealant from the bolts.



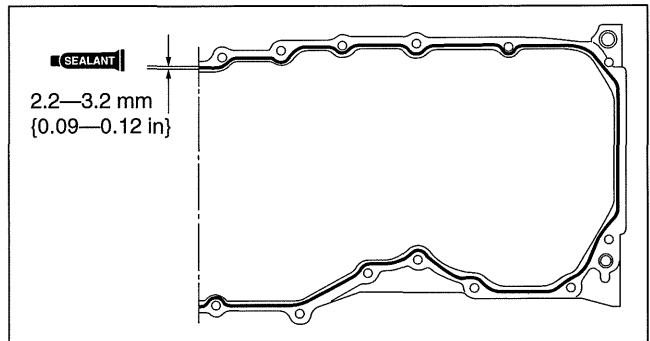
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3. Apply silicone sealant to the oil pan along the inside of the bolt holes as shown in the figure.

Thickness

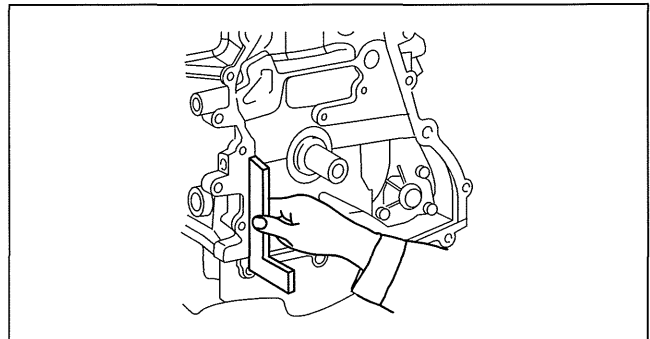
2.2—3.2 mm {0.09—0.12 in}

4. Install the oil pan to the cylinder block.



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5. Use a square ruler to align the oil pan and the cylinder block junction side on the engine front cover side.



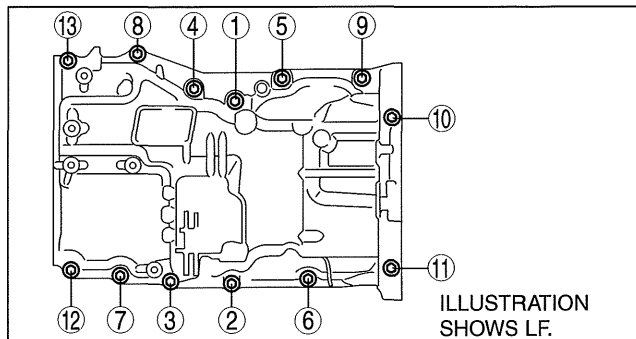
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LUBRICATION [LF, L5]

6. Tighten the bolts in the order shown in the figure.

Tightening torque

17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

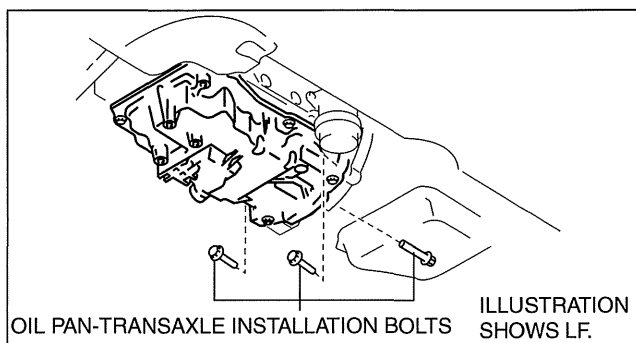


7. Tighten the oil pan-transaxle installation bolts.

Tightening torque

MTX: 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

ATX: 38—52 N·m {3.9—5.3 kgf·m, 29—38 ft·lbf}



OIL PUMP REMOVAL/INSTALLATION [LF, L5]

id0111c4800600

Warning

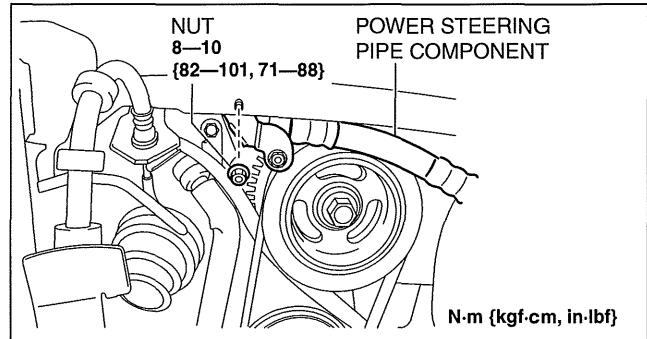
- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the wiring harness.
5. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
6. Remove the spark plugs. (See 01-18A-3 SPARK PLUG REMOVAL/INSTALLATION [LF, L5].)
7. Remove the ventilation hose.
8. Remove the coolant reserve tank with the hose still connected and set it out of the way. (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5].)
9. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
10. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)(See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Drain the engine oil. (See 01-11A-3 ENGINE OIL REPLACEMENT [LF, L5].)
12. Remove the nut shown in the figure and set the power steering pipe component out of the way.

01-11A

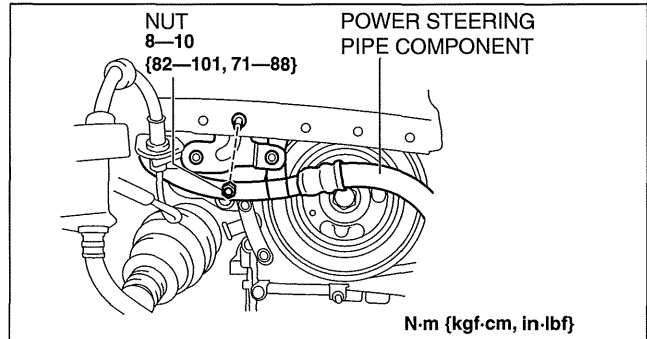
LUBRICATION [LF, L5]

LF



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L5

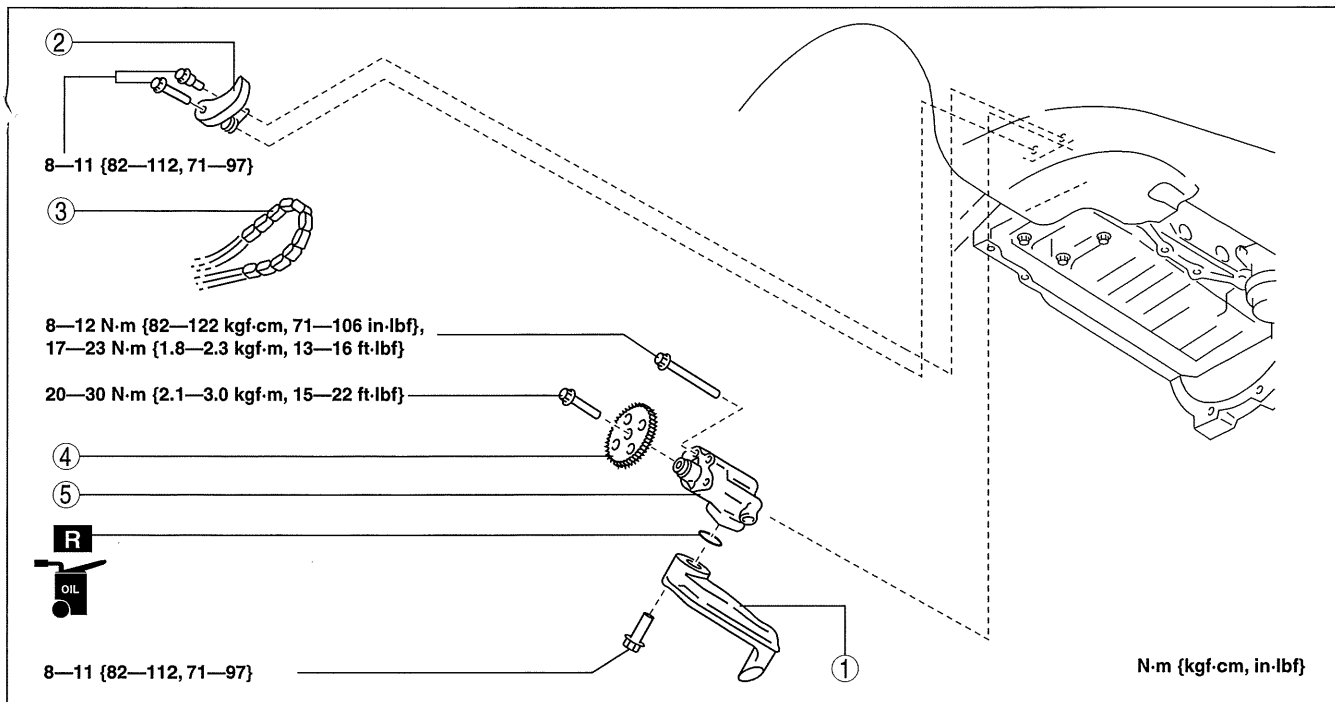


am3uuw0000520

13. Remove the drive belt. (01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5] .)
14. Remove the crankshaft position (CKP) sensor. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
15. Remove the A/C compressor with the cooler hose still connected and secure it using wire or rope so that it is out of the way. (LF) (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
16. Disconnect the drive shaft (RH) from joint shaft, set the drive shaft (RH) out of the way. (MTX) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
17. Remove the engine front cover. (See 01-10A-21 TIMING CHAIN REMOVAL/INSTALLATION [LF, L5].)
18. Remove the oil pan. (See 01-11A-7 OIL PAN REMOVAL/INSTALLATION [LF, L5].)
19. Remove in the order indicated in the table.
20. Install in the reverse order of removal.
21. Refill with the specified type and amount of the engine oil. (See 01-11A-3 ENGINE OIL REPLACEMENT [LF, L5].)
22. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
23. Inspect the oil level. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)
24. Inspect for the ignition timing and idle speed. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
25. Inspect the oil pressure. (See 01-11A-5 OIL PRESSURE INSPECTION [LF, L5].)

LUBRICATION [LF, L5]

01-11A



1	Oil strainer
2	Oil pump chain tensioner
3	Oil pump chain

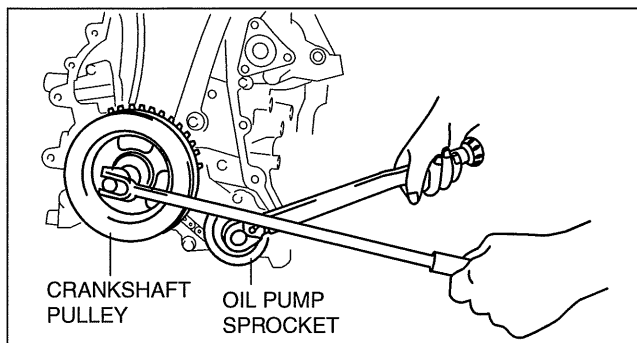
4	Oil pump sprocket (See 01-11A-13 Oil Pump Sprocket Removal/Installation Note.)
5	Oil pump (See 01-11A-13 Oil Pump Installation Note.)

Oil Pump Sprocket Removal/Installation Note

- Temporarily install the crankshaft pulley and crankshaft pulley lock bolt to the crankshaft, and lock the oil pump against rotation as shown in figure.
- Remove/install the oil pump sprocket, and then remove the crankshaft pulley and crankshaft pulley lock bolt.

Tightening torque

20-30 N·m {2.1-3.0 kgf·m, 15-22 ft·lbf}



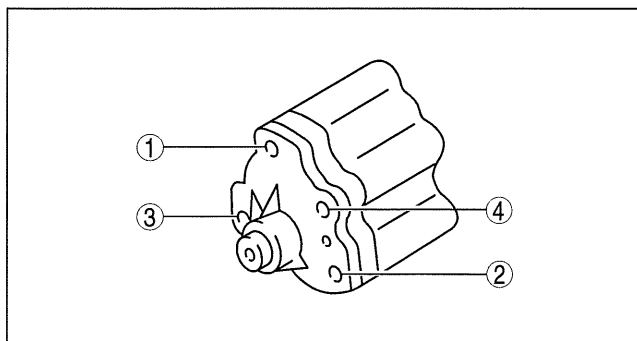
Oil Pump Installation Note

- Tighten the oil pump bolts in two steps in the order shown in the figure.

Tightening torque

Step 1: 8-12 N·m {82-122 kgf·cm, 71-106 in·lbf}

Step 2: 17-23 N·m {1.8-2.3 kgf·m, 13-16 ft·lbf}



1

2

3

01-11B LUBRICATION [L3 WITH TC]

LUBRICATION SYSTEM

LOCATION INDEX [L3 WITH TC]..... 01-11B-1
 ENGINE OIL LEVEL INSPECTION
 [L3 WITH TC] 01-11B-2
 ENGINE OIL REPLACEMENT
 [L3 WITH TC] 01-11B-2
 OIL FILTER REPLACEMENT
 [L3 WITH TC] 01-11B-3
 OIL PRESSURE INSPECTION
 [L3 WITH TC] 01-11B-4

OIL COOLER REMOVAL/INSTALLATION

[L3 WITH TC] 01-11B-5

OIL PAN REMOVAL/INSTALLATION

[L3 WITH TC] 01-11B-6
 Oil Pan Removal Note..... 01-11B-7
 Oil Pan Installation Note 01-11B-7

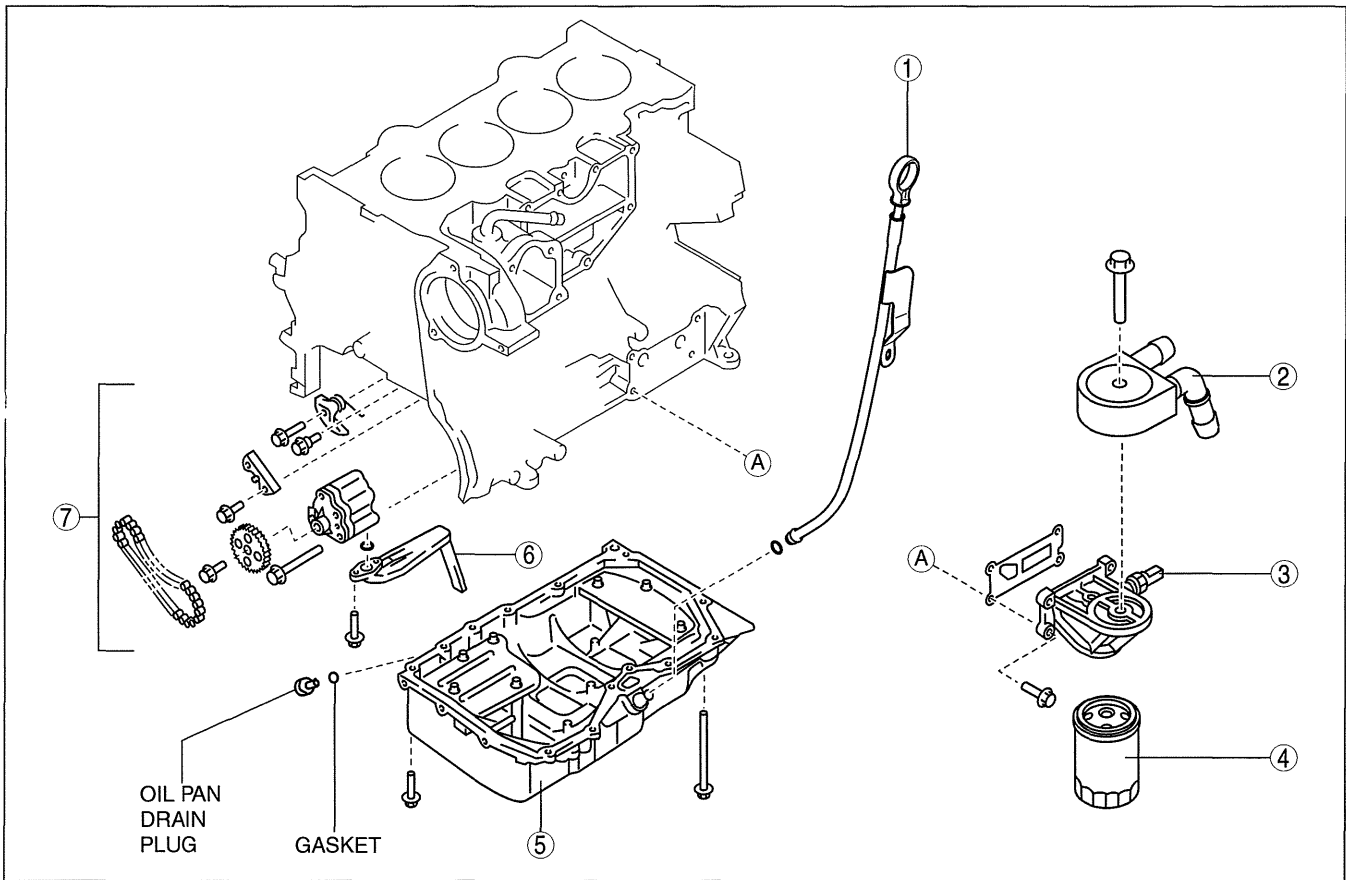
OIL PUMP REMOVAL/INSTALLATION

[L3 WITH TC] 01-11B-9
 Oil Pump Driven Sprocket
 Removal/Installation Note 01-11B-10
 Oil Pump Installation Note..... 01-11B-10

01-11B

LUBRICATION SYSTEM LOCATION INDEX [L3 WITH TC]

id011139800100



am3uuw000607

1	Dipstick (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].) (See 01-11B-2 ENGINE OIL REPLACEMENT [L3 WITH TC].)
2	Oil cooler (See 01-11B-5 OIL COOLER REMOVAL/INSTALLATION [L3 WITH TC].)
3	Oil pressure switch (See 01-11B-4 OIL PRESSURE INSPECTION [L3 WITH TC].)

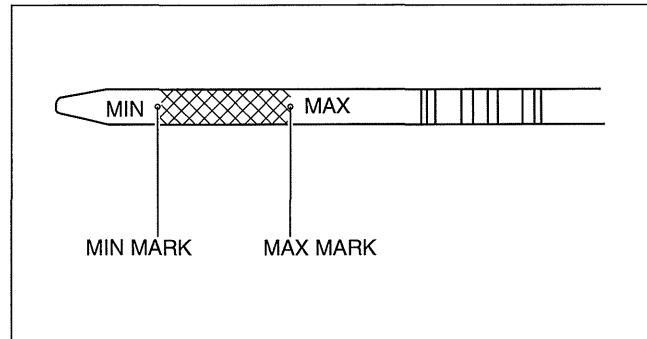
4	Oil filter (See 01-11B-3 OIL FILTER REPLACEMENT [L3 WITH TC].)
5	Oil pan (See 01-11B-6 OIL PAN REMOVAL/INSTALLATION [L3 WITH TC].)
6	Oil strainer (See 01-11B-9 OIL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
7	Oil pump component (See 01-11B-9 OIL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)

LUBRICATION [L3 WITH TC]

ENGINE OIL LEVEL INSPECTION [L3 WITH TC]

id011139800500

1. Position the vehicle on level ground.
2. Warm up the engine.
3. Stop the engine and allow **at least 5 min** before continuing.
4. Remove the dipstick, wipe it cleanly, and reinstall it fully.
5. Remove the dipstick and verify that the oil level is between the MIN and MAX marks on the dipstick.
 - If the oil level is below the MIN mark, add engine oil.



am3uuw0000608

ENGINE OIL REPLACEMENT [L3 WITH TC]

id011139800400

Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

Caution

- If engine oil is spilled on the exhaust system, wipe it off completely. If you fail to wipe the spilled engine oil, it will produce fumes because of the heat.

1. Position the vehicle on level ground.
2. Remove the oil filler cap.
3. Remove the oil pan drain plug.
4. Drain the engine oil into a container.
5. Install the oil pan drain plug with a new gasket.

Oil pan drain plug tightening torque

30—41 N·m {3.1—4.1 kgf·m, 23—30 ft·lbf}



Note

- The amount of residual oil in the engine can vary according to factors such as the replacement method and oil temperature. Verify the oil level after engine oil replacement.

LUBRICATION [L3 WITH TC]

6. Refill with the following type and amount of the engine oil.

Engine oil specification

Item	U.S.A. and CANADA	Except U.S.A. and CANADA
Engine oil grade	 (ILSAC)	 (ILSAC) API SM or ILSAC
Engine oil viscosity	5W-30	

01-11B

Engine oil capacity (approx. quantity)

Oil replacement: 5.3 L {5.6 US qt, 4.7 Imp qt}

Oil and oil filter replacement: 5.7 L {6.0 US qt, 5.0 Imp qt}

Total (dry engine): 6.4 L {6.8 US qt, 5.6 Imp qt}

7. Install the oil filler cap.
8. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
9. Inspect the oil level. (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].)

OIL FILTER REPLACEMENT [L3 WITH TC]

id011139800700

Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

Caution

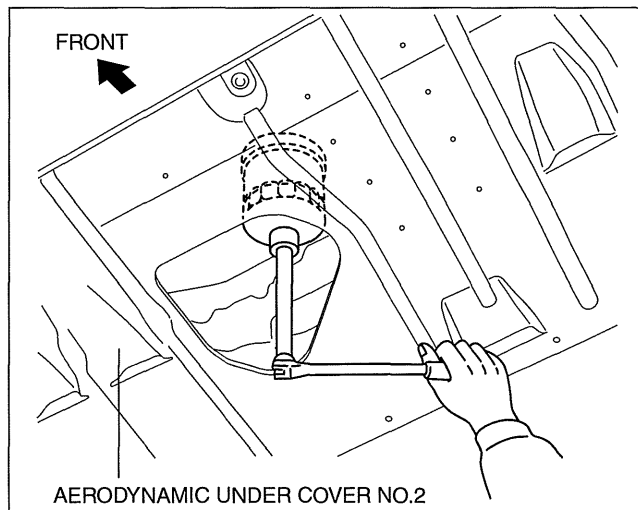
- If engine oil is spilled on the exhaust system, wipe it off completely. If you fail to wipe the spilled engine oil, it will produce fumes because of the heat.

1. Remove the oil filter using a commercially available, cup-type oil filter wrench (76 mm {3.0 in} diameter, 15 sided).
2. Use a clean rag to wipe off the mounting surface.
3. Apply clean engine oil to the O-ring of a new oil filter.
4. Tighten the oil filter according to the instructions on the package or side of the oil filter.

Tightening torque (reference value)

15—20 N·m {1.6—2.0 kgf·m, 12—14 ft·lbf}

5. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
6. Inspect the oil level. (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].)



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LUBRICATION [L3 WITH TC]

OIL PRESSURE INSPECTION [L3 WITH TC]

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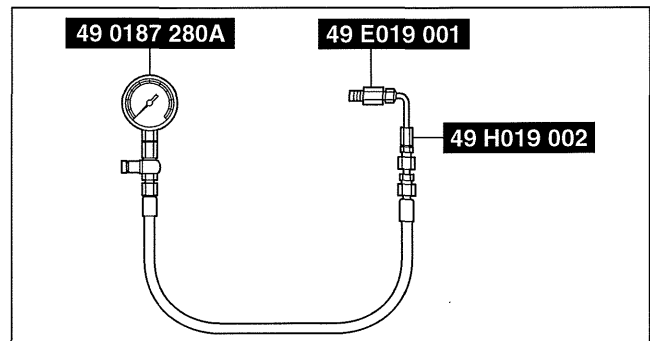
Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove the oil pressure switch.

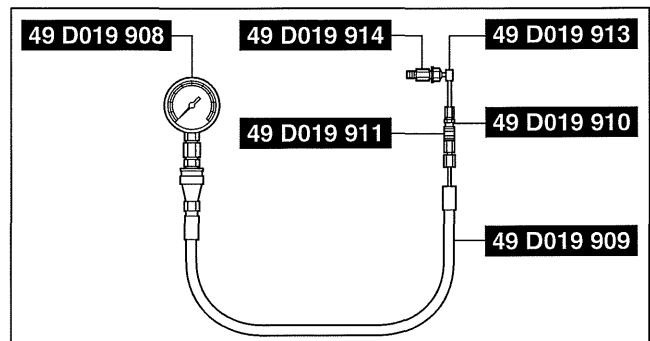
Note

- This inspection can be performed using a combination of **SSTs 49 0187 280A** (oil pressure gauge), **49 E019 001** (adapter) and **49 H019 002** (adapter), or using the following combination of the **SSTs**.



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- **49 D019 908** (gauge), **49 D019 909** (hose), **49 D019 910** (adapter), **49 D019 911** (adapter), **49 D019 913** (adapter), and **49 D019 914** (adapter)



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5. Install the **SSTs** to the oil pressure switch installation hole using the following procedure.
 - Using SSTs 49 0187 280A, 49 E019 001 and 49 H019 002**
 - a. Assemble **SSTs 49 0187 280A** and **49 H019 002** outside of the engine compartment beforehand.
 - b. Install **SST 49 E019 001** to the oil pressure switch installation hole.
 - c. Install **SST 49 H019 002** to the **SST 49 E019 001**.
 - Using SSTs 49 D019 908, 49 D019 909, 49 D019 910, 49 D019 911, 49 D019 913, and 49 D019 914**
 - a. Assemble **SSTs 49 D019 910, 49 D019 913 and 49 D019 914** outside of the engine compartment beforehand.
 - b. Assemble **SSTs 49 D019 908, 49 D019 909 and 49 D019 911** outside of the engine compartment beforehand.
 - c. Install **SST 49 D019 914** to the oil pressure switch installation hole.
 - d. Install **SST 49 D019 911** to the **SST 49 D019 910**.
6. Connect the negative battery cable.
7. Warm up the engine to normal operating temperature.
8. Run the engine at the specified speed, and note the gauge readings.
 - If not within the specification, inspect for the cause and repair or replace if necessary.

Note

- The oil pressure can vary with oil viscosity and temperature.

Oil pressure (reference value) [oil temperature: 100 °C {212 °F}]
297—551 kPa {3.03—5.61 kgf/cm², 43.1—79.9 psi} [3,000 rpm]

9. Stop the engine and wait until it is cool.
10. Disconnect the negative battery cable.

LUBRICATION [L3 WITH TC]

11. Remove the SSTs.

Caution

- Be sure there is no sealant between 1.0—2.0 mm {0.040—0.078 in} from the end of the oil pressure switch to prevent a possible operation malfunction.

12. Apply silicone sealant to the oil pressure switch threads as shown in the figure.

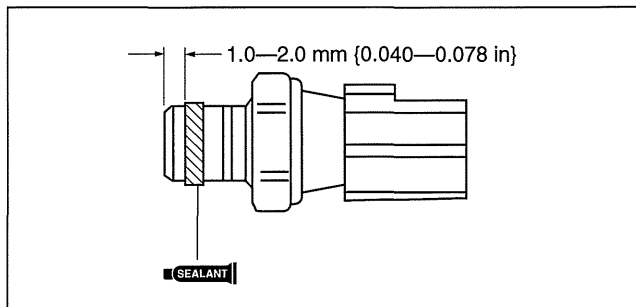
Caution

- Install the oil pressure switch before the applied sealant starts to harden.

13. Install the oil pressure switch.

Tightening torque

12—18 N·m {123—183 kgf·cm, 107—159 in·lbf}



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01-11B

14. Connect the negative battery cable.

15. Start the engine and confirm that there is no oil leakage.

- If there is oil leakage, repair or replace the applicable part.

16. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

17. Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

OIL COOLER REMOVAL/INSTALLATION [L3 WITH TC]

id011139800800

Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

2. Disconnect the negative battery cable.

3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

4. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)

5. Remove in the order indicated in the table.

6. Use a clean rag to wipe off the mounting surface on the oil filter adapter and the oil cooler.

7. Install in the reverse order of the removal.

8. Refill the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)

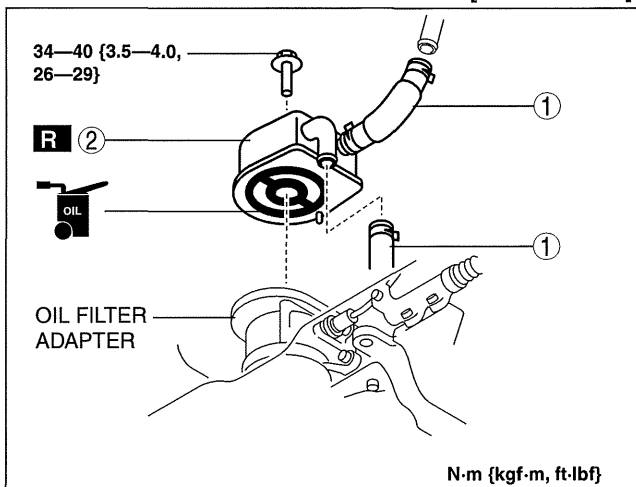
9. Start the engine and confirm that there is no oil leakage.

- If there is oil leakage, repair or replace the applicable part.

10. Inspect the oil level. (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].)

11. Inspect for engine coolant leakage. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)

1	Water hose
2	Oil cooler



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LUBRICATION [L3 WITH TC]

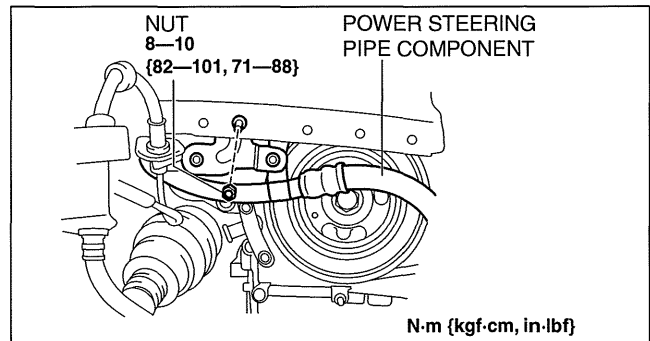
OIL PAN REMOVAL/INSTALLATION [L3 WITH TC]

id011139800200

Warning

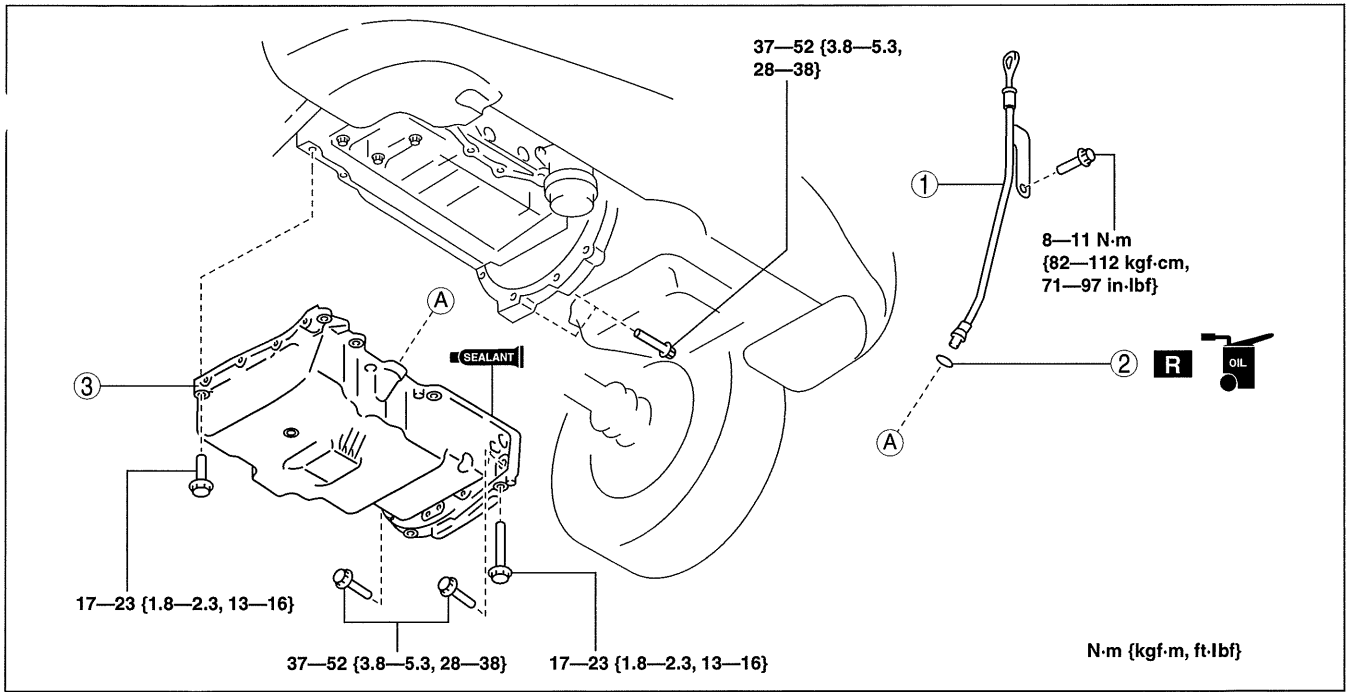
- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
6. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the coolant reserve tank with the hose still connected and set it out of the way. (See 01-12B-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
9. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
10. Drain the engine oil. (See 01-11B-2 ENGINE OIL REPLACEMENT [L3 WITH TC].)
11. Remove the nut shown in the figure and set the power steering pipe component out of the way.
12. Loosen the water pump pulley bolts before removing the drive belt.
13. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
14. Remove the crankshaft position (CKP) sensor. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
15. Remove the engine front cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
16. Remove in the order indicated in the table.
17. Install in the reverse order of removal.
18. Refill with the specified type and amount of the engine oil. (See 01-11B-2 ENGINE OIL REPLACEMENT [L3 WITH TC].)
19. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
20. Inspect the oil level. (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].)
21. Inspect for the ignition timing and idle speed. (See 01-10B-3 ENGINE TUNE-UP [L3 WITH TC].)



LUBRICATION [L3 WITH TC]

01-11B

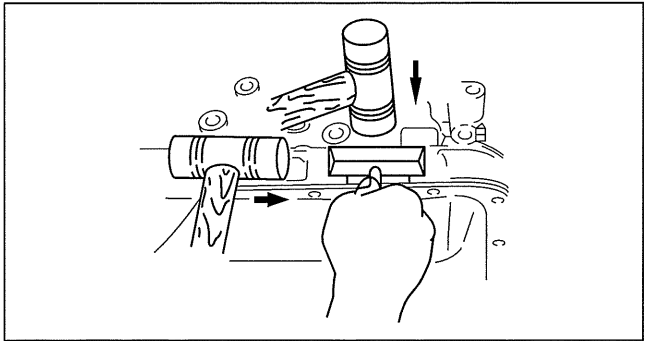


1	Dipstick pipe
2	O-ring

3	Oil pan (See 01-11B-7 Oil Pan Removal Note.) (See 01-11B-7 Oil Pan Installation Note.)
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Oil Pan Removal Note

1. Remove the oil pan using a separator tool.

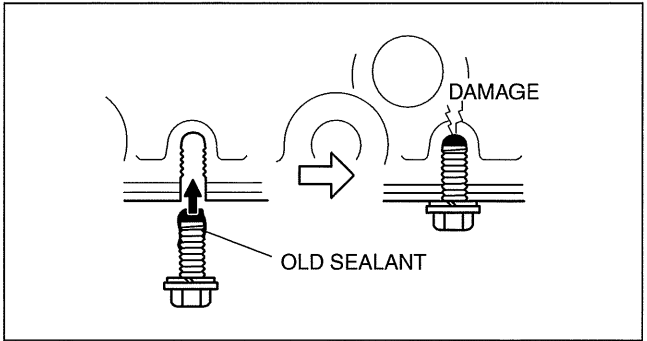


Oil Pan Installation Note

Caution

- Apply the silicon sealant in a single, unbroken line.
- Install the oil pan before the applied sealant starts to harden.
- Using bolts with the old seal adhering could cause cracks in the cylinder block.

1. Completely clean and remove any oil, dirt, sealant or other foreign material that may be adhering to the cylinder block and oil pan.
2. When reusing the oil pan installation bolts, clean any old sealant from the bolts.



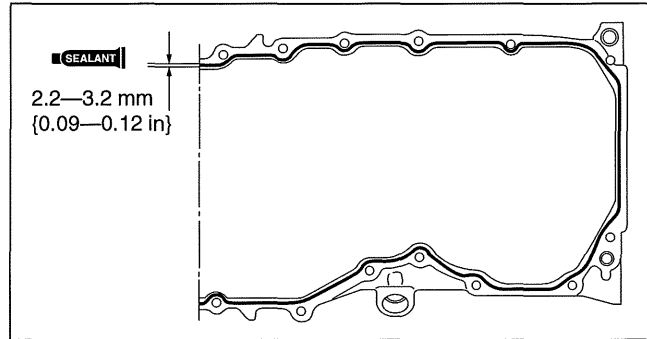
LUBRICATION [L3 WITH TC]

3. Apply silicone sealant to the oil pan along the inside of the bolt holes as shown in the figure.

Thickness

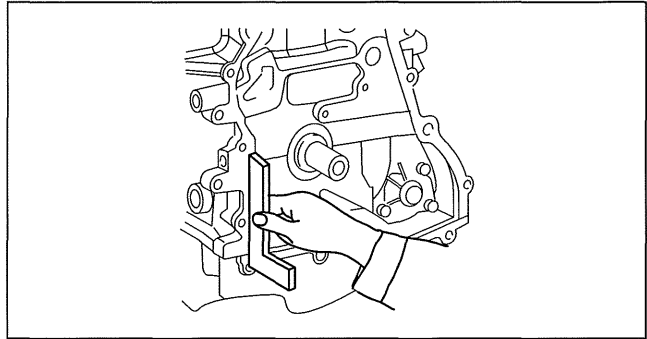
2.2—3.2 mm {0.09—0.12 in}

4. Install the oil pan to the cylinder block.



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5. Use a square ruler to align the oil pan and the cylinder block junction side on the engine front cover side.

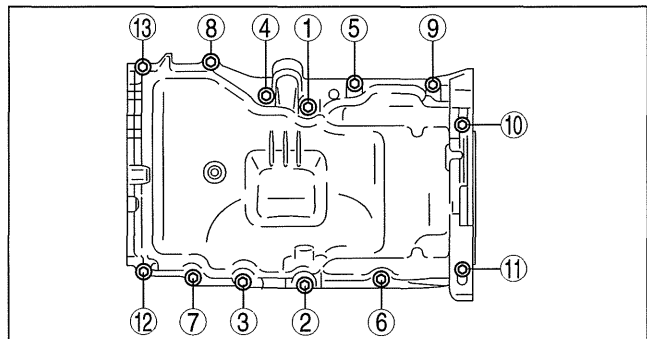


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6. Tighten the bolts in the order shown in the figure.

Tightening torque

17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

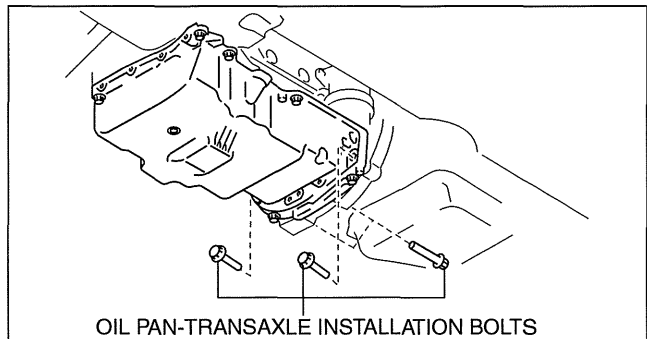


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7. Tighten the oil pan-transaxle installation bolts.

Tightening torque

37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

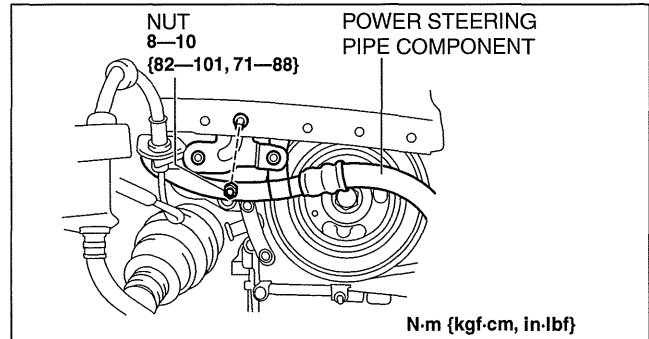


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Warning

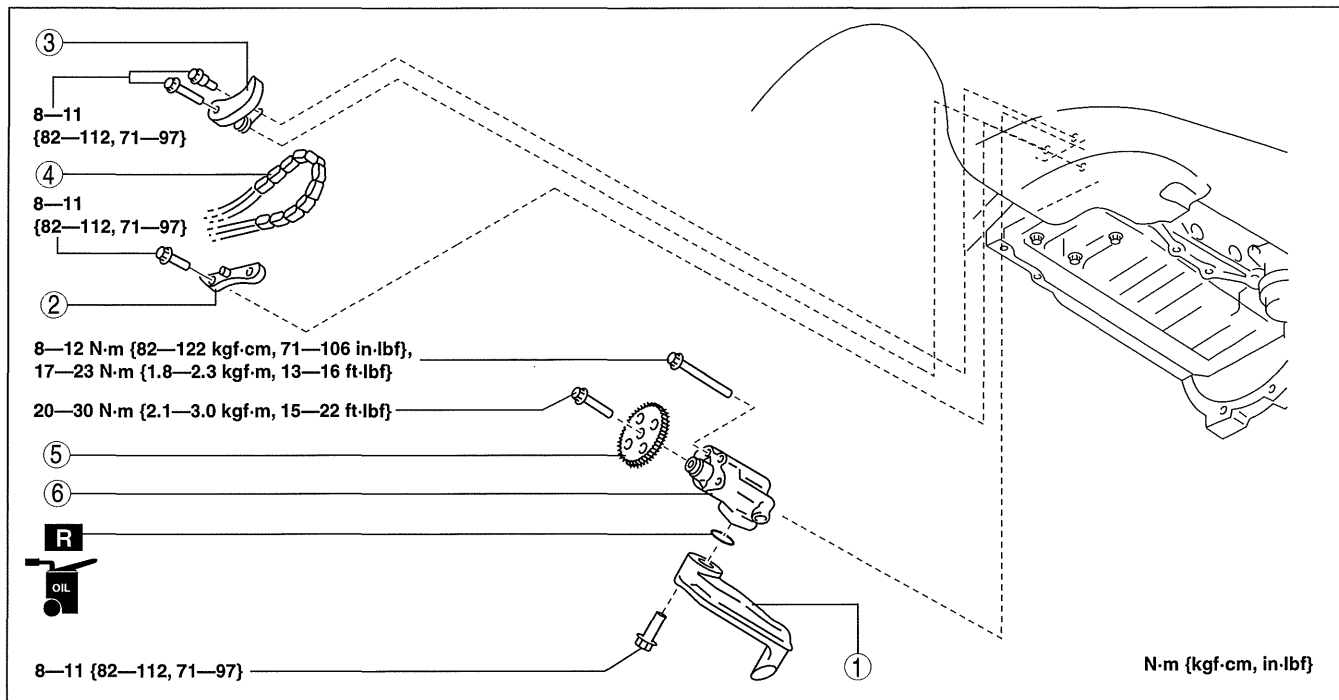
- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the high pressure fuel pump and high pressure fuel pump cover. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
6. Disconnect the ventilation hose from the cylinder head cover. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the coolant reserve tank with the hose still connected and set it out of the way. (See 01-12B-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove the front wheel and tire. (RH) (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
9. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
10. Drain the engine oil. (See 01-11B-2 ENGINE OIL REPLACEMENT [L3 WITH TC].)
11. Remove the nut shown in the figure and set the power steering pipe component out of the way.
12. Loosen the water pump pulley bolts before removing the drive belt.
13. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
14. Remove the crankshaft position (CKP) sensor. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
15. Remove the engine front cover. (See 01-10B-23 TIMING CHAIN REMOVAL/INSTALLATION [L3 WITH TC].)
16. Remove the oil pan. (See 01-11B-6 OIL PAN REMOVAL/INSTALLATION [L3 WITH TC].)
17. Remove in the order indicated in the table.
18. Install in the reverse order of removal.
19. Refill with the specified type and amount of the engine oil. (See 01-11B-2 ENGINE OIL REPLACEMENT [L3 WITH TC].)
20. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
21. Inspect the oil level. (See 01-11B-2 ENGINE OIL LEVEL INSPECTION [L3 WITH TC].)
22. Inspect for the ignition timing and idle speed. (See 01-10B-3 ENGINE TUNE-UP [L3 WITH TC].)
23. Inspect the oil pressure. (See 01-11B-4 OIL PRESSURE INSPECTION [L3 WITH TC].)



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LUBRICATION [L3 WITH TC]



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1	Oil strainer
2	Oil pump chain guide
3	Oil pump chain tensioner
4	Oil pump chain

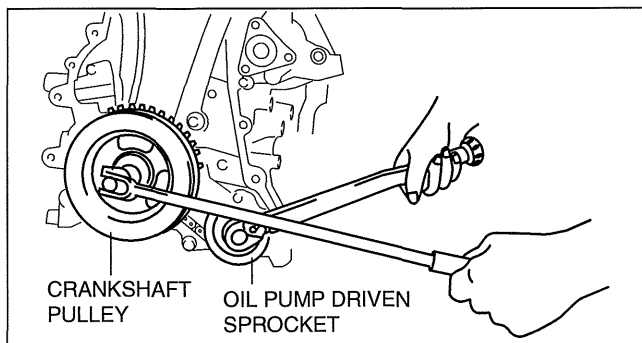
5	Oil pump driven sprocket (See 01-11B-10 Oil Pump Driven Sprocket Removal/Installation Note.)
6	Oil pump (See 01-11B-10 Oil Pump Installation Note.)

Oil Pump Driven Sprocket Removal/Installation Note

- Temporarily install the crankshaft pulley and crankshaft pulley lock bolt to the crankshaft, and lock the oil pump against rotation as shown in figure.
- Remove/install the oil pump driven sprocket, and then remove the crankshaft pulley and crankshaft pulley lock bolt.

Tightening torque

20-30 N·m {2.1-3.0 kgf-m, 15-22 ft-lbf}



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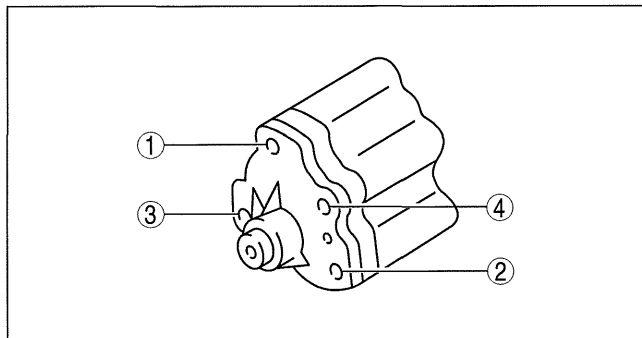
Oil Pump Installation Note

- Tighten the oil pump bolts in two steps in the order shown in the figure.

Tightening torque

Step 1: 8-12 N·m {82-122 kgf-cm, 71-106 in-lbf}

Step 2: 17-23 N·m {1.8-2.3 kgf-m, 13-16 ft-lbf}



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01-12A COOLING SYSTEM [LF, L5]

COOLING SYSTEM LOCATION INDEX
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COOLING SYSTEM SERVICE

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ENGINE COOLANT PROTECTION

INSPECTION [LF, L5] 01-12A-3

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 Radiator Removal Note 01-12A-10

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COOLING FAN COMPONENT

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 Cooling Fan Component

 Removal Note 01-12A-15

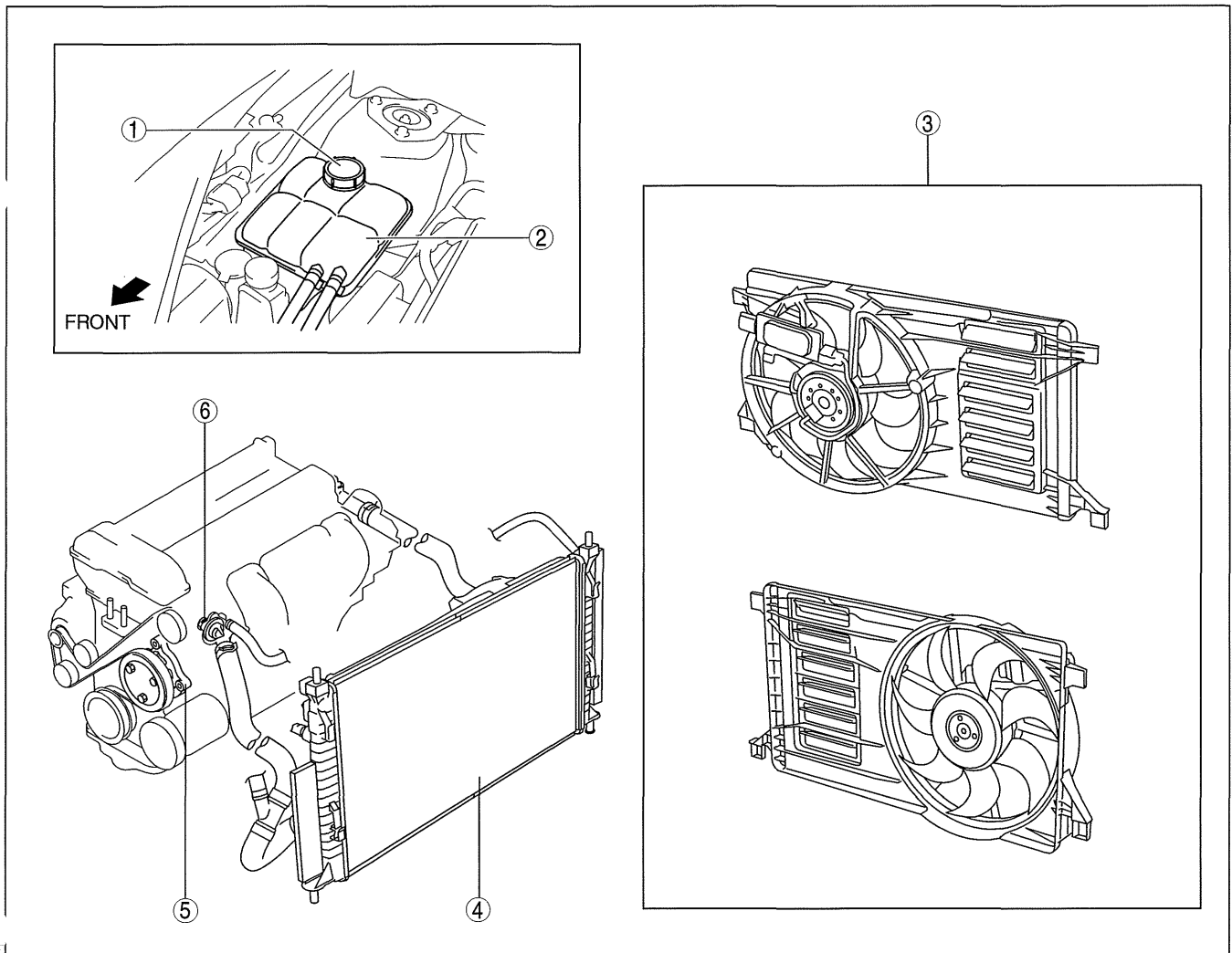
COOLING FAN COMPONENT

INSPECTION [LF, L5] 01-12A-15

01-12A

COOLING SYSTEM LOCATION INDEX [LF, L5]

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COOLING SYSTEM [LF, L5]

1	Cooling system cap (See 01-12A-7 COOLING SYSTEM CAP INSPECTION [LF, L5].)
2	Coolant reserve tank (See 01-12A-2 ENGINE COOLANT LEVEL INSPECTION [LF, L5].) (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5].)
3	Cooling fan component (See 01-12A-13 COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5].) (See 01-12A-15 COOLING FAN COMPONENT INSPECTION [LF, L5].)

4	Radiator (See 01-12A-3 ENGINE COOLANT PROTECTION INSPECTION [LF, L5].) (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].) (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) (See 01-12A-8 RADIATOR REMOVAL/INSTALLATION [LF, L5].)
5	Water pump (See 01-12A-13 WATER PUMP REMOVAL/INSTALLATION [LF, L5].)
6	Thermostat (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].) (See 01-12A-12 THERMOSTAT INSPECTION [LF, L5].)

COOLING SYSTEM SERVICE WARNINGS [LF, L5]

id0112g3800200

Warning

- **Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.**
- **Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.**
- **When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.**
- **Depending on the vehicle, the cooling fan may operate suddenly even when the ignition is off. Therefore, keep hands and tools away from the cooling fan even if the cooling fan is not operating to prevent injury to personnel or damage to the cooling fan. Always disconnect the negative battery cable when servicing the cooling fan or parts near the cooling fan.**

ENGINE COOLANT LEVEL INSPECTION [LF, L5]

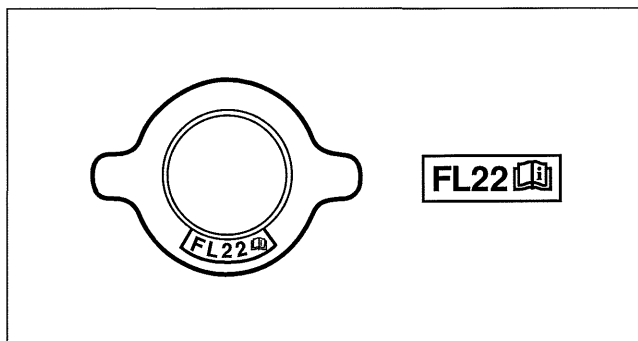
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Warning

- **Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.**
- **Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.**
- **When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.**

Note

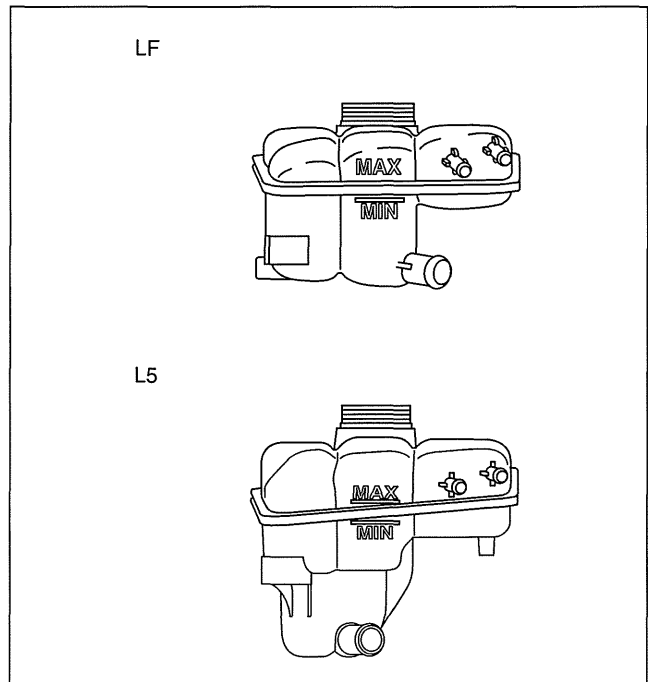
- If the "FL22" mark is shown on or near the cooling system cap, use FL22 type engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.



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COOLING SYSTEM [LF, L5]

1. Verify that the engine coolant level in the coolant reserve tank is between the MAX and MIN marks.
 - If the engine coolant level is below the MIN mark, add engine coolant.



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01-12A

ENGINE COOLANT PROTECTION INSPECTION [LF, L5]

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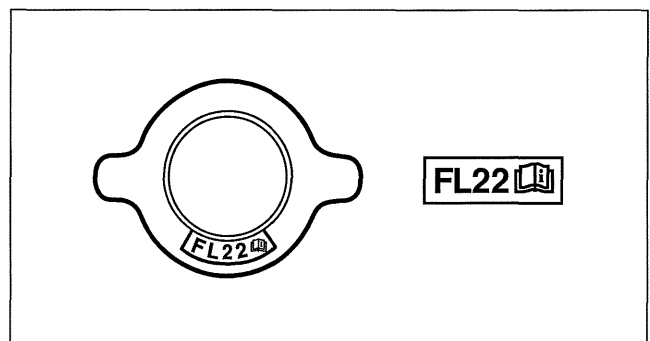
1. Measure the engine coolant temperature and specific gravity using a thermometer and a hydrometer.

Caution

- Use engine coolant at a concentration that meets the environmental conditions in which the vehicle is driven, otherwise engine damage could occur.
- The engine has aluminum parts and must be protected by an ethylene-glycol-based coolant to prevent corrosion and freezing.
- Do not use coolants containing Alcohol, Methanol, Borate or Silicate. These coolants could damage the cooling system.
- Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
- Engine coolant damages paint. If engine coolant does get on a painted surface, rinse it off quickly.

Note

- If the "FL22" mark is shown on or near the cooling system cap, use FL22 type engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.

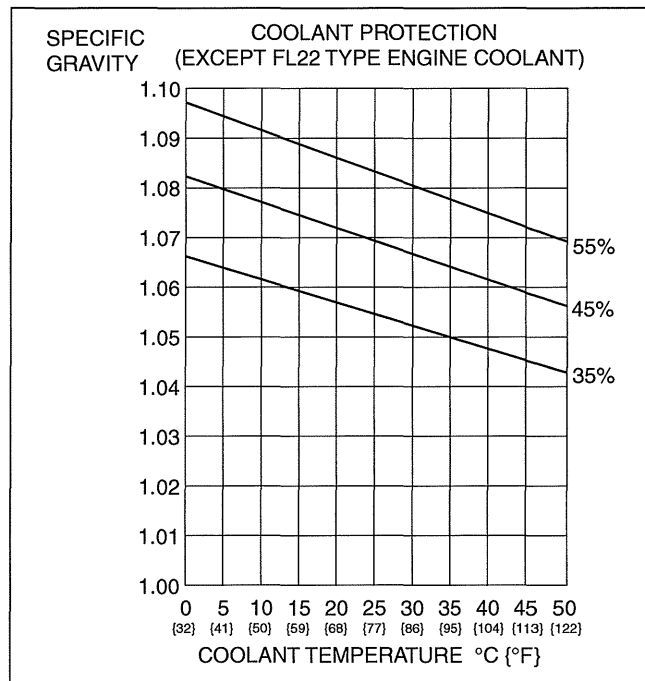


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COOLING SYSTEM [LF, L5]

2. Determine the engine coolant protection level by referring to the graph shown in the figure.

- If the engine coolant protection level is not correct, add water or engine coolant.



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ENGINE COOLANT REPLACEMENT [LF, L5]

id0112g3800600

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

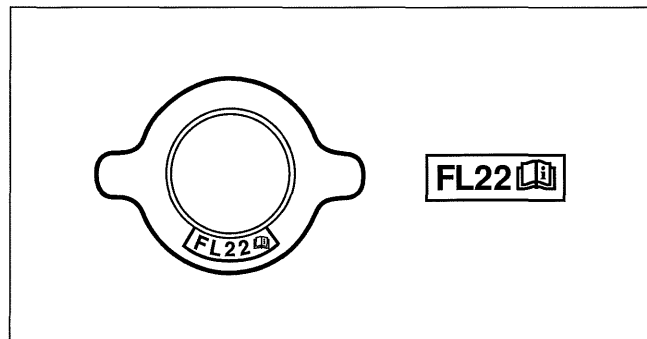
Caution

- Use engine coolant at a concentration that meets the environmental conditions in which the vehicle is driven, otherwise engine damage could occur.
- The engine has aluminum parts and must be protected by an ethylene-glycol-based coolant to prevent corrosion and freezing.
- Do not use coolants containing Alcohol, Methanol, Borate or Silicate. These coolants could damage the cooling system.
- Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
- Engine coolant damages paint. If engine coolant does get on a painted surface, rinse it off quickly.

Note

- If the "FL22" mark is shown on or near the cooling system cap, use FL22 type engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.

Engine coolant capacity (approx. quantity)
7.5 L {7.9 US qt, 6.6 Imp qt}

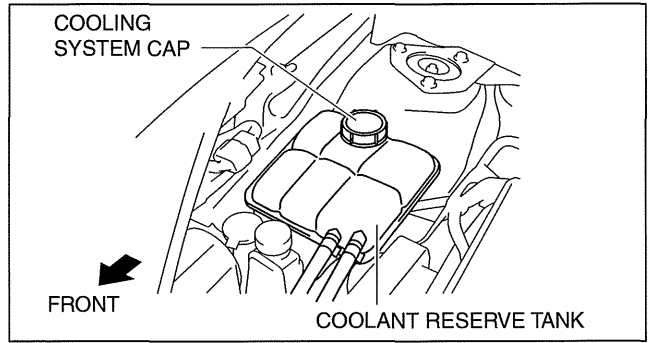


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COOLING SYSTEM [LF, L5]

01-12A

1. Remove the cooling system cap.



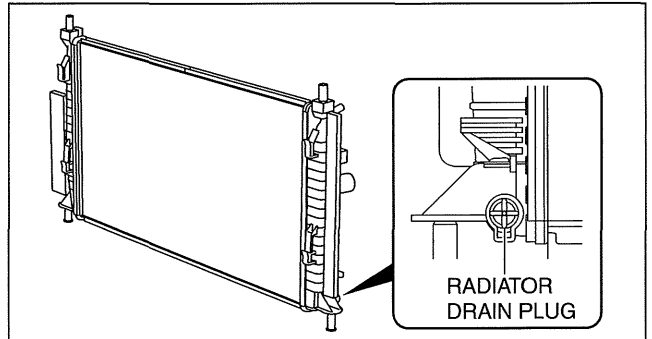
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2. Loosen the radiator drain plug and drain the engine coolant into a container.
3. Flush the cooling system with water until all traces of color are gone.
4. Let the system drain completely.
5. Tighten the radiator drain plug.

Tightening torque

1.2—1.5 N·m {13—15 kgf·cm, 11—13 in·lbf}

6. Referring to the following chart, select the correct volume percentage of the water and engine coolant.



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Antifreeze solution mixture percentage (Except FL22 type engine coolant)

Engine coolant protection	Volume percentage (%)		Gravity at 20 °C {68 °F}
	Water	Coolant	
Above -16 °C {3 °F}	65	35	1.057
Above -26 °C {-15 °F}	55	45	1.072
Above -40 °C {-40 °F}	45	55	1.086

7. Refill the engine coolant into the coolant reserve tank up to the MAX mark on the tank.
8. Install the cooling system cap.

Caution

- If the high engine coolant temperature warning light flashes, stop the engine to lower the engine coolant temperature and prevent overheating. Then, verify the malfunctioning part and repair or replace it.
- If the engine coolant level in the coolant reserve tank is below the MIN mark during engine coolant air bleeding operation, stop the engine, and after the engine coolant temperature decreases, add engine coolant. Then, resume the engine coolant air bleeding operation.

9. Start the engine and warm up the engine by idling.
10. Bleed the air by following the procedures below. At this time, be careful of the coolant temperature to prevent overheating.

Note

- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the PCM control operation, which prevents overheating, and it does not indicate a malfunction.

- (1) Run the engine at **2,500 rpm** for **2—3 min, 2 times**.
- (2) Run the engine at **3,000 rpm** for **5 s**, then idle.
- (3) Repeat steps (1), (2) twice.

11. Stop the engine, and inspect the engine coolant level after the engine coolant temperature decreases.
12. Check the coolant level.

- If it is low, refill the coolant into the coolant reserve tank up to the MAX mark on the tank.

13. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)

COOLING SYSTEM [LF, L5]

RADIATOR DRAIN PLUG REPLACEMENT [LF, L5]

id0112g3802100

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
3. Loosen the radiator drain plug completely.
4. Using a flathead screwdriver or equivalent, pry out the radiator drain plug.

Caution

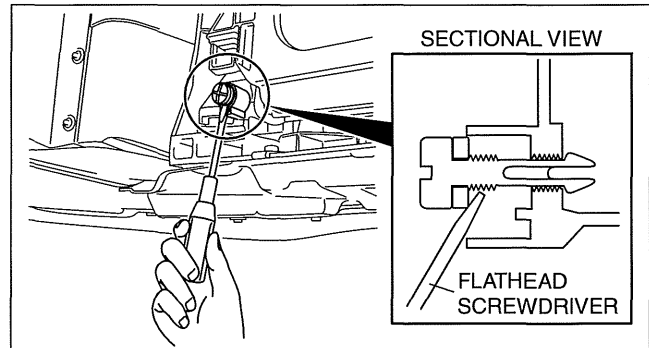
- Do not apply excessive force to the flathead screwdriver or equivalent as doing so can damage the drain bore. Slowly and carefully pry out the radiator drain plug when removing it.

5. Install a new radiator drain plug with a new O-ring.

Tightening torque

1.2—1.5 N·m {13—15 kgf·cm, 11—13 in·lbf}

6. Refill the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
7. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)



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ENGINE COOLANT LEAKAGE INSPECTION [LF, L5]

id0112g3800500

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

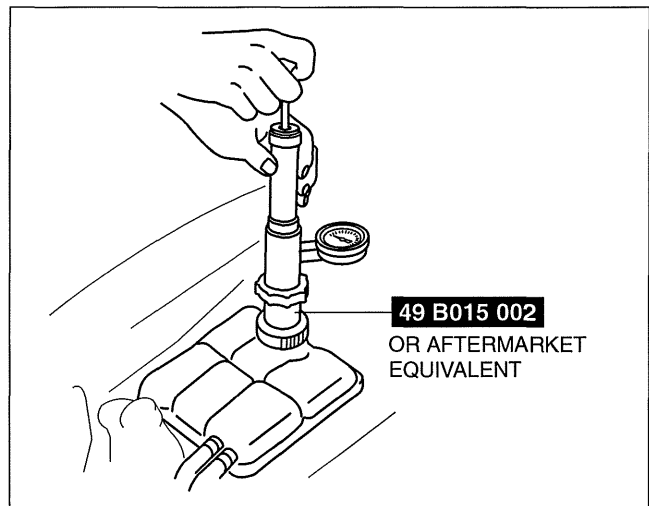
1. Inspect the engine coolant level. (See 01-12A-2 ENGINE COOLANT LEVEL INSPECTION [LF, L5].)
2. Remove the cooling system cap.
3. Install the **SST** or aftermarket equivalent and a radiator cap tester to the coolant reserve tank filler port.
4. Apply pressure using the radiator cap tester.

Caution

- Applying more than 155 kPa {1.58 kgf/cm², 22.5 psi} can damage the hoses, fittings, and other components, and cause leakage.

Engine coolant leakage inspection pressure
155 kPa {1.58 kgf/cm², 22.5 psi} [1 min]

5. When pressurizing the cooling system, verify that the pressure is maintained.
 - If the gauge needle drops, it may indicate water leakage. Repair or replace the applicable part.



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COOLING SYSTEM [LF, L5]

COOLING SYSTEM CAP INSPECTION [LF, L5]

id0112g3801500

Warning

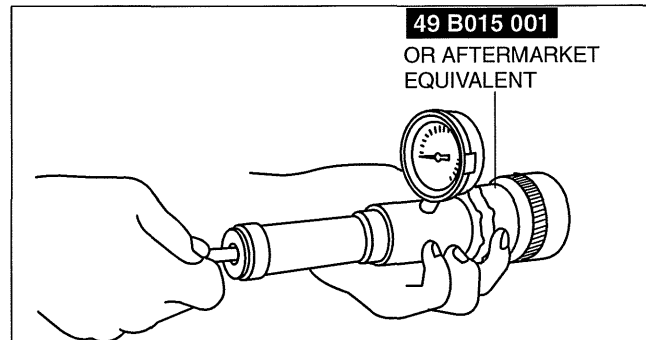
- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

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1. Clean the cooling system cap and the sealed part.
2. Inspect the cooling system cap for cracks or everted seal.
 - If there is any malfunction, replace the cooling system cap.
3. Attach the cooling system cap to the **SST** or aftermarket equivalent and a radiator cap tester.
4. Hold the cooling system cap downward and apply pressure gradually. Verify that the pressure is held stable for **10 s**.
 - If the pressure is not held stable, replace the cooling system cap.

Cooling system cap valve opening pressure

135—155 kPa {1.38—1.58 kgf/cm², 19.6—22.4 psi}



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COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5]

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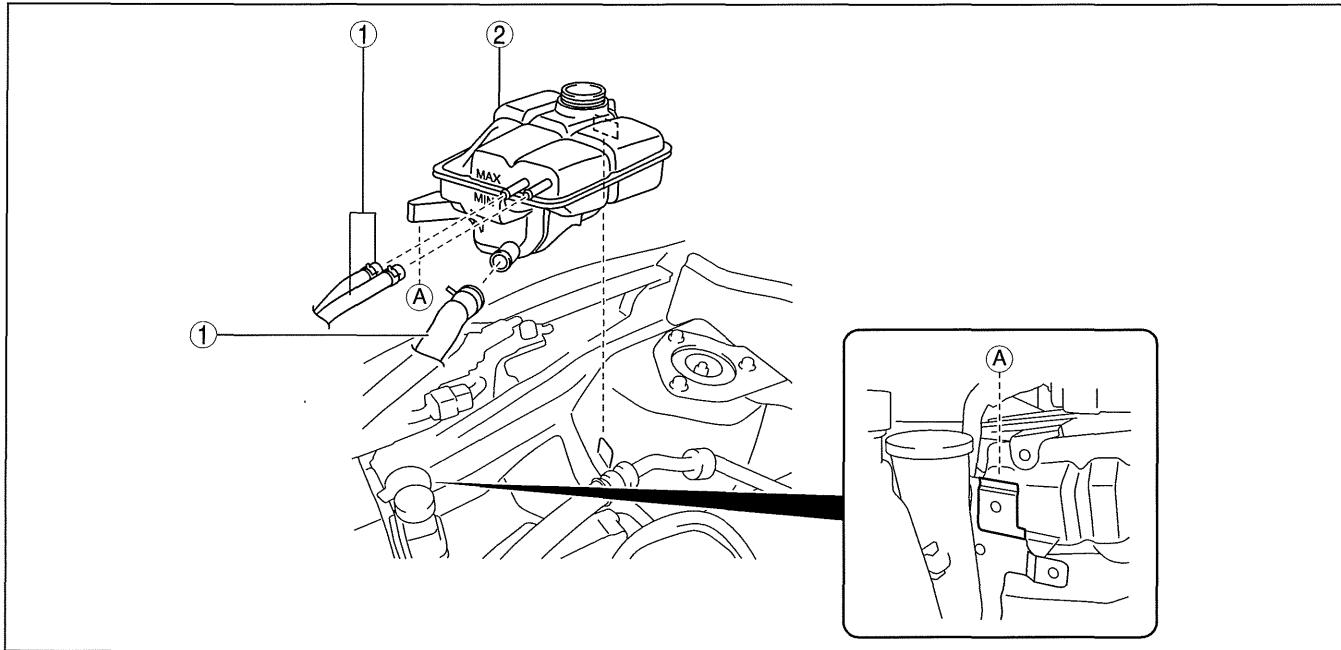
Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Drain the engine coolant until the coolant reserve tank becomes empty. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Refill the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)

COOLING SYSTEM [LF, L5]

5. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)



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1	Hose
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2	Coolant reserve tank
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RADIATOR REMOVAL/INSTALLATION [LF, L5]

id0112g3801400

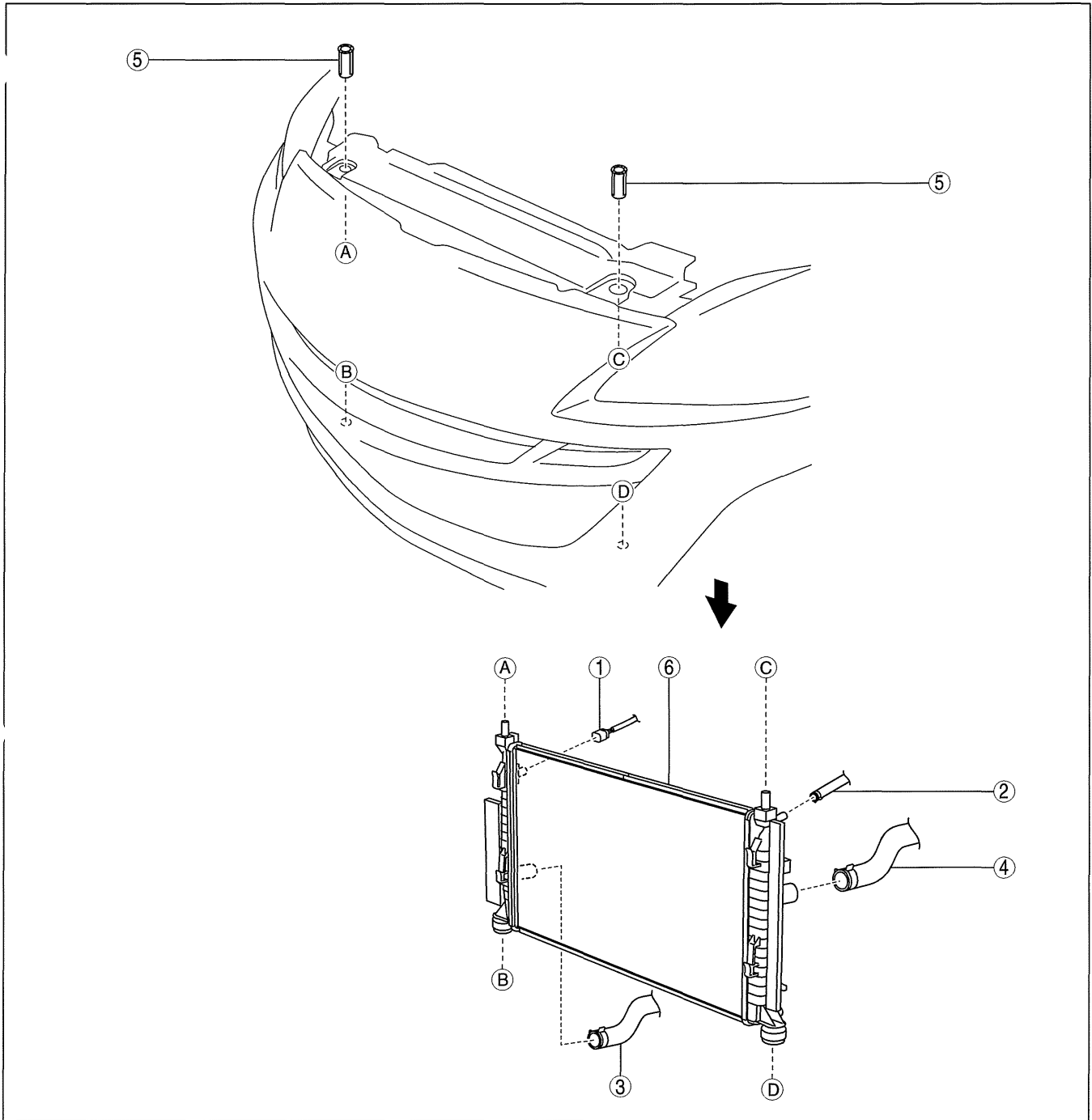
Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component and fresh air duct (No.1, No.2). (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
6. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
7. Remove the cooling fan component. (See 01-12A-13 COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5].)
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Refill the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)

COOLING SYSTEM [LF, L5]

11. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)



01-12A

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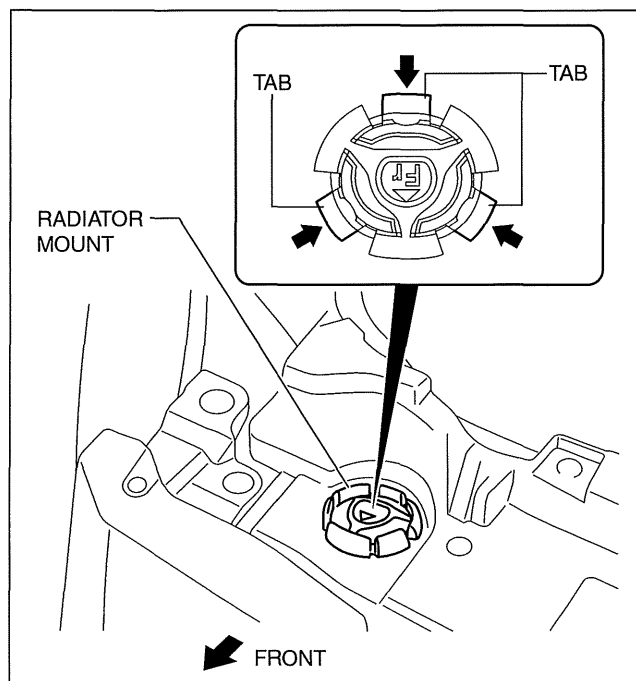
1	Connector
2	Coolant reserve tank hose
3	Lower radiator hose
4	Upper radiator hose

5	Radiator mount (See 01-12A-10 Radiator Mount Removal Note.) (See 01-12A-11 Radiator Mount Installation Note.)
6	Radiator (See 01-12A-10 Radiator Removal Note.)

COOLING SYSTEM [LF, L5]

Radiator Mount Removal Note

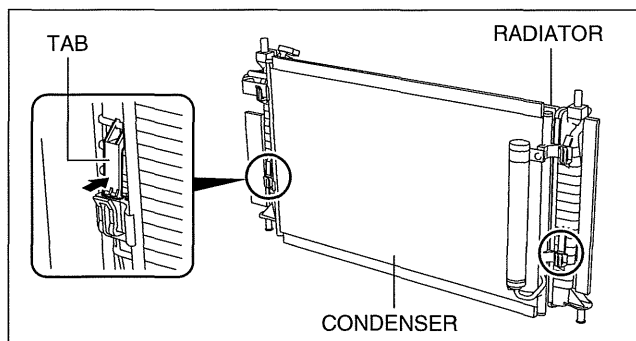
1. While pressing the radiator mount tab in the direction of the arrow shown in the figure, lift the radiator mount.
2. Remove the radiator mount.



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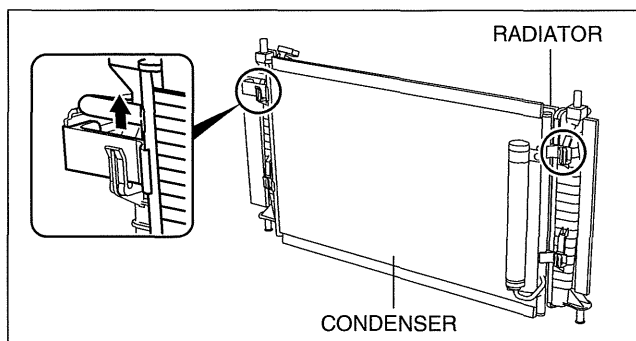
Radiator Removal Note

1. Lift the radiator and remove it from the radiator installation holes on the shroud panel.
2. Move the radiator and condenser to the engine side.
3. Release the left and right tabs on the lower side of the radiator by pressing them in the direction shown in the figure.



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4. Lift the condenser to remove it from the left and right insertion areas on the upper side of the radiator.
5. Set the condenser apart from the radiator.
6. Remove the radiator from below the engine compartment.

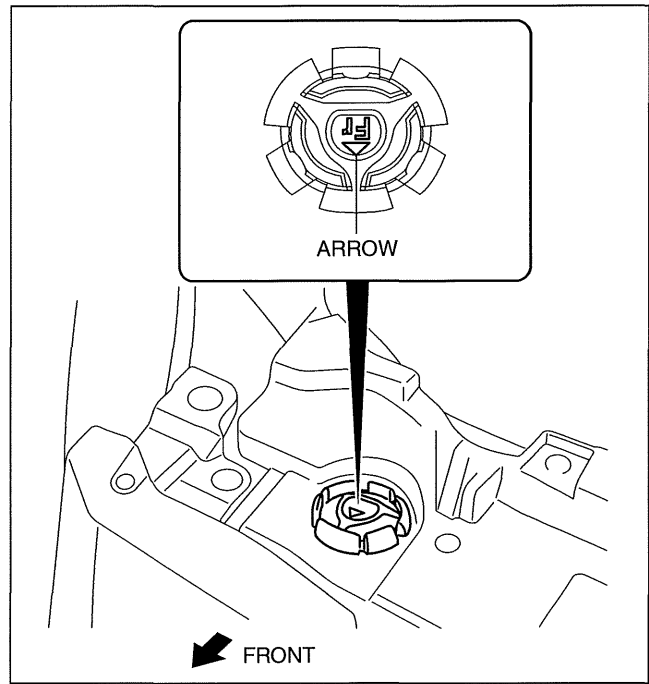


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COOLING SYSTEM [LF, L5]

Radiator Mount Installation Note

1. Install the radiator mount so that the arrow on it is pointed toward the front of the vehicle.



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THERMOSTAT REMOVAL/INSTALLATION [LF, L5]

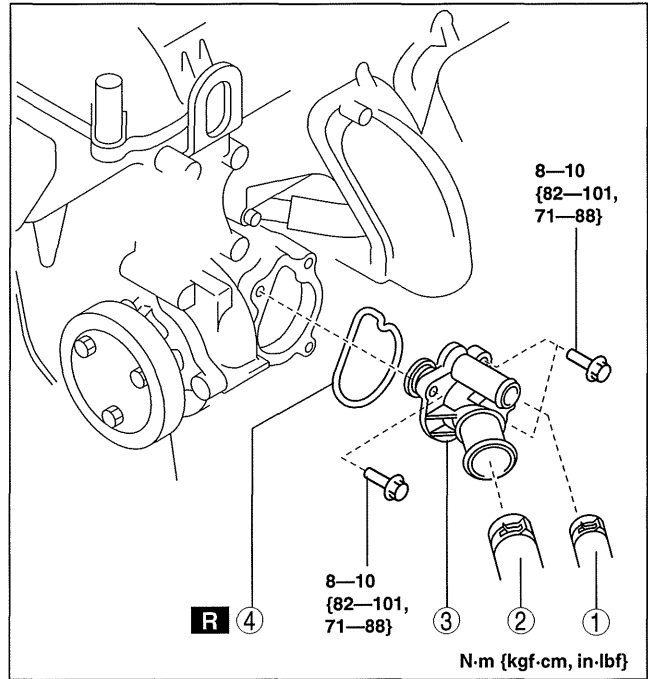
Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)(See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
5. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
6. Remove the generator drive belt with the A/C drive belt still installed and set it out of the way. (LF) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
7. Remove the drive belt. (L5) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
8. Remove the drive belt auto tensioner. (LF) (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
9. Remove the idler pulley. (L5) (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
10. Remove in the order indicated in the table.
11. Install in the reverse order of removal.
12. Refill the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
13. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)

COOLING SYSTEM [LF, L5]

1	Water hose
2	Lower radiator hose
3	Thermostat component
4	Gasket



am6xuw0000230

THERMOSTAT INSPECTION [LF, L5]

id0112g3801300

1. Remove the thermostat. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)
2. Visually check that the thermostat valve is closed.
3. Place the thermostat in water.

Warning

- During inspection, the thermostat and water are extremely hot and can cause severe burns. Do not touch the thermostat and water.

4. Heat the water and check the following.
 - Opening temperature and valve lift
 - If there is a malfunction, replace the thermostat. (See 01-12A-11 THERMOSTAT REMOVAL/INSTALLATION [LF, L5].)

Thermostat initial-opening temperature

80—84 °C {176—183 °F}

Thermostat full-open temperature

97 °C {207 °F}

Thermostat full-open lift

More than 8.0 mm {0.31 in}

COOLING SYSTEM [LF, L5]

WATER PUMP REMOVAL/INSTALLATION [LF, L5]

id0112g3800700

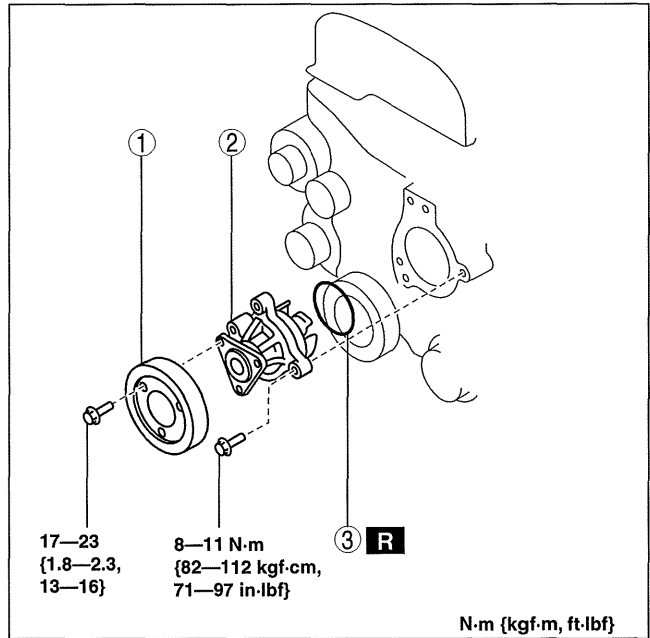
01-12A

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)(See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
5. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
6. Loosen the water pump pulley bolts before removing the drive belt.
7. Remove the generator drive belt with the A/C drive belt still installed and set it out of the way. (LF) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
8. Remove the drive belt. (L5) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
9. Remove the drive belt auto tensioner. (LF) (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
10. Remove the idler pulley. (L5) (See 01-10A-45 ENGINE DISASSEMBLY/ASSEMBLY [LF, L5].)
11. Remove in the order indicated in the table.
12. Install in the reverse order of removal.
13. Refill the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
14. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)

1	Water pump pulley
2	Water pump
3	O-ring (See 01-12A-13 O-ring Installation Note.)



O-ring Installation Note

1. Apply engine coolant to a new O-ring.
2. Install the O-ring.

COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5]

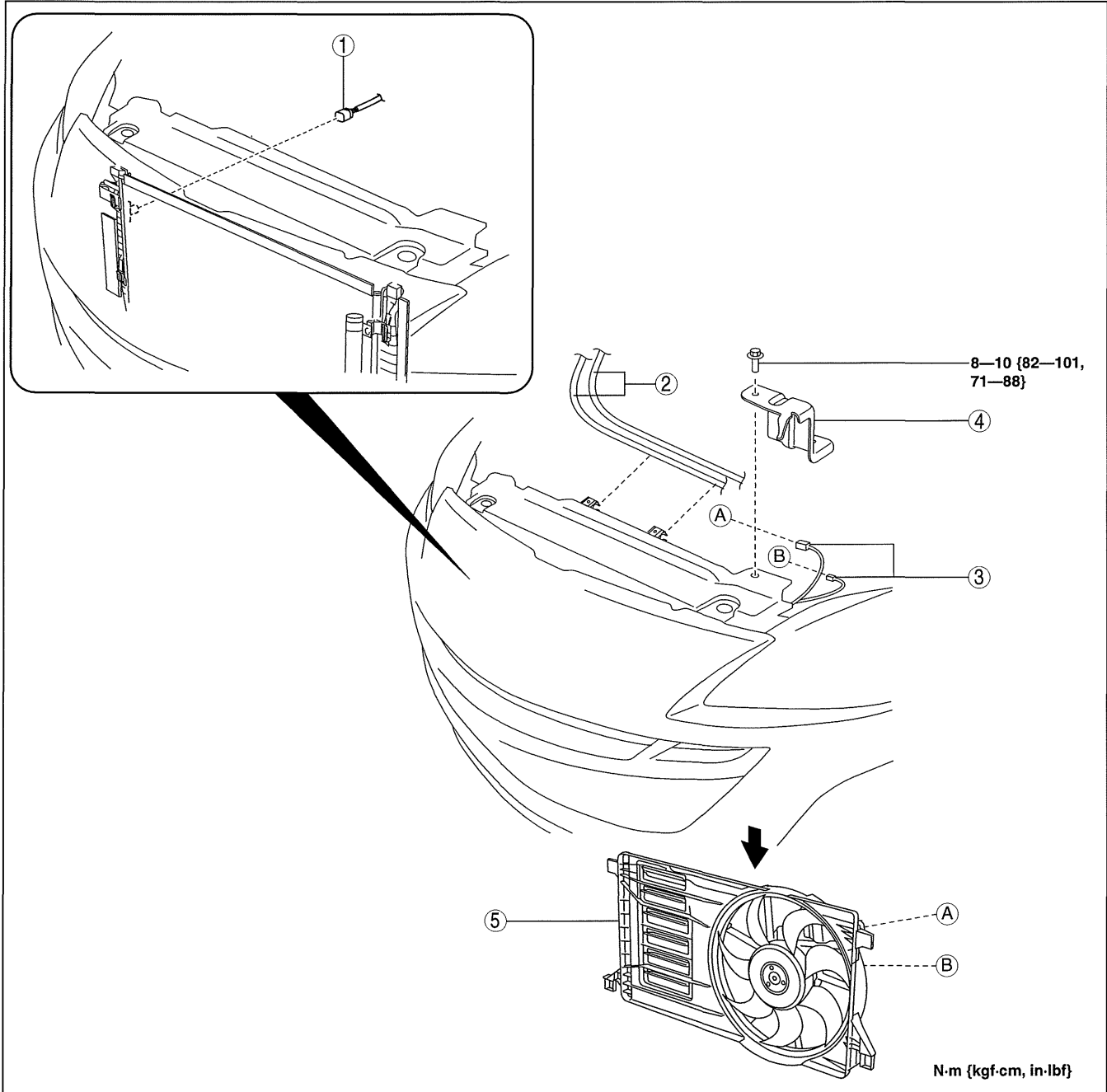
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Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

COOLING SYSTEM [LF, L5]

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component and fresh air duct (No.1, No.2). (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.



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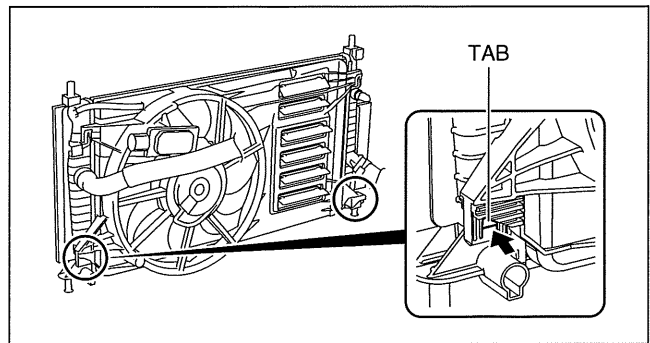
1	Connector
2	Coolant reserve tank hose
3	Connector

4	Air cleaner component bracket
5	Cooling fan component (See 01-12A-15 Cooling Fan Component Removal Note.)

COOLING SYSTEM [LF, L5]

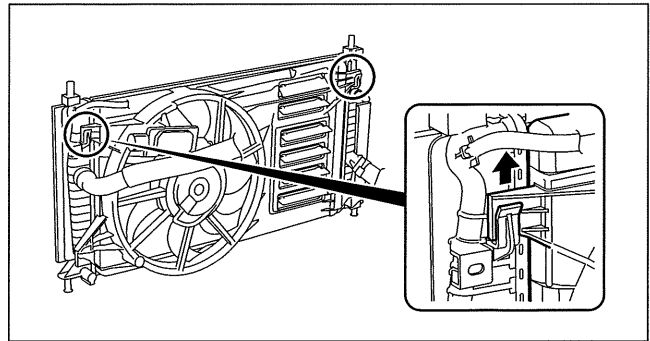
Cooling Fan Component Removal Note

1. Release the left and right tabs on the lower side of the radiator by pressing them in the direction shown in the figure.



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2. Lift the cooling fan component to remove it from the left and right insertion areas on the upper side of the radiator.
3. Remove the cooling fan component from below the engine compartment.



COOLING FAN COMPONENT INSPECTION [LF, L5]

id0112g3050100

1. Perform the cooling fan control system inspection. (See 01-03A-86 ENGINE CONTROL SYSTEM OPERATION INSPECTION [LF, L5].)

01-12B COOLING SYSTEM [L3 WITH TC]

COOLING SYSTEM LOCATION INDEX
 [L3 WITH TC] 01-12B-1

COOLING SYSTEM SERVICE

WARNINGS [L3 WITH TC] 01-12B-2

ENGINE COOLANT LEVEL
INSPECTION [L3 WITH TC] 01-12B-2

ENGINE COOLANT PROTECTION
INSPECTION [L3 WITH TC] 01-12B-3

ENGINE COOLANT REPLACEMENT
 [L3 WITH TC] 01-12B-4

RADIATOR DRAIN PLUG
REPLACEMENT [L3 WITH TC] 01-12B-5

ENGINE COOLANT LEAKAGE
INSPECTION [L3 WITH TC] 01-12B-6

COOLING SYSTEM CAP INSPECTION
 [L3 WITH TC] 01-12B-7

COOLANT RESERVE TANK
REMOVAL/INSTALLATION
 [L3 WITH TC] 01-12B-7

RADIATOR REMOVAL/INSTALLATION
 [L3 WITH TC] 01-12B-8

Radiator Mount Removal Note 01-12B-10

Radiator Removal Note 01-12B-10

Radiator Mount Installation Note 01-12B-11

THERMOSTAT
REMOVAL/INSTALLATION
 [L3 WITH TC] 01-12B-11

THERMOSTAT INSPECTION
 [L3 WITH TC] 01-12B-12

WATER PUMP
REMOVAL/INSTALLATION
 [L3 WITH TC] 01-12B-13

O-ring Installation Note 01-12B-13

COOLING FAN COMPONENT
REMOVAL/INSTALLATION
 [L3 WITH TC] 01-12B-14

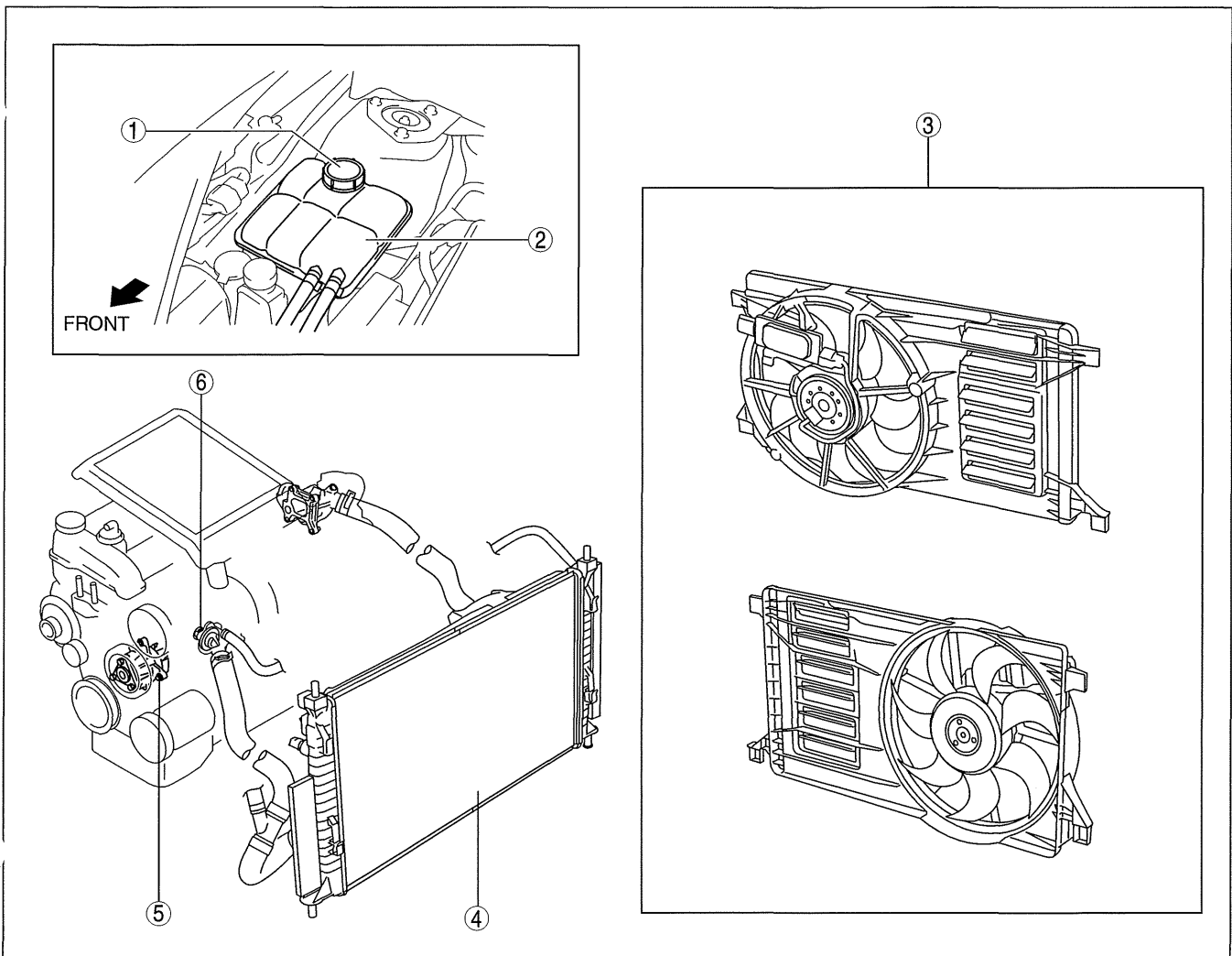
Cooling Fan Component
 Removal Note 01-12B-15

COOLING FAN COMPONENT
INSPECTION [L3 WITH TC] 01-12B-15

01-12B

COOLING SYSTEM LOCATION INDEX [L3 WITH TC]

id011239800100



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COOLING SYSTEM [L3 WITH TC]

1	Cooling system cap (See 01-12B-7 COOLING SYSTEM CAP INSPECTION [L3 WITH TC].)
2	Coolant reserve tank (See 01-12B-2 ENGINE COOLANT LEVEL INSPECTION [L3 WITH TC].) (See 01-12B-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [L3 WITH TC].)
3	Cooling fan component (See 01-12B-14 COOLING FAN COMPONENT REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-12B-15 COOLING FAN COMPONENT INSPECTION [L3 WITH TC].)

4	Radiator (See 01-12B-3 ENGINE COOLANT PROTECTION INSPECTION [L3 WITH TC].) (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].) (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].) (See 01-12B-8 RADIATOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-12B-5 RADIATOR DRAIN PLUG REPLACEMENT [L3 WITH TC].)
5	Water pump (See 01-12B-13 WATER PUMP REMOVAL/INSTALLATION [L3 WITH TC].)
6	Thermostat (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-12B-12 THERMOSTAT INSPECTION [L3 WITH TC].)

COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC]

id011239800200

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.
- Depending on the vehicle, the cooling fan may operate suddenly even when the ignition is off. Therefore, keep hands and tools away from the cooling fan even if the cooling fan is not operating to prevent injury to personnel or damage to the cooling fan. Always disconnect the negative battery cable when servicing the cooling fan or parts near the cooling fan.

ENGINE COOLANT LEVEL INSPECTION [L3 WITH TC]

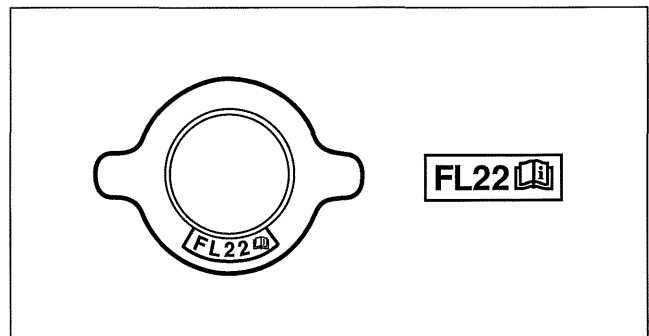
id011239800300

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

Note

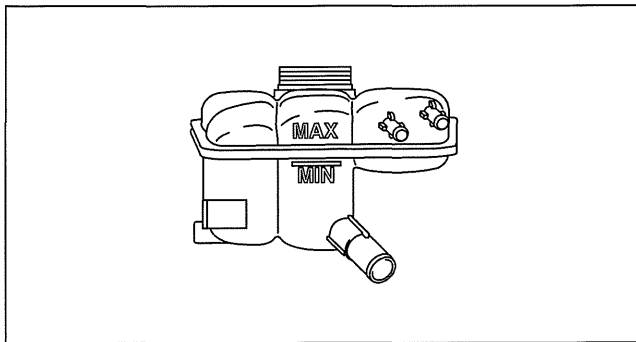
- If the "FL22" mark is shown on or near the cooling system cap, use FL22 type engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.



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COOLING SYSTEM [L3 WITH TC]

1. Verify that the engine coolant level in the coolant reserve tank is between the MAX and MIN marks.
 - If the engine coolant level is below the MIN mark, add engine coolant.



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01-12B

ENGINE COOLANT PROTECTION INSPECTION [L3 WITH TC]

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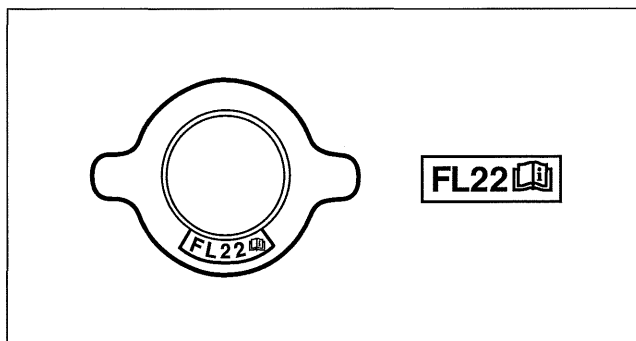
1. Measure the engine coolant temperature and specific gravity using a thermometer and a hydrometer.

Caution

- Use engine coolant at a concentration that meets the environmental conditions in which the vehicle is driven, otherwise engine damage could occur.
- The engine has aluminum parts and must be protected by an ethylene-glycol-based coolant to prevent corrosion and freezing.
- Do not use coolants containing Alcohol, Methanol, Borate or Silicate. These coolants could damage the cooling system.
- Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
- Engine coolant damages paint. If engine coolant does get on a painted surface, rinse it off quickly.

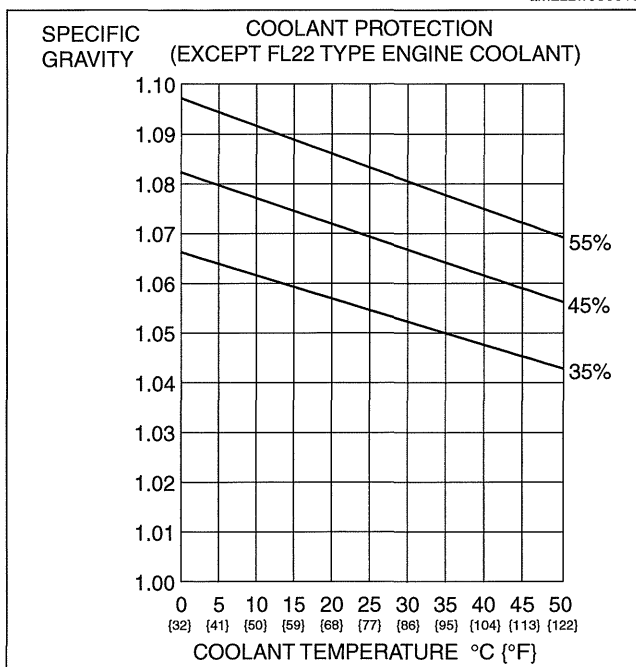
Note

- If the "FL22" mark is shown on or near the cooling system cap, use FL22 type engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.



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2. Determine the engine coolant protection level by referring to the graph shown in the figure.
 - If the engine coolant protection level is not correct, add water or engine coolant.



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COOLING SYSTEM [L3 WITH TC]

ENGINE COOLANT REPLACEMENT [L3 WITH TC]

id011239800600

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

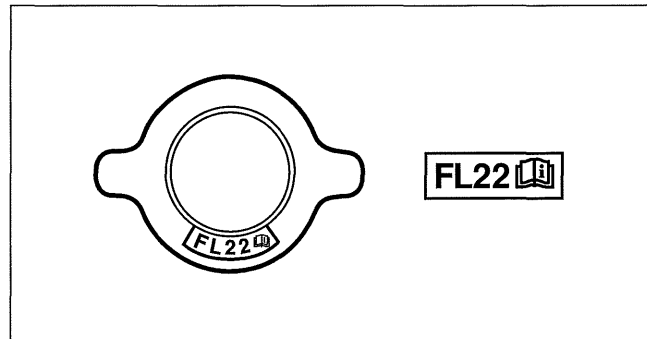
Caution

- Use engine coolant at a concentration that meets the environmental conditions in which the vehicle is driven, otherwise engine damage could occur.
- The engine has aluminum parts and must be protected by an ethylene-glycol-based coolant to prevent corrosion and freezing.
- Do not use coolants containing Alcohol, Methanol, Borate or Silicate. These coolants could damage the cooling system.
- Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
- Engine coolant damages paint. If engine coolant does get on a painted surface, rinse it off quickly.

Note

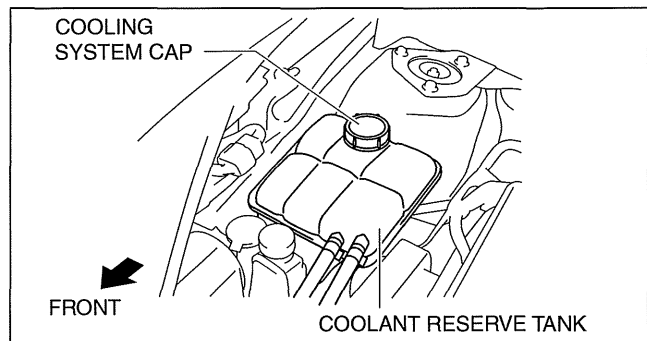
- If the "FL22" mark is shown on or near the cooling system cap, use FL22 type engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.

Engine coolant capacity (approx. quantity)
7.5 L {7.9 US qt, 6.6 Imp qt}



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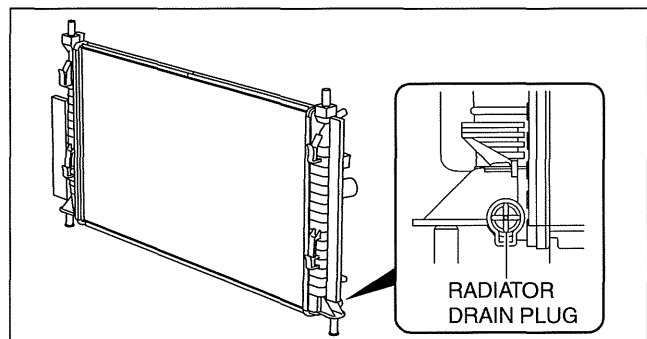
1. Remove the cooling system cap.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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3. Loosen the radiator drain plug and drain the engine coolant into a container.
4. Flush the cooling system with water until all traces of color are gone.
5. Let the system drain completely.
6. Tighten the radiator drain plug.

Tightening torque
1.2—1.5 N·m {13—15 kgf·cm, 11—13 in·lbf}



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COOLING SYSTEM [L3 WITH TC]

7. Referring to the following chart, select the correct volume percentage of the water and engine coolant.

Antifreeze solution mixture percentage (Except FL22 type engine coolant)

Engine coolant protection	Volume percentage (%)		Gravity at 20 °C {68 °F}
	Water	Coolant	
Above -16 °C {3 °F}	65	35	1.057
Above -26 °C {-15 °F}	55	45	1.072
Above -40 °C {-40 °F}	45	55	1.086

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8. Refill the engine coolant into the coolant reserve tank up to the MAX mark on the tank.

9. Install the cooling system cap.

Caution

- If the high engine coolant temperature warning light flashes, stop the engine to lower the engine coolant temperature and prevent overheating. Then, verify the malfunctioning part and repair or replace it.
- If the engine coolant level in the coolant reserve tank is below the MIN mark during engine coolant air bleeding operation, stop the engine, and after the engine coolant temperature decreases, add engine coolant. Then, resume the engine coolant air bleeding operation.

10. Start the engine and warm up the engine by idling.

11. Bleed the air by following the procedures below. At this time, be careful of the coolant temperature to prevent overheating.

Note

- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the PCM control operation, which prevents overheating, and it does not indicate a malfunction.

(1) Run the engine at **2,500 rpm** for **2—3 min, 2 times**.

(2) Run the engine at **3,000 rpm** for **5 s**, then idle.

(3) Repeat steps (1), (2) twice.

12. Stop the engine, and inspect the engine coolant level after the engine coolant temperature decreases.

13. Check the coolant level.

- If it is low, refill the coolant into the coolant reserve tank up to the MAX mark on the tank.

14. Inspect for engine coolant leakage. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)

15. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

RADIATOR DRAIN PLUG REPLACEMENT [L3 WITH TC]

id011239802100

Warning

- **Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.**
- **Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.**
- **When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.**

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

2. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)

3. Loosen the radiator drain plug completely.

COOLING SYSTEM [L3 WITH TC]

- Using a flathead screwdriver or equivalent, pry out the radiator drain plug.

Caution

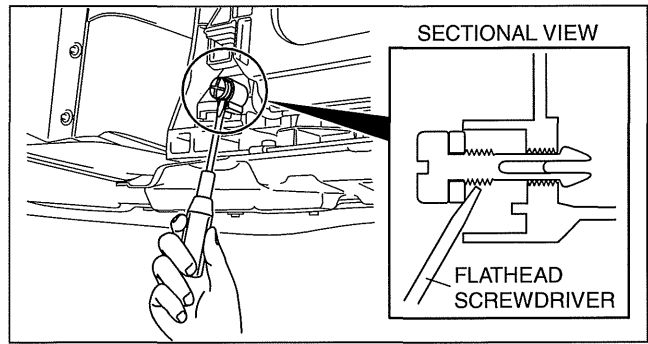
- Do not apply excessive force to the flathead screwdriver or equivalent as doing so can damage the drain bore. Slowly and carefully pry out the radiator drain plug when removing it.

- Install a new radiator drain plug with a new O-ring.

Tightening torque

1.2—1.5 N·m {13—15 kgf·cm, 11—13 in·lbf}

- Refill the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
- Inspect for engine coolant leakage. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)
- Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC]

id011239800500

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

- Inspect the engine coolant level. (See 01-12B-2 ENGINE COOLANT LEVEL INSPECTION [L3 WITH TC].)
- Remove the cooling system cap.
- Install the **SST** or aftermarket equivalent and a radiator cap tester to the coolant reserve tank filler port.
- Apply pressure using the radiator cap tester.

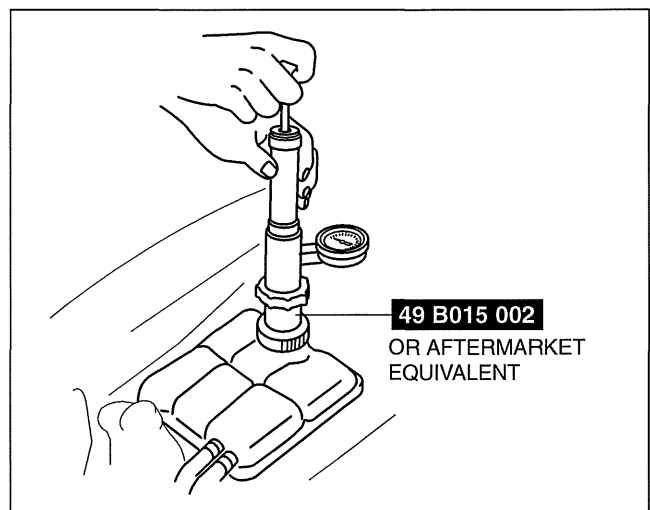
Caution

- Applying more than 155 kPa {1.58 kgf/cm², 22.5 psi} can damage the hoses, fittings, and other components, and cause leakage.

Engine coolant leakage inspection pressure

155 kPa {1.58 kgf/cm², 22.5 psi} [1 min]

- When pressurizing the cooling system, verify that the pressure is maintained.
 - If the gauge needle drops, it may indicate water leakage. Repair or replace the applicable part.



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COOLING SYSTEM [L3 WITH TC]

COOLING SYSTEM CAP INSPECTION [L3 WITH TC]

id011239801500

Warning

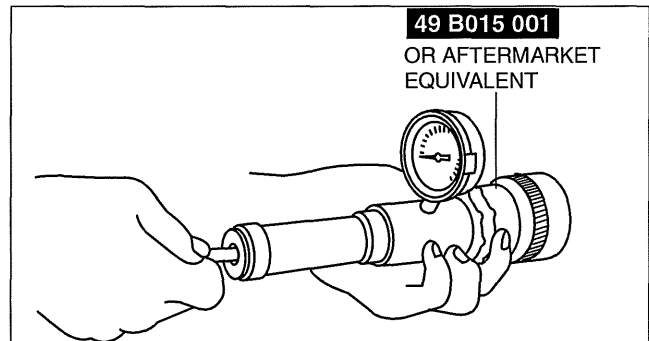
- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

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1. Clean the cooling system cap and the sealed part.
2. Inspect the cooling system cap for cracks or everted seal.
 - If there is any malfunction, replace the cooling system cap.
3. Attach the cooling system cap to the **SST** or aftermarket equivalent and a radiator cap tester.
4. Hold the cooling system cap downward and apply pressure gradually. Verify that the pressure is held stable for **10 s**.
 - If the pressure is not held stable, replace the cooling system cap.

Cooling system cap valve opening pressure

135—155 kPa {1.38—1.58 kgf/cm², 19.6—22.4 psi}



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COOLANT RESERVE TANK REMOVAL/INSTALLATION [L3 WITH TC]

id011239801000

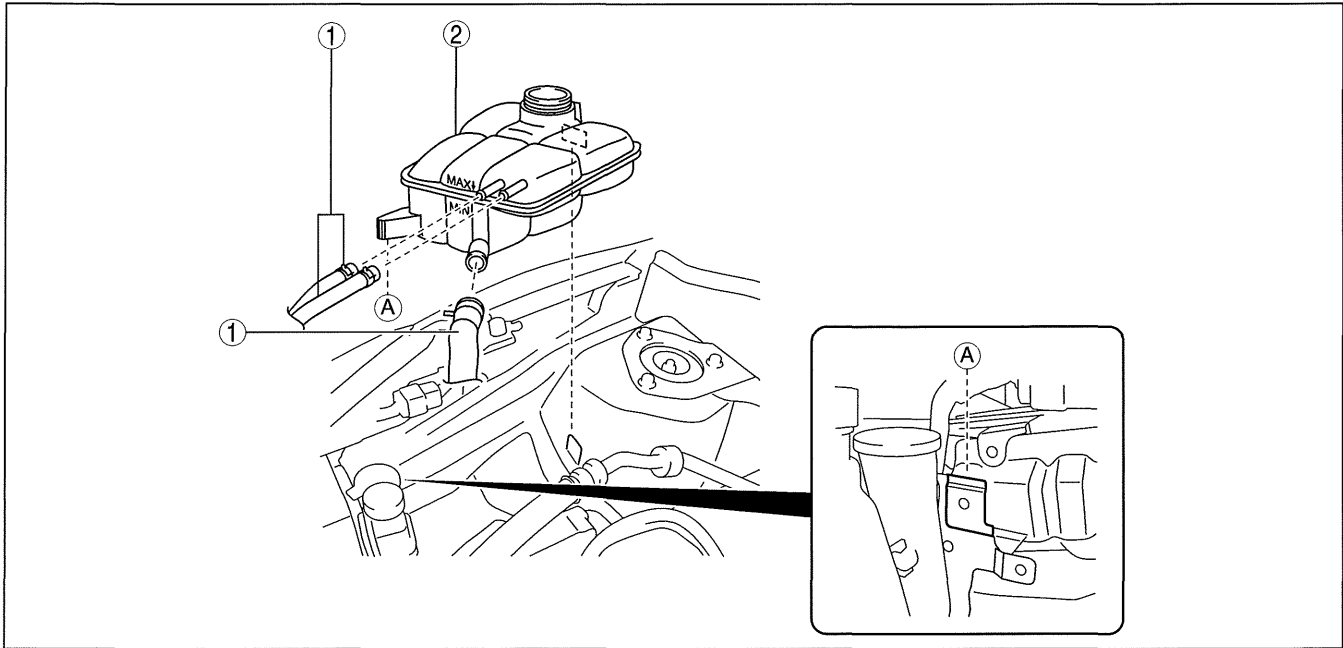
Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Drain the engine coolant until the coolant reserve tank becomes empty. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Refill the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)

COOLING SYSTEM [L3 WITH TC]

6. Inspect for engine coolant leakage. (See 01-12B-2 ENGINE COOLANT LEVEL INSPECTION [L3 WITH TC].)



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1	Hose
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2	Coolant reserve tank
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RADIATOR REMOVAL/INSTALLATION [L3 WITH TC]

id011239801400

Warning

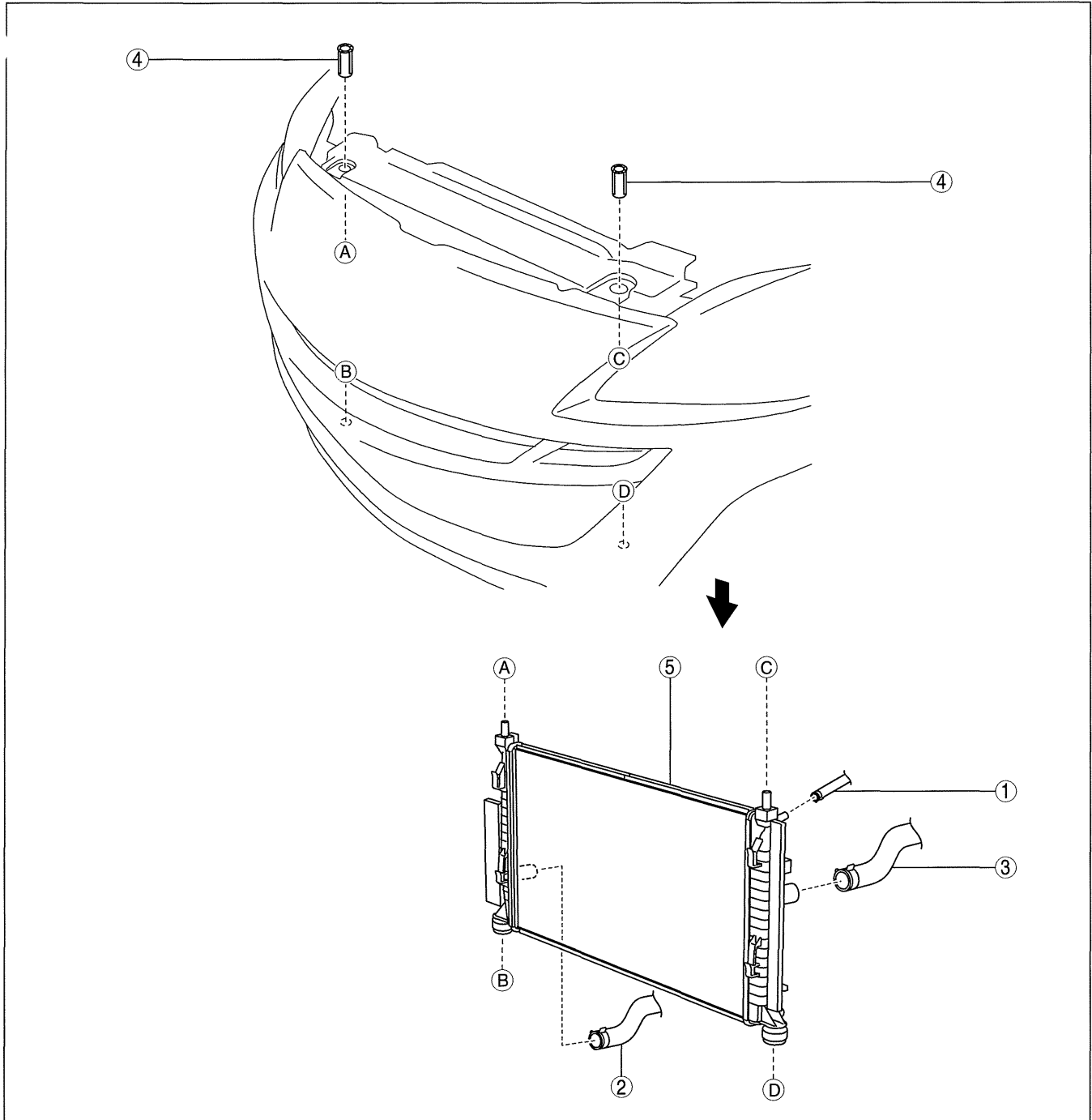
- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the air cleaner component, air cleaner bracket and fresh air duct (No.1, No.2). (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
6. Remove the cooling fan component. (See 01-12B-14 COOLING FAN COMPONENT REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. Refill the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)

COOLING SYSTEM [L3 WITH TC]

10. Inspect for engine coolant leakage. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)

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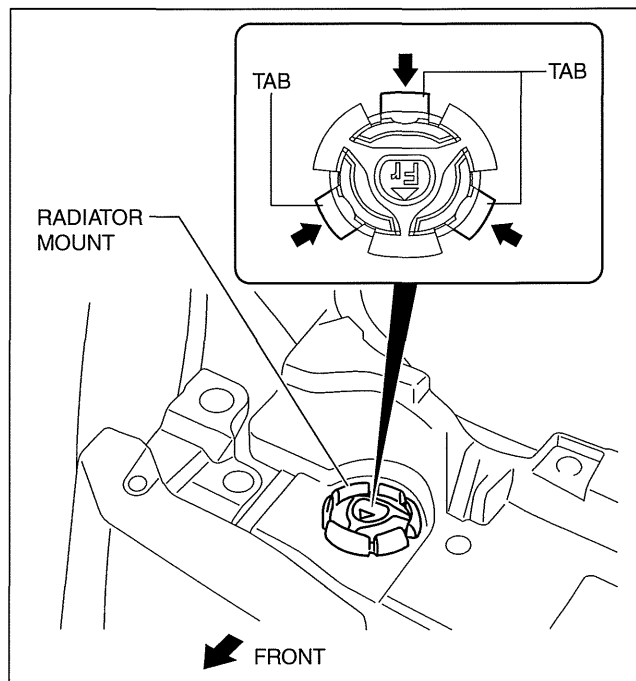
1	Coolant reserve tank hose
2	Lower radiator hose
3	Upper radiator hose

4	Radiator mount (See 01-12B-10 Radiator Mount Removal Note.) (See 01-12B-11 Radiator Mount Installation Note.)
5	Radiator (See 01-12B-10 Radiator Removal Note.)

COOLING SYSTEM [L3 WITH TC]

Radiator Mount Removal Note

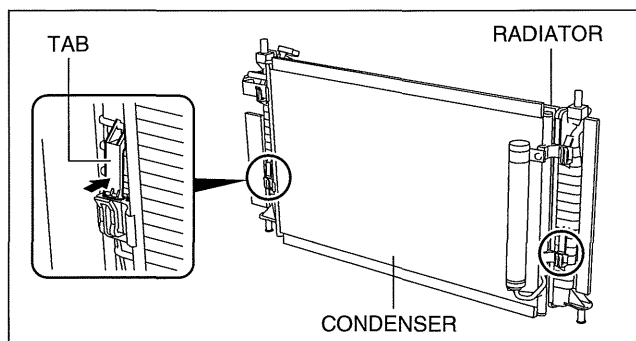
1. While pressing the radiator mount tab in the direction of the arrow shown in the figure, lift the radiator mount.
2. Remove the radiator mount.



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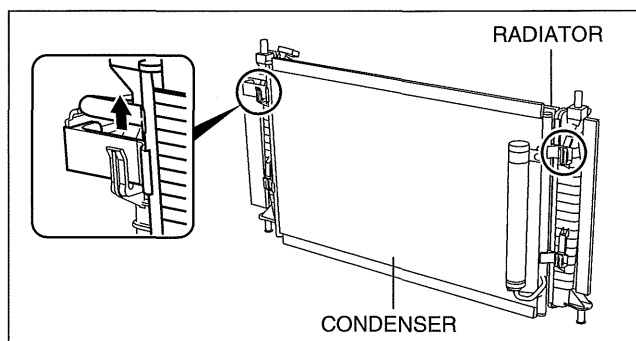
Radiator Removal Note

1. Lift the radiator and remove it from the radiator installation holes on the shroud panel.
2. Move the radiator and condenser to the engine side.
3. Release the left and right tabs on the lower side of the radiator by pressing them in the direction shown in the figure.



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4. Lift the condenser to remove it from the left and right insertion areas on the upper side of the radiator.
5. Set the condenser apart from the radiator.
6. Remove the radiator from below the engine compartment.

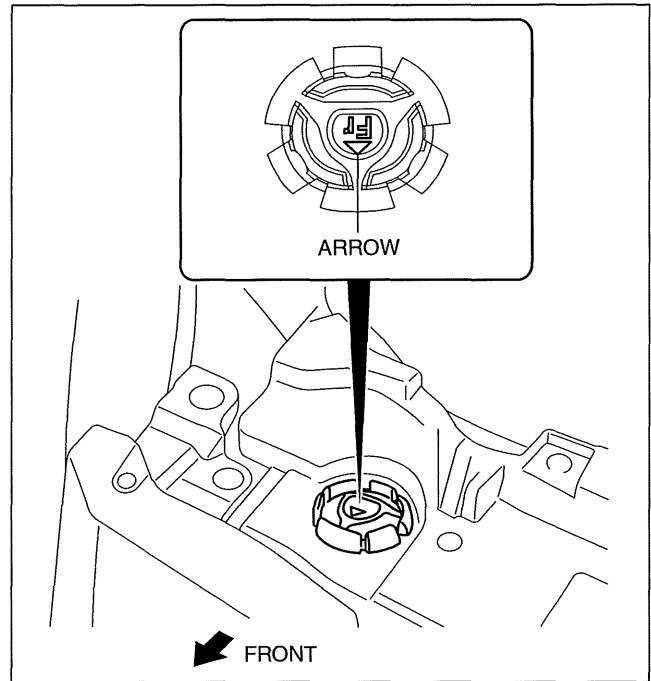


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COOLING SYSTEM [L3 WITH TC]

Radiator Mount Installation Note

1. Install the radiator mount so that the arrow on it is pointed toward the front of the vehicle.



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THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC]

id011239801200

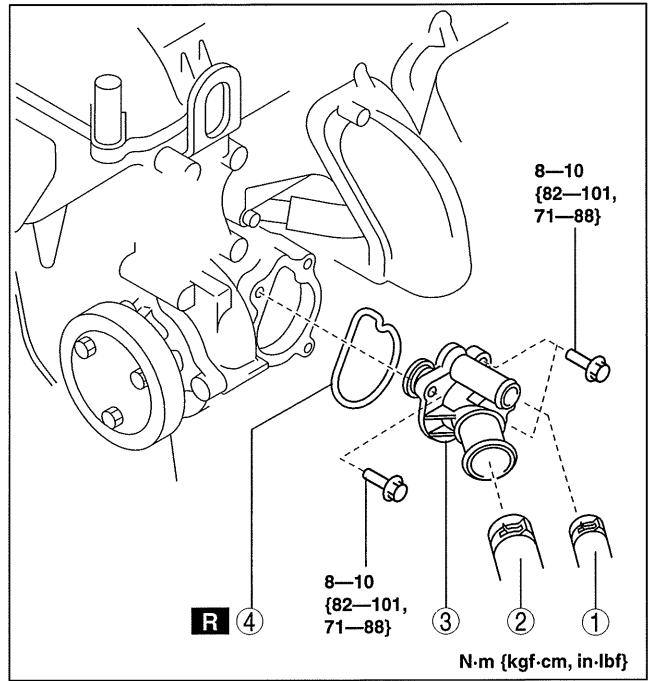
Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)(See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
4. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
5. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the drive belt idler pulley. (See 01-10B-48 ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. Refill the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
10. Inspect for engine coolant leakage. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)

COOLING SYSTEM [L3 WITH TC]

1	Water hose
2	Lower radiator hose
3	Thermostat component
4	Gasket



THERMOSTAT INSPECTION [L3 WITH TC]

id011239801300

1. Remove the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].)
2. Visually check that the thermostat valve is closed.
3. Place the thermostat in water.

Warning

- During inspection, the thermostat and water are extremely hot and can cause severe burns. Do not touch the thermostat and water.

4. Heat the water and check the following.
 - Opening temperature and valve lift
 - If there is a malfunction, replace the thermostat. (See 01-12B-11 THERMOSTAT REMOVAL/INSTALLATION [L3 WITH TC].)

Thermostat initial-opening temperature

80—84 °C {176—183 °F}

Thermostat full-open temperature

97 °C {207 °F}

Thermostat full-open lift

More than 8.0 mm {0.31 in}

COOLING SYSTEM [L3 WITH TC]

WATER PUMP REMOVAL/INSTALLATION [L3 WITH TC]

id011239800700

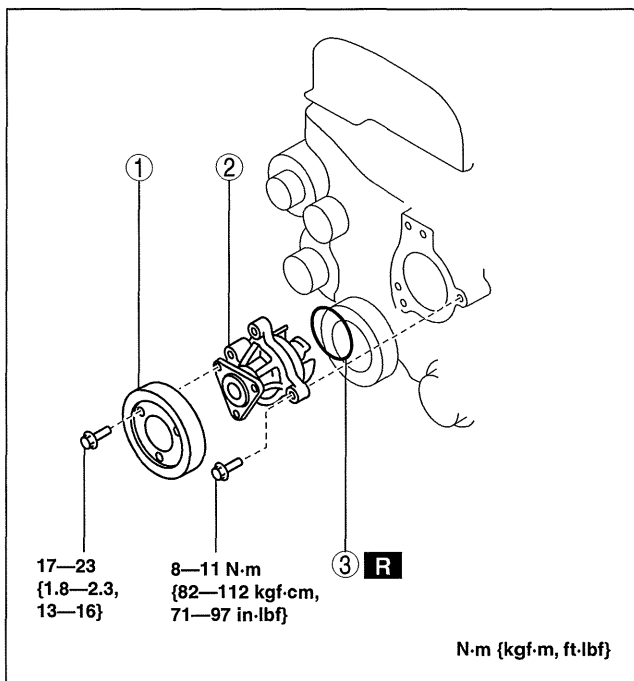
01-12B

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)(See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
4. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
5. Loosen the water pump pulley bolts before removing the drive belt.
6. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the drive belt idler pulley. (See 01-10B-48 ENGINE DISASSEMBLY/ASSEMBLY [L3 WITH TC].)
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Refill the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
11. Inspect for engine coolant leakage. (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)

1	Water pump pulley
2	Water pump
3	O-ring (See 01-12B-13 O-ring Installation Note.)



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O-ring Installation Note

1. Apply engine coolant to a new O-ring.
2. Install the O-ring.

COOLING SYSTEM [L3 WITH TC]

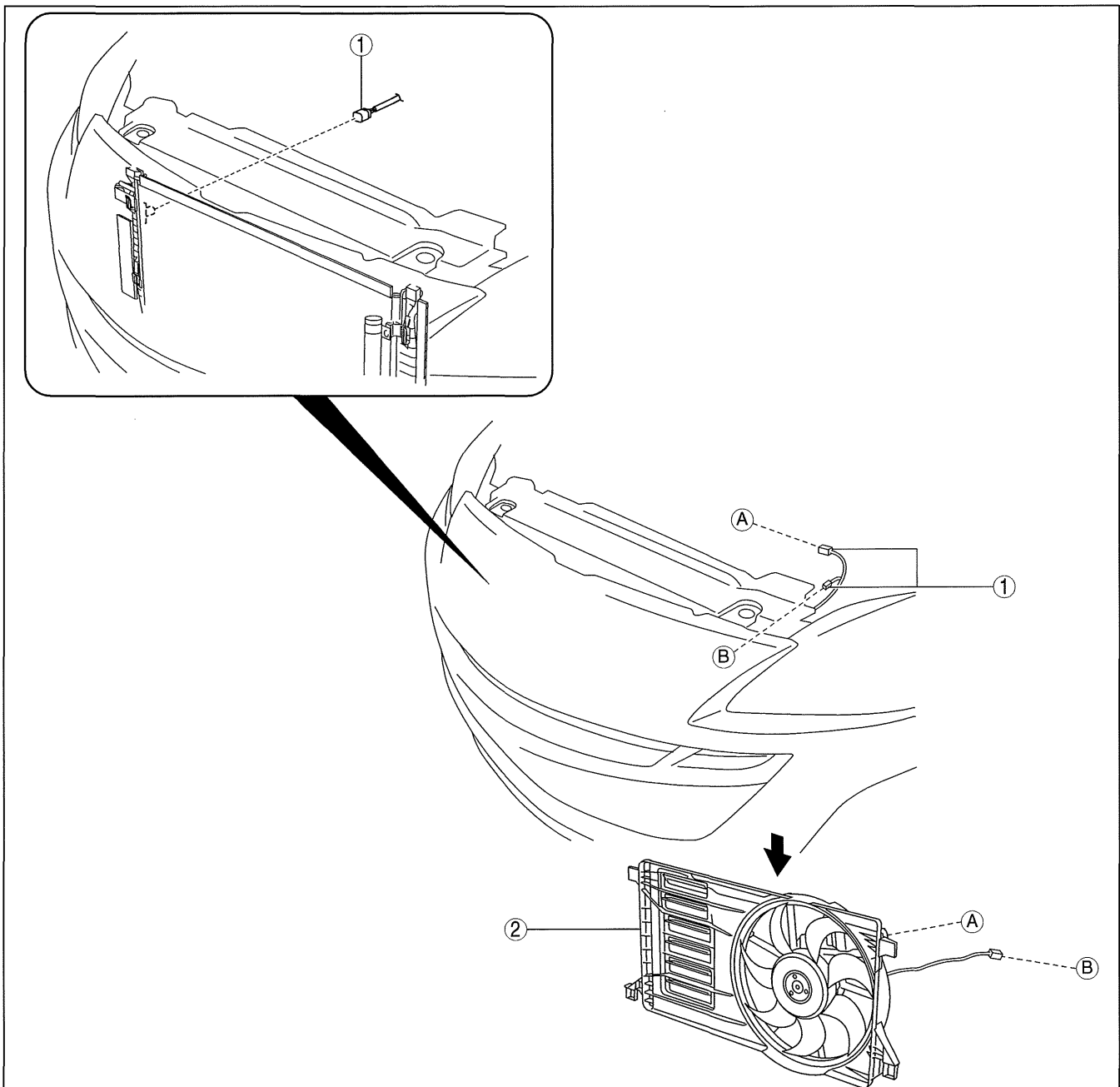
COOLING FAN COMPONENT REMOVAL/INSTALLATION [L3 WITH TC]

id011239801600

Warning

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise 2.5 turns. Step back while the pressure escapes.
- When you are sure all the pressure is gone, turn the cap using the cloth, and remove it.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the dipstick.
4. Remove the air cleaner component, air cleaner bracket and fresh air duct (No.1, No.2). (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.



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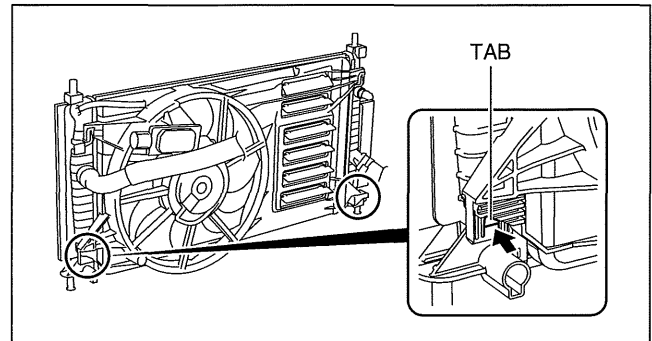
COOLING SYSTEM [L3 WITH TC]

1	Connector
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2	Cooling fan component (See 01-12B-15 Cooling Fan Component Removal Note.)
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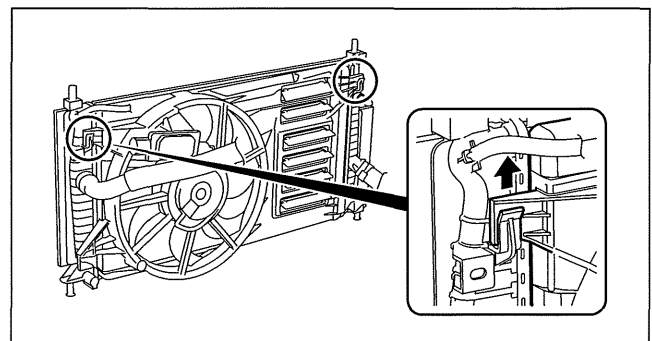
Cooling Fan Component Removal Note

1. Release the left and right tabs on the lower side of the radiator by pressing them in the direction shown in the figure.



01-12B

2. Lift the cooling fan component to remove it from the left and right insertion areas on the upper side of the radiator.
3. Remove the cooling fan component from below the engine compartment.



COOLING FAN COMPONENT INSPECTION [L3 WITH TC]

id011239050100

1. Perform the cooling fan control system inspection. (See 01-03B-91 ENGINE CONTROL SYSTEM OPERATION INSPECTION [L3 WITH TC].)

01-13A INTAKE-AIR SYSTEM [LF, L5]

INTAKE-AIR SYSTEM LOCATION INDEX
 [LF, L5] 01-13A-1

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INTAKE-AIR SYSTEM DIAGRAM [LF, L5] 01-13A-3

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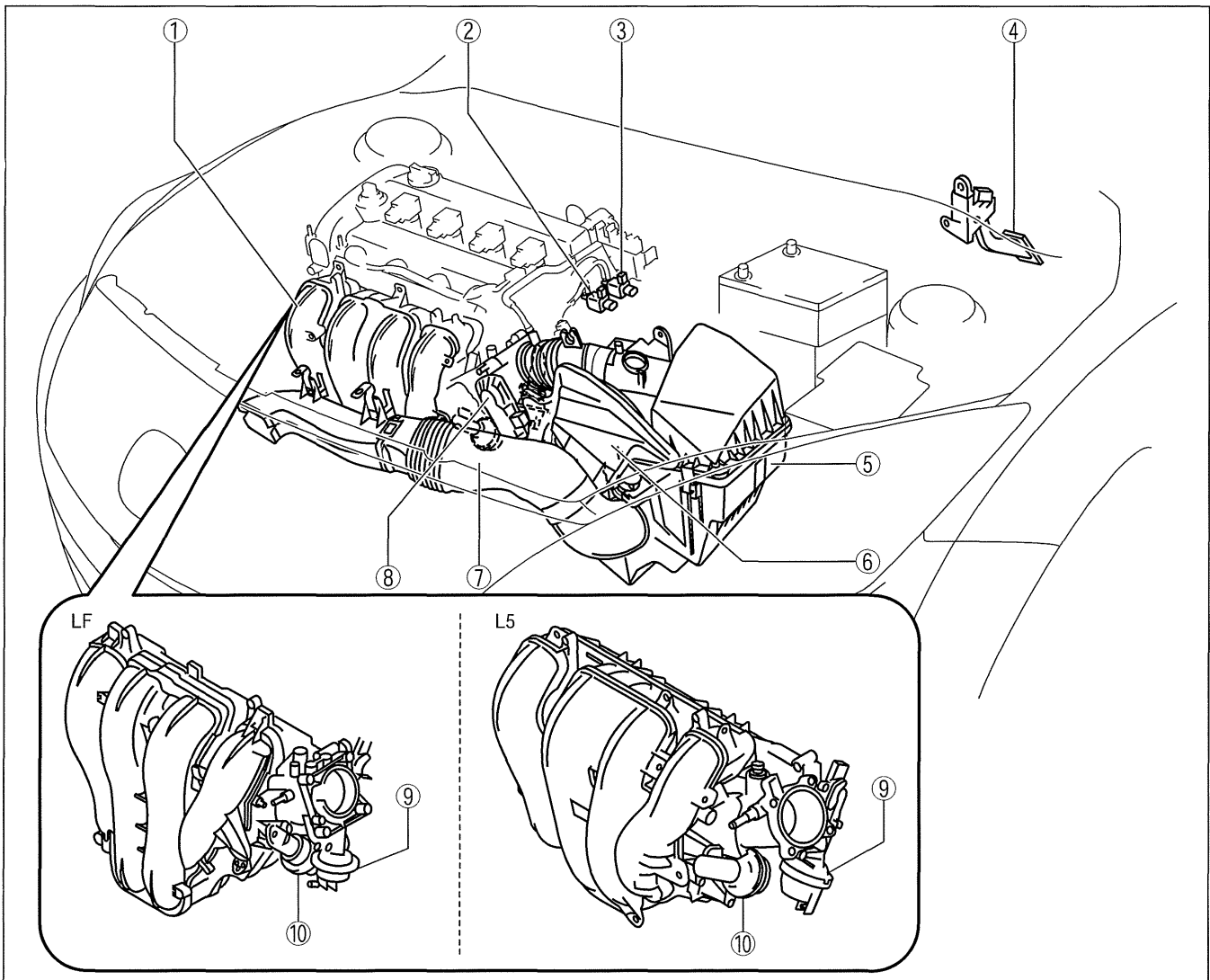
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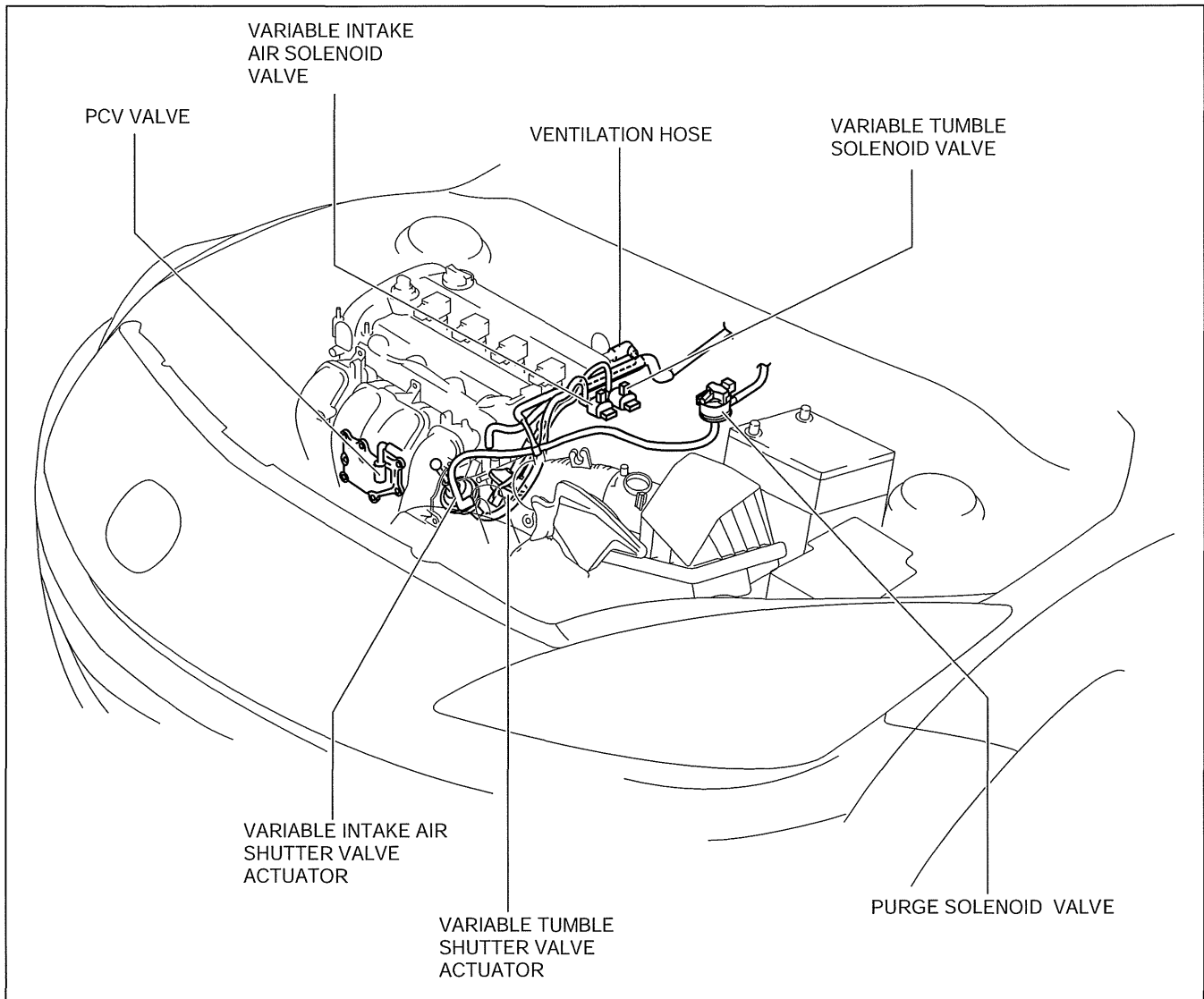
INTAKE-AIR SYSTEM [LF, L5]

1	Intake manifold (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-3 INTAKE MANIFOLD VACUUM INSPECTION [LF, L5].)
2	Variable intake air solenoid valve (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-7 VARIABLE INTAKE AIR SOLENOID VALVE INSPECTION [LF, L5].)
3	Variable tumble solenoid valve (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-7 VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5].)
4	Accelerator pedal (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)

5	Air cleaner (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-6 AIR CLEANER ELEMENT INSPECTION [LF, L5].)
6	Resonance chamber (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
7	Fresh-air duct (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
8	Throttle body (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-13A-6 THROTTLE BODY INSPECTION [LF, L5].)
9	Variable tumble shutter valve actuator (See 01-13A-8 VARIABLE TUMBLE SHUTTER VALVE ACTUATOR INSPECTION [LF, L5].)
10	Variable intake air shutter valve actuator (See 01-13A-7 VARIABLE INTAKE AIR SHUTTER VALVE ACTUATOR INSPECTION [LF, L5].)

INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [LF, L5]

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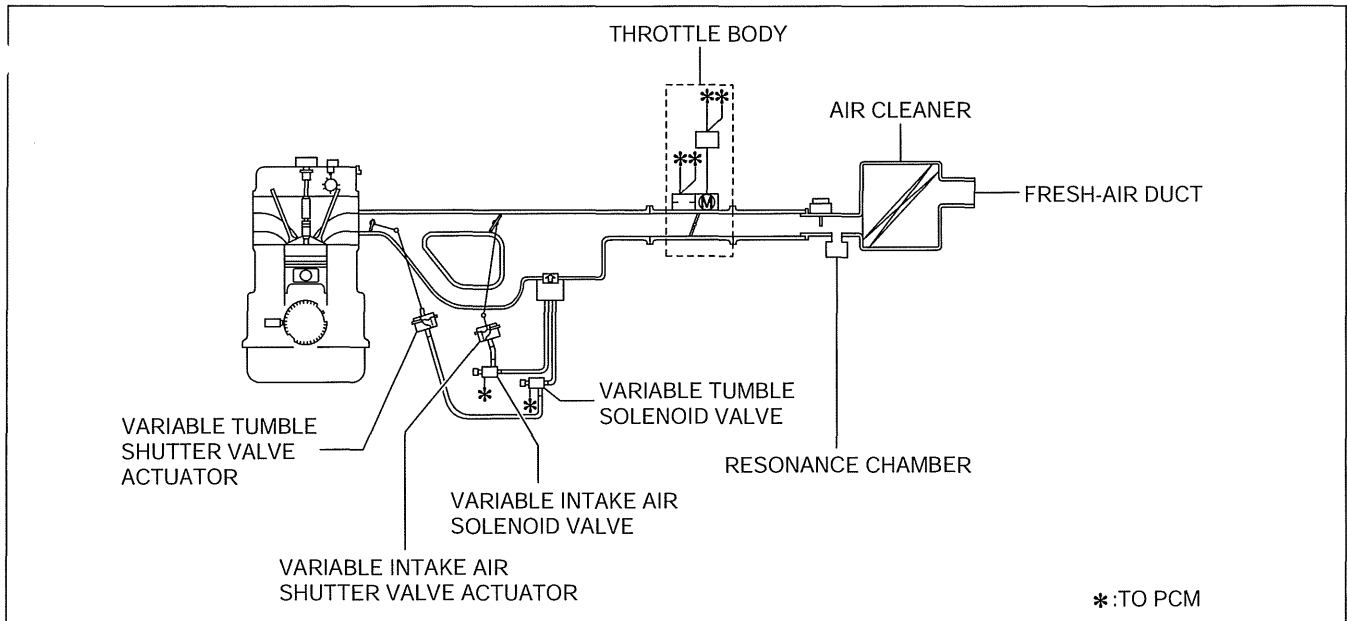


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INTAKE-AIR SYSTEM [LF, L5]

INTAKE-AIR SYSTEM DIAGRAM [LF, L5]

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01-13A

INTAKE MANIFOLD VACUUM INSPECTION [LF, L5]

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1. Verify that the intake air hoses are installed securely.
2. Warm up the engine.
3. Disconnect the vacuum hose connecting the intake manifold and the purge solenoid valve (purge solenoid valve side) and install the vacuum gauge. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
4. Measure the intake manifold vacuum while idling (no load) using the vacuum gauge.
 - If not within the specification, perform the following inspections.
 - Compression pressure (See 01-10A-17 COMPRESSION INSPECTION [LF, L5].)
 - Air suction
 - Installation areas of each vacuum hose
 - Installation area of throttle body
 - Installation area of fuel injector
 - Installation area of PCV valve
 - Installation area of intake manifold

Standard

LF: -68.0 kPa {-510 mmHg, -20.1 inHg}

L5: -70.0 kPa {-525 mmHg, -20.7 inHg}

INTAKE-AIR SYSTEM [LF, L5]

INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5]

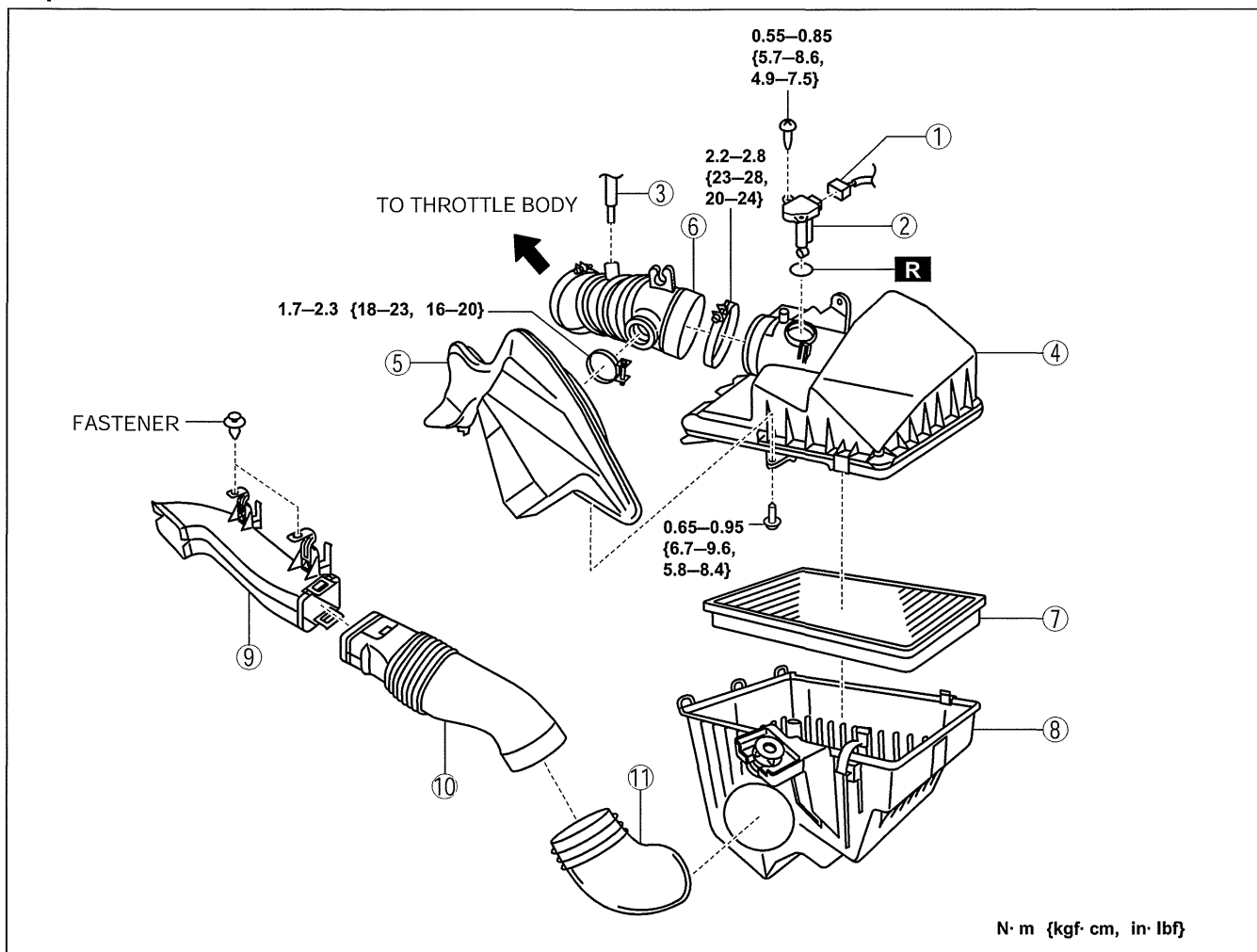
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Warning

- A hot engine and intake air system can cause severe burns. Turn off the engine and wait until they are cool before removing the intake air system.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure".

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)

Step 1



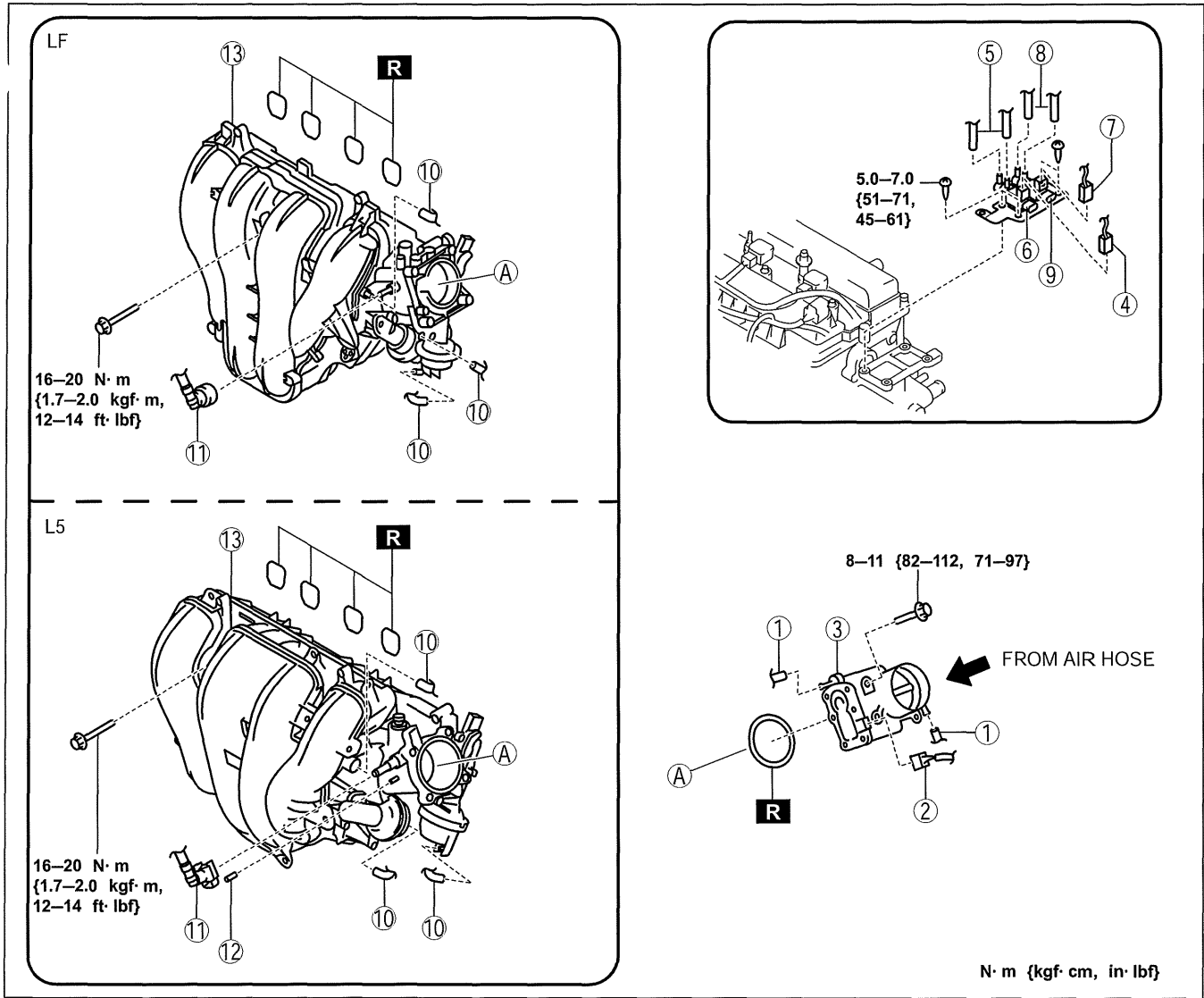
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1	MAF/IAT sensor connector
2	MAF/IAT sensor
3	Ventilation hose
4	Air cleaner cover (See 01-13A-5 Air Cleaner Cover Removal Note.)
5	Resonance chamber
6	Air hose (See 01-13A-6 Air Hose Installation Note)

7	Air cleaner element
8	Air cleaner case
9	Fresh-air duct (No.1) (See 01-13A-5 Fresh-Air Duct (No.1) Removal Note)
10	Fresh-air duct (No.2)
11	Fresh-air duct (No.3)

INTAKE-AIR SYSTEM [LF, L5]

Step 2



01-13A

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1	Water hose (See 01-13A-5 Water Hose Removal Note.)
2	Throttle body connector
3	Throttle body (See 01-13A-6 Throttle Body Installation Note.)
4	Variable intake air solenoid valve connector
5	Vacuum hose
6	Variable intake air solenoid valve
7	Variable tumble solenoid valve connector

8	Vacuum hose
9	Variable tumble solenoid valve
10	Vacuum hose
11	Quick release connector (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
12	Vacuum cap (L5)
13	Intake manifold (See 01-13A-6 Intake Manifold Removal Note.)

Air Cleaner Cover Removal Note

1. Remove the air cleaner cover and resonance chamber and air hose a as single unit.
2. Remove the air cleaner cover.

Fresh-Air Duct (No.1) Removal Note

1. Remove the fresh-air duct (No.1) and fresh-air duct (No.2) a as single unit.
2. Remove the fresh-air duct (No.1).

Water Hose Removal Note

1. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
2. Disconnect the water hose.

INTAKE-AIR SYSTEM [LF, L5]

Intake Manifold Removal Note

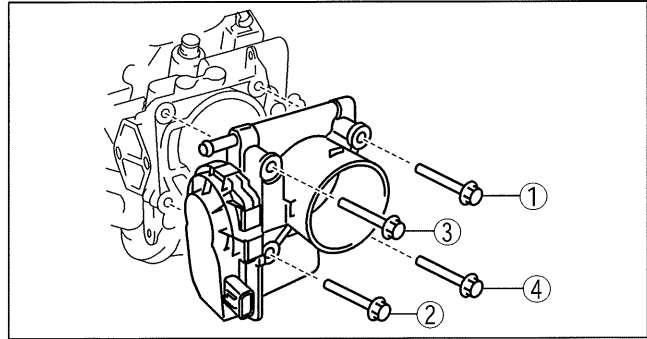
1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Remove all clips for securing wiring harnesses from the intake manifold.
3. Disconnect the vacuum hoses connecting the intake manifold.
4. Remove the fuel distributor and fuel injector as a single unit. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].)
5. Remove the intake manifold.

Throttle Body Installation Note

1. Tighten the installation bolts in the order shown in the figure.

Throttle body tightening torque

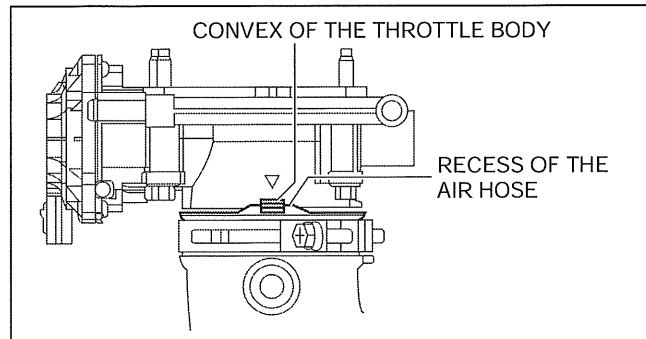
8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



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Air Hose Installation Note

1. Adjust the convex of the throttle body to the recess of the air hose.



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AIR CLEANER ELEMENT INSPECTION [LF, L5]

1. Remove the air cleaner element. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
2. Inspect the following items:
 - Has the replacement interval come?
 - Is the air cleaner element soiled, damaged, or bent?
 - Are the air cleaner case and the air cleaner element correctly sealed?
 - Is the correct air cleaner element installed?
 - If there is any abnormality, clean or replace the air cleaner element. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

THROTTLE BODY INSPECTION [LF, L5]

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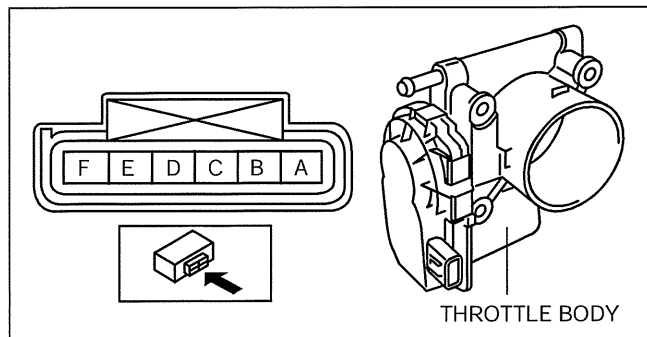
Resistance Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the throttle body connector.
4. Measure the resistance between throttle body terminals E and F.

Throttle body resistance

0.3—100 ohms [20°C {68 °F}]

- If not as specified, replace the throttle body. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)



THROTTLE BODY

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INTAKE-AIR SYSTEM [LF, L5]

VARIABLE INTAKE AIR SOLENOID VALVE INSPECTION [LF, L5]

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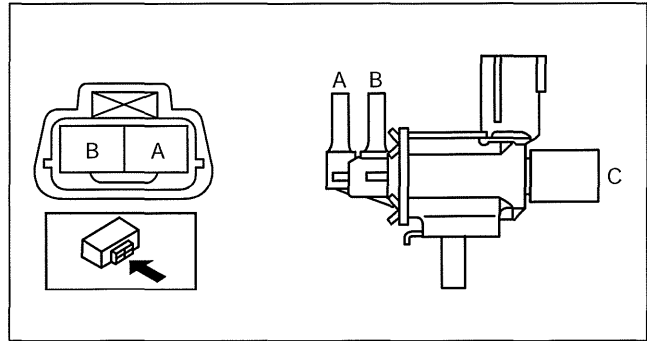
Airflow Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the variable intake air solenoid valve. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Inspect airflow between the ports under the following conditions.

○—○ : Continuity ○=○ : Airflow

Step	Terminal		Port		
	A	B	A	B	C
1	○—○	○—○	○—○	○=○	○=○
2	B+	GND	○=○	○=○	

- If not as specified, replace the variable intake air solenoid valve. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)



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01-13A

VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF, L5]

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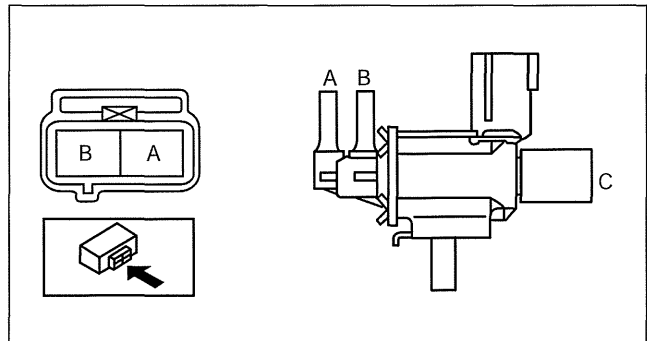
Airflow Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the variable tumble solenoid valve. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Inspect airflow between the ports under the following conditions.

○—○ : Continuity ○=○ : Airflow

Step	Terminal		Port		
	A	B	A	B	C
1	○—○	○—○	○—○	○=○	○=○
2	B+	GND	○=○	○=○	

- If not as specified, replace the variable tumble solenoid valve. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)



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VARIABLE INTAKE AIR SHUTTER VALVE ACTUATOR INSPECTION [LF, L5]

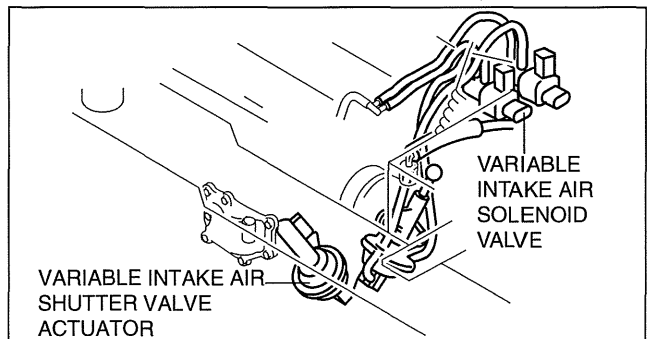
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Operation Inspection

1. Remove the air hose. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the vacuum hose from the variable intake air shutter valve actuator.
3. Connect a vacuum pump to the variable intake air shutter valve actuator.

Note

- Covered with a hood, the rod of the variable intake air shutter valve actuator cannot be seen from above. Use a mirror from under it to check the operation of the variable intake air shutter valve.



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INTAKE-AIR SYSTEM [LF, L5]

4. Check if the rod operates correctly as stated in the table when a gradual negative pressure is applied to the variable intake air shutter valve actuator.
 - When it is not possible to confirm it, replace the intake manifold. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - When the variable intake air shutter valve actuator cannot be activated even though the operation of the rod can be confirmed, check for any incorrect connections or breakage of the vacuum hose.

Vacuum kPa {mmHg, inHg}	Rod movement
Below -2.7 {-20, -0.8}	Not operate
Above -33.4 {-251, -9.86}	Fully pulled

VARIABLE TUMBLE SHUTTER VALVE ACTUATOR INSPECTION [LF, L5]

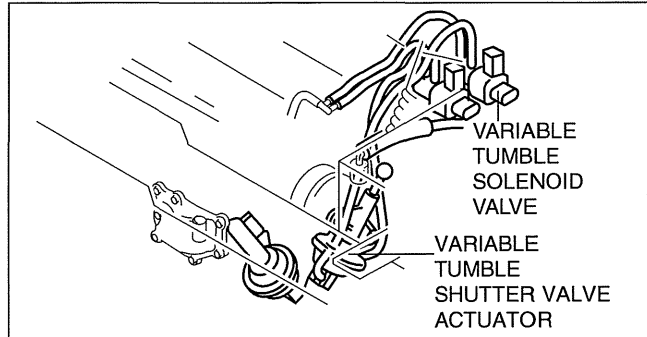
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Operation Inspection

1. Remove the air hose. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the vacuum hose from the variable tumble shutter valve actuator.
3. Connect a vacuum pump to the variable tumble shutter valve actuator.

Note

- Covered with a hood, the rod of the variable tumble shutter valve actuator cannot be seen from above. Use a mirror from under it to check the operation of the variable tumble shutter valve.



am6zzw000022

4. Check if the rod operates correctly as stated in the table when a gradual negative pressure is applied to the variable tumble shutter valve actuator.
 - When it is not possible to confirm it, replace the intake manifold. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - When the variable tumble shutter valve actuator cannot be activated even though the operation of the rod can be confirmed, check for any incorrect connections or breakage of the vacuum hose.

Vacuum kPa {mmHg, inHg}	Rod movement
Below -2.7 {-20, -0.8}	No operate
Above -33.4 {-251, -9.86}	Fully pulled

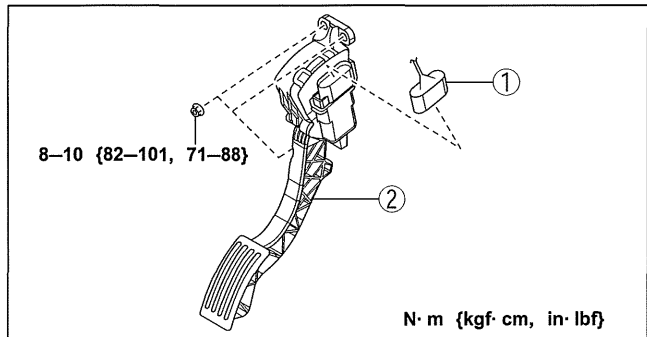
ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5]

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1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove in the order indicated in the table.

1	APP sensor connector
2	Accelerator pedal

4. Install in the reverse order of removal.



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01-13B INTAKE-AIR SYSTEM [L3 WITH TC]

INTAKE-AIR SYSTEM DIAGRAM

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Air Hose Removal Note 01-13B-6

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Throttle Body Removal Note 01-13B-6

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Turbocharger Insulator Removal Note 01-13B-7

Oil Outlet Pipe Removal Note 01-13B-7

Turbocharger Removal Note 01-13B-7

Turbocharger Installation Note..... 01-13B-8

Wastegate Control Solenoid Valve Installation Note..... 01-13B-10

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THROTTLE BODY INSPECTION [L3 WITH TC].....

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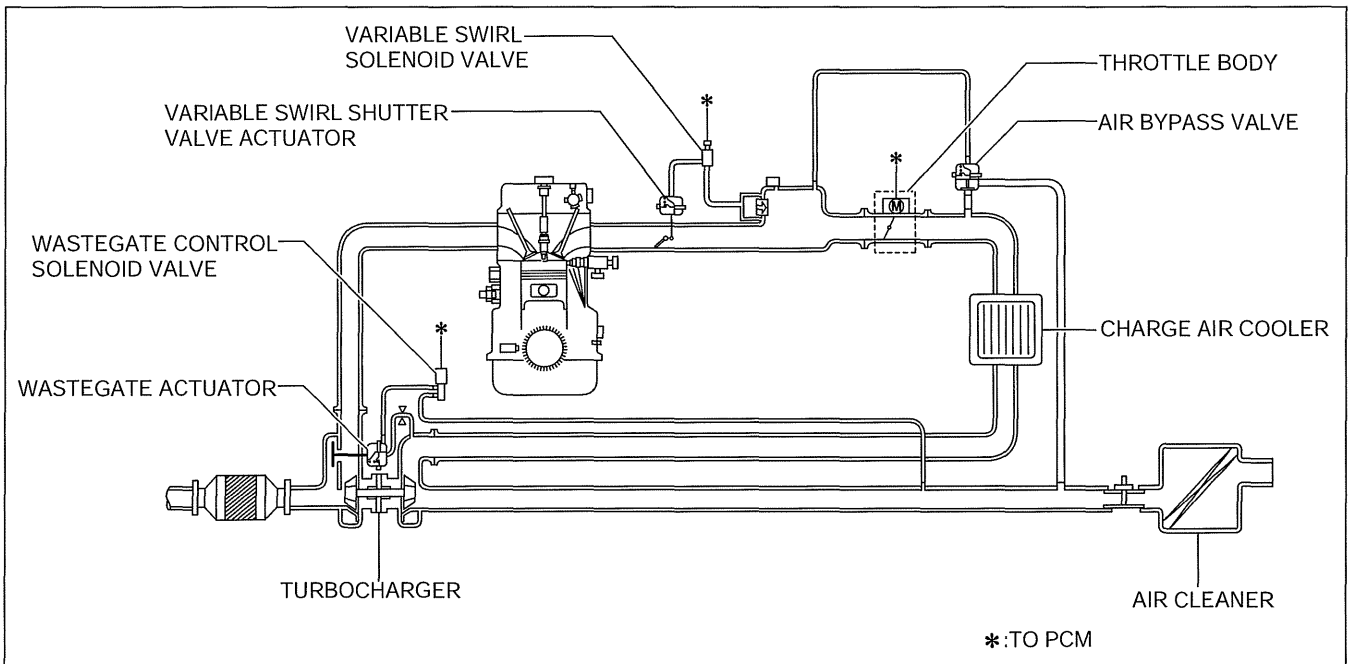
ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].....

01-13B-14

01-13B

INTAKE-AIR SYSTEM DIAGRAM [L3 WITH TC]

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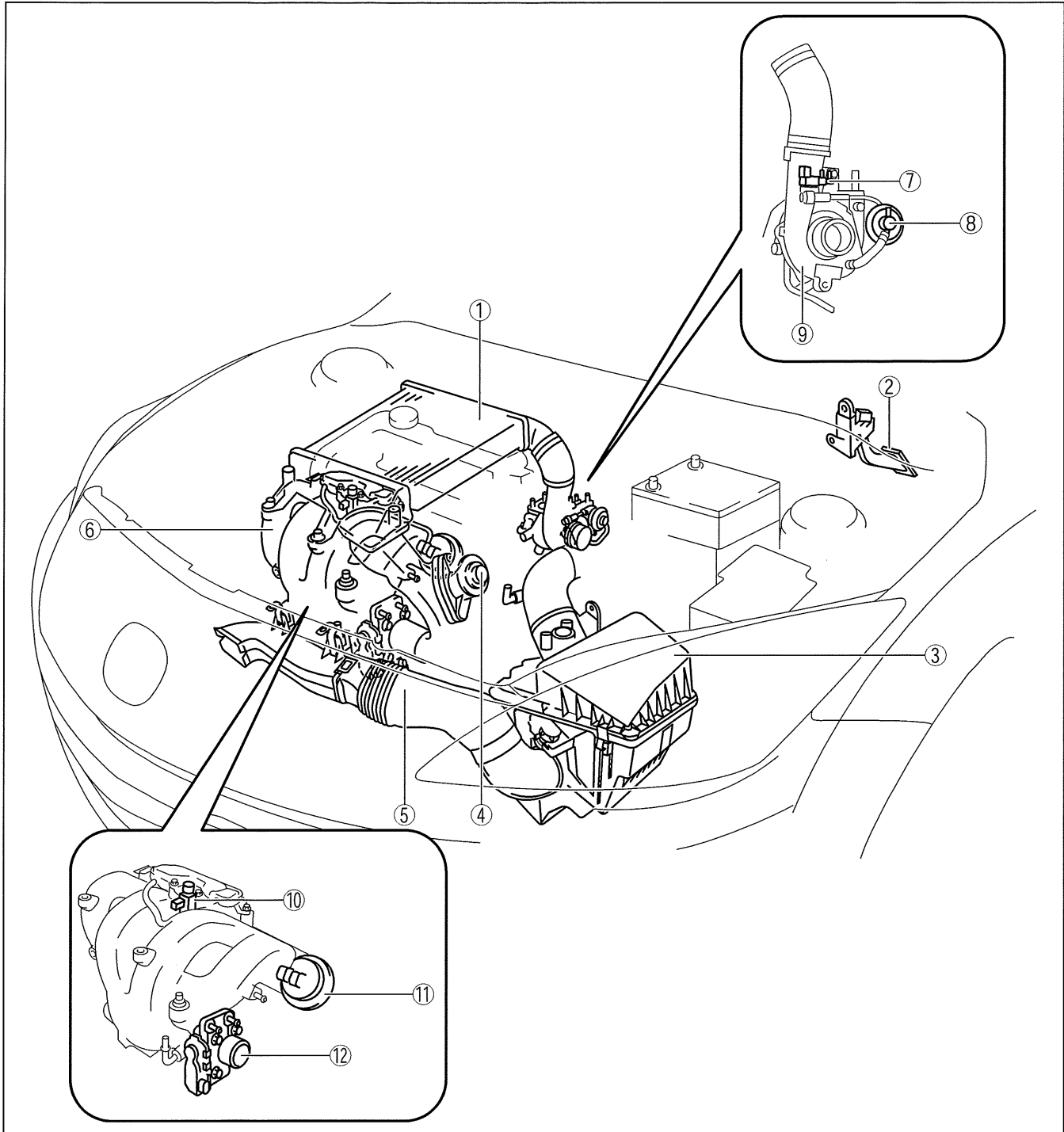


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INTAKE-AIR SYSTEM [L3 WITH TC]

INTAKE-AIR SYSTEM LOCATION INDEX [L3 WITH TC]

id011339800100



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1	Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-11 CHARGE AIR COOLER INSPECTION [L3 WITH TC].)
2	Accelerator pedal (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
3	Air cleaner (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-10 AIR CLEANER ELEMENT INSPECTION [L3 WITH TC].)

4	Air bypass valve (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-11 AIR BYPASS VALVE INSPECTION [L3 WITH TC].)
5	Fresh-air duct (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
6	Intake manifold (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-4 INTAKE MANIFOLD VACUUM INSPECTION [L3 WITH TC].)

INTAKE-AIR SYSTEM [L3 WITH TC]

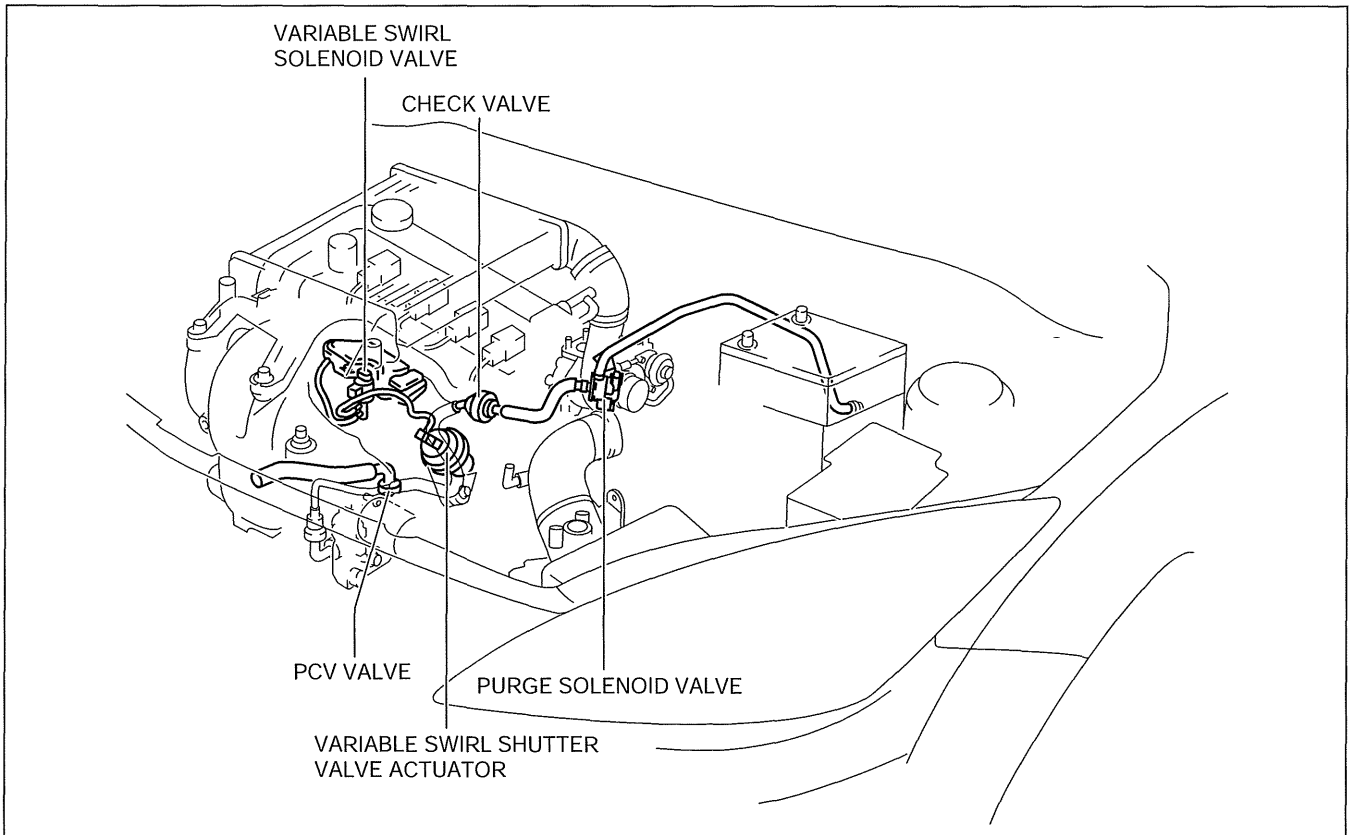
7	Wastegate control solenoid valve (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-13 WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC].)
8	Wastegate actuator (See 01-13B-14 WASTEGATE ACTUATOR INSPECTION [L3 WITH TC].)
9	Turbocharger (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-13 TURBOCHARGER INSPECTION [L3 WITH TC].)

10	Variable swirl solenoid valve (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-12 VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC].)
11	Variable swirl shutter valve actuator (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-12 VARIABLE SWIRL SHUTTER VALVE ACTUATOR INSPECTION [L3 WITH TC].)
12	Throttle body (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-13B-12 THROTTLE BODY INSPECTION [L3 WITH TC].)

01-13B

INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [L3 WITH TC]

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am3uuw0000575

INTAKE-AIR SYSTEM [L3 WITH TC]

INTAKE MANIFOLD VACUUM INSPECTION [L3 WITH TC]

id011339801500

1. Verify that the intake air hoses are installed securely.
2. Warm up the engine.
3. Disconnect the vacuum hose connected between the check valve and the intake manifold from the intake manifold and install the vacuum gauge. (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
4. Measure the intake manifold vacuum while idling (no load) using the vacuum gauge.
 - If not within the specification, perform the following inspections.
 - Compression pressure (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].)
 - Air suction
 - Installation areas of each vacuum hose
 - Installation areas of throttle body
 - Installation areas of fuel injector
 - Installation areas of PCV valve
 - Installation areas of intake manifold

Note

- If any air suction exists, the change in engine speed can be made apparent by spraying the penetrant lubricating spray on the applicable part.

Standard

Approx. -71 kPa {-533 mmHg, -21 inHg}

INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC]

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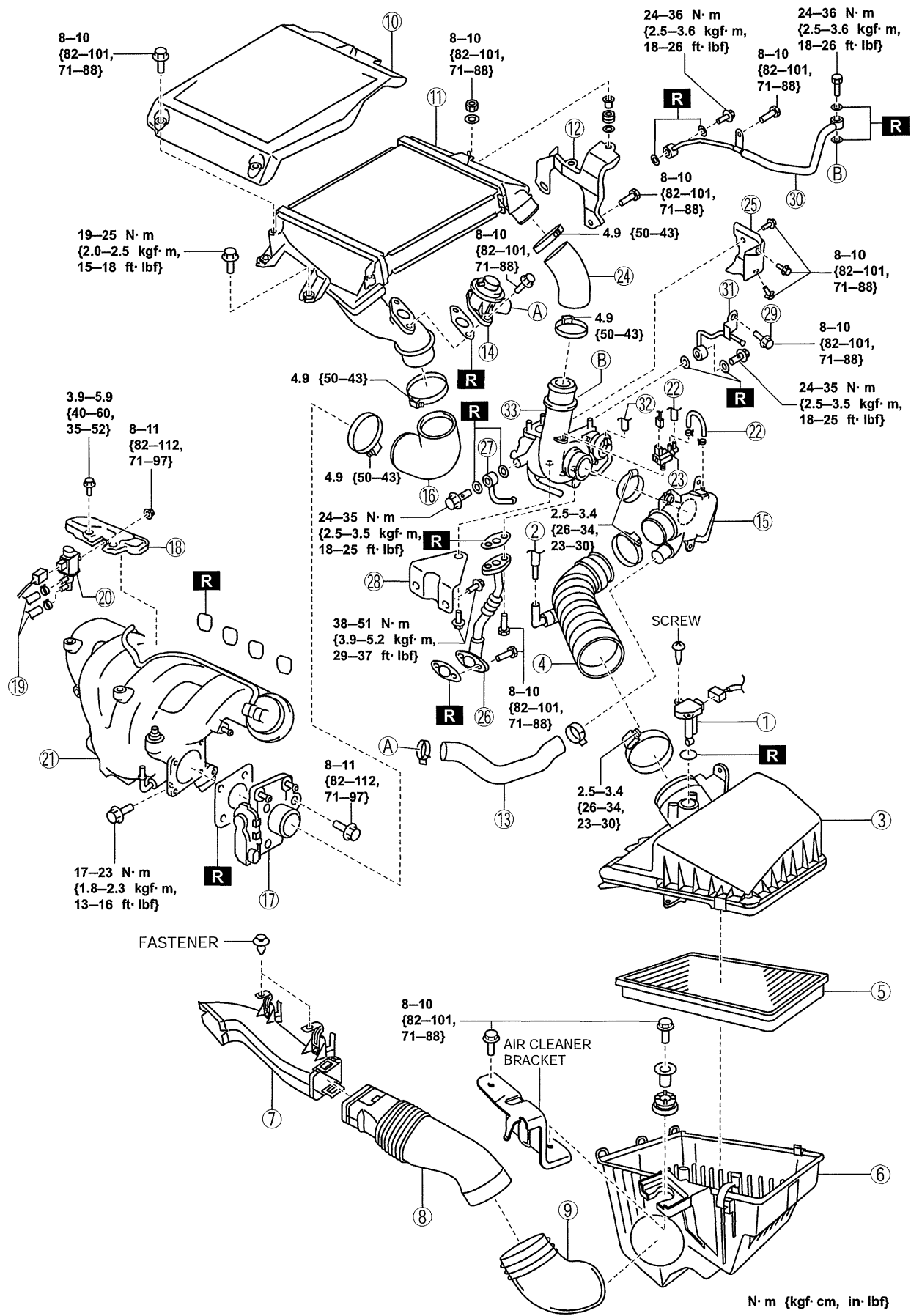
Warning

- **A hot engine and intake air system can cause severe burns. Turn off the engine and wait until they are cool before removing the intake air system.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the splash shield (RH) and aerodynamic under cover No.2 as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
5. Disconnect the wiring harness.
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.

INTAKE-AIR SYSTEM [L3 WITH TC]

01-13B



am3uuw000615

INTAKE-AIR SYSTEM [L3 WITH TC]

1	MAF/IAT sensor
2	Ventilation hose
3	Air cleaner cover (See01-13B-6 Air Cleaner Cover Removal Note.)
4	Air hose (See01-13B-6 Air Hose Removal Note.)
5	Air cleaner element
6	Air cleaner case
7	Fresh-air duct (No.1) (See01-13B-6 Fresh-Air Duct (No.1) Removal Note.)
8	Fresh-air duct (No.2)
9	Fresh-air duct (No.3)
10	Charge air cooler cover
11	Charge air cooler
12	Charge air cooler bracket
13	Air bypass hose
14	Air bypass valve
15	Air duct (See 01-13B-6 Air Duct Removal Note)
16	Charge air cooler air outlet hose
17	Throttle body (See01-13B-6 Throttle Body Removal Note.) (See01-13B-10 Throttle Body Installation Note.)
18	Vacuum chamber

19	Vacuum hose
20	Variable swirl solenoid valve
21	Intake manifold (See01-13B-7 Intake Manifold Removal Note.)
22	Vacuum hose
23	Wastegate control solenoid valve (See01-13B-10 Wastegate Control Solenoid Valve Installation Note.)
24	Charge air cooler air inlet hose
25	Turbocharger insulator (See 01-13B-7 Turbocharger Insulator Removal Note.)
26	Oil outlet pipe (See 01-13B-7 Oil Outlet Pipe Removal Note.)
27	Water outlet pipe
28	Turbocharger bracket
29	Water inlet pipe bracket installation bolt
30	Oil inlet pipe
31	Water inlet pipe
32	Vacuum hose
33	Turbocharger (See01-13B-7 Turbocharger Removal Note.) (See01-13B-8 Turbocharger Installation Note.)

Air Cleaner Cover Removal Note

1. Remove the air cleaner cover and air hose as a single unit.
2. Remove the air cleaner cover.

Air Hose Removal Note

1. Disconnect the variable swirl shutter valve switch connector.
2. Disconnect the fuel injector harness connector.
3. Disconnect the ventilation hose connected to the air hose.
4. Remove the air hose.

Fresh-Air Duct (No.1) Removal Note

1. Remove the fresh-air duct (No.1) and fresh-air duct (No.2) as a single unit.
2. Remove the fresh-air duct (No.1).

Air Duct Removal Note

1. Disconnect the wastegate control solenoid valve connector.
2. Disconnect the purge solenoid valve connector.
3. Disconnect the EGR valve connector.
4. Remove the air duct.

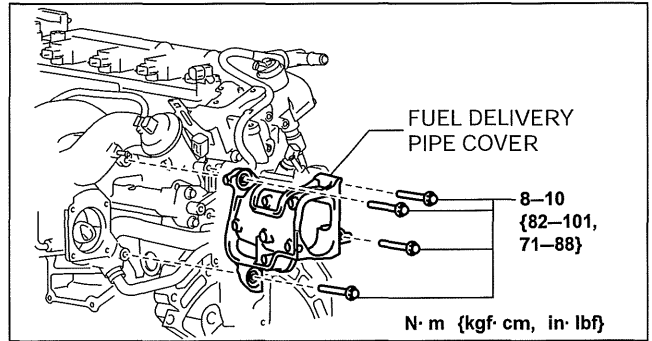
Throttle Body Removal Note

1. Disconnect the throttle body connector.
2. Drain the engine coolant before removing the water hose. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
3. Remove the throttle body.

INTAKE-AIR SYSTEM [L3 WITH TC]

Intake Manifold Removal Note

1. Remove the fuel delivery pipe cover.
2. Disconnect the quick connector connected to the intake manifold.
3. Remove the EGR pipe. (See 01-16B-9 EGR PIPE REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the variable swirl solenoid valve connector.
5. Disconnect the OCV connector.
6. Remove the oil level gauge pipe. (See 01-11B-6 OIL PAN REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
8. Set the electric power steering oil pump out of the way. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
9. Disconnect the fuel pressure sensor connector.
10. Disconnect the vacuum hose connected between the intake manifold and the master cylinder from the intake manifold.
11. Disconnect the MAP sensor connector.
12. Remove the intake manifold installation bolts.
13. Disconnect the evaporative hose connected between the intake manifold and the PCV valve from the intake manifold.
14. Remove the intake manifold.



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Turbocharger Insulator Removal Note

1. Remove the exhaust manifold upper insulator. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the turbocharger insulator.

Oil Outlet Pipe Removal Note

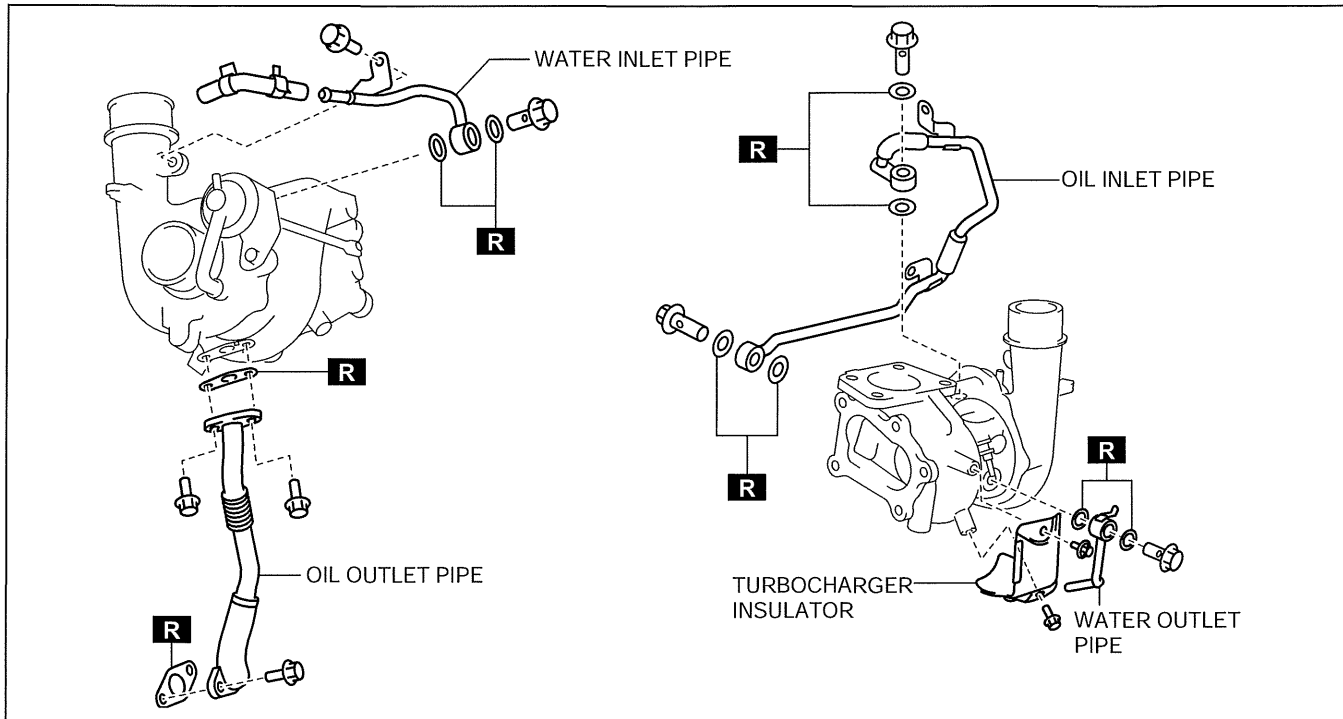
1. Set the generator duct out of the way. (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the oil outlet pipe.

Turbocharger Removal Note

1. Remove the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the A/F sensor. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the WU-TWC insulator. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the exhaust manifold lower insulator. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the TWC. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the WU-TWC. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

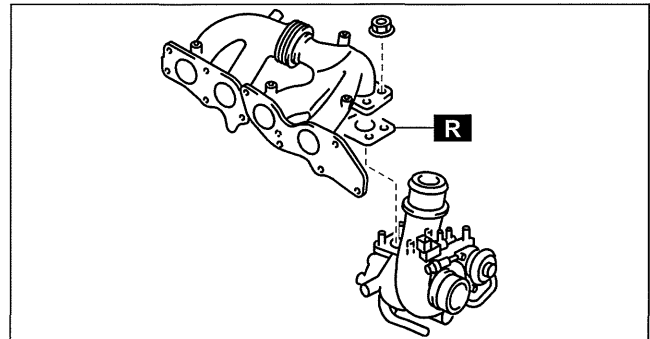
INTAKE-AIR SYSTEM [L3 WITH TC]

7. Remove the oil outlet pipe, oil inlet pipe, water pipe, and turbocharger insulator.



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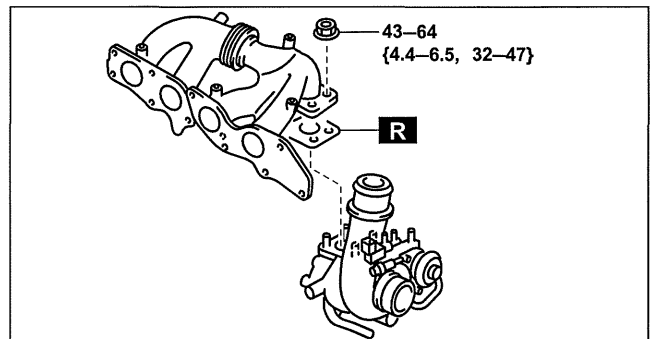
8. Remove the turbocharger.



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Turbocharger Installation Note

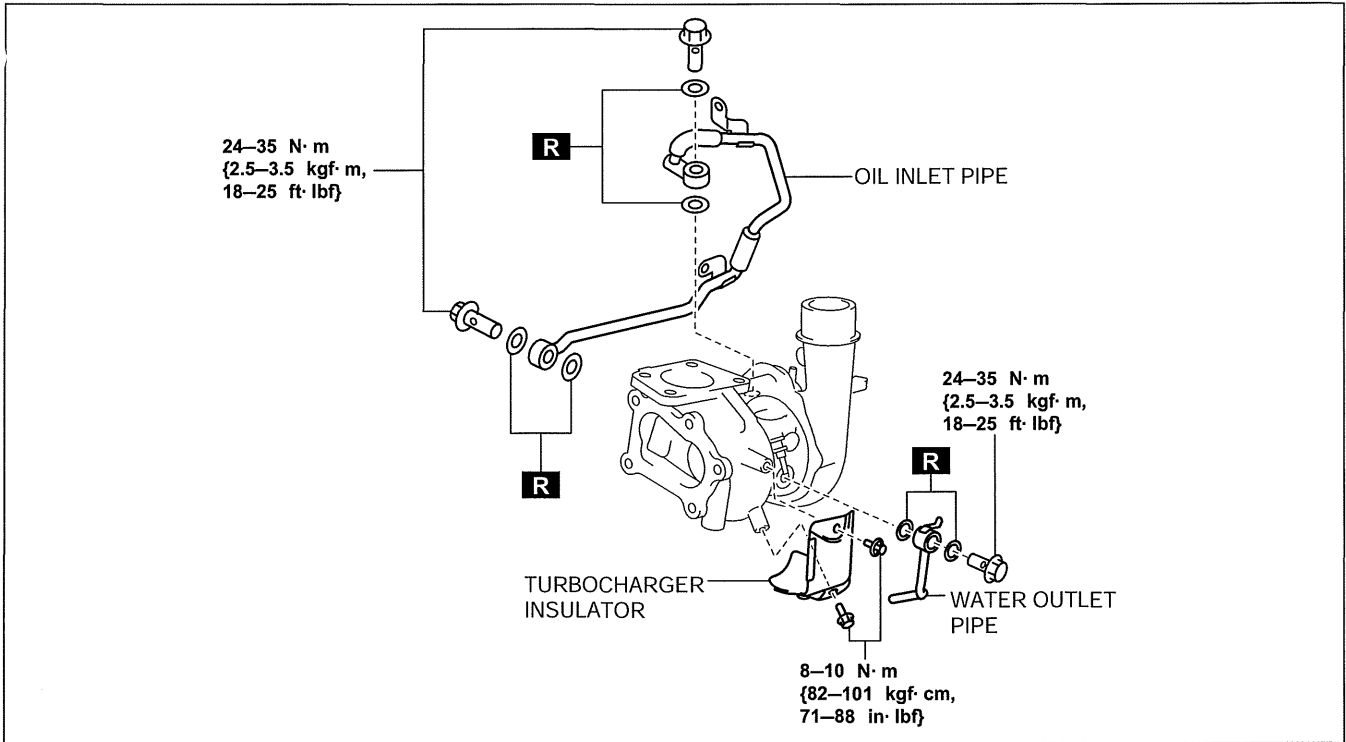
1. Install the turbocharger.
2. Install the WU-TWC. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
3. Install the A/F sensor. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Install the HO2S. (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)



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INTAKE-AIR SYSTEM [L3 WITH TC]

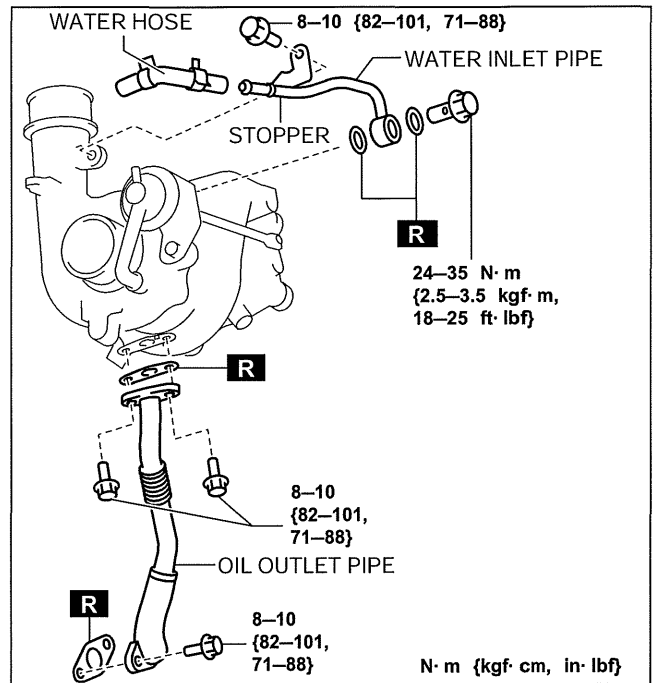
5. Tight the oil inlet pipe installation bolt while the stopper of the water outlet pipe is faced to the installation area, then install the turbocharger insulator.



01-13B

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6. Install the oil outlet pipe and water inlet pipe, then insert the water hose until it reaches the stopper.

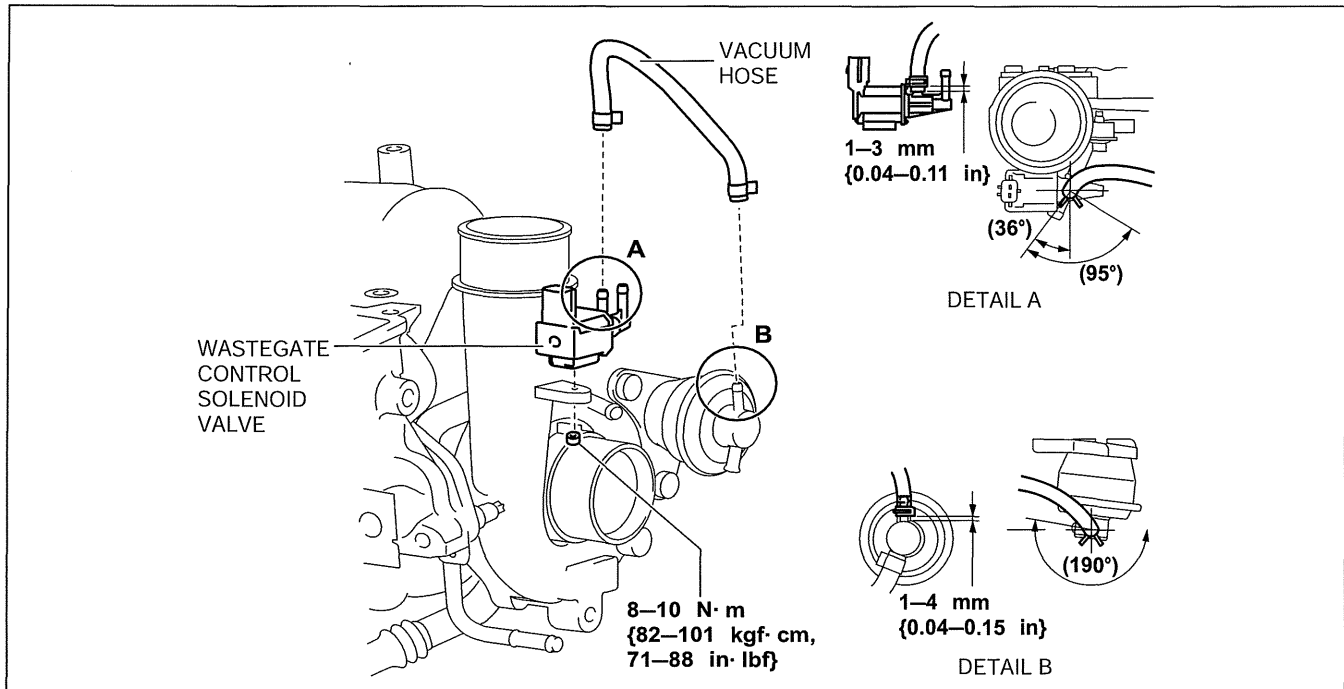


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INTAKE-AIR SYSTEM [L3 WITH TC]

Wastegate Control Solenoid Valve Installation Note

1. Install the wastegate control solenoid valve.



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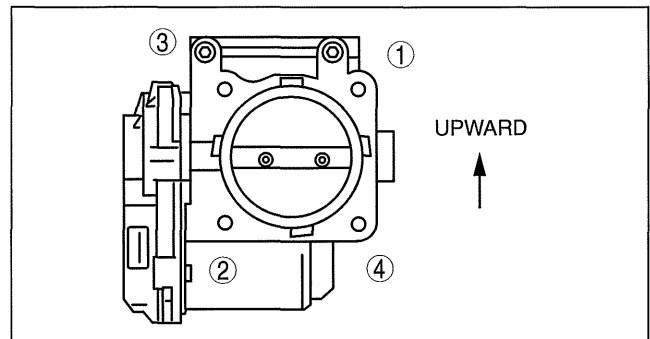
2. Install the vacuum hose as shown in the figure.

Throttle Body Installation Note

1. Tighten the throttle body installation bolts in the order shown in the figure.

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



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AIR CLEANER ELEMENT INSPECTION [L3 WITH TC]

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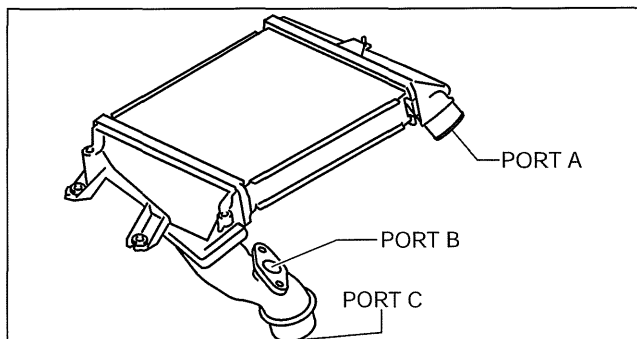
1. Remove the air cleaner element. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Inspect the following items:
 - Has the replacement interval come?
 - Is the air cleaner element soiled, damaged, or bent?
 - Are the air cleaner case and the air cleaner element correctly sealed?
 - Is the correct air cleaner element installed?
 - If there is any abnormality, clean or replace the air cleaner element. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

INTAKE-AIR SYSTEM [L3 WITH TC]

CHARGE AIR COOLER INSPECTION [L3 WITH TC]

id011339800900

1. Remove the charge air cooler cover. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the air bypass valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Plug ports A and B.
5. Verify that there is no air leakage when air is sent from port C.
 - If there is leakage, replace the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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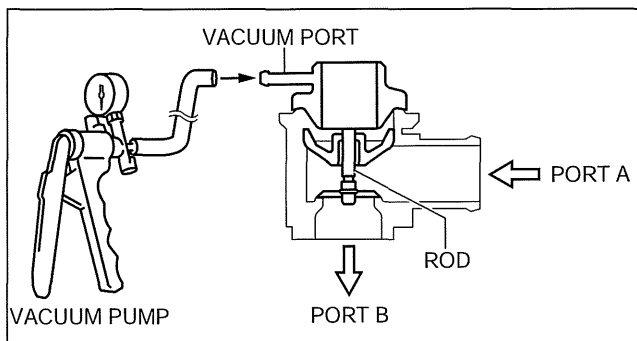
01-13B

AIR BYPASS VALVE INSPECTION [L3 WITH TC]

id011339800500

1. Remove the air bypass valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Connect the vacuum pump to the vacuum ports of the air bypass valve.
3. Verify that the airflow is as indicated in the table.

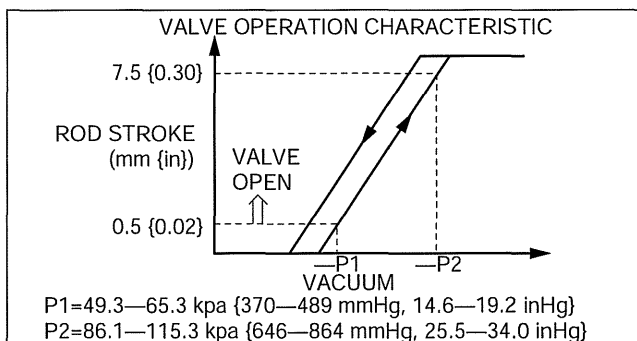
Vacuum (kPa {mmHg, inHg})	Valve operation condition	Airflow between port A—B
-66 {-495, -19} or more	Open	Yes
-49 {-368, -14} or less	Closed	No



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Approx. value

- If there is any malfunction, replace the air bypass valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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INTAKE-AIR SYSTEM [L3 WITH TC]

THROTTLE BODY INSPECTION [L3 WITH TC]

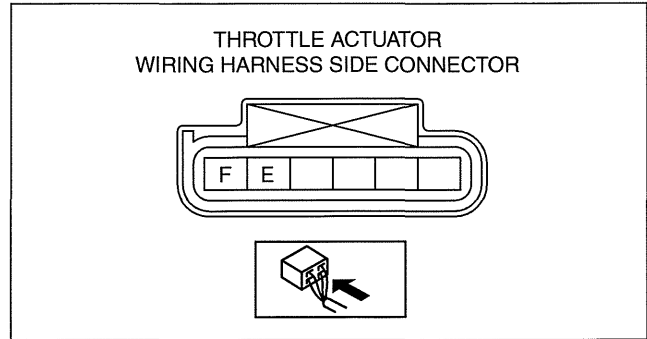
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Resistance Inspection

1. Remove the battery cover (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the throttle body connector.
4. Measure the resistance between the throttle body terminals E and F.

Throttle body resistance
0.3—100 ohms [20 °C {68 °F}]

- If not as specified, replace the throttle body. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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VARIABLE SWIRL SOLENOID VALVE INSPECTION [L3 WITH TC]

id011339801100

Airflow Inspection

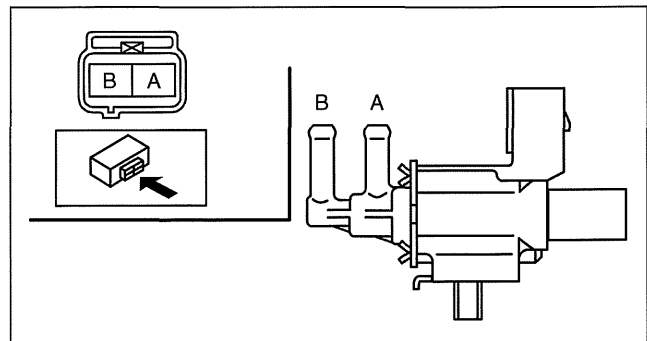
1. Remove the battery cover (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the variable swirl solenoid valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Inspect the airflow between the ports under the following conditions.

○—○ : Continuity ○—○ : Airflow

Step	Terminal		Port	
	A	B	A	B
1	○—○			
2	B+	GND	○—○	

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- If not as specified, replace the variable swirl solenoid valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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VARIABLE SWIRL SHUTTER VALVE ACTUATOR INSPECTION [L3 WITH TC]

id011339801200

Operation Inspection

1. Remove the air hose. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the vacuum hose from the variable swirl control solenoid valve.
3. Connect a vacuum pump to the variable swirl shutter valve actuator.
4. Apply vacuum and verify that the rod moves.

Vacuum kPa {mmHg, inHg}	Rod movement
-2.7 {-20, -0.8} or less	Not move
-33.4 {-251, -9.9} or more	Fully pulled

- If the rod does not move, replace the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

INTAKE-AIR SYSTEM [L3 WITH TC]

WASTEGATE CONTROL SOLENOID VALVE INSPECTION [L3 WITH TC]

id011339800600

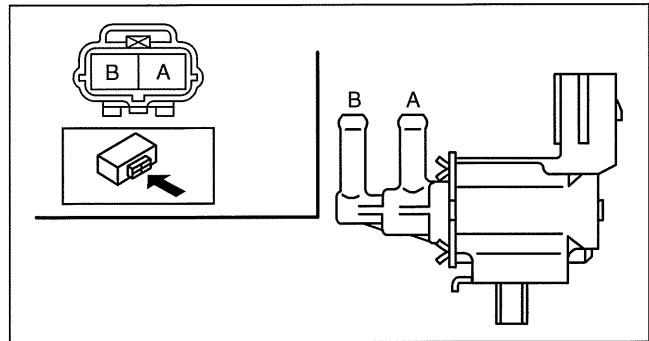
Airflow Inspection

1. Remove the battery cover (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the wastegate control solenoid valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Inspect the airflow between the ports under the following conditions.

○—○ : Continuity ○≡○ : Airflow

Step	Terminal		Port	
	A	B	A	B
1	○—○			
2	B+	GND	○≡○	

- If not as specified, replace the wastegate control solenoid valve. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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TURBOCHARGER INSPECTION [L3 WITH TC]

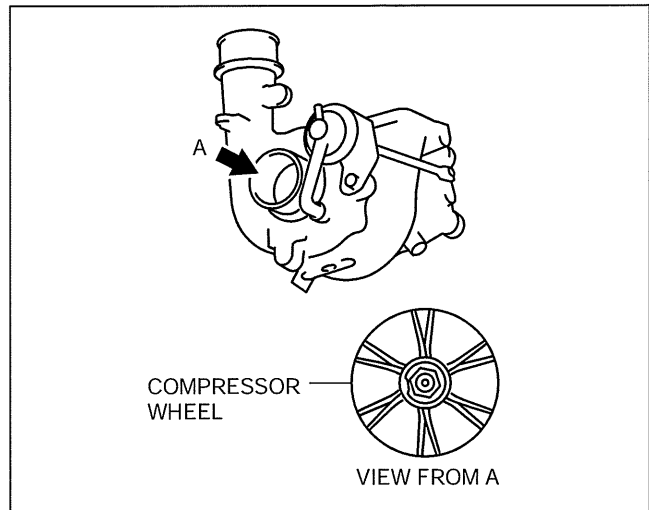
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Compressor Wheel Inspection

1. Remove the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Visually inspect the compressor wheel from view A for the cracks, damage, or bending on all the compressor wheel blades.
 - If there are any cracks or damage, replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

Note

- If there is contact between the compressor wheel and compressor housing, there may be cracks, damage, or bending on the blade end area.
- If there are cracks, damage, or bending on the compressor wheel, verify the following after replacing the turbocharger.
 - Intake air/exhaust system related components
 - Oil outlet pipe and oil inlet pipe damage



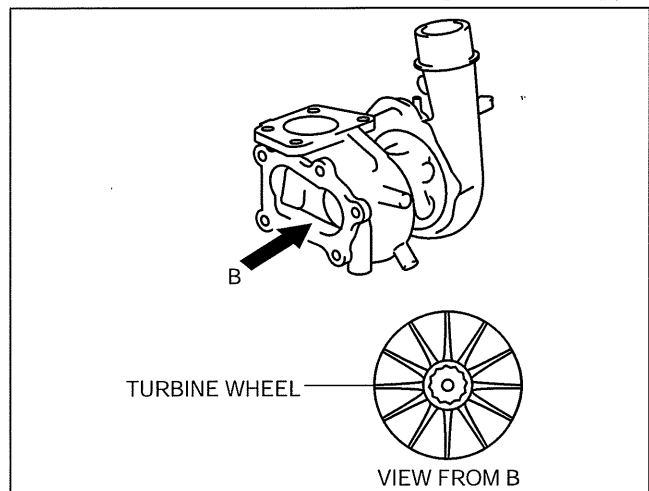
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Turbine wheel inspection

1. Remove the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Visually inspect the turbine wheel from view B for the cracks, damage, or bending on all the turbine wheel blades.
 - If there are cracks, damage, or bending on the turbine wheel, replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

Note

- If there is contact between the turbine wheel and turbine housing, there may be cracks, damage, or bending on the blade end area.
- If there are cracks, damage, or bending on the turbine wheel, verify the following after replacing the turbocharger.
 - Intake air/exhaust system related components
 - Oil outlet pipe and oil inlet pipe damage



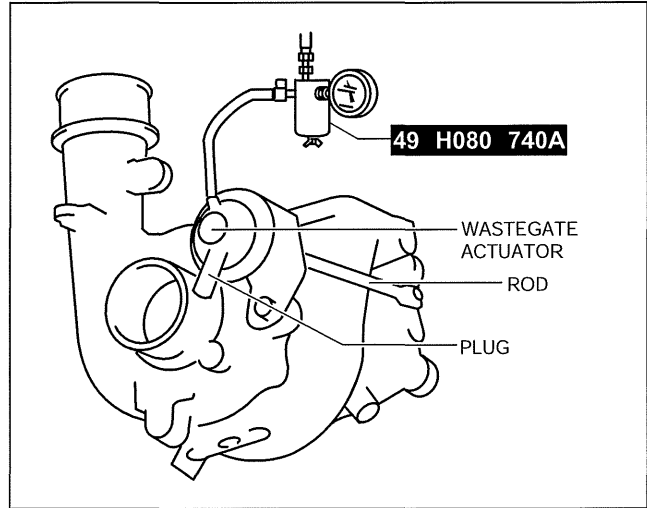
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INTAKE-AIR SYSTEM [L3 WITH TC]

WASTEGATE ACTUATOR INSPECTION [L3 WITH TC]

id011339800700

1. Remove the air hose and air duct. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC])
2. Disconnect the hose from the wastegate actuator.
3. Plug the wastegate actuator as shown in the figure.
4. Connect the vacuum pump to the port

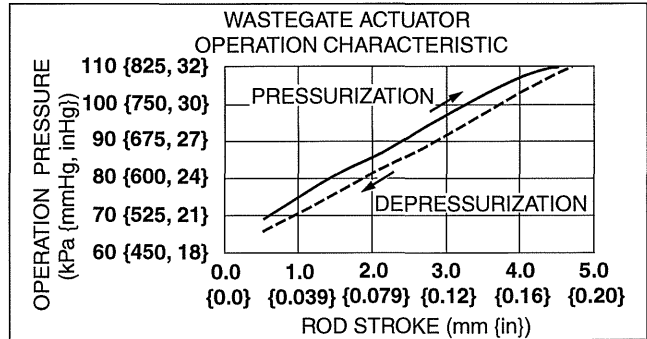


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5. Raise the pressure slowly and take a measurement of the pressure when the rod stroke is 1.5 mm {0.06 in}.

Specification (rod stroke: 1.5 mm {0.06 in})
78.0—83.4 kPa {586—625 mmHg, 23.1—24.6 inHg}

- If the rod does not move, replace the turbocharger. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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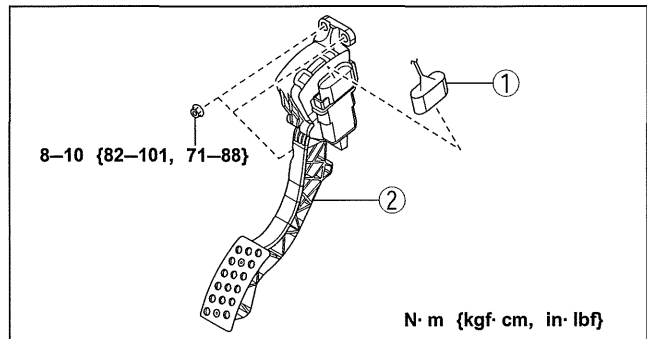
ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC]

id011339801400

1. Remove the battery cover (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the dashboard under cover. (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.

1	Connector
2	Accelerator pedal

5. Install in the reverse order of removal.



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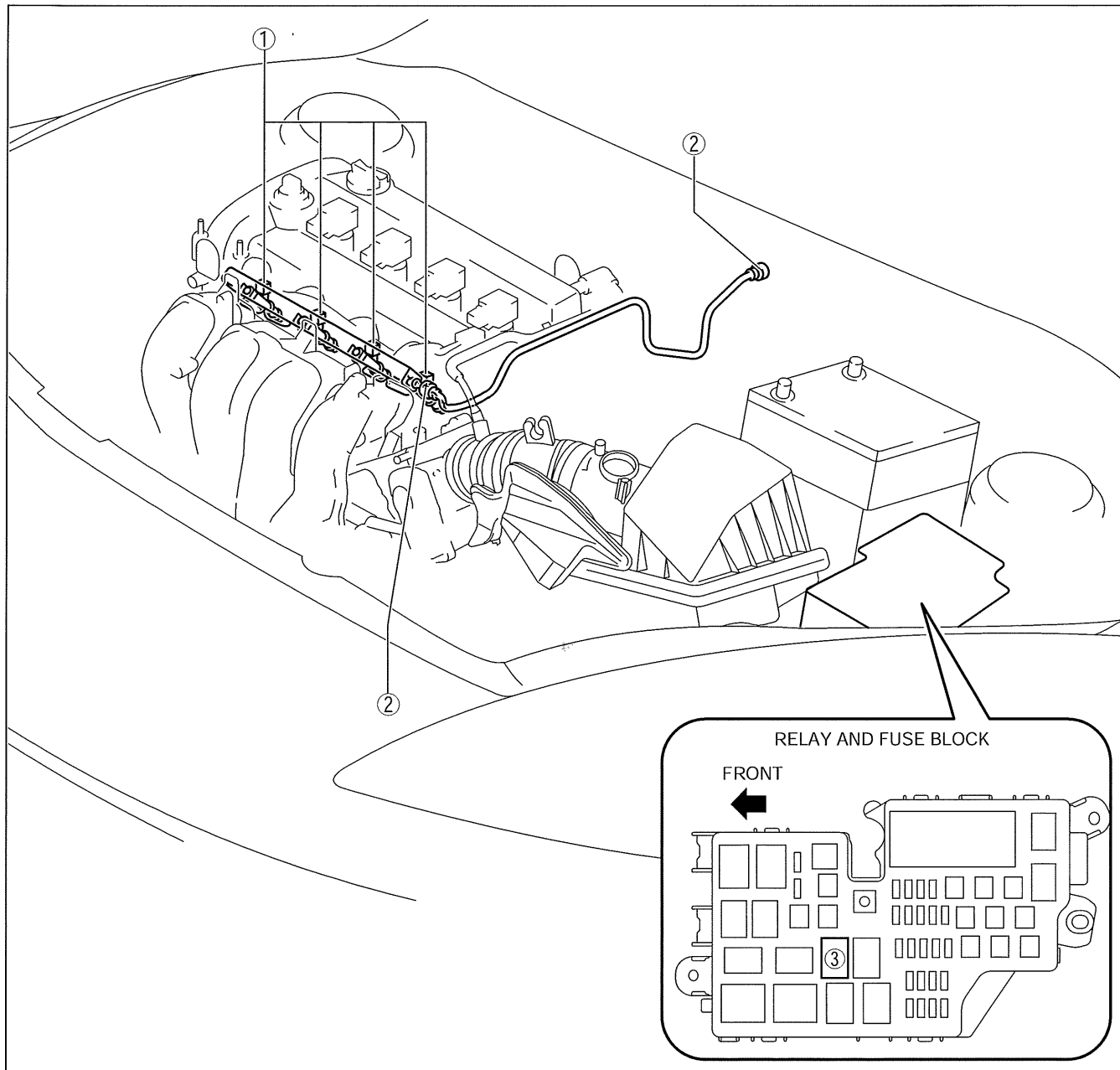
01-14A

FUEL SYSTEM [LF, L5]

FUEL SYSTEM LOCATION INDEX [LF, L5]

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Engine Compartment Side



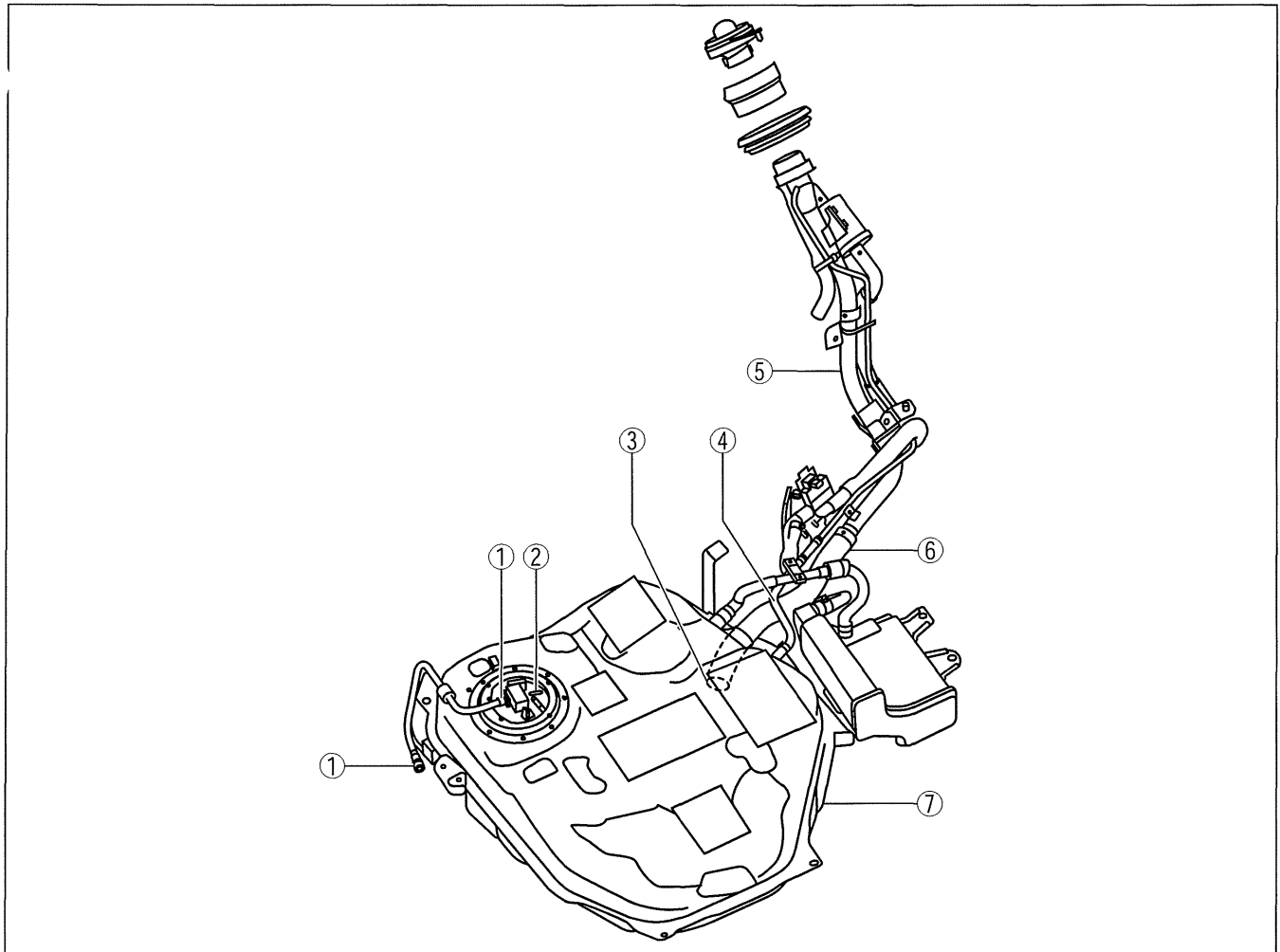
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1	Fuel injector (See 01-14A-19 FUEL INJECTOR REMOVAL/ INSTALLATION [LF, L5].) (See 01-14A-21 FUEL INJECTOR INSPECTION [LF, L5].)
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2	Quick release connector (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
3	Fuel pump relay (See 09-21-17 RELAY INSPECTION.)

FUEL SYSTEM [LF, L5]

Fuel Tank Side



01-14A

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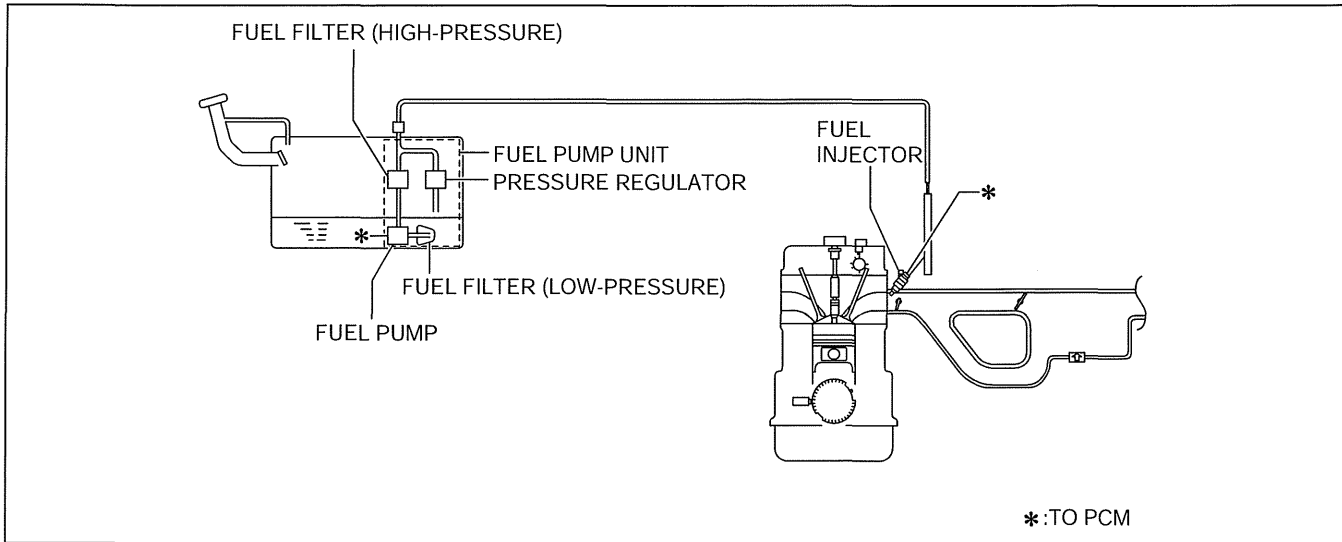
1	Quick release connector (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
2	Fuel pump unit (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) (See 01-14A-14 FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY [LF, L5].) (See 01-14A-14 FUEL PUMP UNIT INSPECTION [LF, L5].)
3	Nonreturn valve (See 01-14A-13 NONRETURN VALVE INSPECTION [LF, L5].)

4	Breather hose (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
5	Fuel-filler pipe (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
6	Joint hose (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
7	Fuel tank (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].) (See 01-14A-12 FUEL TANK INSPECTION [LF, L5].)

FUEL SYSTEM [LF, L5]

FUEL SYSTEM FLOW DIAGRAM [LF, L5]

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BEFORE SERVICE PRECAUTION [LF, L5]

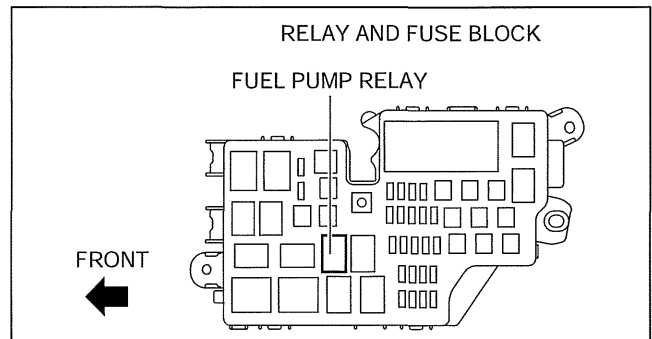
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Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure".
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before performing work on the fuel system, discharge static electricity by touching the vehicle body.

Fuel Line Safety Procedure

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the fuel-filler cap to release the pressure inside the fuel tank.
4. Remove the fuel pump relay.
5. Connect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
6. Start the engine.
7. After the engine stalls, crank the engine 3—4 times.
8. Switch the ignition to off.
9. Install the fuel pump relay.



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Warning

- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. When installing the fuel hose, perform “Fuel Leakage Inspection” described below.
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before performing work on the fuel system, discharge static electricity by touching the vehicle body.

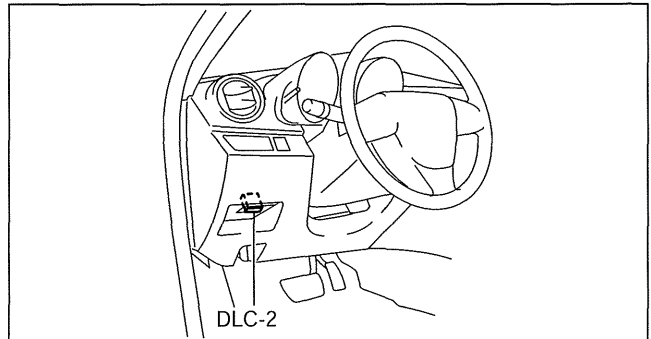
Fuel Leakage Inspection

Caution

- Connecting to the wrong check connector terminal may cause a malfunction. Carefully connect only to the specified terminal.

Using M-MDS

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Using the simulation function “FP”, start the fuel pump. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].)
4. Verify that there is no fuel leakage from the pressurized parts.



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Standard

There shall be no leakage after 5 min.

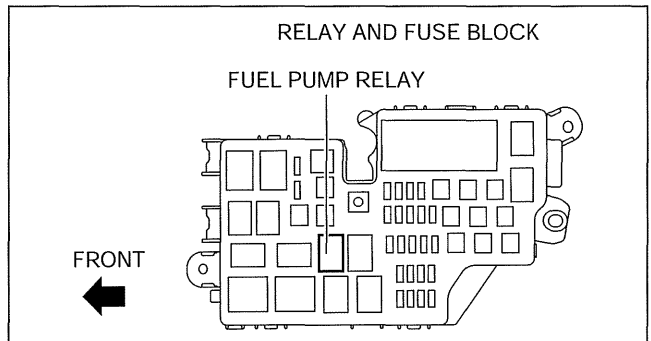
5. In the case of fuel leakage, replace the following components and then do the recheck by the fuel leakage checking procedure.
 - If there is leakage, replace the fuel hoses and clips.
 - If there is damage on the seal on the fuel pipe side, replace the fuel pipe.

Without using M-MDS

1. Disconnect the negative battery cable.
2. Remove the fuel pump relay.

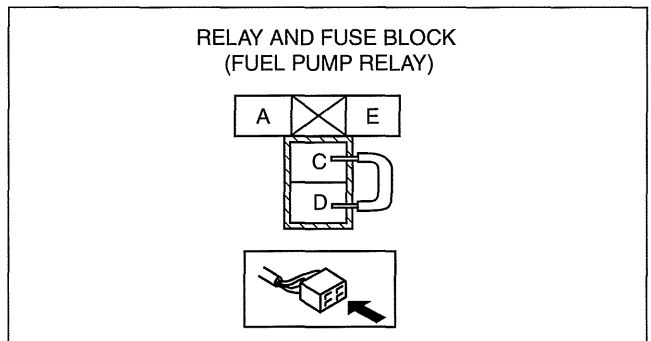
Caution

- Short the specified terminals because shorting the wrong terminal of the relay and fuse block may cause malfunctions.



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3. Using a jumper wire, short fuel pump relay terminals C and D in the relay and fuse block.
4. Connect the negative battery cable and operate the fuel pump.
5. Verify that there is no fuel leakage from the pressurized parts.



am6zzw0000028

Standard

There shall be no leakage after 5 min.

6. In the case of fuel leakage, replace the following components and then do the recheck by the fuel leakage checking procedure.
 - If there is leakage, replace the fuel hoses and clips.
 - If there is damage on the seal on the fuel pipe side, replace the fuel pipe.

FUEL SYSTEM [LF, L5]

FUEL LINE PRESSURE INSPECTION [LF, L5]

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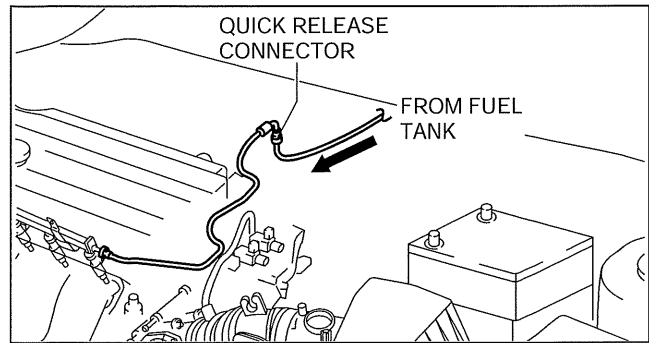
Warning

- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. To prevent this, complete the following inspection with the engine stopped.
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before performing work on the fuel system, discharge static electricity by touching the vehicle body.

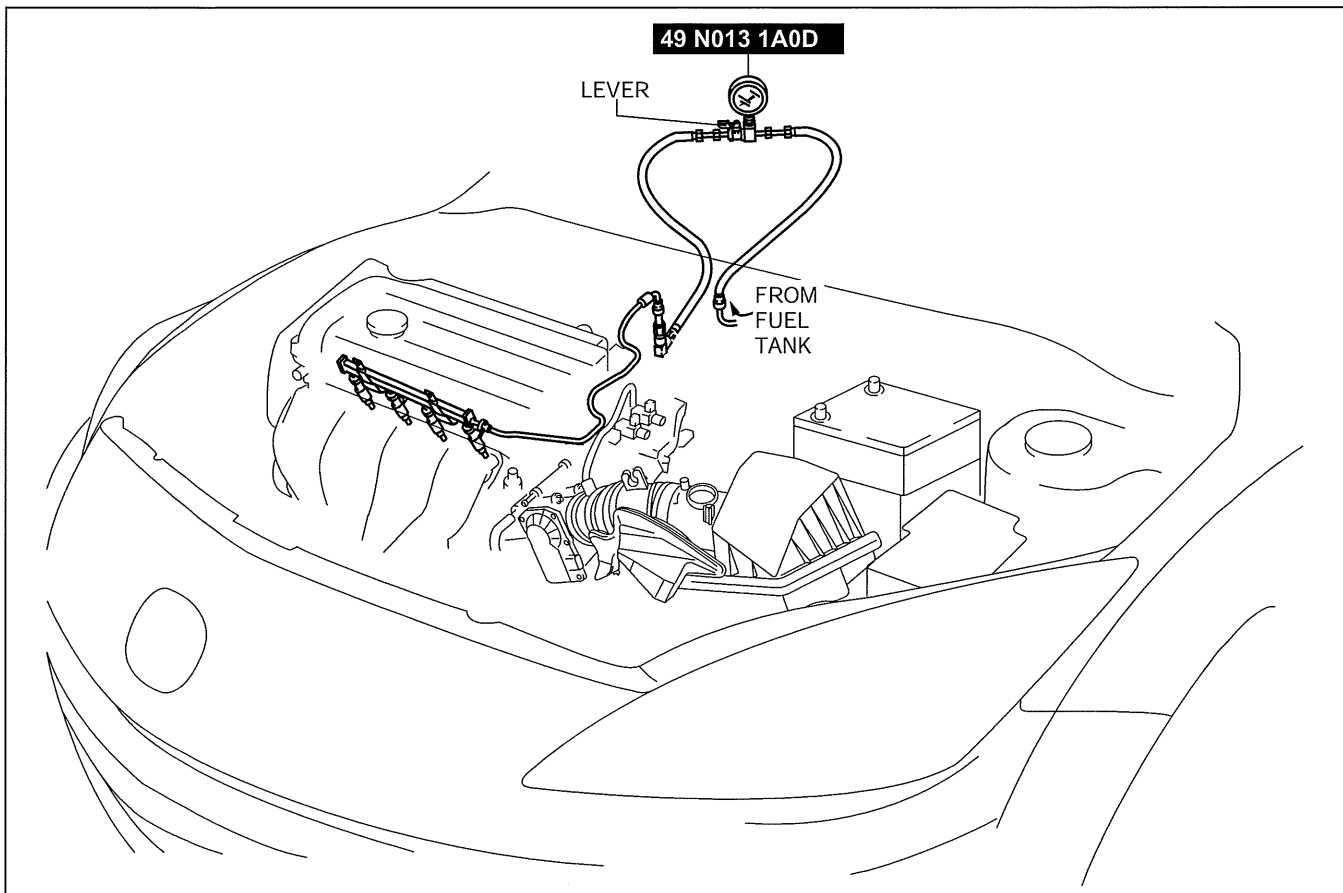
Caution

- Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using cloth or soft brush, and make sure that it is free of foreign material.

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable.
4. Disconnect the quick release connector. (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
5. Turn the lever of the **SST** parallel to the hose as shown in the figure.



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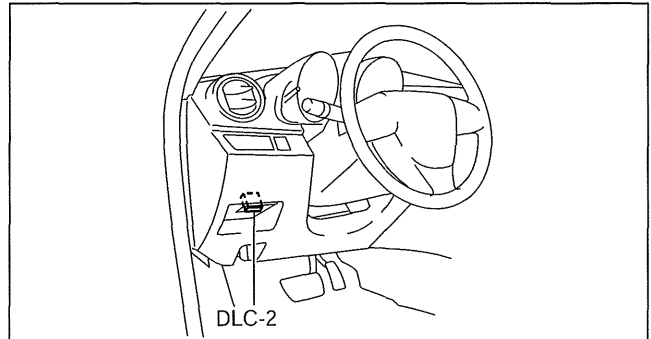
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FUEL SYSTEM [LF, L5]

6. Insert the **SST** quick release connector into the fuel pipe until a click is heard.
7. Verify that the quick release connector is firmly connected by pulling it by hand.
8. Start the fuel pump using the following procedure.

Using M-MDS

1. Connect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Connect the M-MDS to the DLC-2.
3. Using the simulation function "FP", start the fuel pump. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].)



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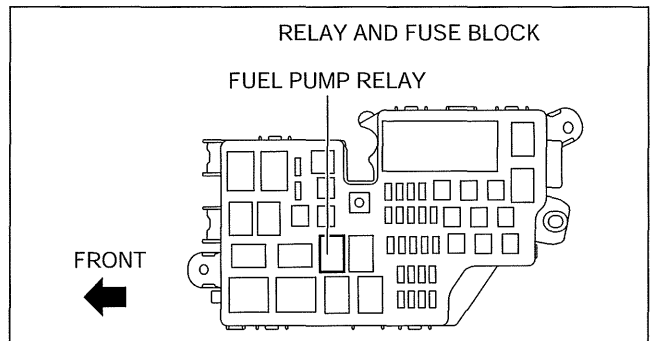
01-14A

Without using M-MDS

1. Remove the fuel pump relay.

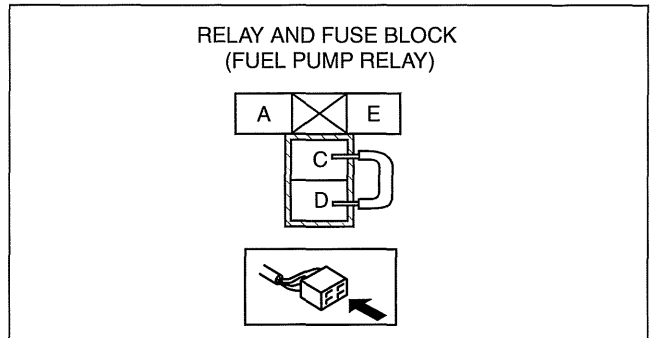
Caution

- Short the specified terminals because shorting the wrong terminal of the relay and fuse block may cause malfunctions.



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2. Using a jumper wire, short fuel pump relay terminals C and D in the relay and fuse block.
3. Connect the negative battery cable and operate the fuel pump.



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9. Operate the fuel pump for **10 s**.
10. Measure the fuel line pressure.
 - If not within the specification, inspect the following:
 - If it less than the specification:**
 - Fuel pump unit
 - Fuel line for clogging or leakage
 - If it exceeds the specification:**
 - Fuel line clogging

Fuel pressure

350—430 kPa {3.57—4.38 kgf/cm², 50.8—62.3 psi}

11. Stop the fuel pump using the following procedure.

Using M-MDS

1. Using the simulation function "FP", stop the fuel pump. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].)

Without using M-MDS

1. Disconnect the negative battery cable to stop the fuel pump.

FUEL SYSTEM [LF, L5]

12. Measure the fuel hold pressure **after 5 min.**
 - If not within the specification, inspect the following:
 - Fuel line leakage

Fuel hold pressure

210 kPa {2.14 kgf/cm², 30.5 psi} or more

13. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
14. Disconnect the **SST**.
15. Connect the quick release connector. (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
16. Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)

FUEL TANK REMOVAL/INSTALLATION [LF, L5]

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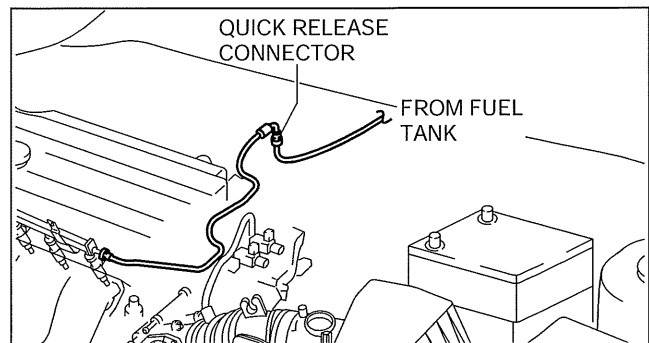
Warning

- **Repairing a fuel tank containing fuel is dangerous. Explosion or fire may cause death or serious injury. Always properly steam clean a fuel tank before repairing it.**
- **Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, do not damage the sealing surface of the fuel pump unit when removing or installing.**
- **A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before draining fuel, make sure to discharge static electricity by touching the vehicle body.**

Caution

- **Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.**

1. Level the vehicle.
2. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
3. Disconnect the quick release connector. (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
4. Connect a long hose to the disconnected quick release connector and drain the fuel into a container used for collecting gasoline.

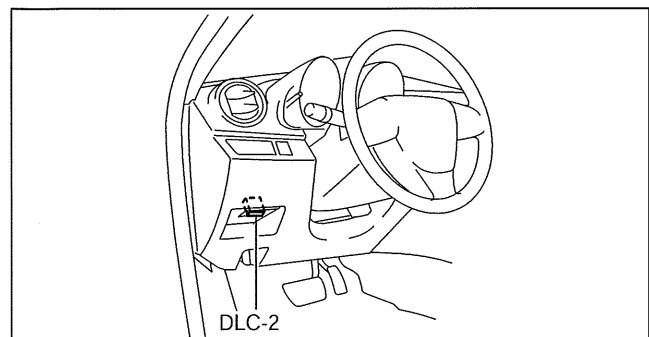


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5. Drain the fuel from the fuel tank using the following procedure:

Using M-MDS

1. Connect the M-MDS to the DLC-2.
2. Using the simulation function "FP", start the fuel pump. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].)



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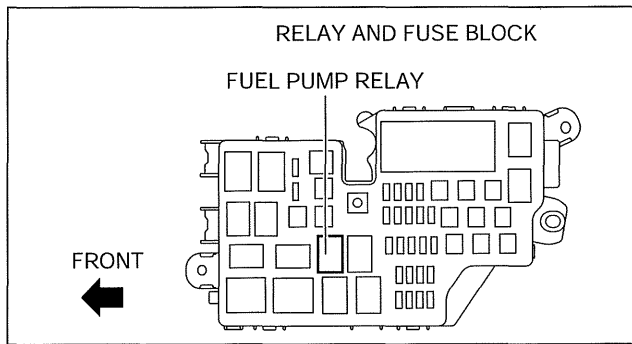
FUEL SYSTEM [LF, L5]

Without using M-MDS

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the fuel pump relay.

Caution

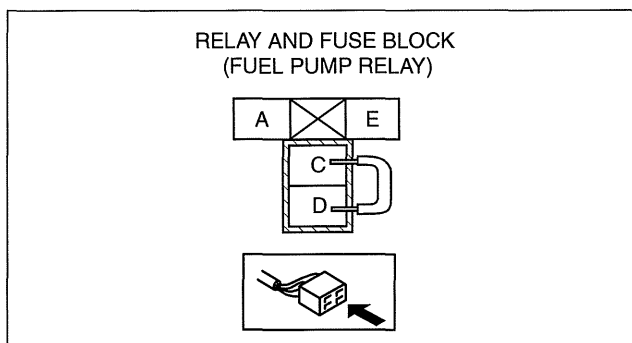
- Short the specified terminals because shorting the wrong terminal of the relay and fuse block may cause malfunctions.



4. Using a jumper wire, short fuel pump relay terminals C and D in the relay and fuse block.
5. Connect the negative battery cable and operate the fuel pump. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)

Caution

- The fuel pump could be damaged if it is operated while there is no fuel in the fuel tank. Verify the amount of fuel being discharged from the hose and stop operation of the fuel pump when essentially no fuel is being discharged.



6. Stop the fuel pump using the following procedure.

Using M-MDS

1. Using the simulation function "FP", stop the fuel pump. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].)
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable.

Without using M-MDS

1. Disconnect the negative battery cable to stop the fuel pump.

7. To remove the fuel pump unit, remove the following parts:

- (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (2) Service hole cover
- (3) fuel pump unit connector

8. Remove the TWC. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)

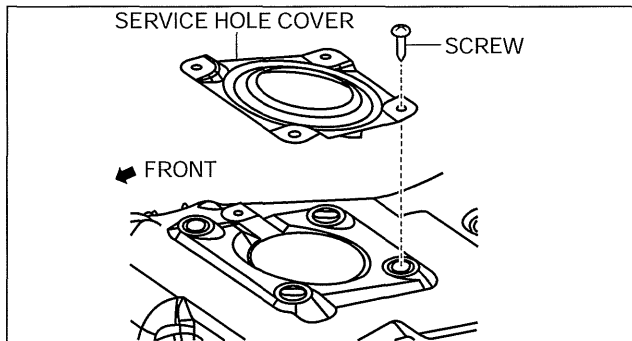
9. Remove the under cover. (See 02-14-8 REAR TRAILING LINK REMOVAL/INSTALLATION.)

10. Remove the insulator (middle No.1). (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)

11. Remove in the order indicated in the table.

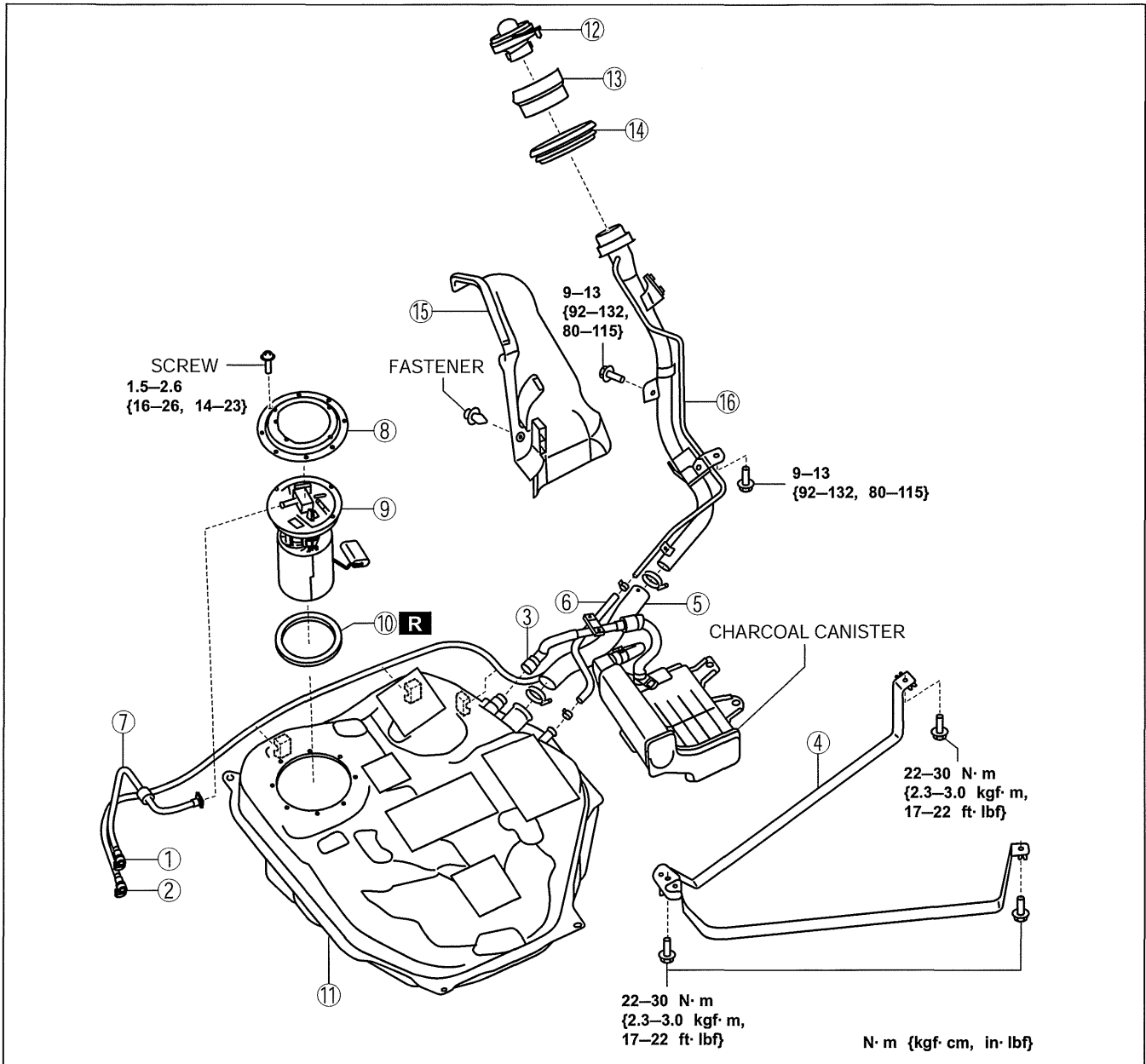
12. Install in the reverse order of removal.

13. Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)



01-14A

FUEL SYSTEM [LF, L5]



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1	Quick release connector (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
2	Quick release connector (See 01-16A-11 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5].)
3	Quick release connector (See 01-16A-11 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5].)
4	Fuel tank strap
5	Joint hose (See 01-14A-11 Joint Hose Installation Note.)
6	Breather hose (See 01-14A-11 Breather Hose Removal Note.) (See 01-14A-11 Breather Hose Installation Note.)

7	Fuel hose (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
8	Set plate
9	Fuel pump unit
10	O-ring
11	Fuel tank
12	Fuel-filler cap
13	Protector
14	Dust cover
15	Fuel-filler pipe protector
16	Fuel-filler pipe (See 01-14A-11 Fuel-Filler Pipe Removal Note.)

FUEL SYSTEM [LF, L5]

Breather Hose Removal Note

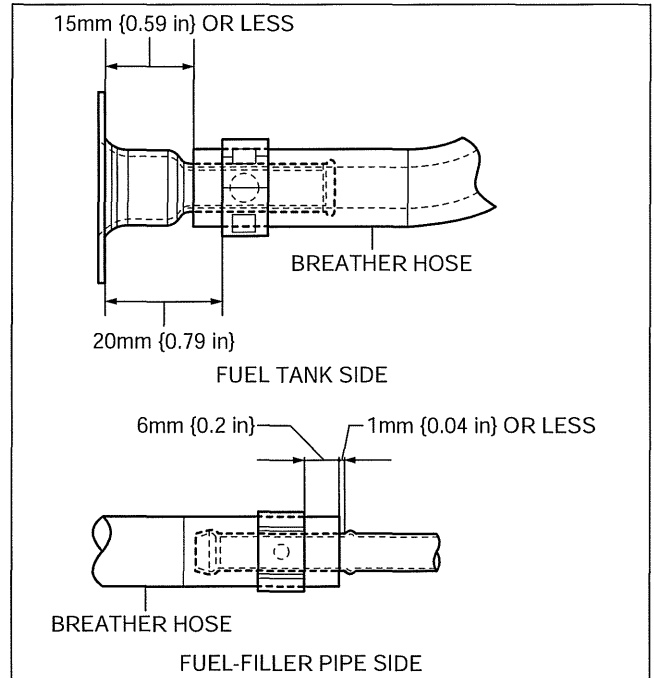
1. Disconnect the breather hose of fuel-filler pipe side.
2. Remove the following parts as a single unit.
 - Fuel tank
 - Breather hose
 - Fuel pump unit
 - Fuel hose
3. Remove the breather hose.

Fuel-Filler Pipe Removal Note

1. Remove the rear tire (LH). (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
2. Remove the fuel-filler pipe.

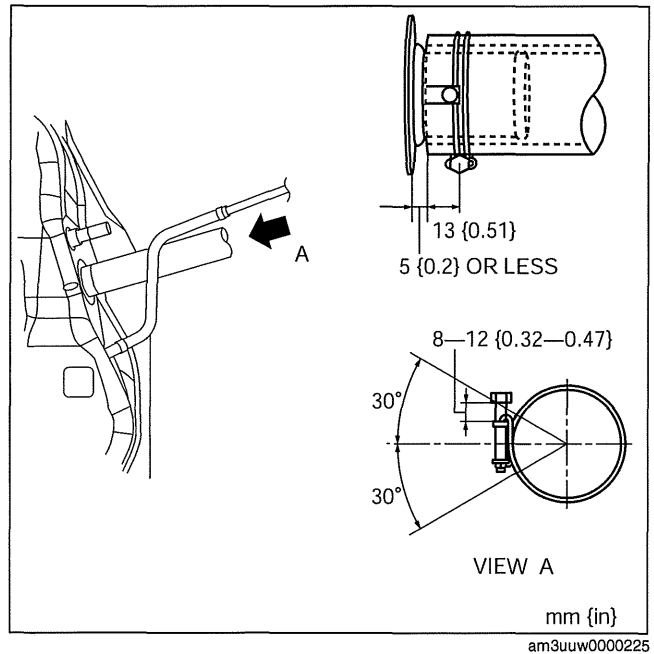
Breather Hose Installation Note

1. Install the breather hose as shown in the figure.



Joint Hose Installation Note

1. Install the joint hose and clamp as shown in the figure.



01-14A

FUEL SYSTEM [LF, L5]

FUEL TANK INSPECTION [LF, L5]

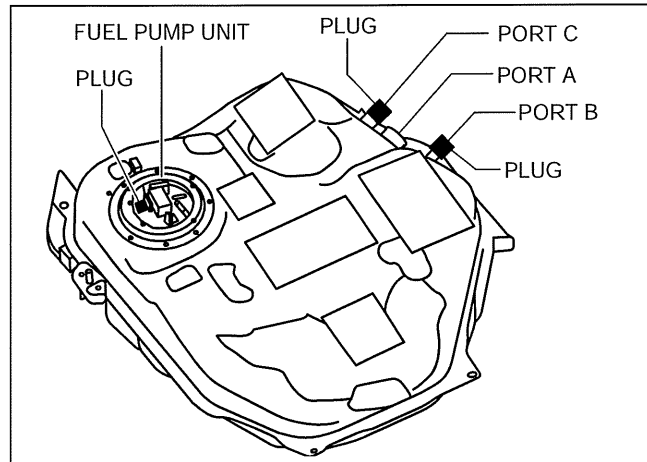
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Note

- The rollover valve and the fuel shut-off valve built into the fuel tank and fuel tank leakage are inspected in this inspection.

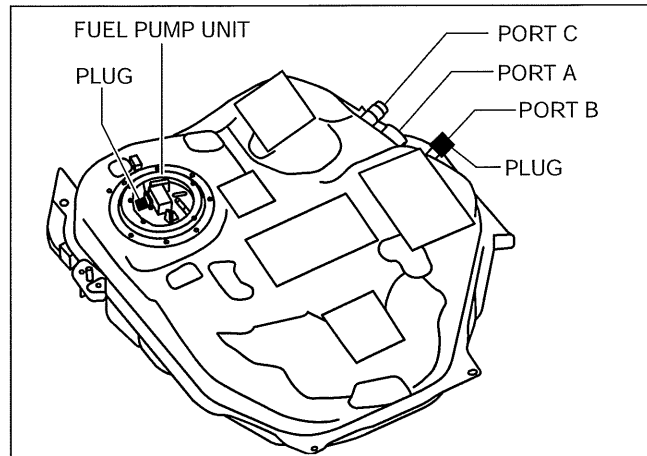
- Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
- Remove the fuel tank and the fuel pump unit as a single unit. (See 01-14A-8 FUEL TANK REMOVAL/ INSTALLATION [LF, L5].)
- Perform the following procedure to verify the fuel tank airtightness.

- Plug the fuel pump unit pipe, ports B and C.
- Apply a pressure of **3 kPa {23 mmHg, 0.9 inHg}** to port A and wait for a while.
- Verify that there is no air flow leakage from the fuel tank.
 - If there is air flow, replace the fuel tank. (See 01-14A-8 FUEL TANK REMOVAL/ INSTALLATION [LF, L5].)

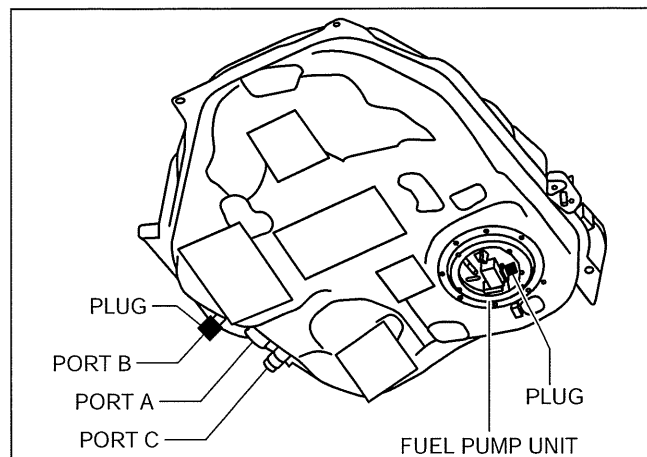


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- Plug the fuel pump unit pipe and port B.
- Level the fuel tank.
- Apply a pressure of **3 kPa {23 mmHg, 0.9 inHg}** to port A and wait for a while.
- With the pressure still applied, verify that there is air flow port C and the pressure is **0—3 kPa {0—23 mmHg, 0—0.9 inHg}**.
 - If there is no air flow, replace the fuel tank. (See 01-14A-8 FUEL TANK REMOVAL/ INSTALLATION [LF, L5].)
- Apply a pressure of **-0.5 kPa {-3.8 mmHg, -0.1 inHg}** to port A and wait for a while.
- With the pressure still applied, verify that there is air flow port C and the pressure is **-0.5—0 kPa {-3.8—0 mmHg, -0.1—0 inHg}**.
 - If there is no air flow, replace the fuel tank. (See 01-14A-8 FUEL TANK REMOVAL/ INSTALLATION [LF, L5].)
 - If there is air flow, place the fuel tank upside down.
- Apply a pressure to port A and wait for a while.
- With the pressure still applied, verify that there is no air flow from port C.
 - If there is air flow, replace the fuel tank. (See 01-14A-8 FUEL TANK REMOVAL/ INSTALLATION [LF, L5].)



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FUEL SYSTEM [LF, L5]

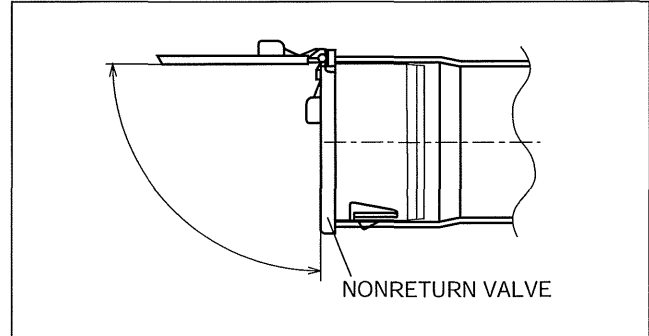
NONRETURN VALVE INSPECTION [LF, L5]

id0114a7803600

Warning

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”, while referring to the “BEFORE SERVICE PRECAUTION”.

1. Complete the “BEFORE SERVICE PRECAUTION”. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Remove the nonreturn valve. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
3. Verify that the nonreturn valve is closed.
 - If malfunction, replace the nonreturn valve. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
4. Verify that the nonreturn valve is not stuck open and does not open even when pulled up by a finger.
 - If malfunction, replace the nonreturn valve. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)



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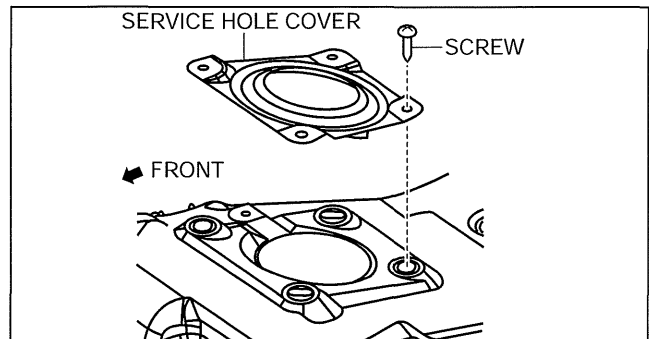
FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5]

id0114a7800900

Warning

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”, while referring to “BEFORE SERVICE PRECAUTION”.
- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, before performing the fuel pump unit removal/installation, always complete the “Fuel Leak Inspection After Fuel Pump Unit Installation”.

1. Complete the “BEFORE SERVICE PRECAUTION”. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
5. Remove the service hole cover.
6. Disconnect the fuel pump unit connector.
7. Disconnect the joint hose of fuel-filler pipe side.
8. Disconnect the breather hose of fuel-filler pipe side.
9. Remove the following parts as a single unit.
 - Fuel tank
 - Joint hose
 - Breather hose
 - Fuel pump unit
 - Fuel hose



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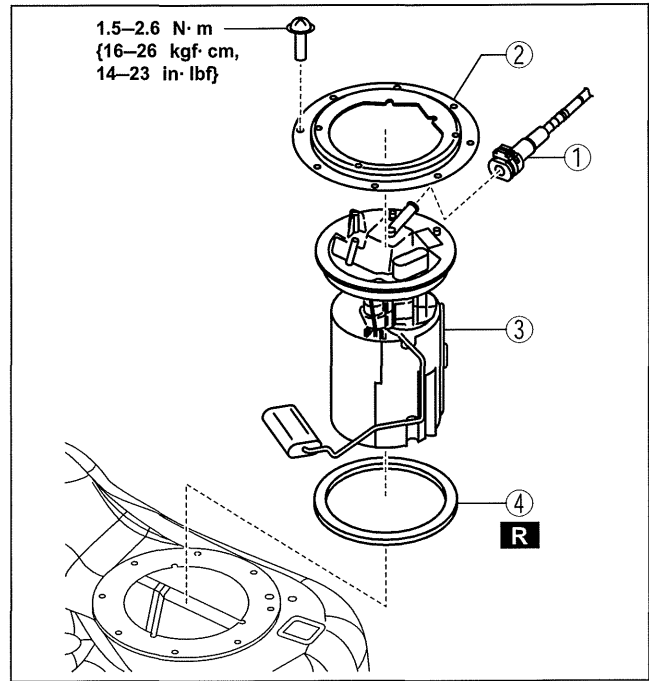
01-14A

FUEL SYSTEM [LF, L5]

10. Remove the order indicated in the table.

1	Quick release connector (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
2	Set plate
3	Fuel pump unit
4	O-ring

11. Install in the reverse order of removal.
12. Complete the "AFTER SERVICE PRECAUTION".
(See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)



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FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY [LF, L5]

id0114a7801000

Note

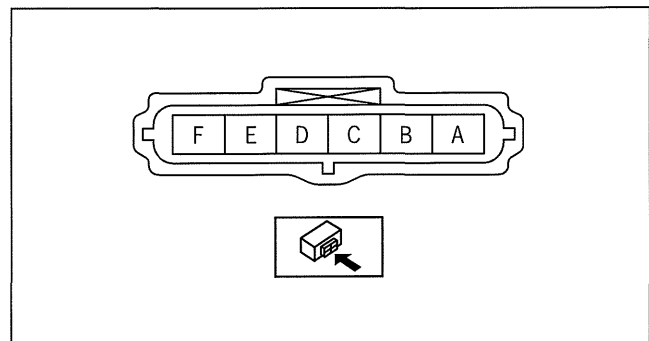
- Fuel pump unit cannot disassemble.

FUEL PUMP UNIT INSPECTION [LF, L5]

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Continuity Inspection

- Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- Disconnect the negative battery cable.
- Disconnect the fuel pump unit connector.
- Inspect for continuity between fuel pump unit terminals A—E.
 - If there is no continuity, replace the fuel pump. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].)



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FUEL SYSTEM [LF, L5]

QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5]

id0114a7801700

Warning

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”, while referring to the “BEFORE SERVICE PRECAUTION”.

Caution

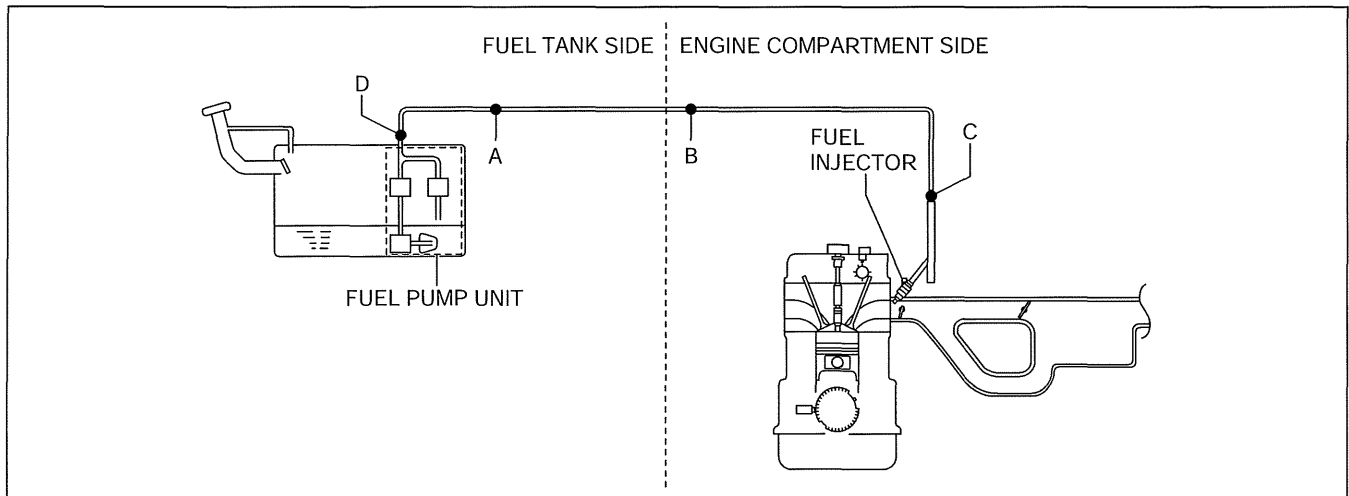
- Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.

01-14A

Quick Release Connector Type

Caution

- There are four types of quick release connectors. Verify the type and location, and install/remove properly.



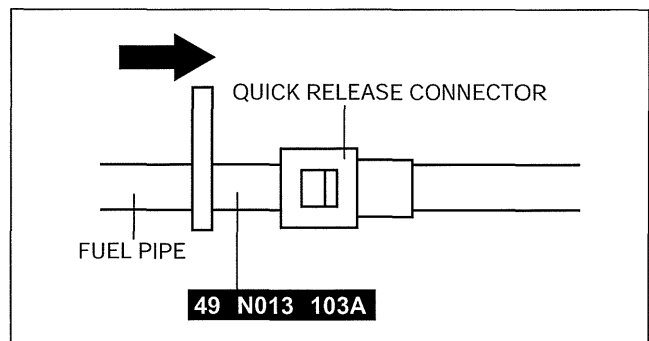
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Type A Removal

Caution

- Be careful not to damage the pipe when unlocking the retainer.

1. Complete the “BEFORE SERVICE PRECAUTION”. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Insert the SST into the quick release connector.
3. Pull out the fuel hose straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

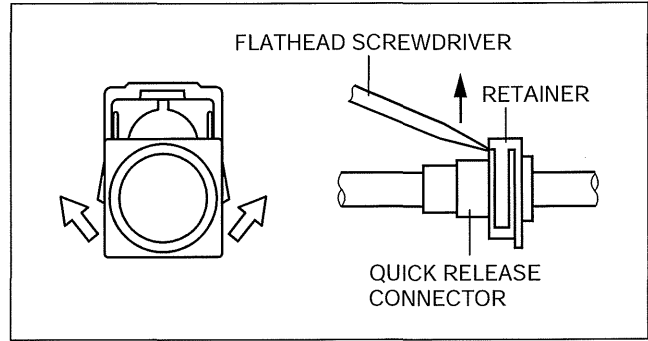


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FUEL SYSTEM [LF, L5]

Type B Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Move the retainer upward using a small flathead screwdriver or a similar tool.
3. Pull out the fuel hose straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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Type C Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)

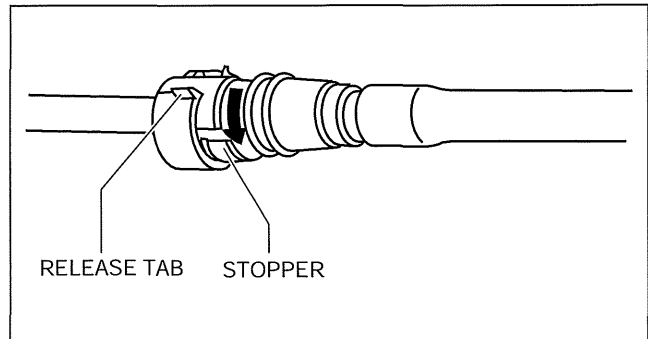
Caution

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

Note

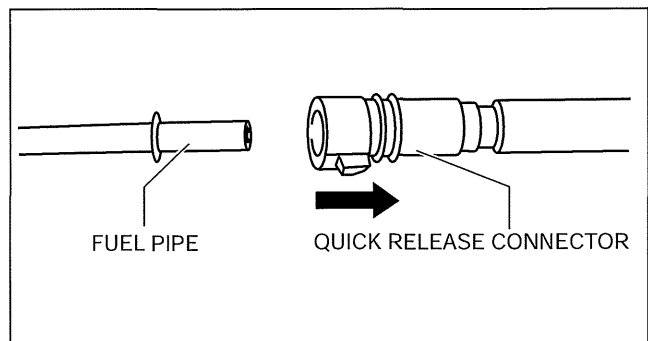
- The fuel hose can be removed by pushing it to the pipe side to release the lock.

2. Rotate the release tab on the quick release connector to the stopper position.



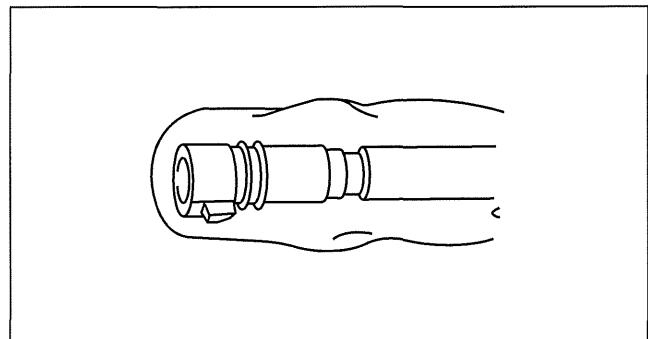
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3. Pull out the evaporative hose straight from the fuel pipe and disconnect it.



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4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



Type D Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)

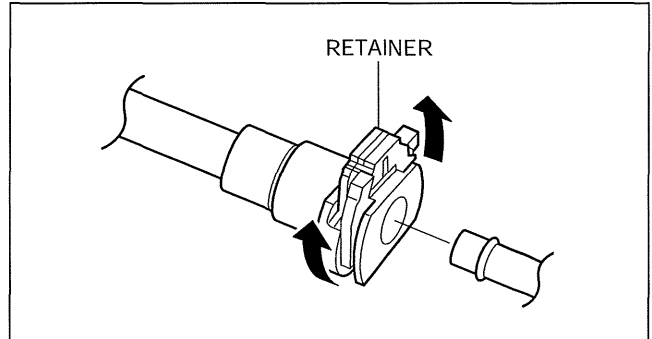
Caution

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

Note

- The fuel hose can be removed by pushing it to the pipe side to release the lock.

2. Release the retainer shown in the figure.
3. Disconnect the quick release connector.
4. Cover the disconnect the quick release connector and fuel pipe with vinyl sheeting or similar material to prevent it from scratches or dirt.



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Type A Installation

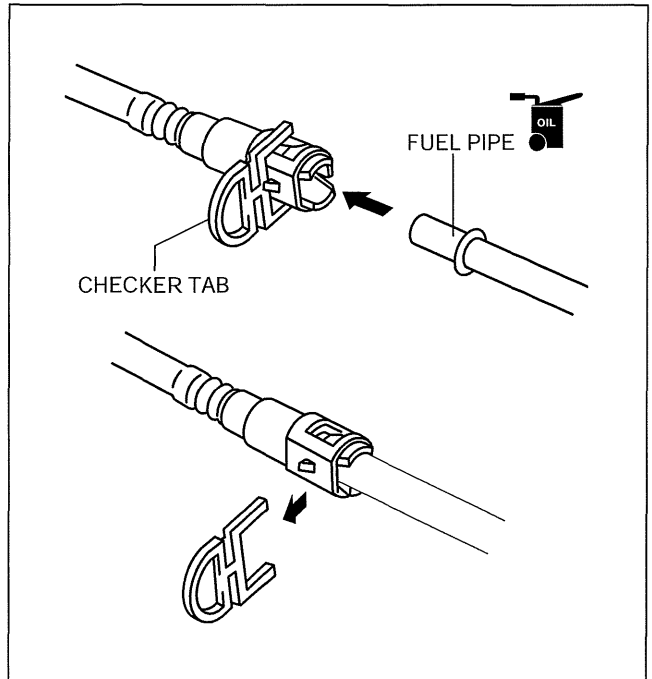
Caution

- Always replace the retainer with a new one when using SST 49 E042 001, otherwise, fuel leakage could result.

Note

- If the quick release connector O-ring is damaged or has slipped, replace the piping component.
- A checker tab is integrated with the quick release connector for new fuel hoses and fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.

1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Install a new retainer to the quick release connector.
4. Reconnect the hose straight to the pipe until a click is heard.
5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.
6. Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)



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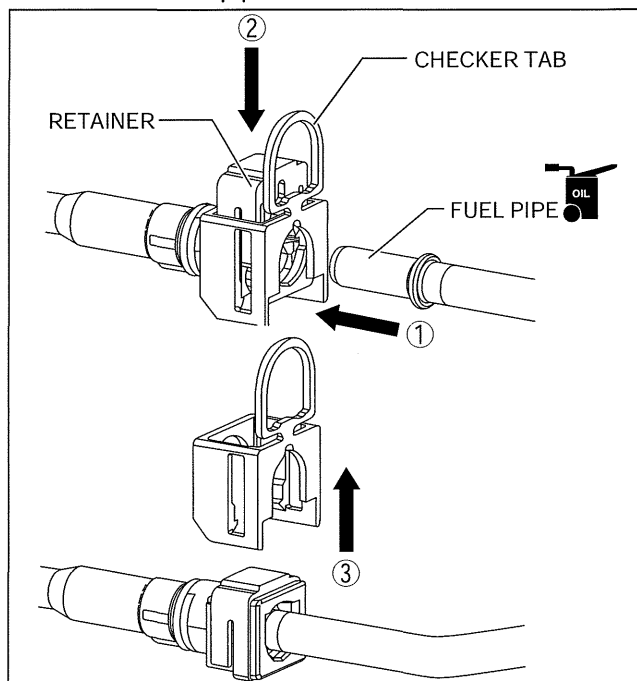
FUEL SYSTEM [LF, L5]

Type B Installation

Note

- If the quick release connector O-ring is damaged or has slipped, replace the fuel hose.
- A checker tab is integrated with the quick release connector for new fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.

1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Install the quick release connector.
 - Insert the fuel pipe straight to the end of the quick release connector.
 - Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the fuel pipe further to the quick release connector.
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.
5. Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)



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Type C Installation

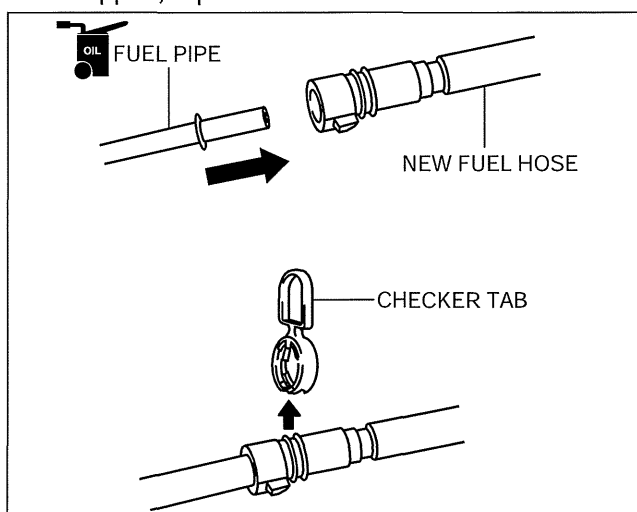
Note

- If the quick release connector O-ring is damaged or has slipped, replace the fuel hose.
- A checker tab is integrated with the quick release connector for new fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.

1. Inspect the fuel hose and fuel pipe sealing surface for damaged and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Reconnect the fuel hose straight to the fuel pipe until a click is heard.

Note

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.



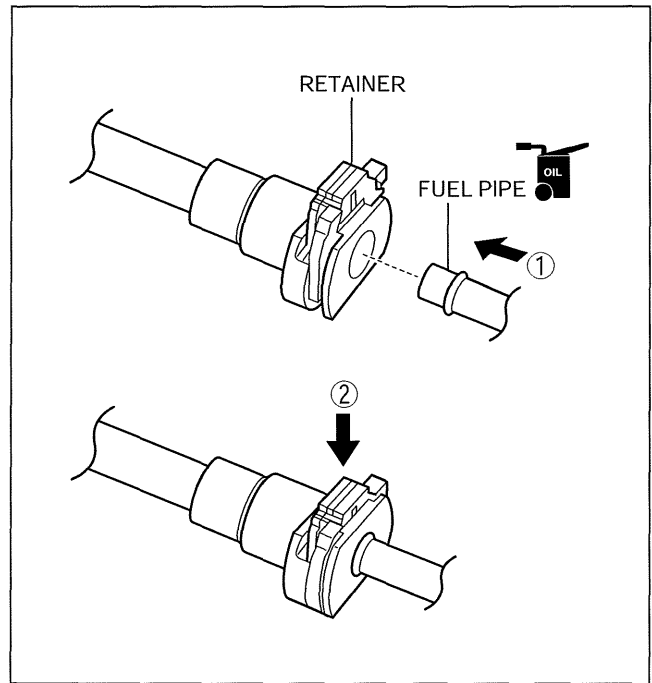
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4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move **2.0—3.0 mm {0.08—0.12 in}** and is connected securely.
5. Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)

FUEL SYSTEM [LF, L5]

Type D Installation

- Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
- Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
- Install the quick release connector.
 - Insert the fuel pipe straight to the end of the quick release connector.
 - Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the fuel pipe further to the quick release connector.
- Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.
- Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)



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01-14A

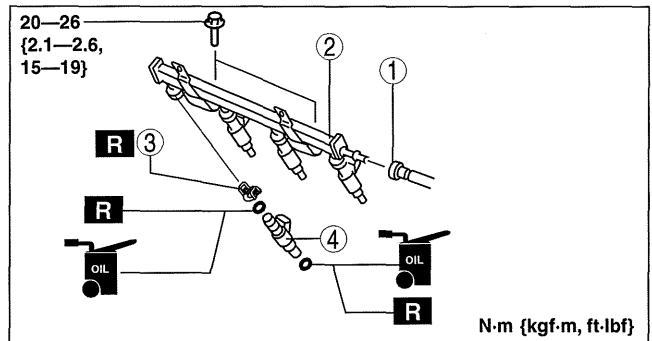
FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5]

id0114a7800600

- Complete the "BEFORE SERVICE PRECAUTION". (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
- Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
- Disconnect the fuel injector connector.
- Remove in the order indicated in the table.

1	Quick release connector (See 01-14A-15 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [LF, L5].)
2	Fuel distributor
3	Injector clip (See 01-14A-20 Fuel Injector Removal Note.)
4	Fuel injector (See 01-14A-21 Fuel Injector Installation Note.)

- Install in the reverse order of removal.
- Complete the "AFTER SERVICE PRECAUTION". (See 01-14A-5 AFTER SERVICE PRECAUTION [LF, L5].)



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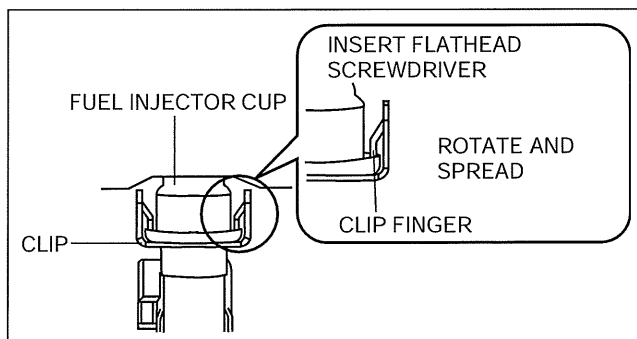
FUEL SYSTEM [LF, L5]

Fuel Injector Removal Note

Caution

- Use of a deformed fuel injector clip will cause the fuel injector to be connected incorrectly and could result in fuel leakage. It will also cause the fuel injector to rotate. Therefore, always replace the clip when the fuel injector is removed.

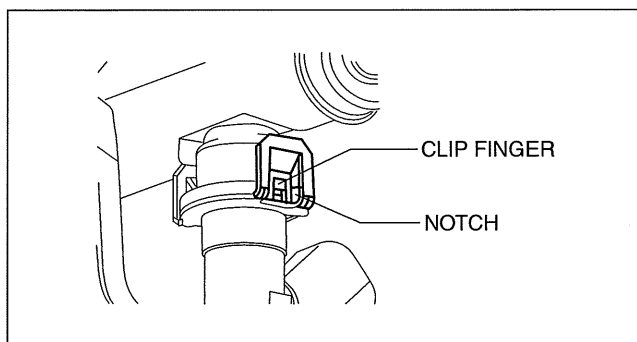
1. Insert a flathead screwdriver between the fuel injector cup and clip finger.



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Note

- When pushing the clip finger outward, deform the finger until it is removed completely from the cup notch.



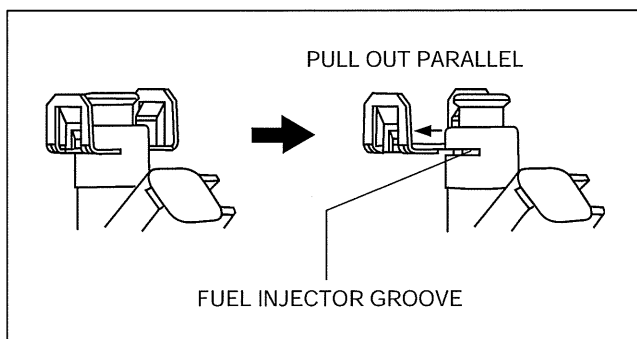
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2. Push the clip finger outward using a flathead screwdriver.
3. Remove the fuel injector with the clip.
4. Remove the clip from the fuel injector using the following procedure:

Caution

- The clip will not be reused.

- (1) Hold the clip using pliers.
- (2) Pull the clip parallel to the fuel injector groove and remove it from the fuel injector.



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FUEL SYSTEM [LF, L5]

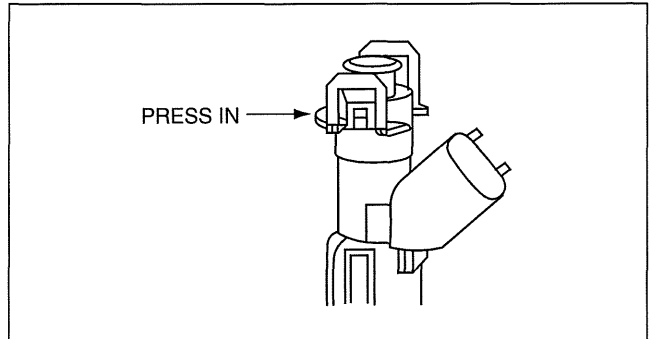
Fuel Injector Installation Note

1. Apply a small amount of clean oil to the fuel injector groove and the new O-ring, and assemble them.
2. Temporarily attach a new clip to the fuel injector groove.

Note

- When the clip is attached correctly, the central area of the fuel injector and the clip finger positions are aligned.

3. Hold the fuel injector firmly and push the clip into the fuel injector until the clip stops sliding.
4. Verify that the fuel injector connector position is correct.
5. Press the fuel injector into the fuel injector cup. Continue pressing until the clip contacts the lower surface of the fuel injector cup.
6. Verify that the fuel injector and clip are correctly installed with the clip locked onto the fuel injector cup notch.



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FUEL INJECTOR INSPECTION [LF, L5]

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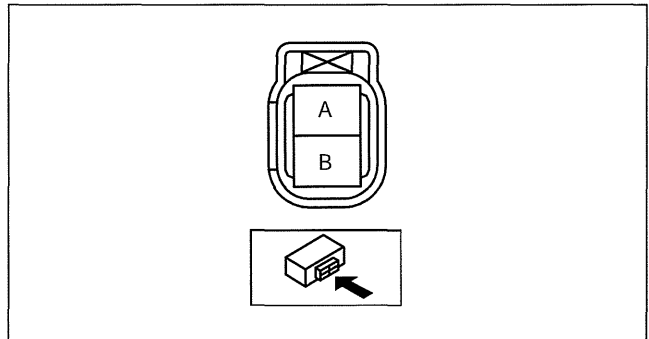
Resistance Inspection

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable.
4. Disconnect the fuel injector connector.
5. Inspect the resistance between fuel injector terminals A and B.

Fuel injector resistance

11.4—12.6 ohms [20 °C {68 °F}]

- If not within the specification, replace the fuel injector. (See 01-14A-19 FUEL INJECTOR REMOVAL/INSTALLATION [LF, L5].)



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01-14A

01-14B FUEL SYSTEM [L3 WITH TC]

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HIGH PRESSURE FUEL PUMP

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High Pressure Line Pipe

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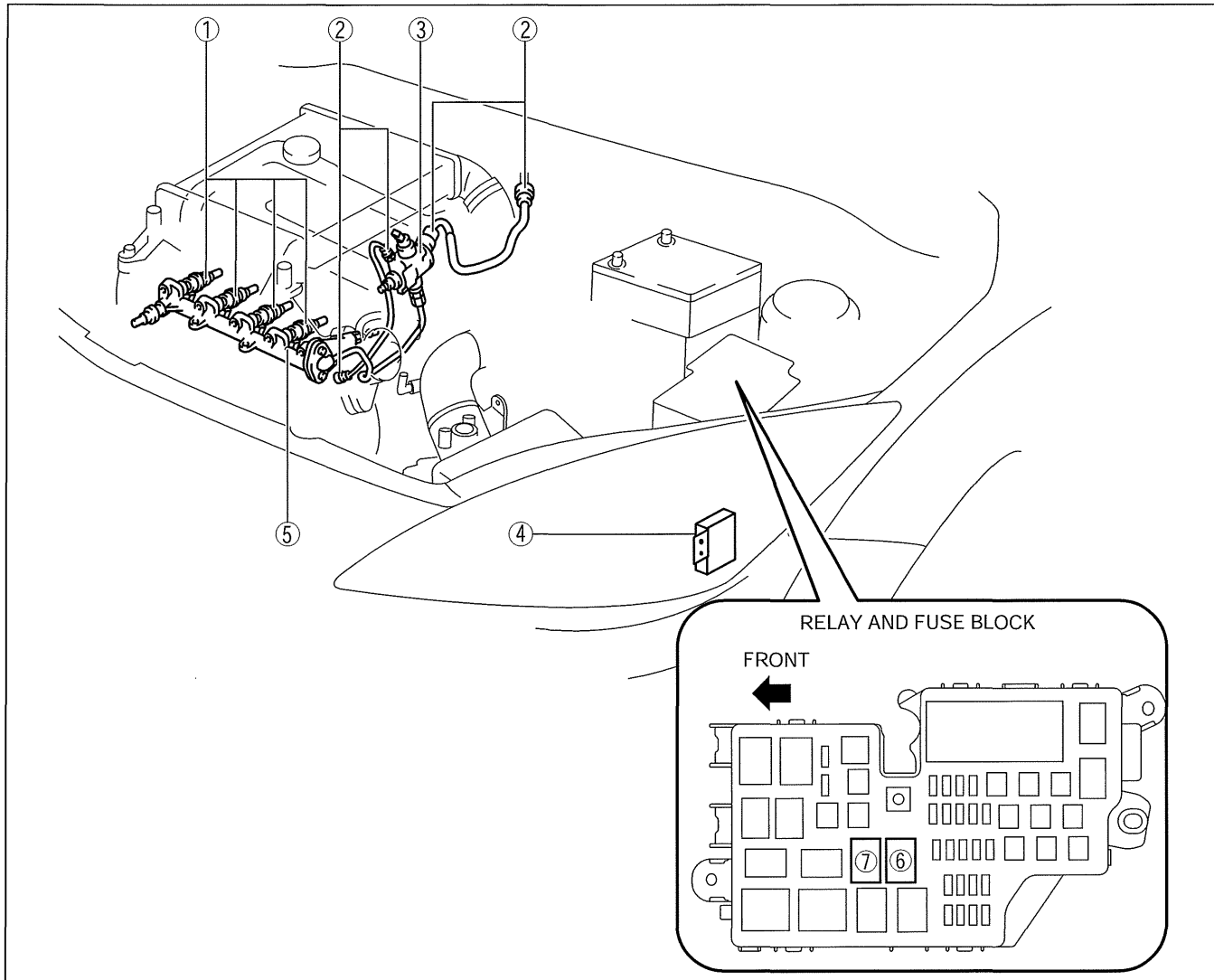
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FUEL SYSTEM [L3 WITH TC]

FUEL SYSTEM LOCATION INDEX [L3 WITH TC]

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Engine Room Side



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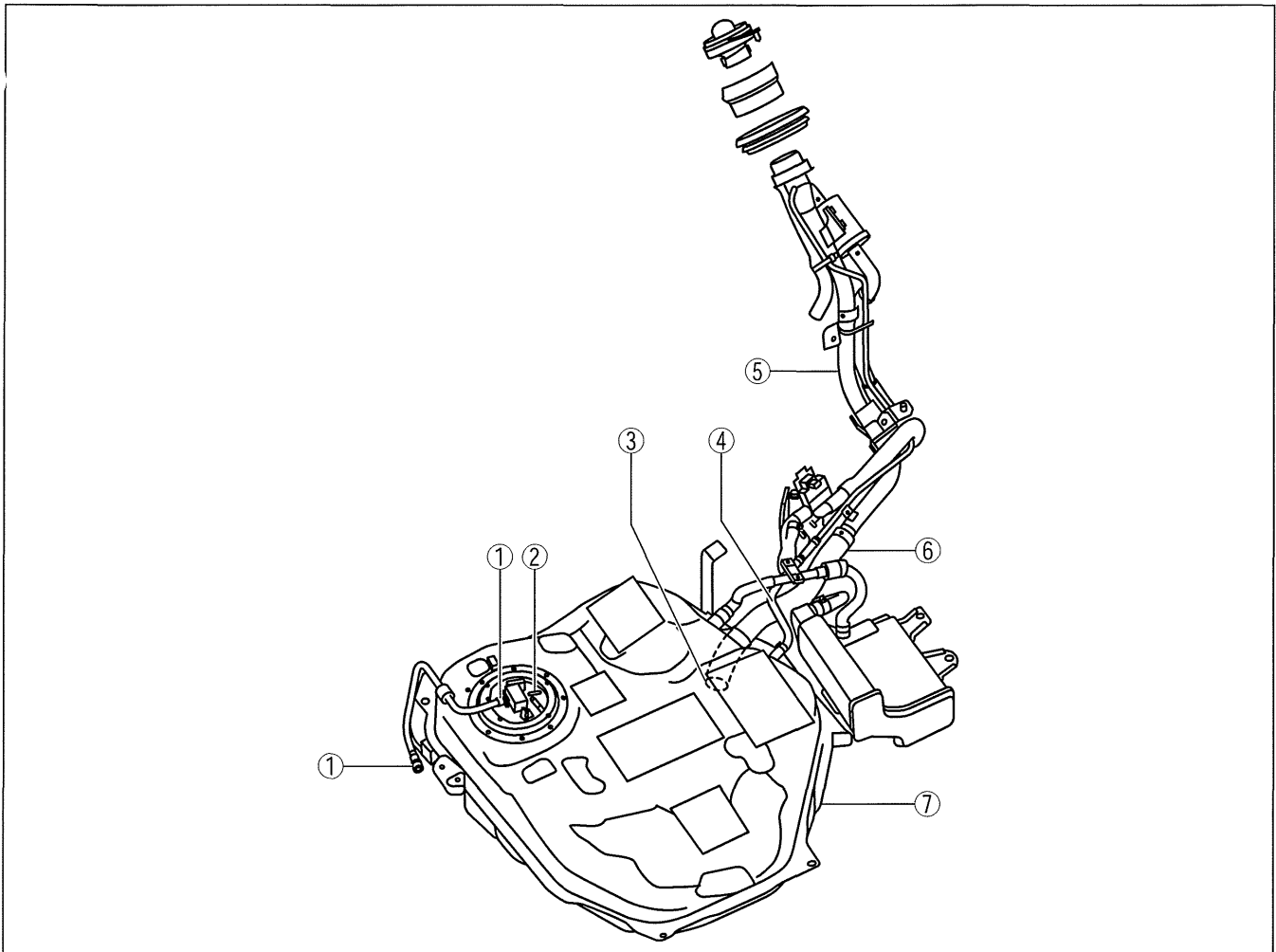
1	Fuel injector (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-29 FUEL INJECTOR INSPECTION [L3 WITH TC].)
2	Quick release connector (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
3	High pressure fuel pump (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-20 HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC].)

4	Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-17 FUEL PUMP RESISTOR INSPECTION [L3 WITH TC].)
5	Fuel delivery pipe (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
6	Fuel pump speed control relay (See 09-21-17 RELAY INSPECTION.)
7	Fuel pump relay (See 09-21-17 RELAY INSPECTION.)

FUEL SYSTEM [L3 WITH TC]

Fuel Tank Side

01-14B



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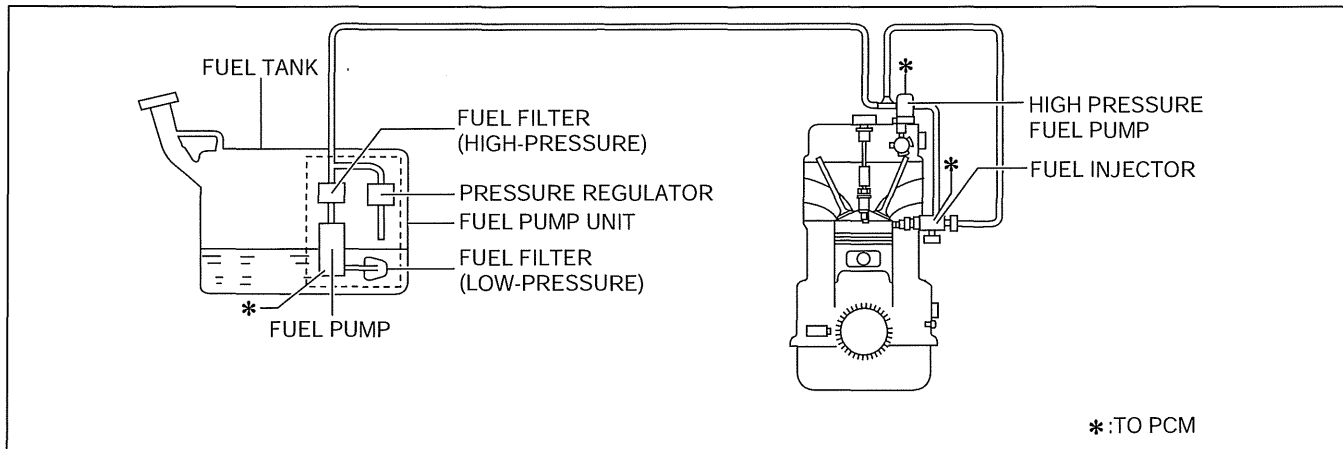
1	Quick release connector (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
2	Fuel pump unit (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-15 FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY [L3 WITH TC].) (See 01-14B-16 FUEL PUMP UNIT INSPECTION [L3 WITH TC].)
3	Nonreturn valve (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-13 NONRETURN VALVE INSPECTION [L3 WITH TC].)

4	Breather hose (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
5	Fuel-filler pipe (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
6	joint hose (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
7	Fuel tank (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-14B-12 FUEL TANK INSPECTION [L3 WITH TC].)

FUEL SYSTEM [L3 WITH TC]

FUEL SYSTEM DIAGRAM [L3 WITH TC]

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BEFORE SERVICE PRECAUTION [L3 WITH TC]

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Warning

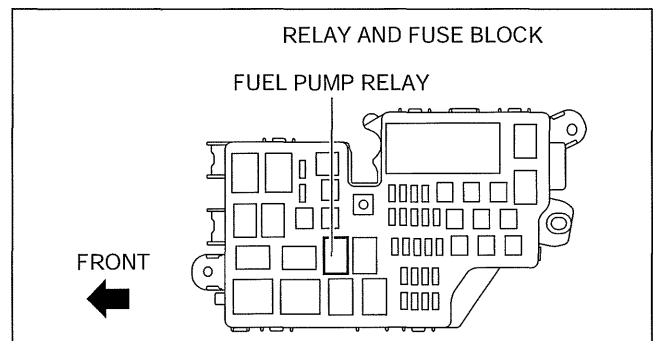
- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the following "Fuel Line Safety Procedure".
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before performing work on the fuel system, discharge static electricity by touching the vehicle body.

Fuel Line Safety Procedure

Note

- Fuel in the fuel system is under high pressure even when the engine is not running.

1. Remove the fuel-filler cap and release the pressure in the fuel tank.
2. Remove the fuel pump relay.
3. Start the engine.
4. After the engine stalls, crank the engine several times.
5. Switch the ignition to off.
6. Install the fuel pump relay.



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FUEL SYSTEM [L3 WITH TC]

AFTER SERVICE PRECAUTION [L3 WITH TC]

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Warning

- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. When installing the fuel hose, perform “Fuel Leakage Inspection” described below.
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before performing work on the fuel system, discharge static electricity by touching the vehicle body.

01-14B

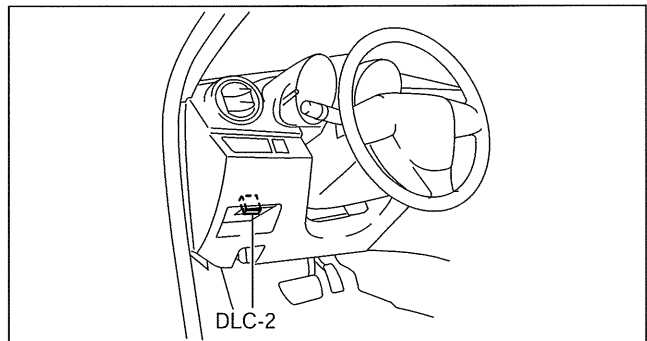
Fuel Leakage Inspection

Caution

- Connecting to the wrong check connector terminal may cause a malfunction. Carefully connect only to the specified terminal.

Using M-MDS

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Using the simulation function “FP”, start the fuel pump. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
4. Verify that there is no fuel leakage from the pressurized parts.



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Standard

There shall be no leakage after 5 min.

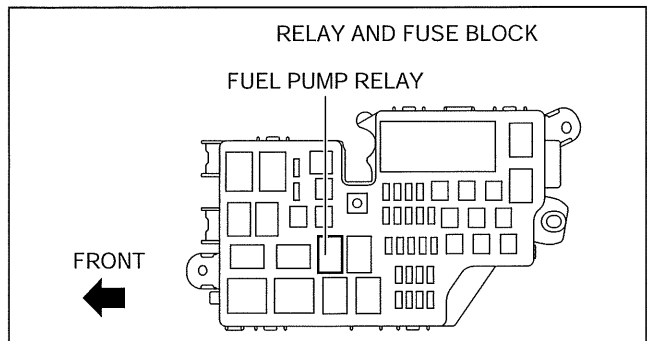
5. In the case of fuel leakage, replace the following components and then do the recheck by the fuel leakage checking procedure.
 - If there is leakage, replace the fuel hoses and clips.
 - If there is damage on the seal on the fuel pipe side, replace the fuel pipe.

Without using M-MDS

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the fuel pump relay.

Caution

- Short the specified terminals because shorting the wrong terminal of the relay and fuse block may cause malfunctions.

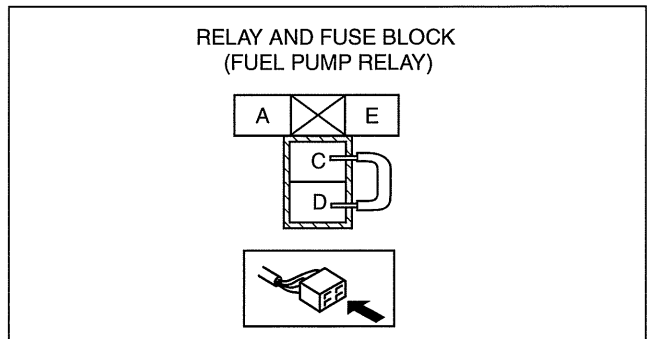


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4. Using a jumper wire, short fuel pump relay terminals C and D in the relay and fuse block.
5. Connect the negative battery cable and operate the fuel pump. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
6. Install battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
7. Verify that there is no fuel leakage from the pressurized parts.

Standard

There shall be no leakage after 5 min.



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8. In the case of fuel leakage, replace the following components and then do the recheck by the fuel leakage checking procedure.
 - If there is leakage, replace the fuel hoses and clips.
 - If there is damage on the seal on the fuel pipe side, replace the fuel pipe.

FUEL SYSTEM [L3 WITH TC]

FUEL LINE PRESSURE INSPECTION [L3 WITH TC]

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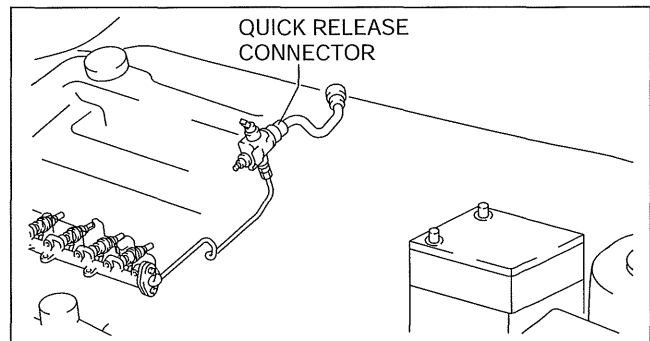
Warning

- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. To prevent this, complete the following inspection with the engine stopped.
- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure", while referring to the "BEFORE SERVICE PRECAUTION".
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before performing work on the fuel system, discharge static electricity by touching the vehicle body.

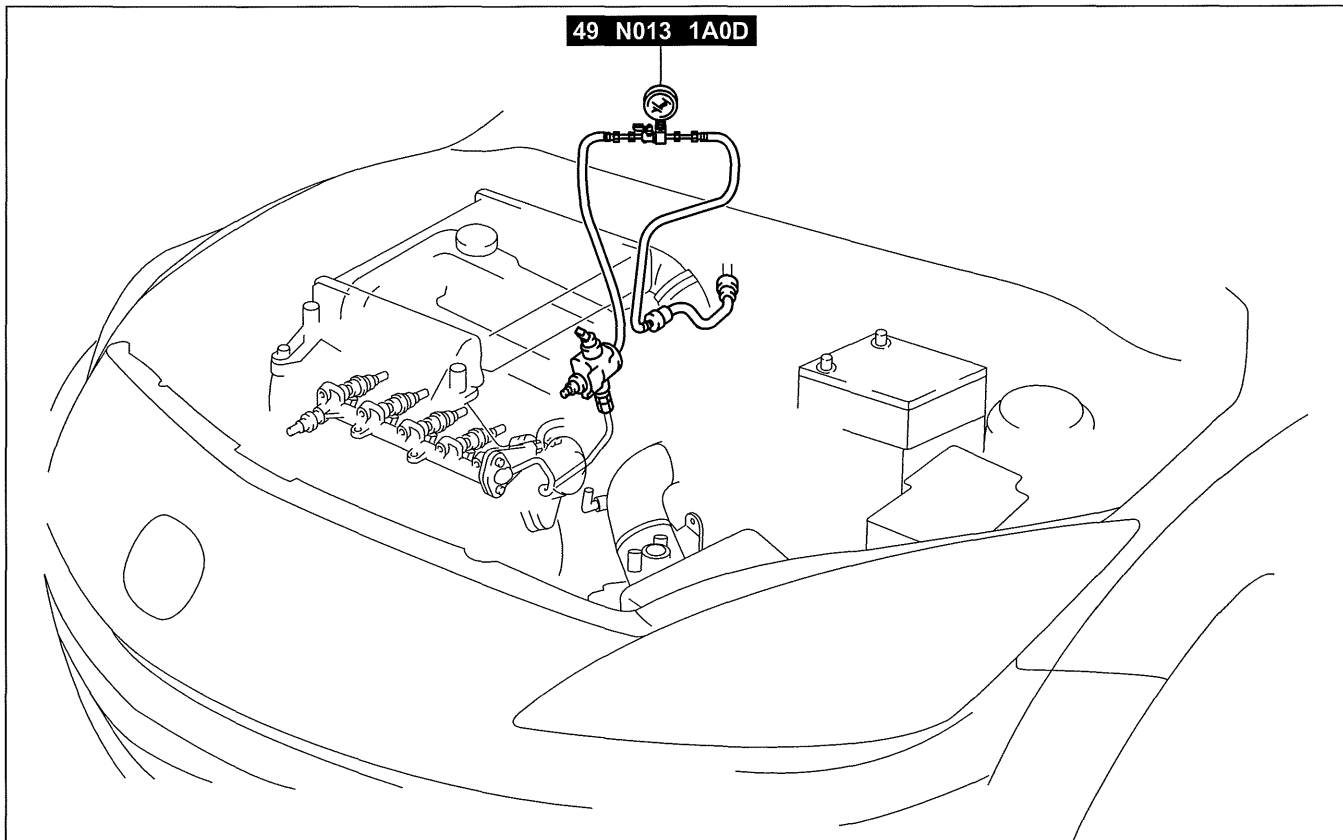
Caution

- Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using cloth or soft brush, and make sure that it is free of foreign material.

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
2. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the quick release connector. (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
5. Turn the lever of the **SST** parallel to the hose as shown in the figure.



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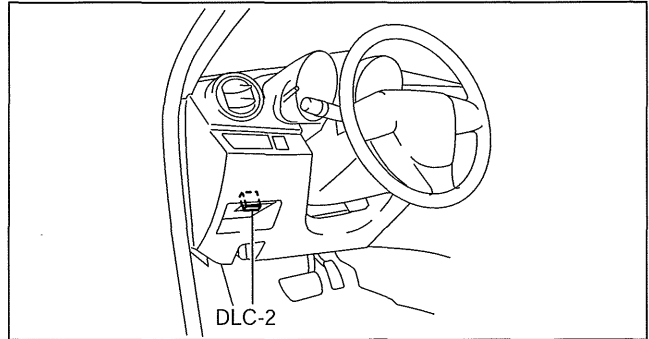
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FUEL SYSTEM [L3 WITH TC]

6. Insert the **SST** quick release connector into the fuel pipe until a click is heard.
7. Verify that the quick release connector is firmly connected by pulling it by hand.
8. Start the fuel pump using the following procedure.

Using M-MDS

1. Connect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Connect the M-MDS to the DLC-2.
3. Using the simulation function "FP", start the fuel pump. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)



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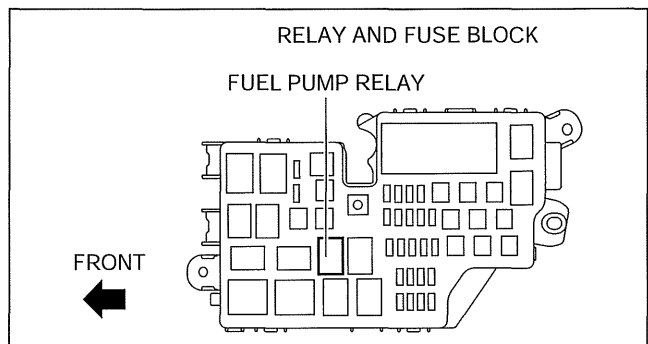
01-14B

Without using M-MDS

1. Remove the fuel pump relay.

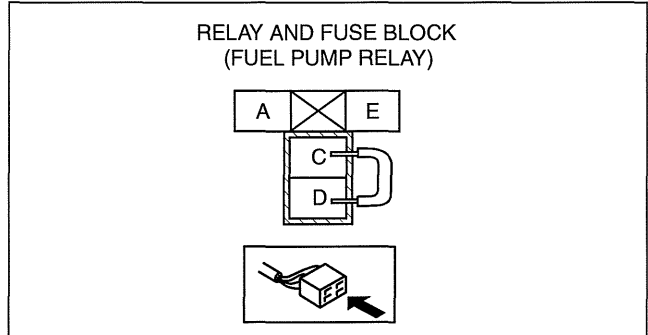
Caution

- Short the specified terminals because shorting the wrong terminal of the relay and fuse block may cause malfunctions.



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2. Using a jumper wire, short fuel pump relay terminals C and D in the relay and fuse block.
3. Connect the negative battery cable and operate the fuel pump.



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9. Operate the fuel pump for **10 s**.
10. Measure the fuel line pressure.
 - If not within the specification, inspect the following:
 - If it less than the specification:**
 - Fuel pump unit
 - Fuel line for clogging or leakage
 - If it exceeds the specification:**
 - Fuel line clogging

Fuel pressure

350—430 kPa {3.57—4.38 kgf/cm², 50.8—62.3 psi}

11. Stop the fuel pump using the following procedure.

Using M-MDS

1. Using the simulation function "FP", stop the fuel pump. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)

Without using M-MDS

1. Disconnect the negative battery cable to stop the fuel pump.

FUEL SYSTEM [L3 WITH TC]

12. Measure the fuel hold pressure **after 5 min.**
 - If not within the specification, inspect the following:
 - Fuel line leakage

Fuel hold pressure

210 kPa {2.14 kgf/cm², 30.5 psi} or more

13. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
14. Disconnect the **SST**.
15. Connect the quick release connector. (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
16. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)

FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC]

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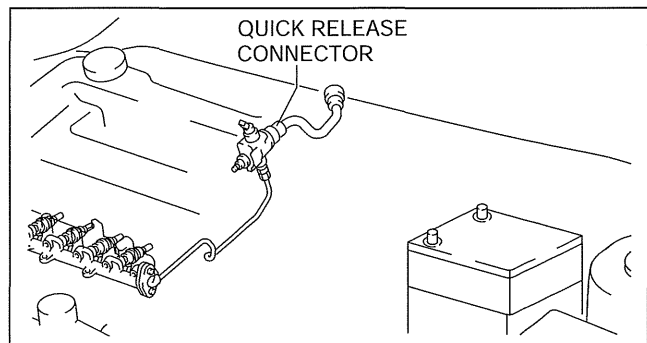
Warning

- **Repairing a fuel tank containing fuel is dangerous. Explosion or fire may cause death or serious injury. Always properly steam clean a fuel tank before repairing it.**
- **Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, do not damage the sealing surface of the fuel pump unit when removing or installing.**
- **A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before draining fuel, make sure to discharge static electricity by touching the vehicle body.**

Caution

- **Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.**

1. Level the vehicle.
2. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
3. Disconnect the quick release connector. (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Connect a long hose to the disconnected quick release connector and drain the fuel into a container used for collecting gasoline.

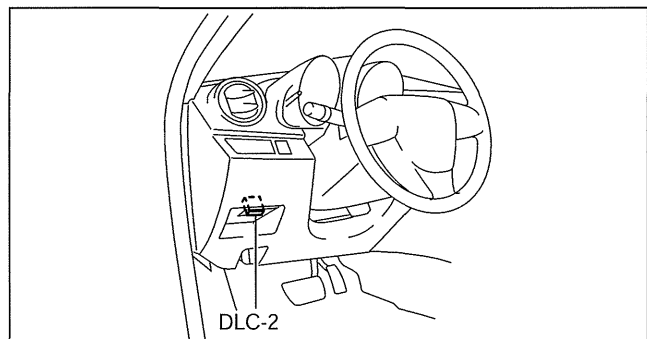


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5. Drain the fuel from the fuel tank using the following procedure:

Using M-MDS

1. Connect the M-MDS to the DLC-2.
2. Using the simulation function "FP", start the fuel pump. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)



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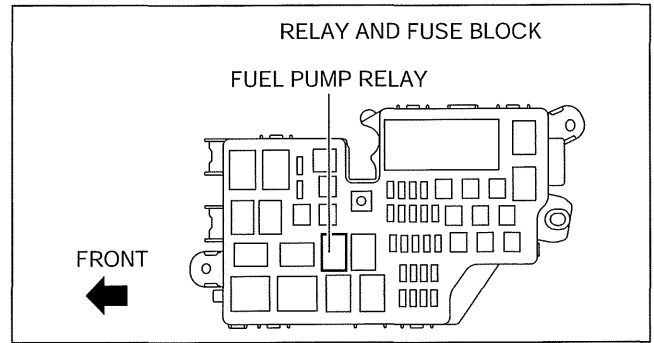
FUEL SYSTEM [L3 WITH TC]

Without using M-MDS

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the fuel pump relay.

Caution

- Short the specified terminals because shorting the wrong terminal of the relay and fuse block may cause malfunctions.

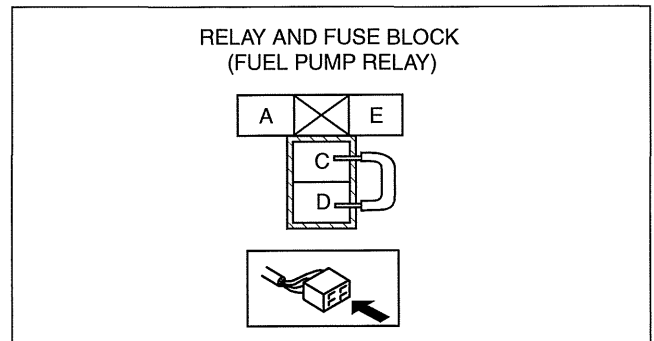


01-14B

4. Using a jumper wire, short fuel pump relay terminals C and D in the relay and fuse block.
5. Connect the negative battery cable and operate the fuel pump. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

Caution

- The fuel pump could be damaged if it is operated while there is no fuel in the fuel tank. Verify the amount of fuel being discharged from the hose and stop operation of the fuel pump when essentially no fuel is being discharged.



6. Stop the fuel pump using the following procedure.

Using M-MDS

1. Using the simulation function "FP", stop the fuel pump. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].)
2. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the negative battery cable.

Without using M-MDS

1. Disconnect the negative battery cable to stop the fuel pump.

7. To remove the fuel pump unit, remove the following parts:

- (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (2) Service hole cover
- (3) fuel pump unit connector

8. Remove the middle pipe. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

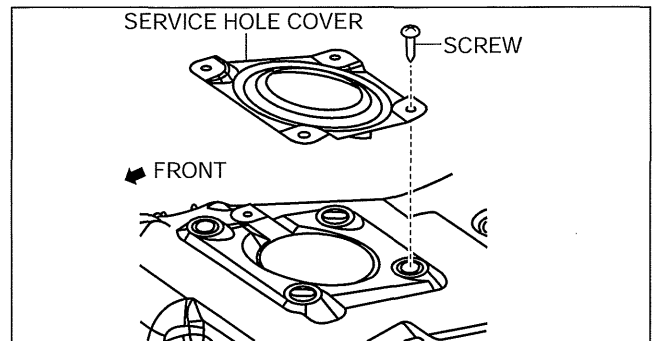
9. Remove the under cover. (See 02-14-8 REAR TRAILING LINK REMOVAL/INSTALLATION.)

10. Remove the insulator (middle No.1). (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

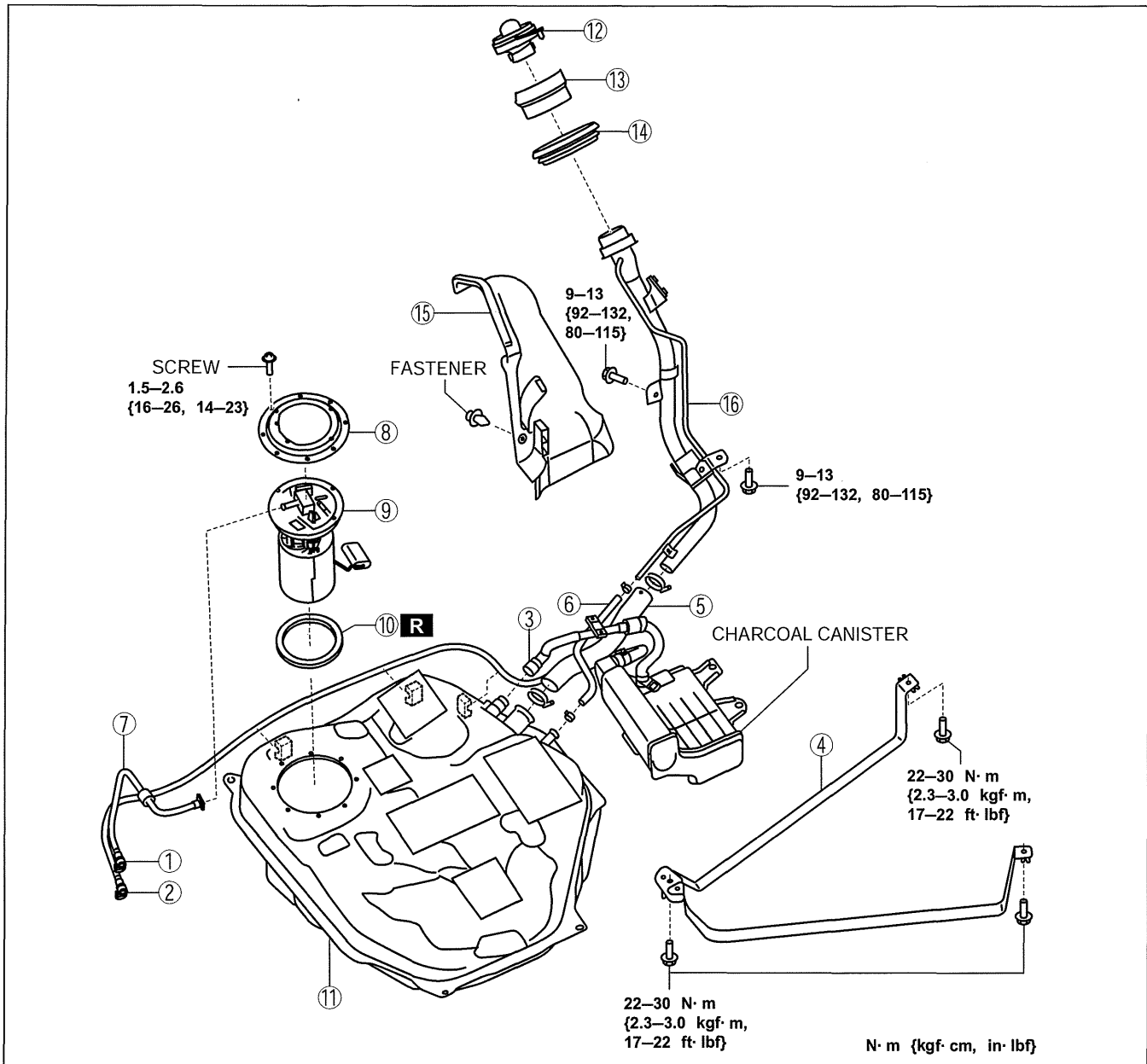
11. Remove in the order indicated in the table.

12. Install in the reverse order of removal.

13. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)



FUEL SYSTEM [L3 WITH TC]



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1	Quick release connector (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
2	Quick release connector (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
3	Quick release connector (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
4	Fuel tank strap
5	Joint hose (See 01-14B-11 Joint Hose Installation Note.)
6	Breather hose (See 01-14B-11 Breather Hose Removal Note.) (See 01-14B-11 Breather Hose Installation Note.)

7	Fuel hose (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
8	Set plate
9	Fuel pump unit
10	O-ring
11	Fuel tank
12	Fuel-filler cap
13	Protector
14	Dust cover
15	Fuel-filler pipe protector
16	Fuel-filler pipe (See 01-14B-11 Fuel-Filler Pipe Removal Note.)

FUEL SYSTEM [L3 WITH TC]

Breather Hose Removal Note

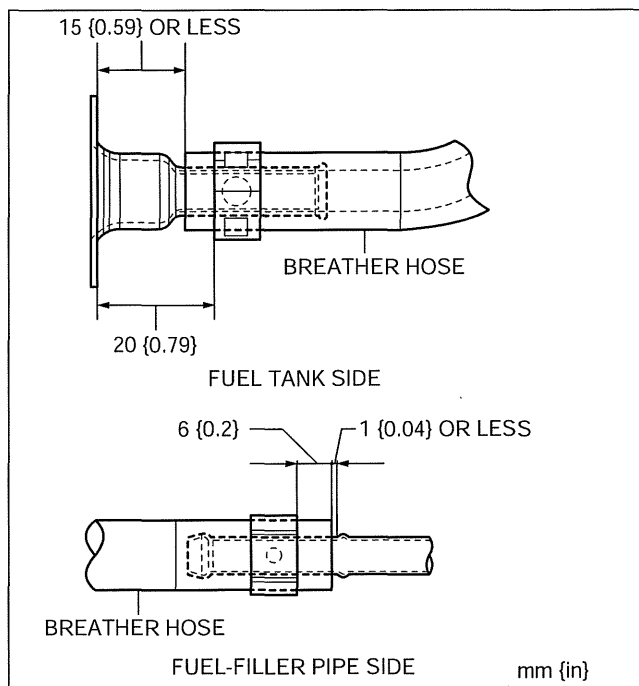
1. Disconnect the breather hose of fuel tank side.
2. Remove the following parts as a single unit.
 - Fuel tank
 - Breather hose
 - Fuel pump unit
 - Fuel hose
3. Remove the breather hose.

Fuel-Filler Pipe Removal Note

1. Remove the rear tire (RH). (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
2. Remove the fuel-filler pipe.

Breather Hose Installation Note

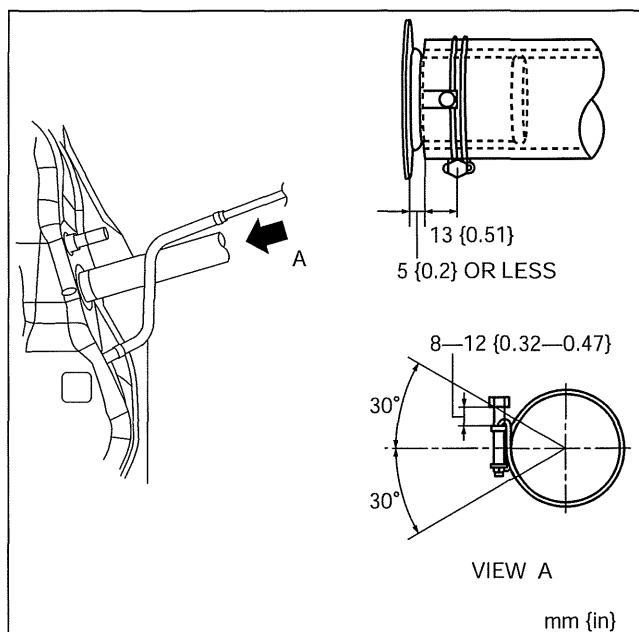
1. Install the breather hose as shown in the figure.



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Joint Hose Installation Note

1. Install the joint hose and clamp as shown in the figure.



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01-14B

FUEL SYSTEM [L3 WITH TC]

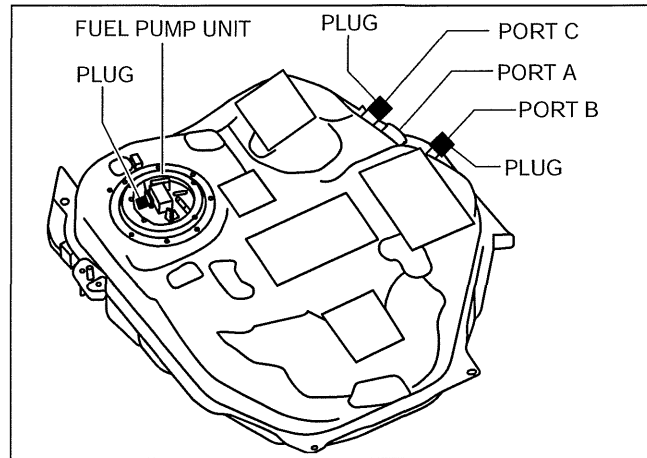
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FUEL TANK INSPECTION [L3 WITH TC]

Note

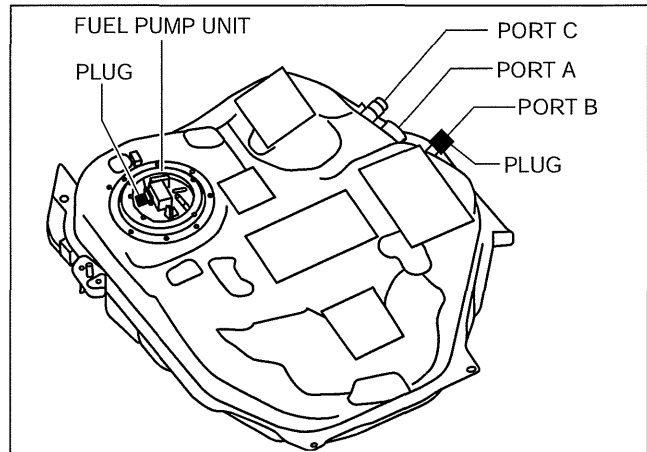
- The rollover valve and the fuel shut-off valve built into the fuel tank and fuel tank leakage are inspected in this inspection.

- Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
- Remove the fuel tank and the fuel pump unit as a single unit. (See 01-14B-8 FUEL TANK REMOVAL/ INSTALLATION [L3 WITH TC].)
- Perform the following procedure to verify the fuel tank airtightness.
 - Plug the fuel pump unit pipe, ports B and C.
 - Apply a pressure of **3 kPa {23 mmHg, 0.9 inHg}** to port A and wait for a while.
 - Verify that there is no air flow from the fuel tank.
 - If there is air flow, replace the fuel tank. (See 01-14B-8 FUEL TANK REMOVAL/ INSTALLATION [L3 WITH TC].)

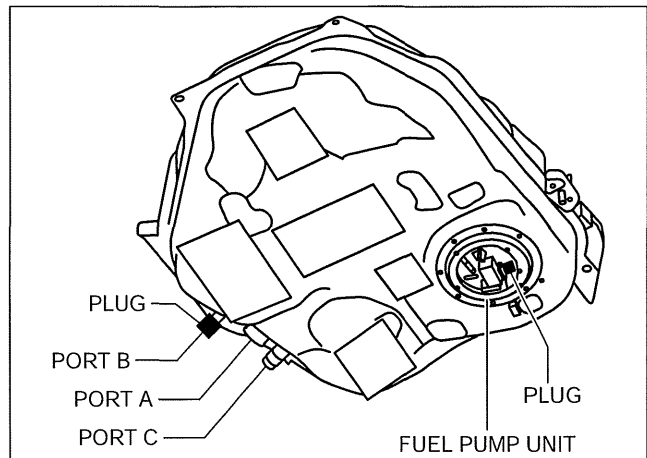


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- Plug the fuel pump unit pipe and port B.
- Level the fuel tank.
- Apply a pressure of **3 kPa {23 mmHg, 0.9 inHg}** to port A and wait for a while.
- With the pressure still applied, verify that there is air flow port C and the pressure is **0—3 kPa {0—23 mmHg, 0—0.9 inHg}**.
 - If there is no air flow, replace the fuel tank. (See 01-14B-8 FUEL TANK REMOVAL/ INSTALLATION [L3 WITH TC].)
- Apply a pressure of **-0.5 kPa {-3.8 mmHg, -0.1 inHg}** to port A and wait for a while.
- With the pressure still applied, verify that there is air flow port C and the pressure is **-0.5—0 kPa {-3.8—0 mmHg, -0.1—0 inHg}**.
 - If there is no air flow, replace the fuel tank. (See 01-14B-8 FUEL TANK REMOVAL/ INSTALLATION [L3 WITH TC].)
 - If there is air flow, place the fuel tank upside down.
- Apply a pressure to port A and wait for a while.
- With the pressure still applied, verify that there is no air flow from port C.
 - If there is air flow, replace the fuel tank. (See 01-14B-8 FUEL TANK REMOVAL/ INSTALLATION [L3 WITH TC].)



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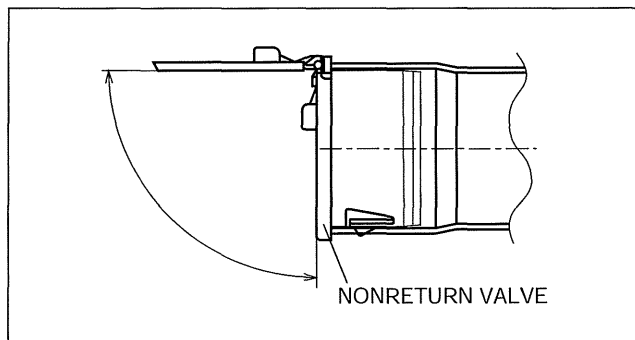
NONRETURN VALVE INSPECTION [L3 WITH TC]

id011439803600

Warning

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”, while referring to the “BEFORE SERVICE PRECAUTION”.

1. Complete the “BEFORE SERVICE PRECAUTION”. (See 01-14A-4 BEFORE SERVICE PRECAUTION [LF, L5].)
2. Remove the nonreturn valve. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
3. Verify that the nonreturn valve is closed.
 - If malfunction, replace the nonreturn valve. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
4. Verify that the nonreturn valve is not stuck open and does not open even when pulled up by a finger.
 - If malfunction, replace the nonreturn valve. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)



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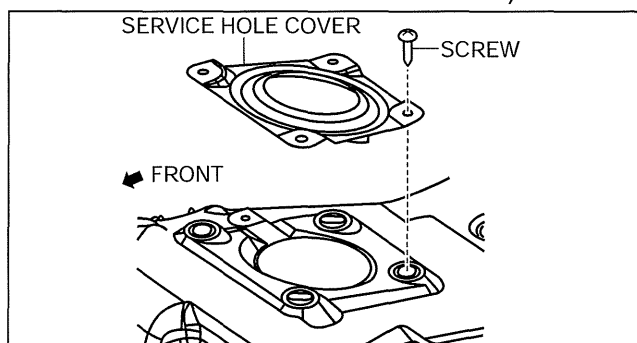
FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC]

id011439800900

Warning

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”, while referring to “BEFORE SERVICE PRECAUTION”.
- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, before performing the fuel pump unit removal/installation, always complete the “Fuel Leak Inspection After Fuel Pump Unit Installation”.

1. Complete the “BEFORE SERVICE PRECAUTION”. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
2. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
5. Remove the service hole cover.
6. Disconnect the fuel pump unit connector.
7. Disconnect the joint hose of fuel tank side.
8. Disconnect the breather hose of fuel-filler pipe side.
9. Remove the following parts as a single unit.
 - Fuel tank
 - Breather hose
 - Fuel pump unit
 - Fuel hose



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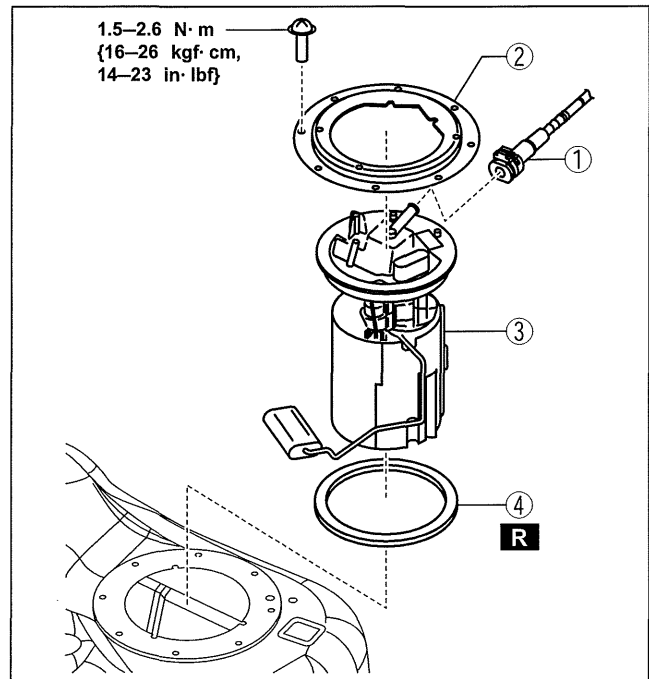
FUEL SYSTEM [L3 WITH TC]

10. Remove the order indicated in the table.

1	Quick release connector (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
2	Set plate
3	Fuel pump unit
4	O-ring

11. Install in the reverse order of removal.

12. Complete the "AFTER SERVICE PRECAUTION".
(See 01-14B-5 AFTER SERVICE PRECAUTION
[L3 WITH TC].)



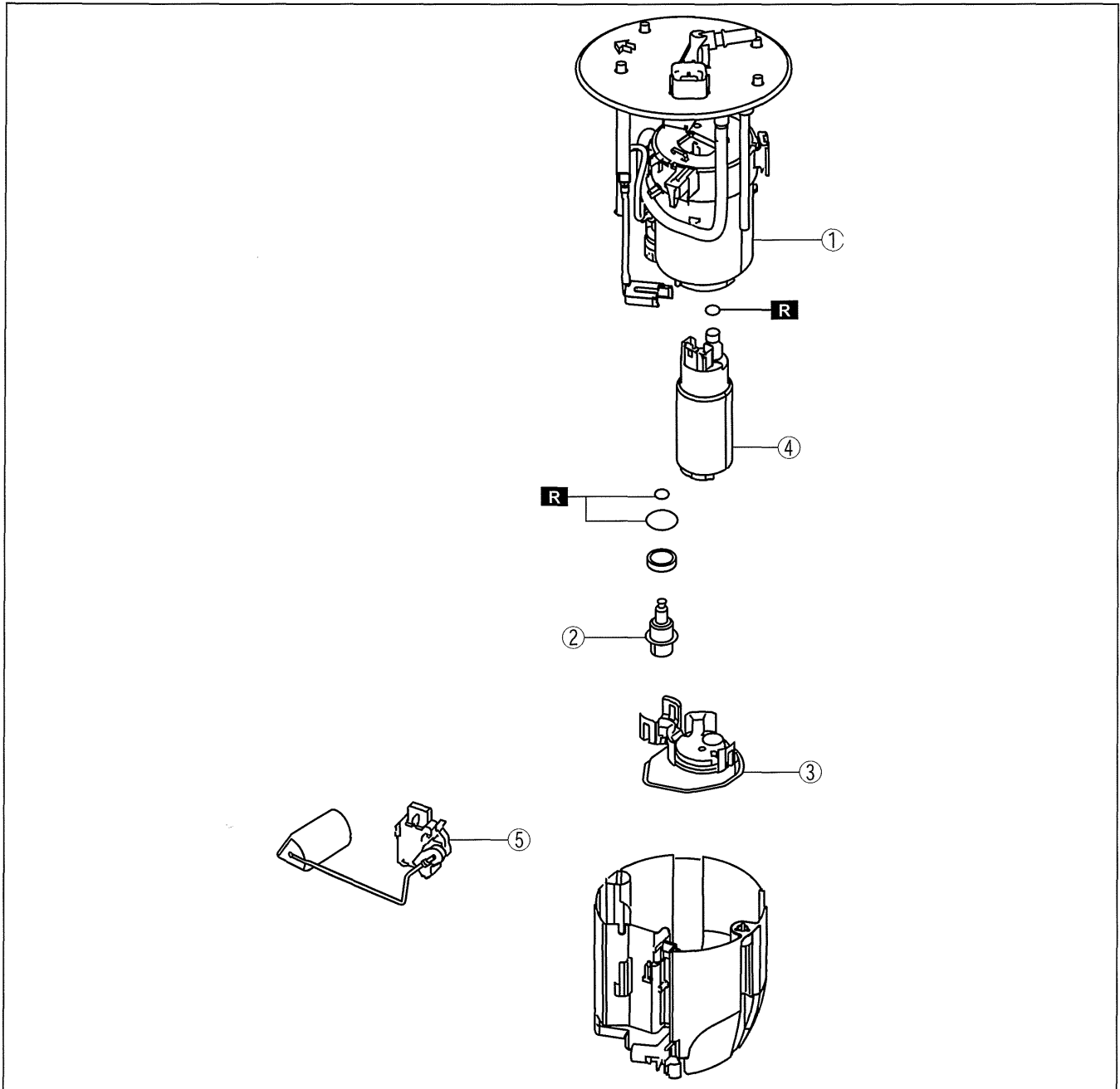
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FUEL SYSTEM [L3 WITH TC]

FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY [L3 WITH TC]

id011439801000

1. Remove the fuel pump unit. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disassemble in the order indicated in the table.
3. Assemble in the reverse order of disassembly.



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1	Fuel filter (high-pressure)
2	Pressure regulator
3	Fuel filter (low-pressure)

4	Fuel pump
5	Fuel gauge sender unit

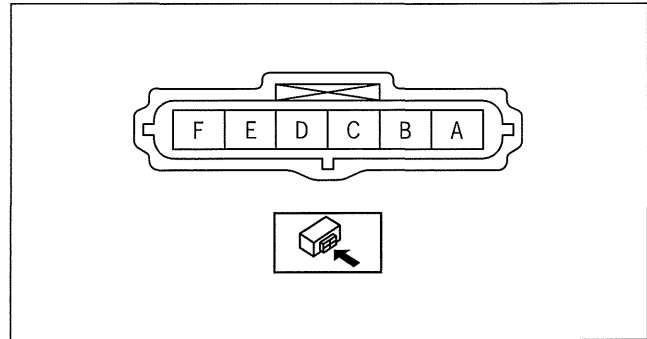
FUEL SYSTEM [L3 WITH TC]

FUEL PUMP UNIT INSPECTION [L3 WITH TC]

id011439801100

Continuity Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the fuel pump unit connector.
4. Inspect for continuity between fuel pump unit terminals A—E.
 - If there is no continuity, replace the fuel pump. (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].)

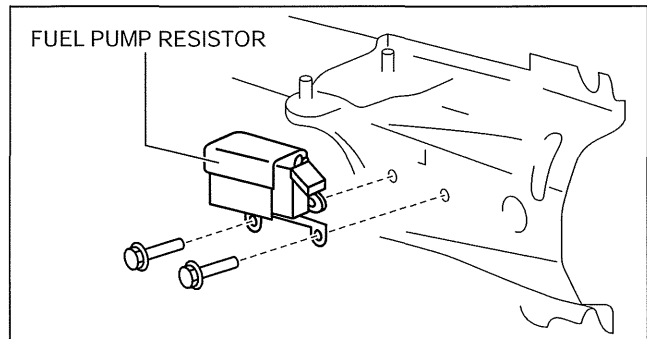


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FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC]

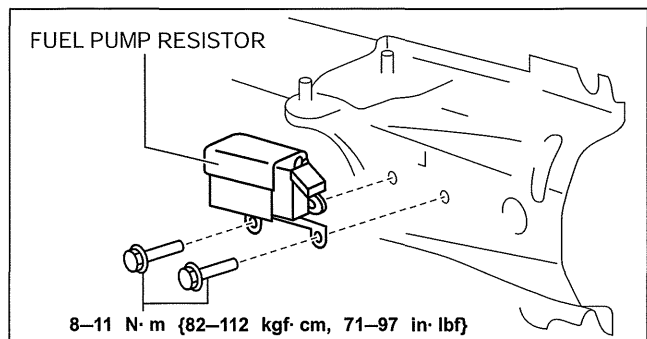
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1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the air cleaner. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the fuel pump resistor connector.
5. Remove the fuel pump resistor.



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6. Install in the order as shown in the figure.
7. Connect the fuel pump resistor connector.



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FUEL SYSTEM [L3 WITH TC]

FUEL PUMP RESISTOR INSPECTION [L3 WITH TC]

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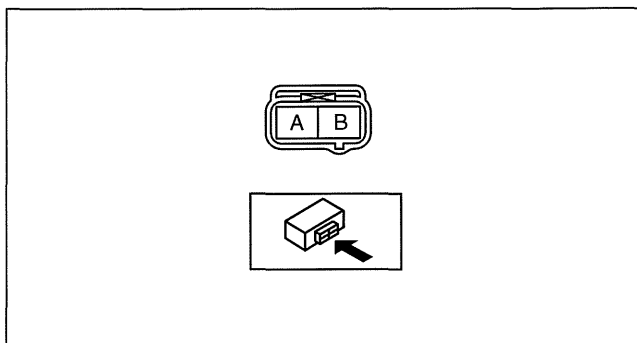
Resistance Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the fuel pump resistor. (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Verify that the continuity between the fuel pump resistor terminal A and B is within the specification.

Fuel pump resistor continuity

0.304—0.336 ohms [20 °C {68 °F}]

- If not within the specification, replace the fuel pump resistor. (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)



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01-14B

HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC]

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Caution

- Do not disassemble the high pressure fuel pump.
- Do not scratch or damage the fuel sealing surface of the high and low fuel ports.
- When removing the high pressure fuel pipe, secure the joint (pump side) so that it does not rotate, and loosen the screw (pipe side).

Note

- If the high pressure fuel pump is removed, replace the O-ring with a new one.

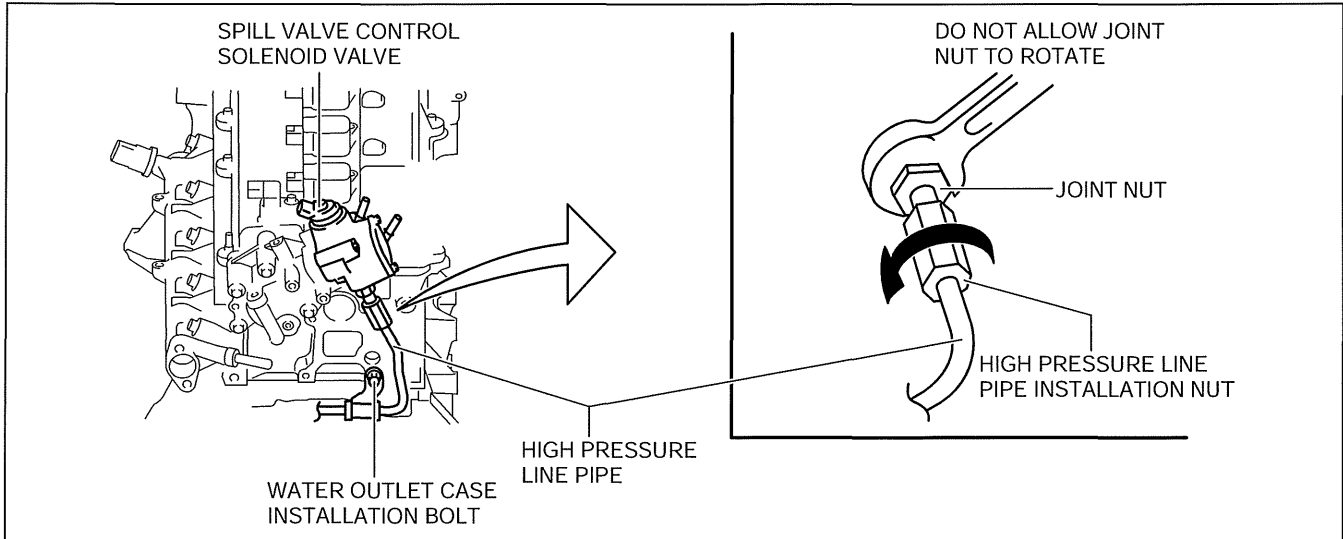
1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
2. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the spill valve control solenoid valve connector.
5. Disconnect the quick release connector on the high pressure fuel pump. (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the air duct. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

Warning

- If the high pressure fuel pump joint nut is loosened, fuel leakage may occur resulting in death or serious injury, or damage to the equipment or the vehicle. Fuel can also irritate the skin and eyes. When removing the high pressure line pipe, always tighten the high pressure line pipe installation nut while fixing the high pressure fuel pump joint nut with a wrench. If the high pressure fuel pump joint nut has rotated, replace the high pressure fuel pump with a new one.

FUEL SYSTEM [L3 WITH TC]

8. Disconnect the high pressure line pipe of the high pressure fuel pump.



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(1) Fix the joint nut with a wrench on the high pressure fuel pump side as shown in the figure.

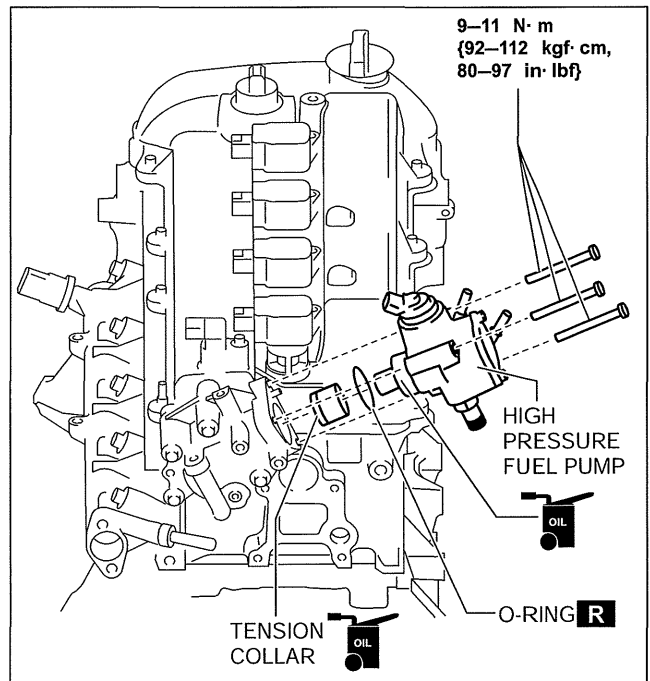
(2) Loosen the high pressure line pipe installation nut.

9. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)

10. Loosen the water outlet case installation bolts securing the high pressure line pipe.

11. Remove the following part:

- High pressure fuel pump
- Tension collar



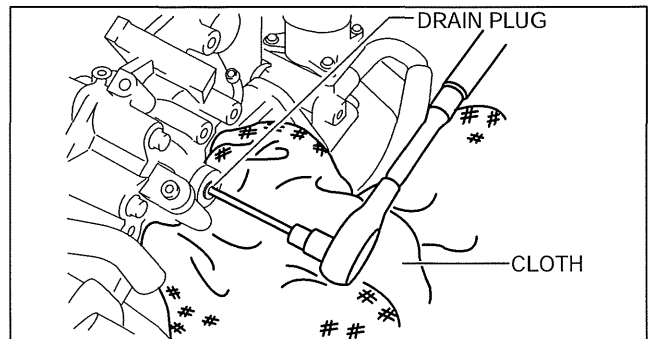
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12. Perform the following procedure when removing the high pressure fuel pump cover.

(1) Remove the drain plug and drain the engine oil accumulated in the high-pressure fuel pump cover.

Note

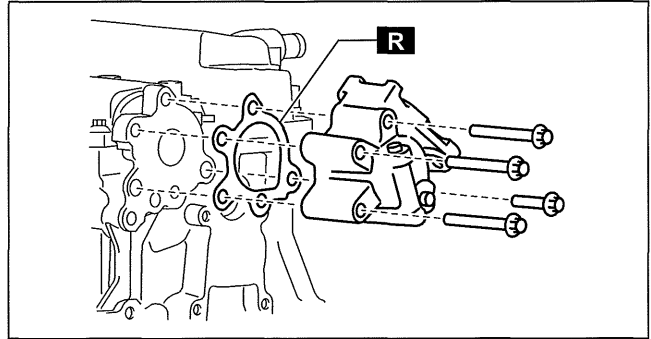
- 20—30 ml {20—30 cc, 1.3—1.8 cu in} of engine oil will drain out when the plug is removed so put a cloth under the drain plug beforehand.



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FUEL SYSTEM [L3 WITH TC]

- (2) Remove the high pressure fuel pump cover.



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- (3) Install the high pressure fuel pump cover.
1) Apply the silicone sealant to the contact surfaces of the camshaft cap and cylinder head.

Diameter

5 mm {0.2 in}

- 2) Tighten the high pressure fuel pump cover bolts.

Tightening torque

17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

- 3) Apply the silicone sealant to the drain plug.
4) Tighten the drain plug.

Tightening torque

12—17 N·m {123—173 kgf·cm, 107—150 in·lbf}

Caution

- If the high pressure fuel pump installation bolts are tightened with the high pressure fuel pump tilted, the high pressure fuel pump may not operate correctly. Tighten the high pressure fuel pump installation bolts in a few passes with equal torque.

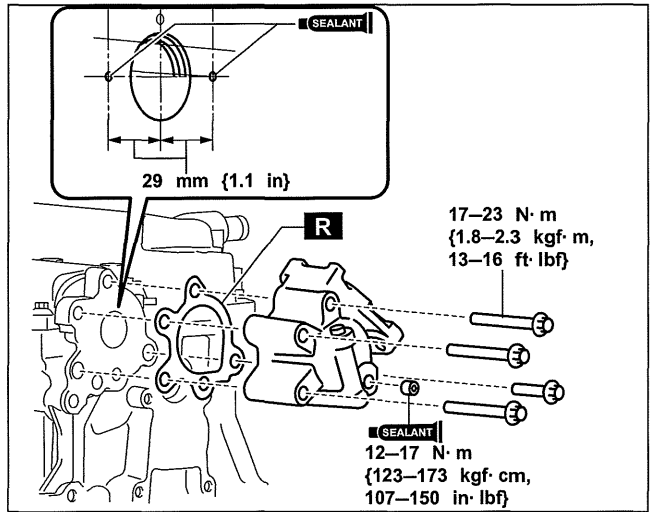
13. Tighten the bolts on the high pressure fuel pump.

Tightening torque

9—11 N·m {92—112 kgf·cm, 80—97 in·lbf}

Warning

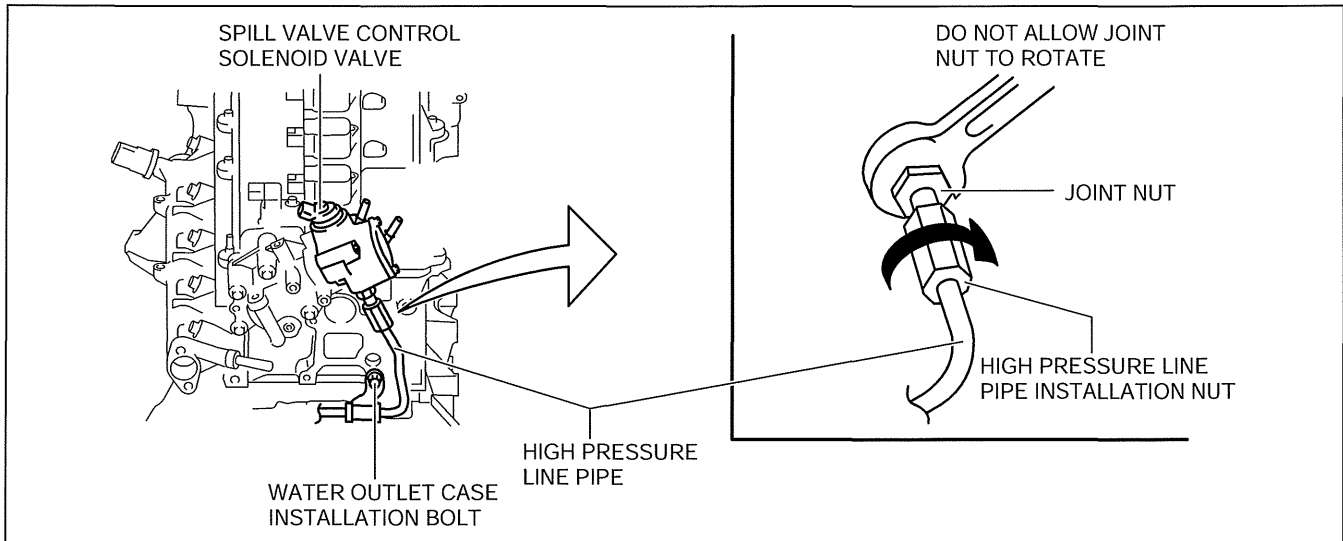
- If the high pressure fuel pump joint nut is loosened, fuel leakage may occur resulting in death or serious injury, or damage to the equipment or the vehicle. Fuel can also irritate the skin and eyes. When installing the high pressure line pipe, always tighten the high pressure line pipe installation nut while fixing the high pressure fuel pump joint nut with a wrench. If the high pressure fuel pump joint nut has rotated, replace the high pressure fuel pump with a new one.



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FUEL SYSTEM [L3 WITH TC]

14. Assemble the high pressure line pipe.



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- (1) Fix the joint nut with a wrench on the high pressure fuel pump side as shown in the figure.
- (2) Tighten the high pressure line pipe installation nut.

Tightening torque

24—35 N·m {2.5—3.5 kgf·m, 18—25 ft·lbf}

15. Tighten the water outlet case installation bolts.

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}

16. Install the quick release connector. (See 01-14B-21 QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC].)

Fuel Leakage Inspection After High Pressure Fuel Pump Installation

1. Verify that the high pressure fuel pump is assembled securely.
2. Drive the vehicle starting from a standstill and brake suddenly **five to six times** at a low speed.
3. Stop the vehicle and verify from outside the vehicle that there is no fuel leakage around the high pressure fuel pump.

HIGH PRESSURE FUEL PUMP INSPECTION [L3 WITH TC]

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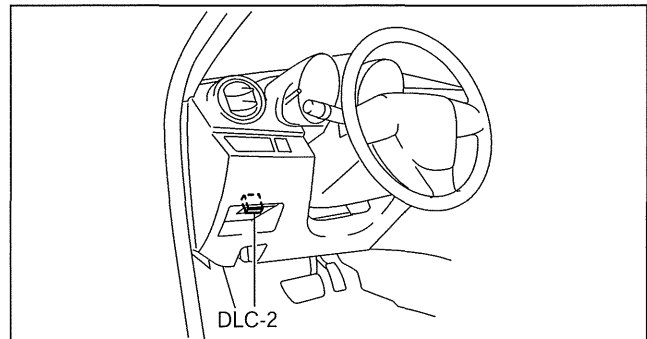
Note

- The following vacuum values are indicated by relative pressure from the fuel pressure sensor.

1. Verify that the fuel pressure sensor is normal. (See 01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].)
2. Connect the M-MDS to the DLC-2.
3. Turn the ignition switch to the ON position (Engine off).
4. Select the FUEL_PRES, and LOAD, RPM PIDs on the M-MDS.

Caution

- If the engine is run at a high speed, it could be damaged. When racing the engine, do not race it up to 6,700 rpm or more.



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5. After the LOAD PID is **60% or more** while the engine is raced with the accelerator pedal fully depressed, verify that the FUEL_PRES PID is **approx. 11.5Mpa**.
 - If not as verified, replace the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)

FUEL SYSTEM [L3 WITH TC]

QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [L3 WITH TC]

id011439801700

Warning

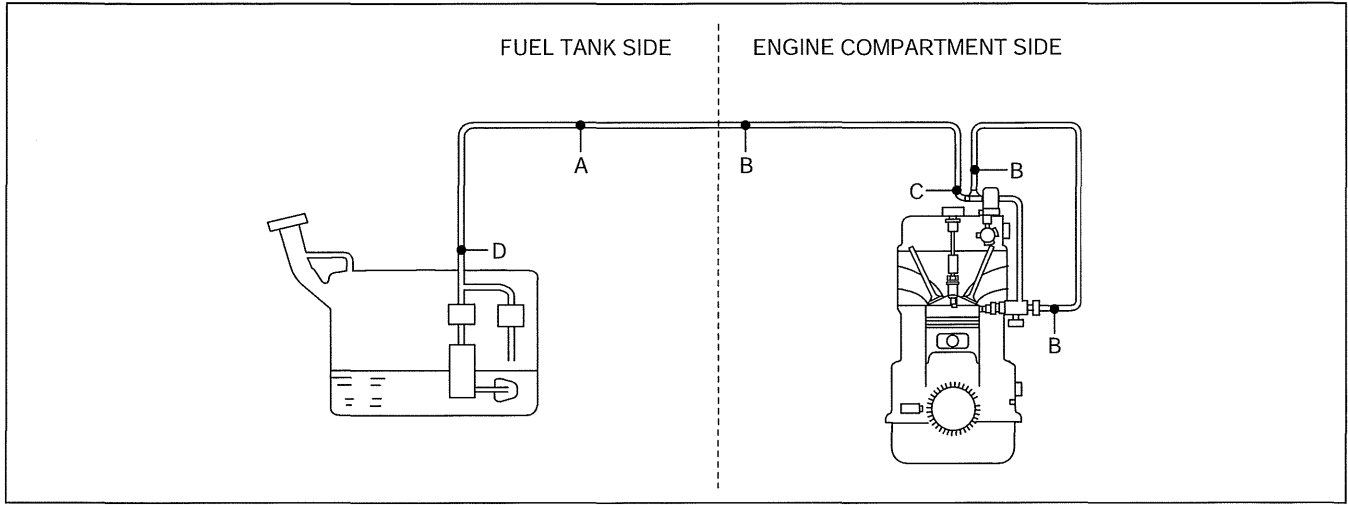
- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”, while referring to the “BEFORE SERVICE PRECAUTION”.

01-14B

Quick Release Connector Type

Caution

- There are four types of quick release connectors. Verify the type and location, and install/remove properly.



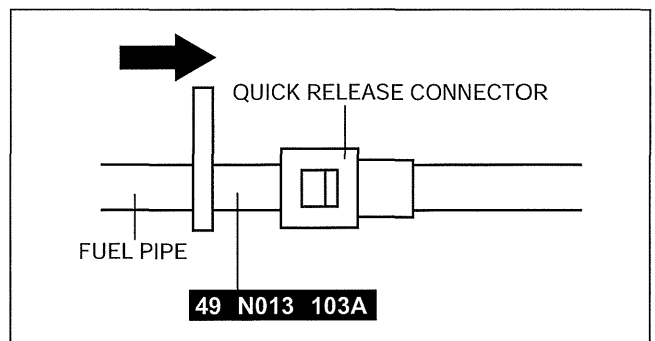
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Type A Removal

Caution

- Be careful not to damage the pipe when unlocking the retainer.

1. Complete the “BEFORE SERVICE PRECAUTION”. (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
2. Insert the SST into the quick release connector.
3. Pull out the fuel hose straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

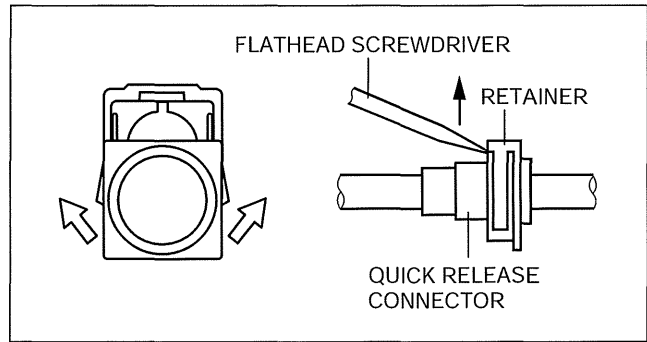


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FUEL SYSTEM [L3 WITH TC]

Type B Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
2. Move the retainer upward using a small flathead screwdriver or a similar tool.
3. Pull out the fuel hose straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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Type C Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

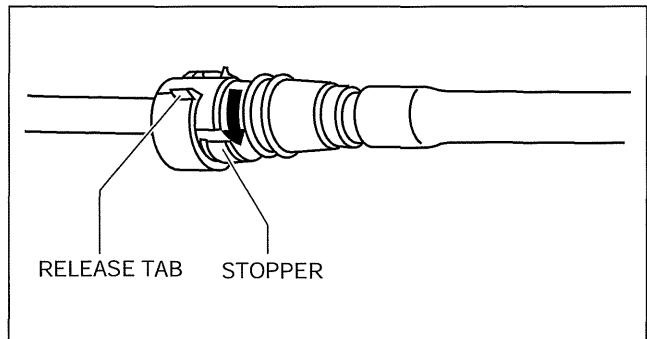
Caution

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

Note

- The fuel hose can be removed by pushing it to the pipe side to release the lock.

2. Rotate the release tab on the quick release connector to the stopper position.
3. Pull out the evaporative hose straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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Type D Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)

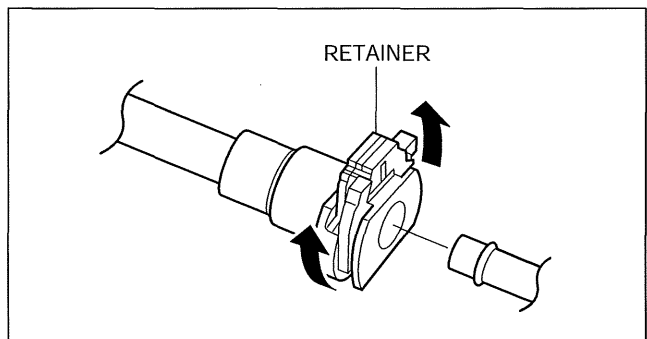
Caution

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

Note

- The fuel hose can be removed by pushing it to the pipe side to release the lock.

2. Release the retainer shown in the figure.
3. Disconnect the quick release connector.
4. Cover the disconnect the quick release connector and fuel pipe with vinyl sheeting or similar material to prevent it from scratches or dirt.



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Type A Installation

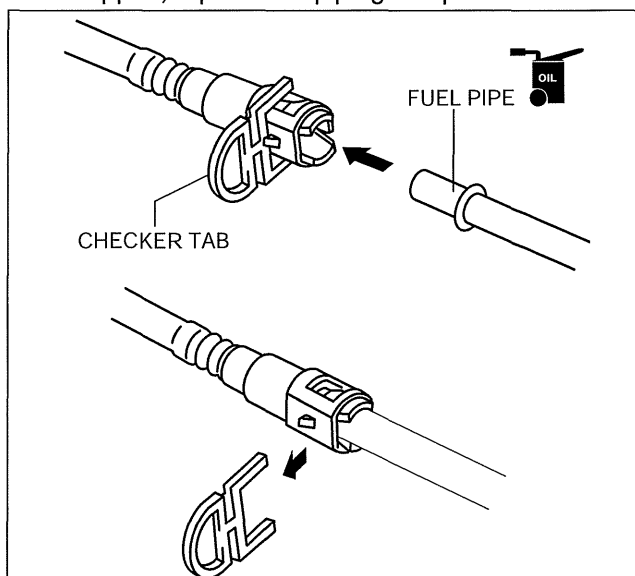
Caution

- Always replace the retainer with a new one when using SST 49 E042 001, otherwise, fuel leakage could result.

Note

- If the quick release connector O-ring is damaged or has slipped, replace the piping component.
- A checker tab is integrated with the quick release connector for new fuel hoses and fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.

1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Install a new retainer to the quick release connector.
4. Reconnect the hose straight to the pipe until a click is heard.
5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.
6. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)



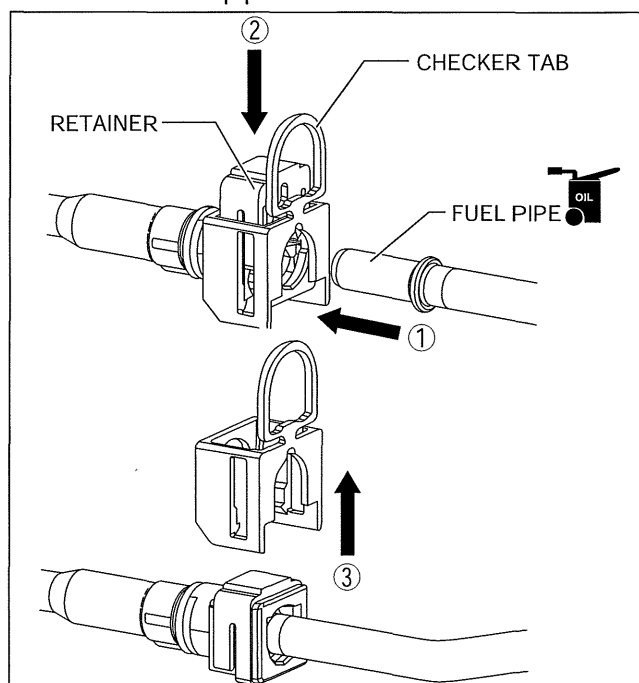
01-14B

Type B Installation

Note

- If the quick release connector O-ring is damaged or has slipped, replace the fuel hose.
- A checker tab is integrated with the quick release connector for new fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.

1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Install the quick release connector.
 - Insert the fuel pipe straight to the end of the quick release connector.
 - Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the fuel pipe further to the quick release connector.
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.
5. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)



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FUEL SYSTEM [L3 WITH TC]

Type C Installation

Note

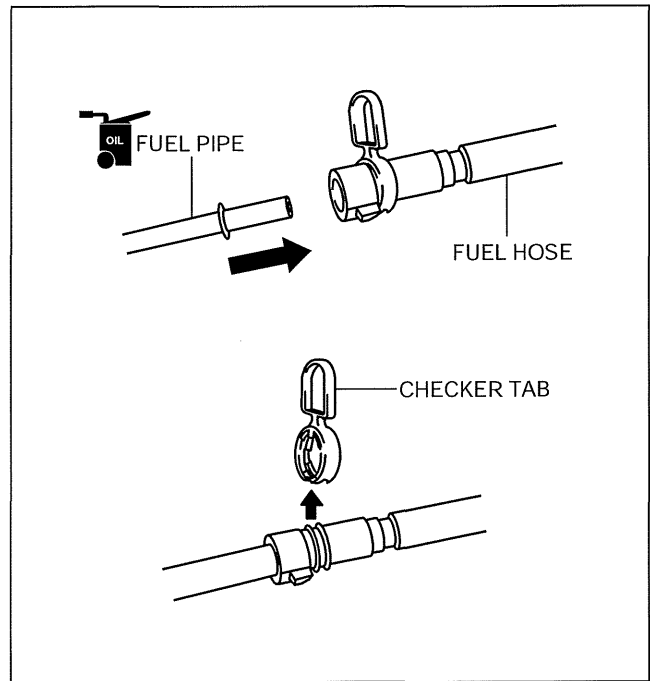
- If the quick release connector O-ring is damaged or has slipped, replace the fuel hose.
- A checker tab is integrated with the quick release connector for new fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.

1. Inspect the fuel hose and fuel pipe sealing surface for damaged and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Reconnect the fuel hose straight to the fuel pipe until a click is heard.

Note

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.

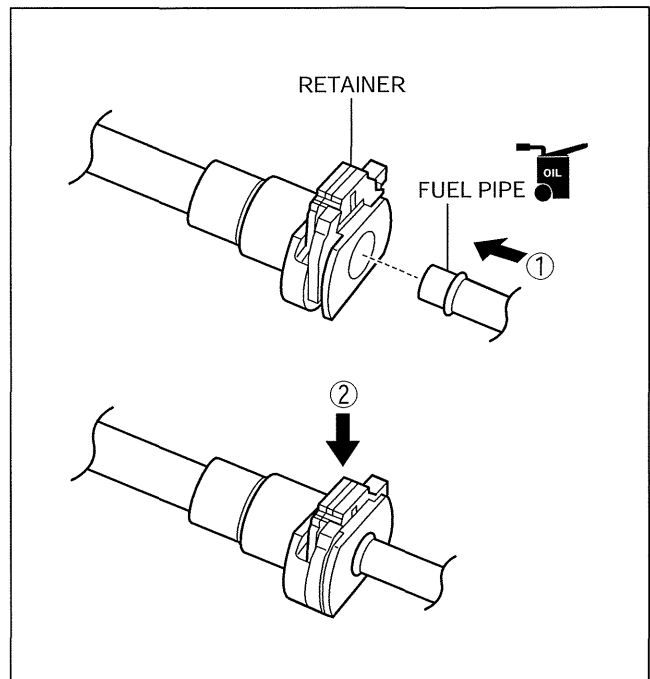
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move **2.0—3.0 mm {0.08—0.12 in}** and is connected securely.
5. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)



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Type D Installation

1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.
3. Install the quick release connector.
 - Insert the fuel pipe straight to the end of the quick release connector.
 - Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the fuel pipe further to the quick release connector.
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.
5. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)



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FUEL SYSTEM [L3 WITH TC]

FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC]

id011439800600

Caution

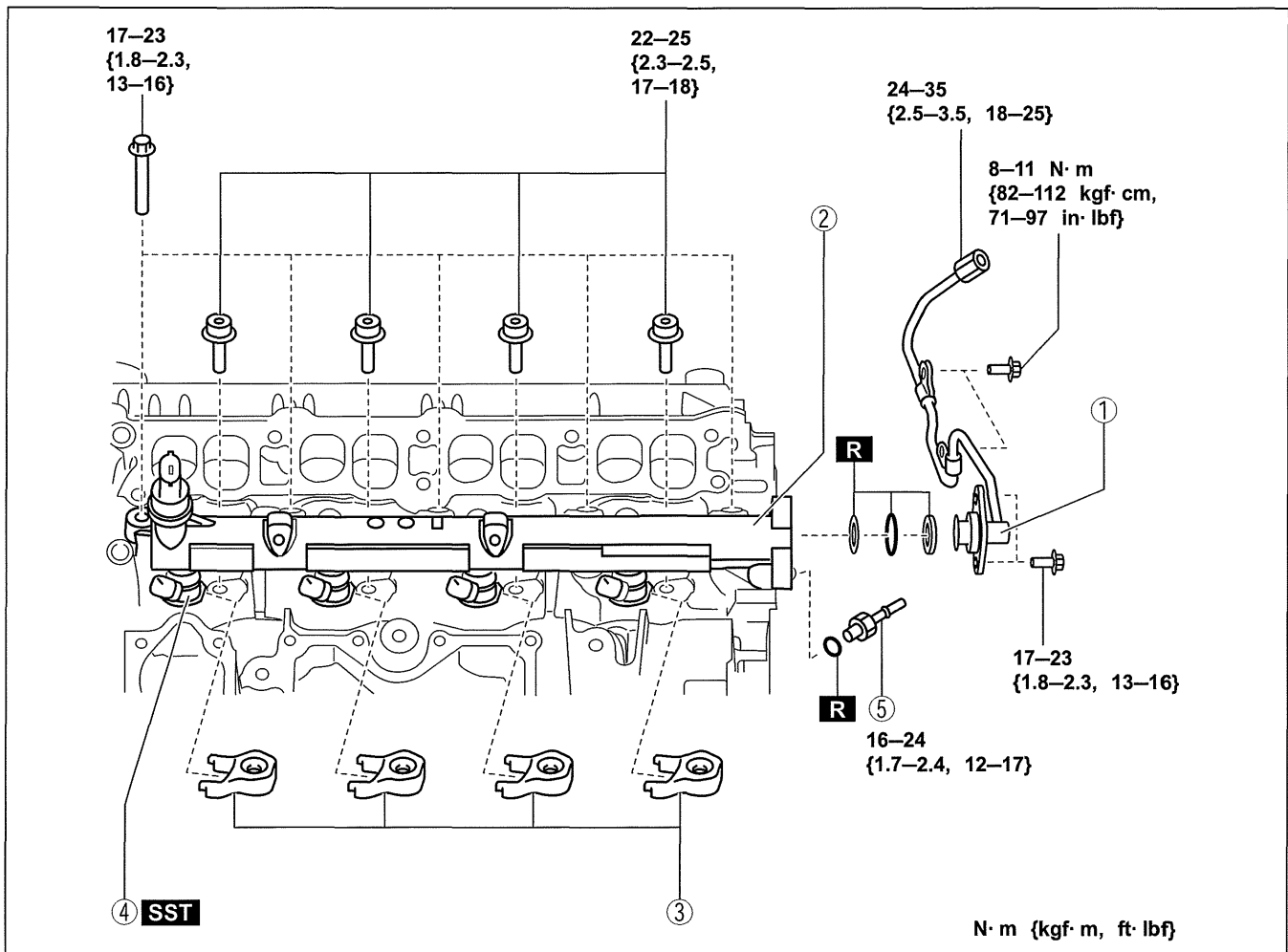
- Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.

Note

- When the fuel pressure sensor replaces, replace a new fuel delivery pipe with a new fuel pressure sensor.

01-14B

1. Complete the "BEFORE SERVICE PRECAUTION". (See 01-14B-4 BEFORE SERVICE PRECAUTION [L3 WITH TC].)
2. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Complete the "AFTER SERVICE PRECAUTION". (See 01-14B-5 AFTER SERVICE PRECAUTION [L3 WITH TC].)



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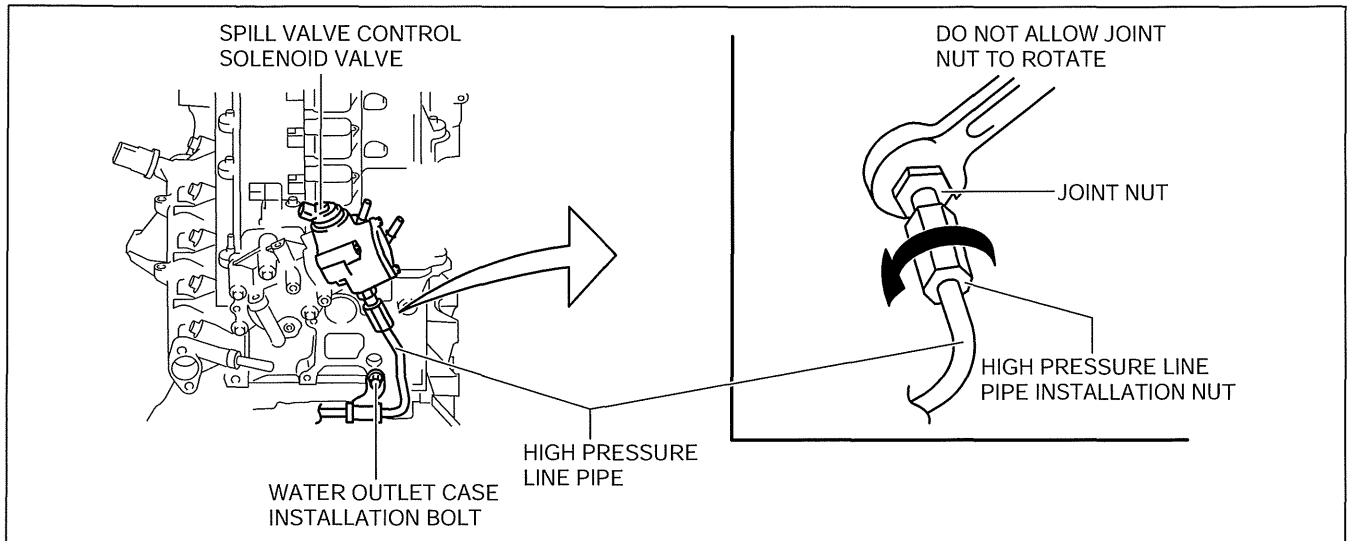
1	High pressure line pipe (See 01-14B-26 High Pressure Line Pipe Removal Note.) (See 01-14B-28 High Pressure Line Pipe Installation Note.)
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2	Fuel delivery pipe (See 01-14B-27 Fuel Delivery Pipe Installation Note.)
3	Fuel injector bracket
4	Fuel injector (See 01-14B-26 Fuel Injector Removal Note.)
5	Relief valve

FUEL SYSTEM [L3 WITH TC]

High Pressure Line Pipe Removal Note

1. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
2. Disconnect the high pressure line pipe of the high pressure fuel pump. (See 01-14B-17 HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 WITH TC].)



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- (1) Fix the joint nut with a wrench on the high pressure fuel pump side as shown in the figure.
- (2) Loosen the high pressure line pipe installation nut.
3. Remove the high pressure line pipe.

Fuel Injector Removal Note

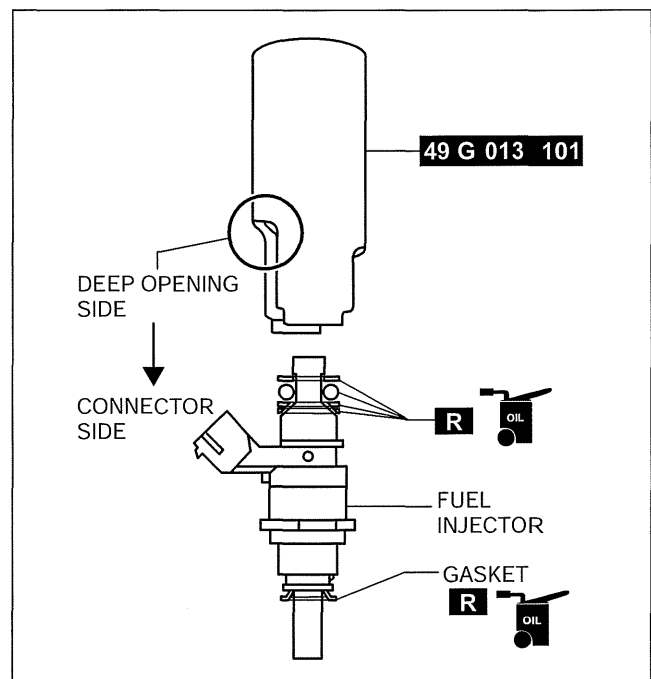
Note

- Depending on the driving conditions, carbon may accumulate on the inserted part of the fuel injector, causing the fuel injector to stick. Remove the fuel injector using the following procedure.

1. Install the **SST** to the fuel injector confirming that the **SST** faces the correct direction as shown in the figure.

Caution

- If the SST slips while ratcheting up the fuel injector, the fuel injector or surrounding parts could be damaged. Press fit the SST to the fuel injector firmly and operate carefully.
- When ratcheting up the fuel injector, the fuel injector connector may contact the cylinder head and damage the fuel injector. Ratchet up the fuel injector so that the fuel injector connector does not contact the cylinder head.

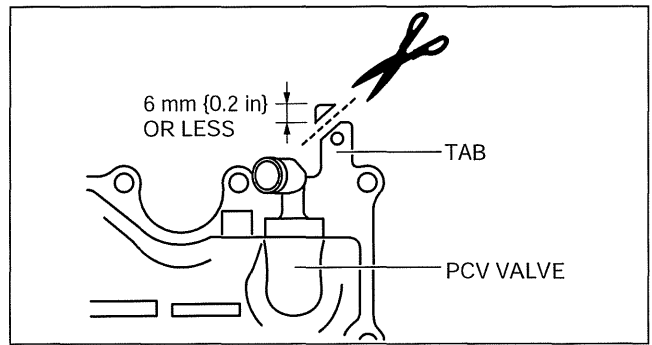


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FUEL SYSTEM [L3 WITH TC]

Note

- If fuel injector No.3 contacts the oil separator, cut the tab on the oil separator as shown in the figure. Carefully cut the tab so that the oil separator is not deformed or damaged, with no clearance on the mating surfaces of the oil separator and engine.



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01-14B

2. Keep ratcheting the **SST** so that the fuel injector becomes free enough to ratchet up without using the **SST**.

Caution

- **Do not apply excessive force to the fuel injector connector because the fuel injector could be damaged.**

3. Pull out the fuel injector by ratcheting it upright.
4. Verify that there are no gasket in the cylinder heads after removing the fuel injectors.

Warning

- **If foreign material such as metal shavings penetrates the fuel injector installation hole on the cylinder block, the engine could be damaged. Remove all foreign material and cap the fuel injector installation hole after removing the fuel injector.**

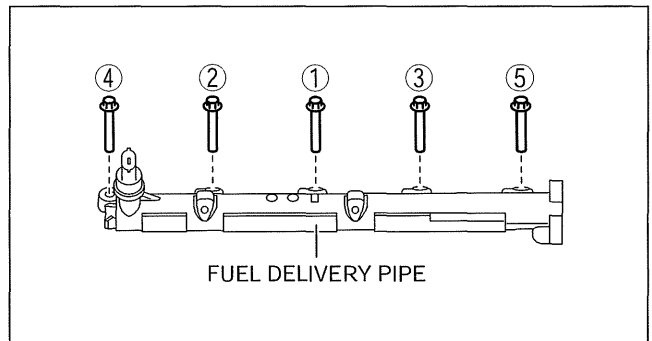
5. Clean the fuel injector and around the insertion hole using a vacuum cleaner.

Fuel Delivery Pipe Installation Note

1. Tighten the bolts in the order shown in the figure.

Tightening torque

17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

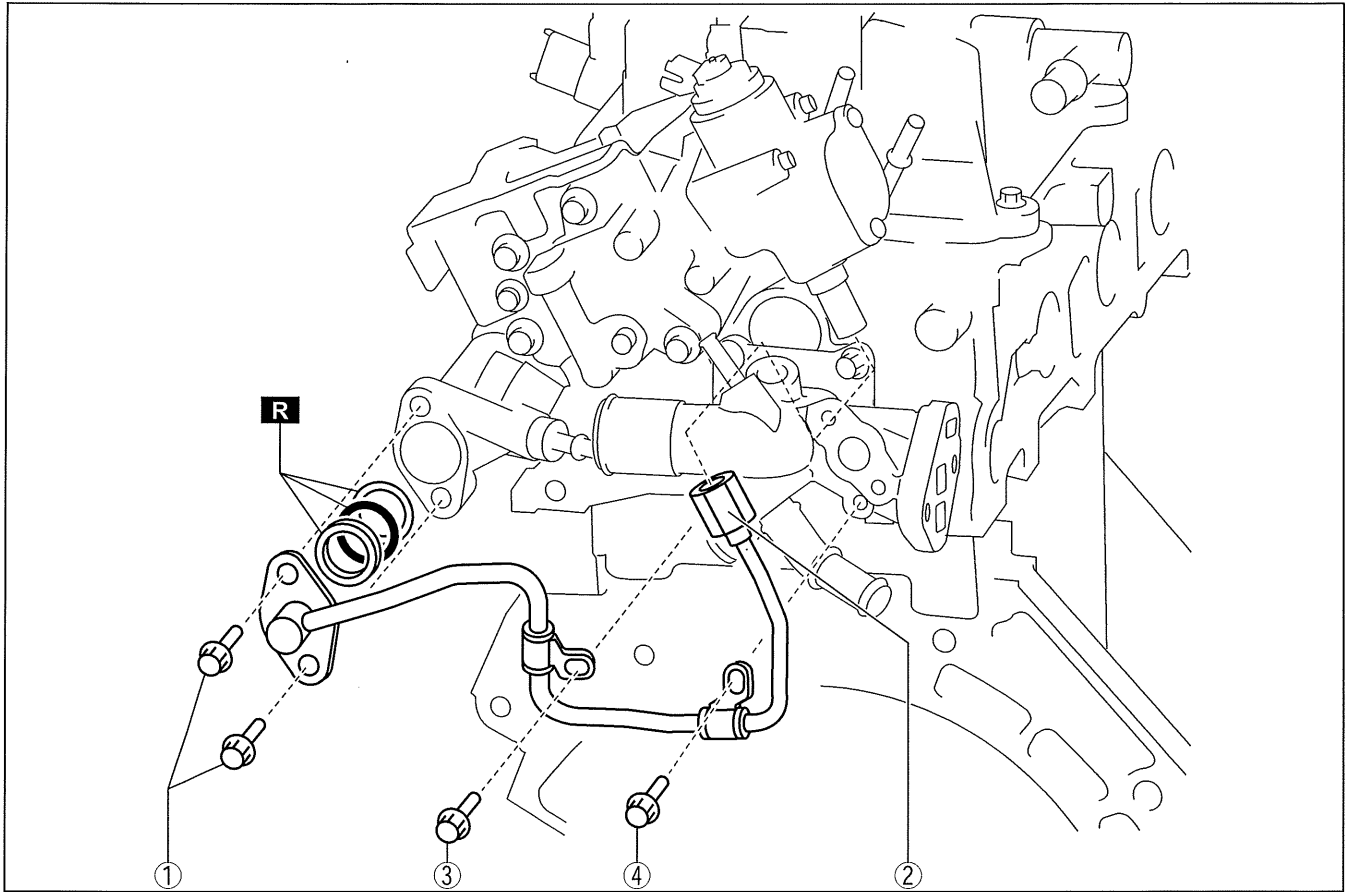


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FUEL SYSTEM [L3 WITH TC]

High Pressure Line Pipe Installation Note

1. Temporarily tighten the bolts in the order shown in the figure.



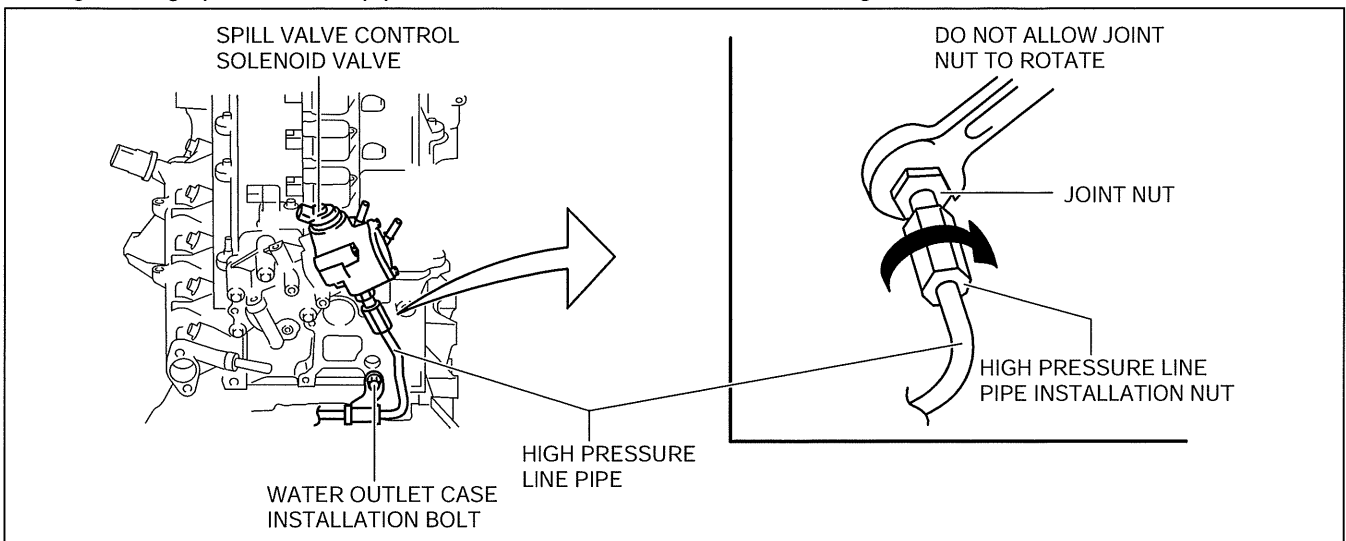
am3uuw0000583

2. Tighten bolts of No.1 shown in the figure.

Tightening torque

17—23 N·m {1.8—2.3 kgf·m, 13—16 ft·lbf}

3. Tighten high pressure line pipe installation nut of No.2 shown in the figure.



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- (1) Fix the joint nut with a wrench on the high pressure fuel pump side as shown in the figure.
- (2) Tighten the high pressure line pipe installation nut.

Tightening torque

24—35 N·m {2.5—3.5 kgf·m, 18—25 ft·lbf}

4. Tighten bolts of No.3, No.4 shown in the figure.

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}

FUEL INJECTOR INSPECTION [L3 WITH TC]

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01-14B

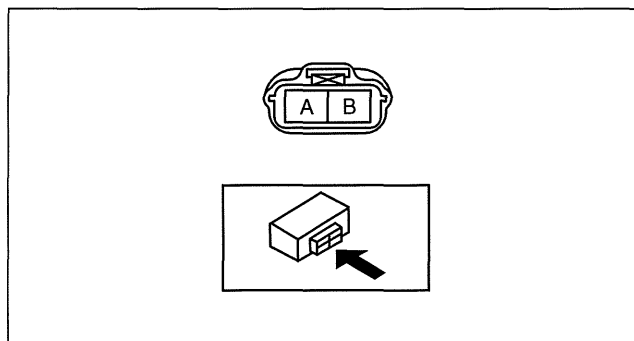
Resistance Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the fuel delivery pipe. (See 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the fuel injector connectors.
5. Measure the resistance of the fuel injector.

Fuel injector resistance

1.0—1.2 ohms [20 °C {68 °F}]

- If not as specified, replace the fuel injector.
(See 01-14B-25 FUEL INJECTOR
REMOVAL/INSTALLATION [L3 WITH TC].)



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01-15A EXHAUST SYSTEM [LF, L5]

EXHAUST SYSTEM INSPECTION

[LF, L5] 01-15A-1

EXHAUST SYSTEM

REMOVAL/INSTALLATION [LF, L5]... 01-15A-1

Exhaust System Insulator

Removal/installation Note 01-15A-3

Remove the Exhaust Manifold

Removal Note01-15A-4

Exhaust Manifold Installation Note01-15A-4

Exhaust Manifold Insulator

Installation Note01-15A-5

01-15A

EXHAUST SYSTEM INSPECTION [LF, L5]

id0115a6800100

1. Start the engine and inspect each exhaust system component for exhaust gas leakage.
 - If there is leakage, repair or replace the appropriate component. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)

EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5]

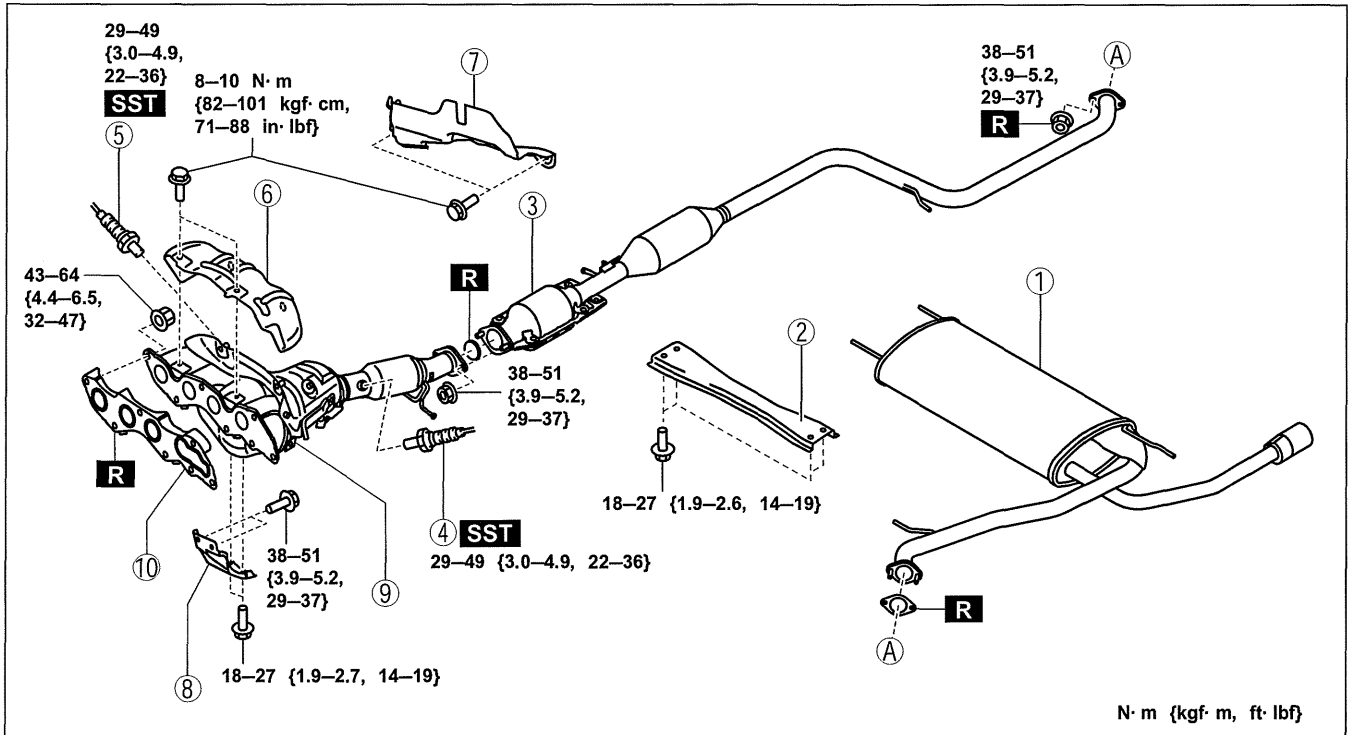
id0115a6800200

Warning

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before removing the exhaust system.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove in the order indicated in the table.
5. Remove the insulator. (See 01-15A-3 Exhaust System Insulator Removal/installation Note.)
6. Install in the reverse order of removal.

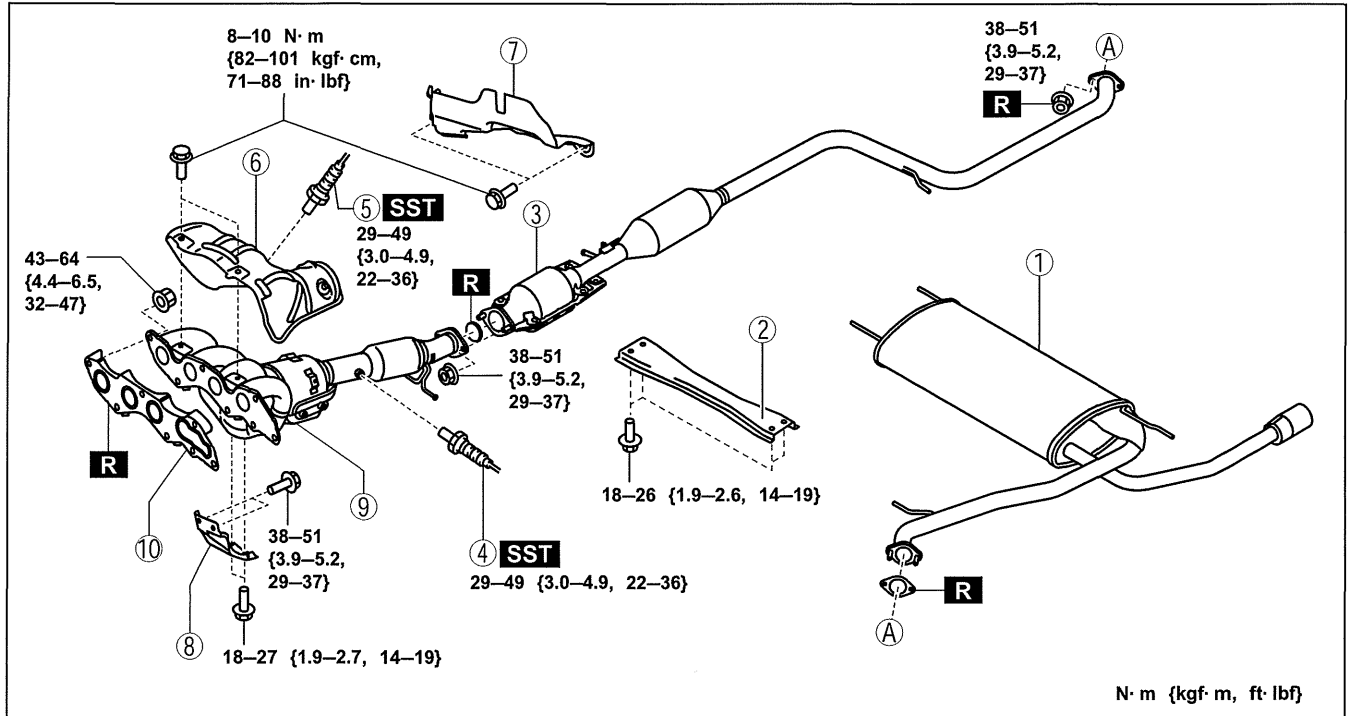
LF (California emission regulation applicable model)



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EXHAUST SYSTEM [LF, L5]

LF (Except for california emission regulation applicable model)



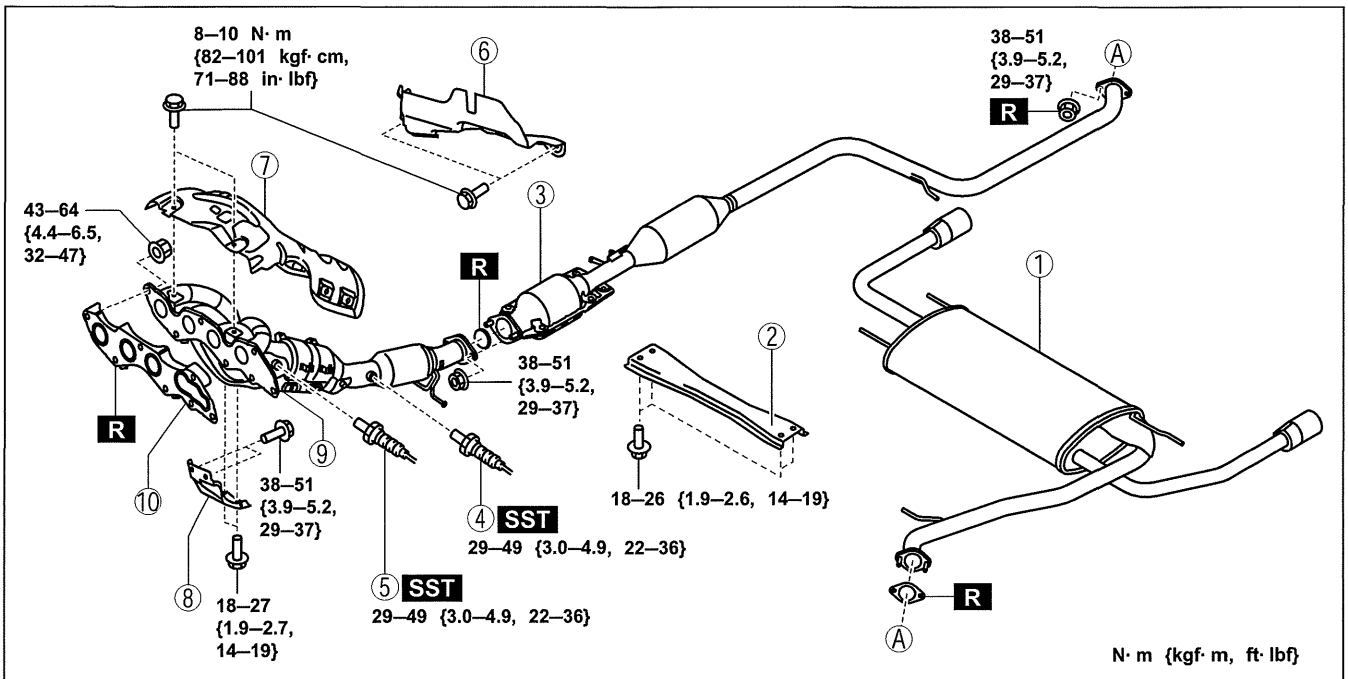
N·m {kgf·m, ft·lbf}

am3uuw0000456

1	Main silencer
2	Tunnel member (rear)
3	TWC
4	HO2S (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
5	A/F sensor (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)

6	Exhaust manifold insulator (See 01-15A-4 Exhaust Manifold Installation Note.)
7	insulator
8	Exhaust manifold bracket
9	Exhaust manifold (See 01-15A-4 Remove the Exhaust Manifold Removal Note.)
10	Exhaust manifold gasket

L5



N·m {kgf·m, ft·lbf}

am3uuw0000456

EXHAUST SYSTEM [LF, L5]

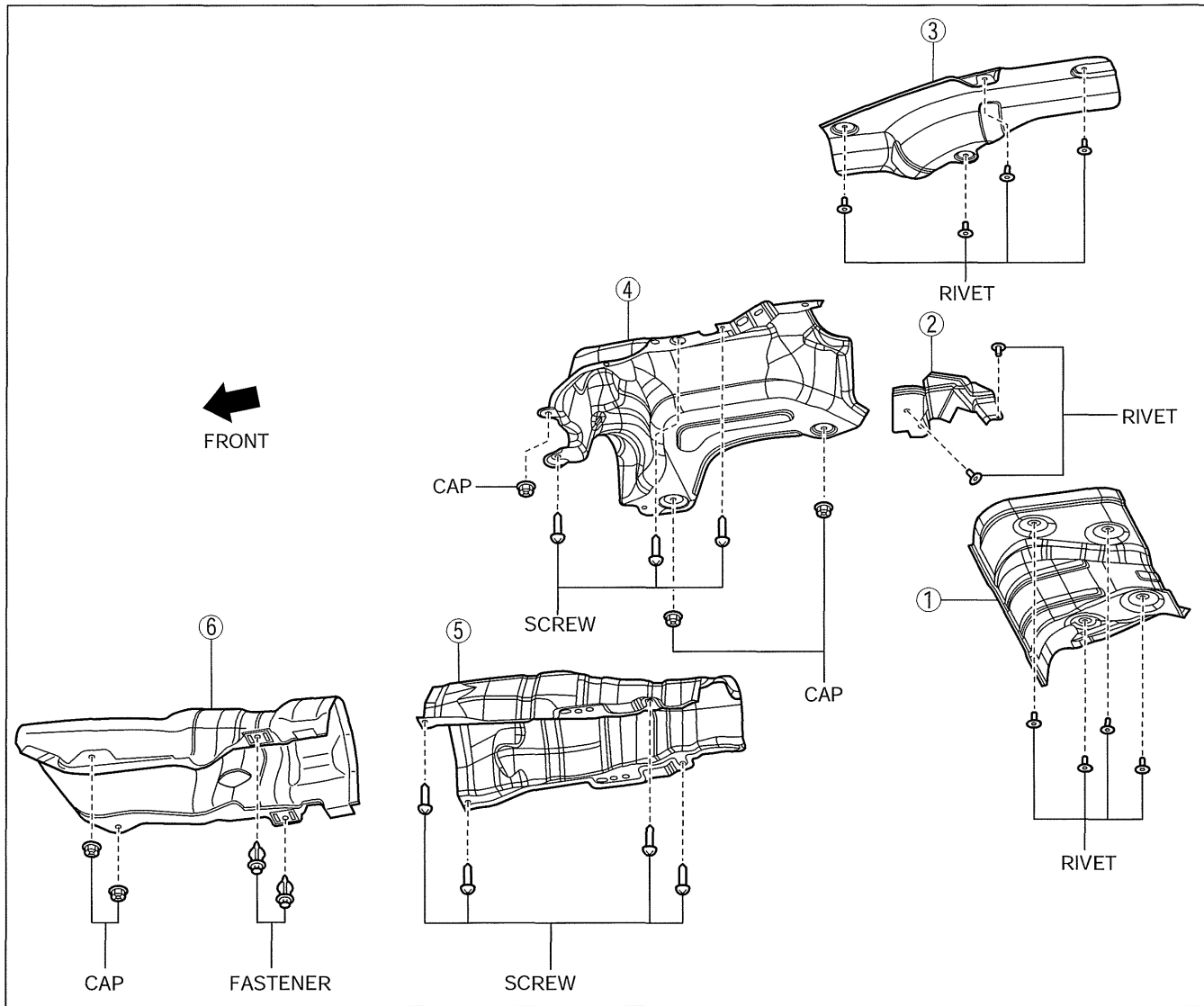
1	Main silencer
2	Tunnel member (rear)
3	TWC
4	HO2S (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)
5	A/F sensor (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)

6	insulator
7	Exhaust manifold insulator (See 01-15A-4 Exhaust Manifold Installation Note.)
8	Exhaust manifold bracket
9	Exhaust manifold (See 01-15A-4 Remove the Exhaust Manifold Removal Note.)
10	Exhaust manifold gasket

01-15A

Exhaust System Insulator Removal/installation Note

1. Remove the exhaust system insulator in the order shown in the figure.
2. Install in the reverse order of removal.



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1	Insulator (rear No.1) (See 01-15A-4 Insulator (Rear No.1, No.2, No.3) Removal Note.)
2	Insulator (rear No.2) (See 01-15A-4 Insulator (Rear No.1, No.2, No.3) Removal Note.)

3	Insulator (rear No.3) (See 01-15A-4 Insulator (Rear No.1, No.2, No.3) Removal Note.)
4	Insulator (middle No.1)
5	Insulator (middle No.2)
6	Insulator (front) (See 01-15A-4 Insulator (Front) Removal Note.)

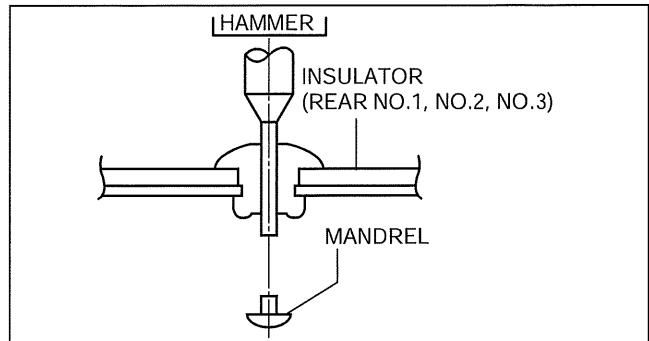
EXHAUST SYSTEM [LF, L5]

Insulator (Rear No.1, No.2, No.3) Removal Note

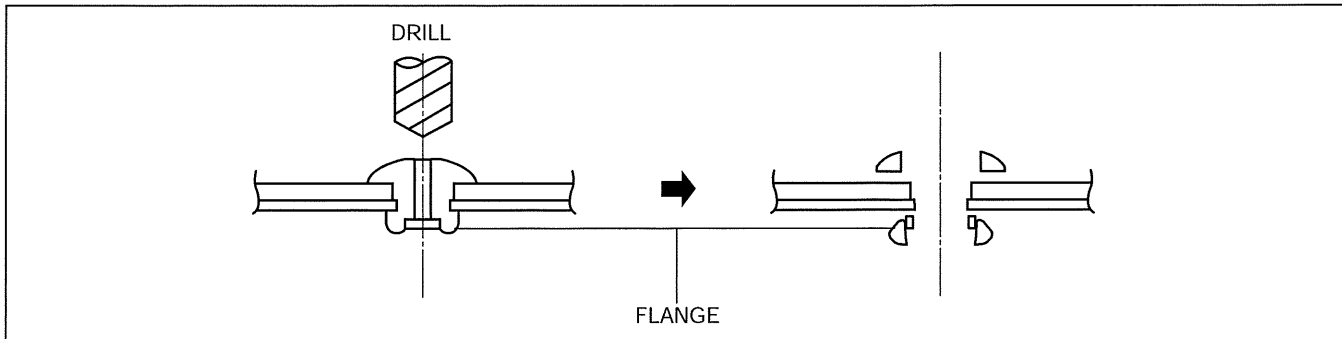
Note

- The insulator (rear No.1, No.2, No.3) are installed using rivets.

- Push out the mandrel using a hammer and punch (2—2.8 mm {0.08—0.11 in} diameter).
- Remove the flange using a drill (5 mm {0.20 in} drill bit).



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Insulator (Front) Removal Note

- Remove the tunnel member (front).
- Remove the insulator (front).

Remove the Exhaust Manifold Removal Note

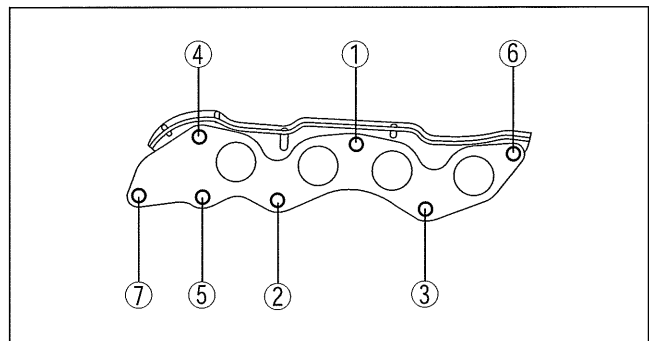
- Windshield wiper arm and blade. (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
- Remove the cowl grille. (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- Remove the windshield wiper motor. (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
- Remove the cowl panel. (See 09-10-45 COWL PANEL REMOVAL/INSTALLATION.)
- Remove the exhaust manifold.

Exhaust Manifold Installation Note

- Temporarily tighten the exhaust manifold installation nuts.
- Tighten the exhaust manifold new installation nuts in the order shown in the figure.

Tightening torque

43—64 N·m {4.4—6.5 kgf·m, 32—47 ft·lbf}



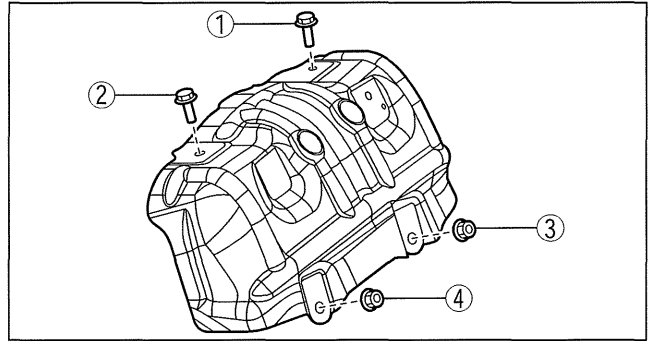
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EXHAUST SYSTEM [LF, L5]

Exhaust Manifold Insulator Installation Note

1. Temporarily tighten the exhaust manifold insulator.
2. Tighten the exhaust manifold insulator in the order shown in the figure.

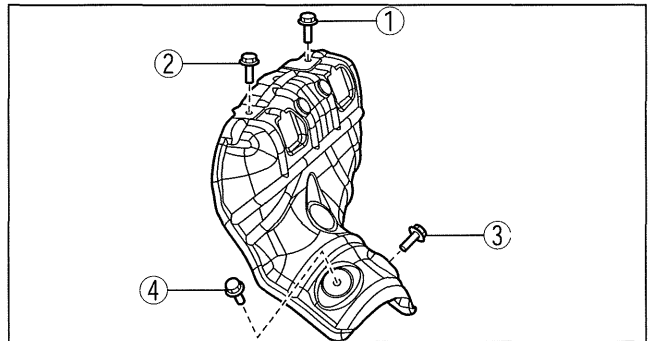
LF (California emission regulation applicable model)



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01-15A

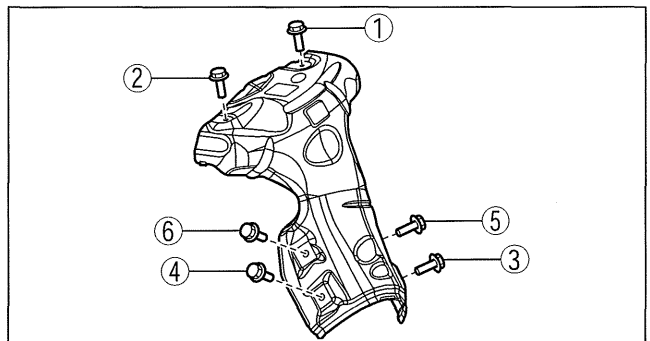
LF (Except for California emission regulation applicable model)



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L5

Tightening torque
8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}



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01-15B EXHAUST SYSTEM [L3 WITH TC]

EXHAUST SYSTEM INSPECTION
[L3 WITH TC] 01-15B-1

EXHAUST SYSTEM
REMOVAL/INSTALLATION
[L3 WITH TC] 01-15B-1

Exhaust System Insulator
Removal/installation Note 01-15B-3

Seal Ring Removal Note 01-15B-4

Exhaust Manifold Upper Insulator
Removal Note 01-15B-4

WU-TWC Insulator Removal Note01-15B-4

Exhaust Manifold Installation Note01-15B-5

WU-TWC Installation Note01-15B-5

Seal Ring (WU-TWC Side)
Installation Note01-15B-5

TWC Installation Note01-15B-6

Seal Ring (TWC Side)
Installation Note01-15B-6

Presilencer Installation Note01-15B-7

01-15B

EXHAUST SYSTEM INSPECTION [L3 WITH TC]

id011539800100

1. Start the engine and inspect each exhaust system component for exhaust gas leakage.
 - If there is leakage, repair or replace if necessary. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC]

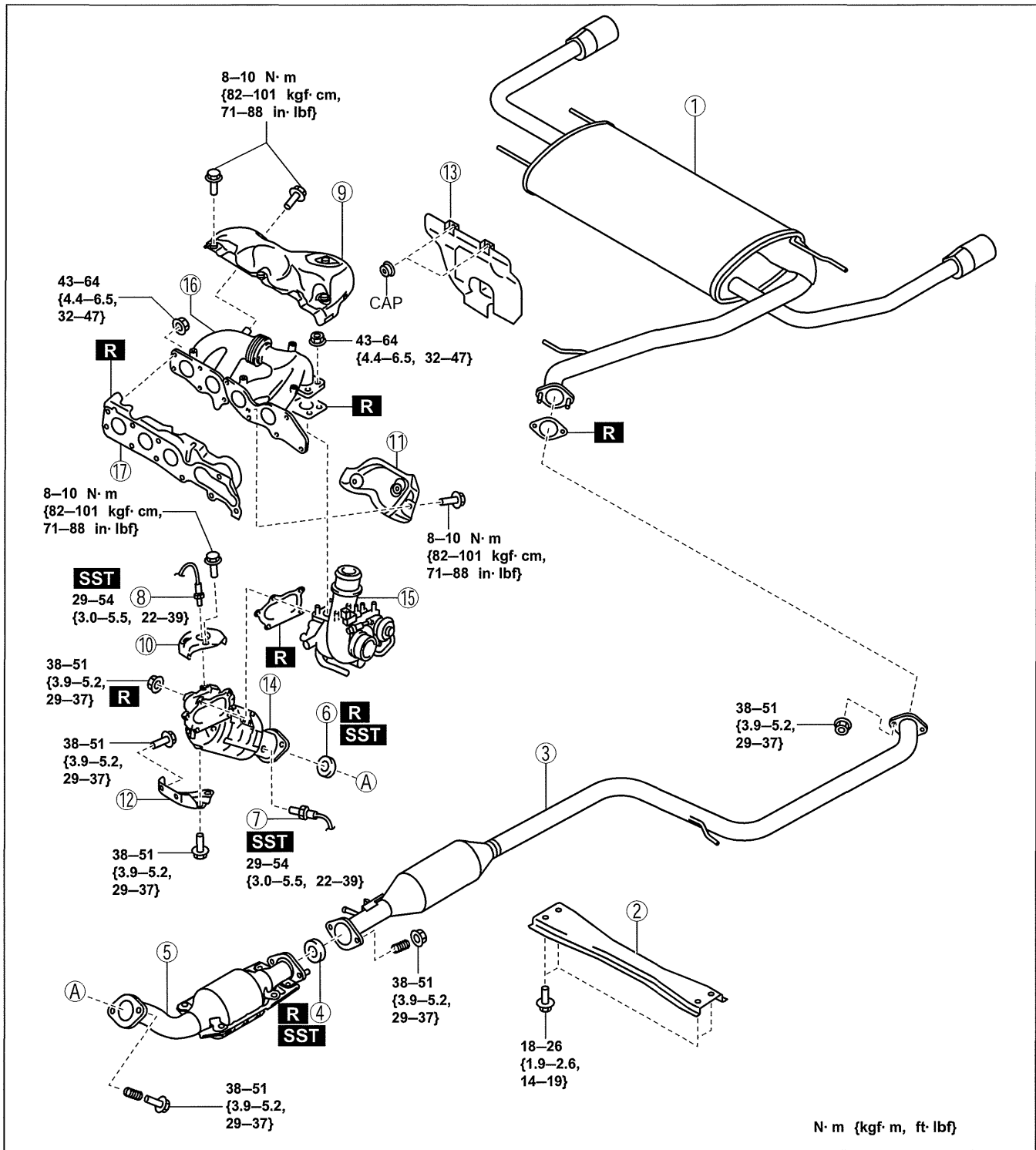
id011539800200

Warning

- **A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before removing the exhaust system.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove in the order indicated in the table.
4. Remove the exhaust system insulator. (See 01-15B-3 Exhaust System Insulator Removal/installation Note.)
5. Install in the reverse order of removal.

EXHAUST SYSTEM [L3 WITH TC]



am3uuw000615

1	Main silencer
2	Tunnel member
3	Presilencer (See 01-15B-7 Presilencer Installation Note.)
4	Seal ring (TWC side) (See 01-15B-4 Seal Ring Removal Note.) (See 01-15B-6 Seal Ring (TWC Side) Installation Note.)
5	TWC (See 01-15B-6 TWC Installation Note.)

6	Seal ring (WU-TWC side) (See 01-15B-4 Seal Ring Removal Note.) (See 01-15B-5 Seal Ring (WU-TWC Side) Installation Note.)
7	HO2S (See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC])
8	A/F sensor (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

EXHAUST SYSTEM [L3 WITH TC]

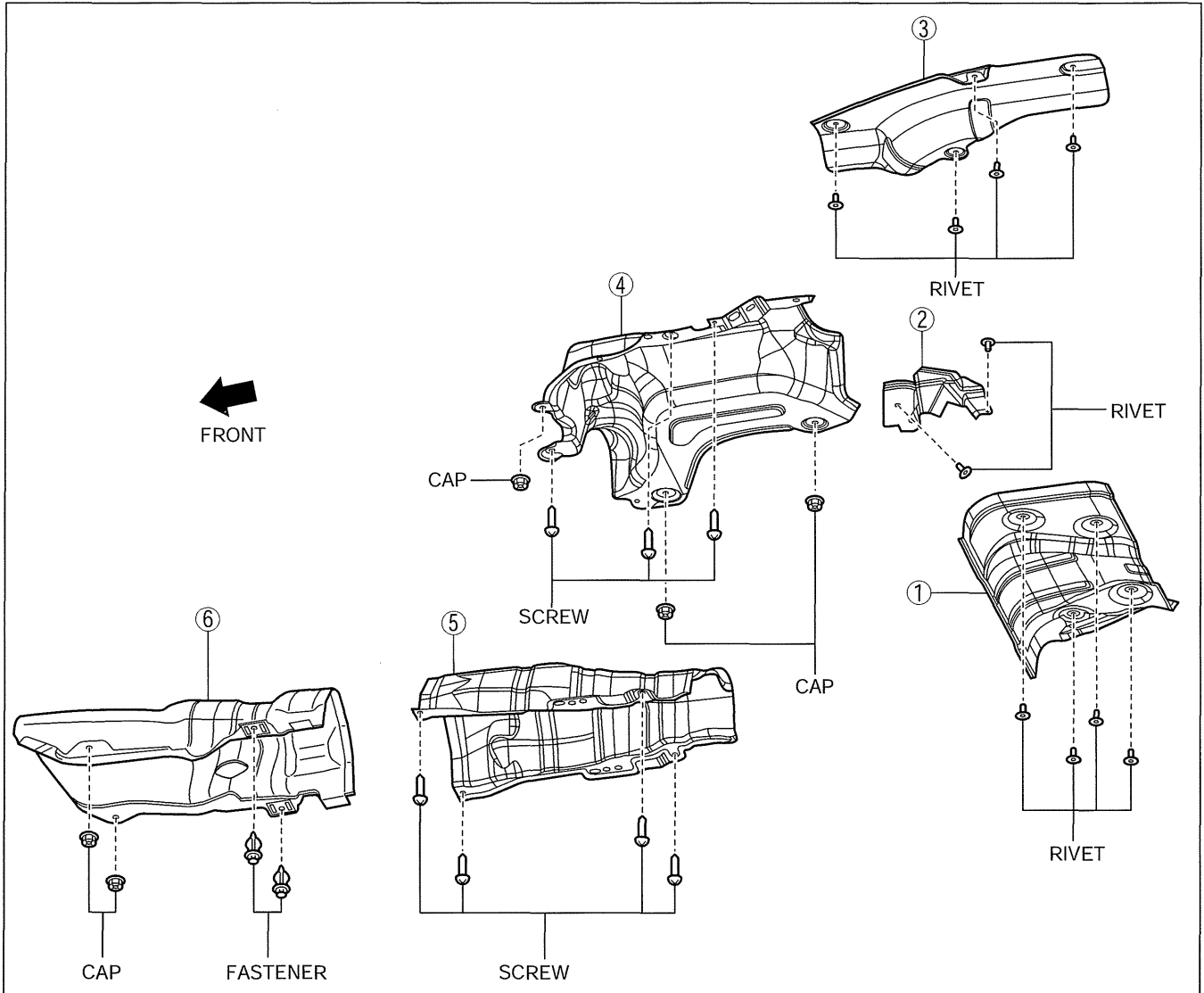
9	Exhaust manifold upper insulator (See 01-15B-4 Exhaust Manifold Upper Insulator Removal Note.)
10	WU-TWC insulator (See 01-15B-4 WU-TWC Insulator Removal Note.)
11	Exhaust manifold lower insulator
12	WU-TWC bracket
13	Insulator

14	WU-TWC (See 01-15B-5 WU-TWC Installation Note.)
15	Turbocharger (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
16	Exhaust manifold (See 01-15B-5 Exhaust Manifold Installation Note.)
17	Exhaust manifold gasket

01-15B

Exhaust System Insulator Removal/installation Note

1. Remove the exhaust system insulator in the order shown in the figure.
2. Install in the reverse order of removal.



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1	Insulator (rear No.1) (See 01-15B-4 Insulator (Rear No.1, No.2, No.3) Removal Note.)
2	Insulator (rear No.2) (See 01-15B-4 Insulator (Rear No.1, No.2, No.3) Removal Note.)

3	Insulator (rear No.3) (See 01-15B-4 Insulator (Rear No.1, No.2, No.3) Removal Note.)
4	Insulator (middle No.1)
5	Insulator (middle No.2)
6	Insulator (front) (See 01-15B-4 Insulator (Front) Removal Note.)

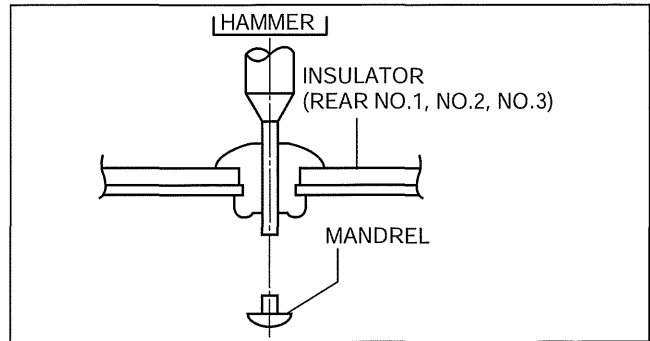
EXHAUST SYSTEM [L3 WITH TC]

Insulator (Rear No.1, No.2, No.3) Removal Note

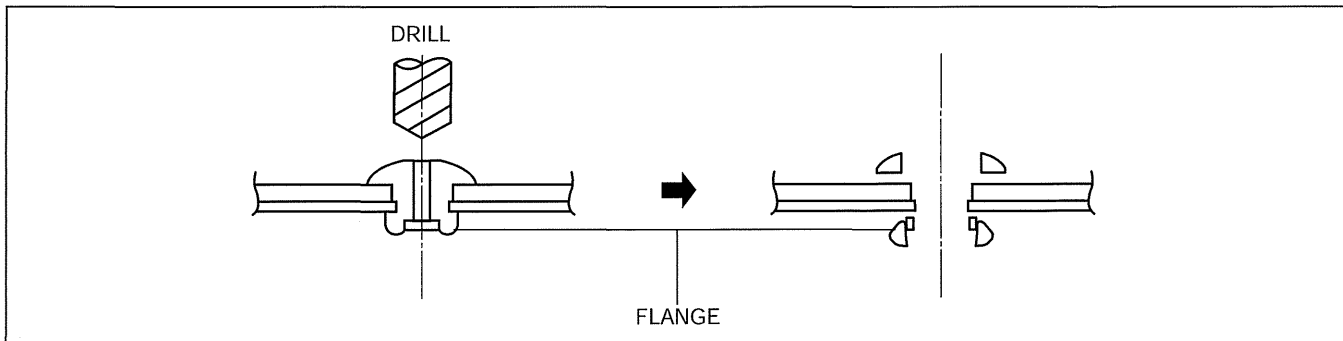
Note

- The insulator (rear No.1, No.2, No.3) are installed using rivets.

- Push out the mandrel using a hammer and punch (2—2.8 mm {0.08—0.11 in} diameter).
- Remove the flange using a drill (5 mm {0.20 in} drill bit).



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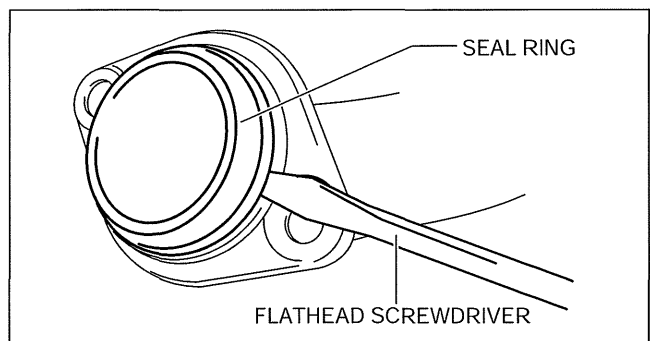
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Insulator (Front) Removal Note

- Remove the tunnel member (front).
- Remove the insulator (front).

Seal Ring Removal Note

- Remove the seal ring using a flathead screwdriver being careful not to damage the pipe.



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Exhaust Manifold Upper Insulator Removal Note

- Remove the charge air cooler cover. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
- Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
- Remove the charge air cooler bracket. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
- Remove the exhaust manifold upper insulator.

WU-TWC Insulator Removal Note

- Remove the turbocharger insulator. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
- Remove the WU-TWC insulator.

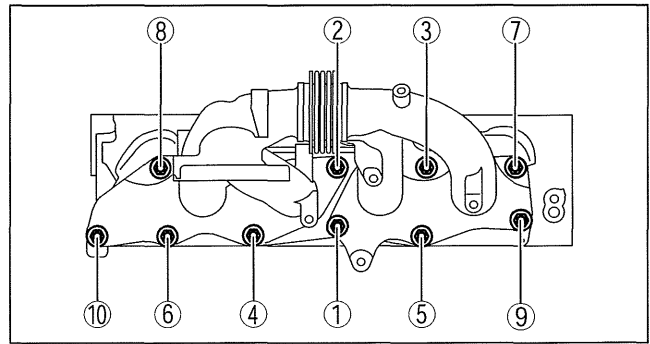
EXHAUST SYSTEM [L3 WITH TC]

Exhaust Manifold Installation Note

1. Tighten the exhaust manifold installation nuts in the order shown.

Tightening torque

43—64 N·m {4.4—6.5 kgf·m, 32—47 ft·lbf}



am3uuw0000579

01-15B

WU-TWC Installation Note

1. Temporarily tighten No.1 shown in the figure.
2. Temporarily tighten No.2 shown in the figure.
3. Temporarily tighten No.3 shown in the figure.
4. Completely tighten No.1 shown in the figure.

Tightening torque

38—51 N·m {3.9—5.2 kgf·m, 29—37 ft·lbf}

5. Completely tighten No.2 shown in the figure.

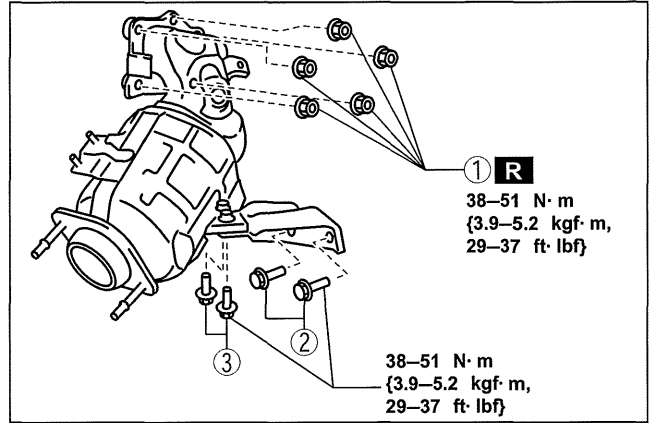
Tightening torque

38—51 N·m {3.9—5.2 kgf·m, 29—37 ft·lbf}

6. Completely tighten No.3 shown in the figure.

Tightening torque

38—51 N·m {3.9—5.2 kgf·m, 29—37 ft·lbf}



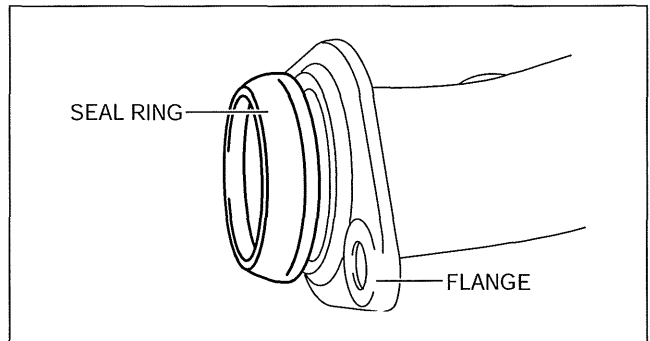
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Seal Ring (WU-TWC Side) Installation Note

Caution

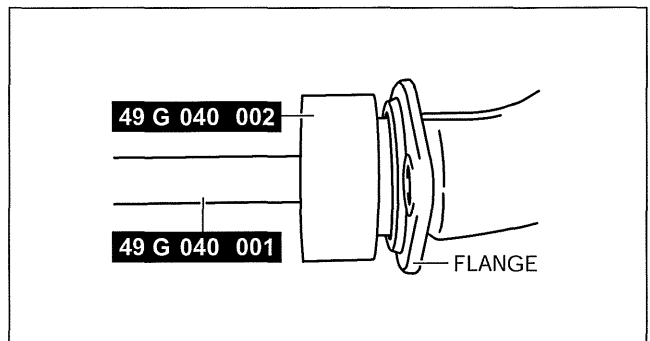
- If installation is performed without using the SST, the seal ring will be damaged and deformed, resulting in an incorrect installation. Always use the SST to install the seal ring.

1. Temporarily install the seal ring to the pipe so that the seal ring is even with the flange.



am3uuw0000580

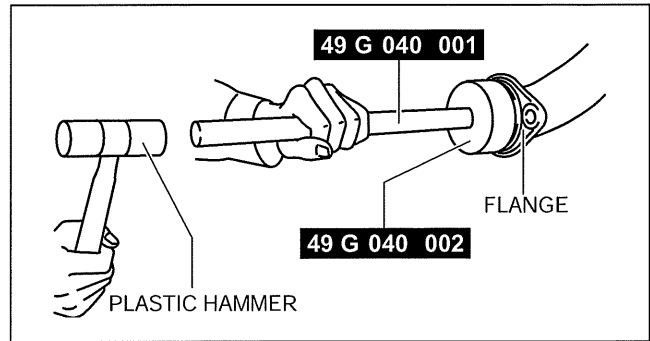
2. Install the SST to the seal ring so that the SST is even with the flange.



am3uuw0000580

EXHAUST SYSTEM [L3 WITH TC]

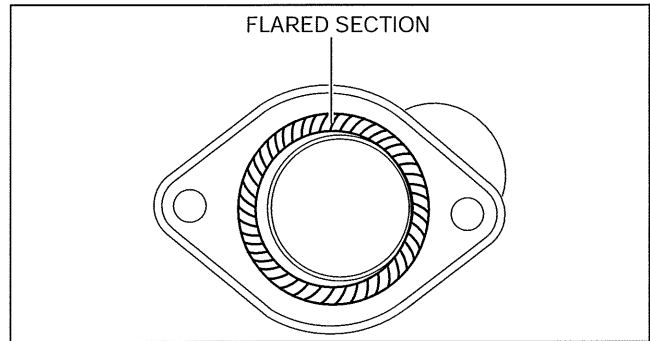
3. Press in the seal ring by tapping the SST using a plastic hammer until the seal ring contacts the flange.



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TWC Installation Note

1. Spray carbon remover (TB6601 or equivalent) on the flared section of the exhaust pipe.
2. Remove the carbon adhering to the flared section shown in the figure using a nylon brush or sandpaper (No. 400 or equivalent).



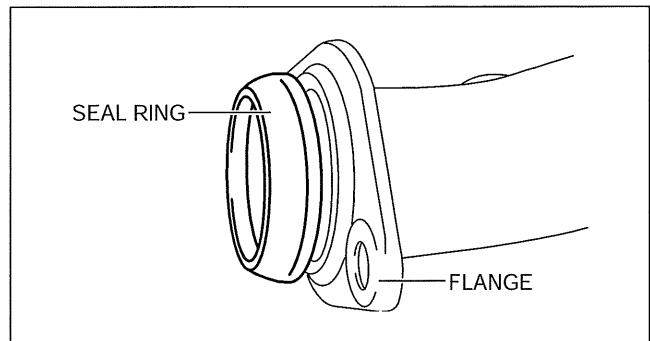
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Seal Ring (TWC Side) Installation Note

Caution

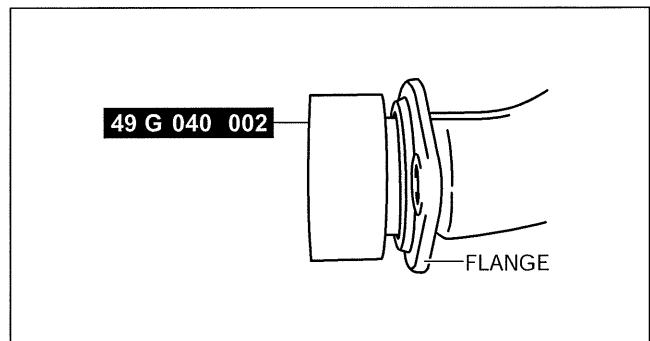
- If installation is performed without using the SST, the seal ring will be damaged and deformed, resulting in an incorrect installation. Always use the SST to install the seal ring.

1. Temporarily install the seal ring to the pipe so that the seal ring is even with the flange.



am3uuw0000580

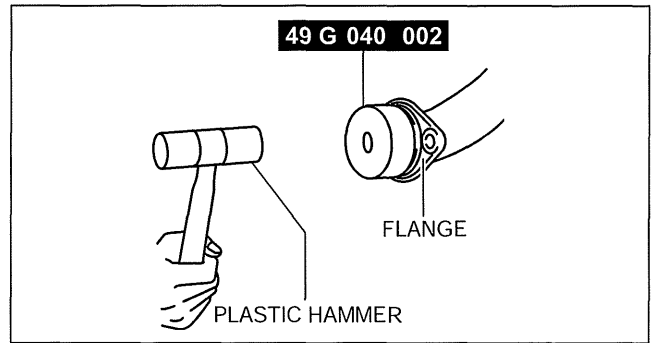
2. Install the SST to the seal ring so that the SST is even with the flange.



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EXHAUST SYSTEM [L3 WITH TC]

3. Press in the seal ring by tapping the SST using a plastic hammer until the seal ring contacts the flange.

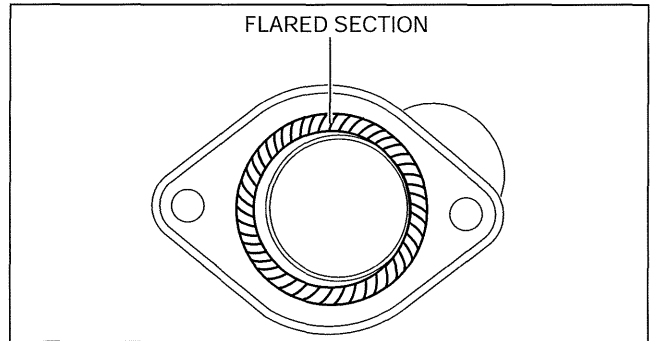


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01-15B

Presilencer Installation Note

1. Spray carbon remover (TB6601 or equivalent) on the flared section of the exhaust pipe.
2. Remove the carbon adhering to the flared section shown in the figure using a nylon brush or sandpaper (No. 400 or equivalent).



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01-16A EMISSION SYSTEM [LF, L5]

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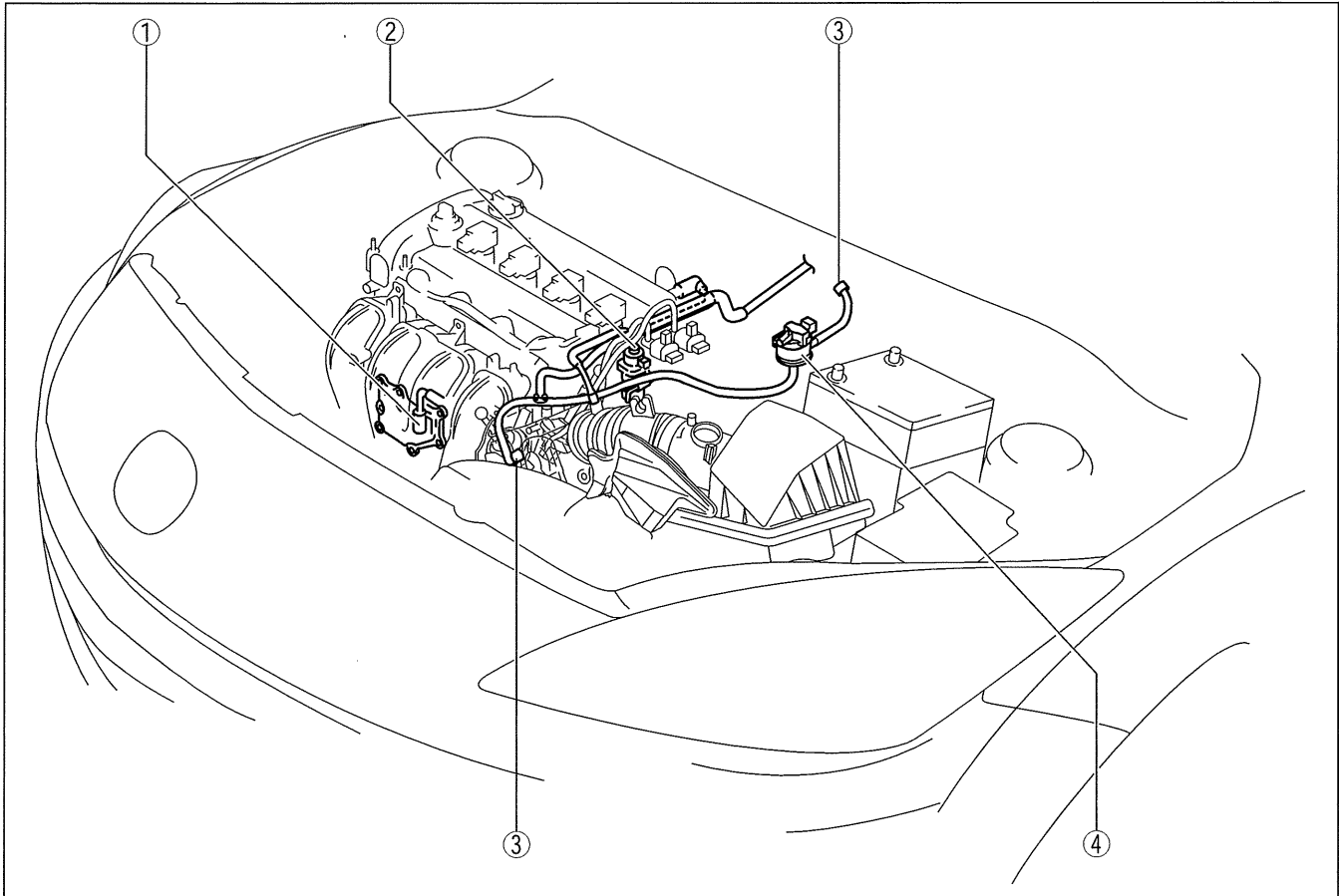
01-16A

EMISSION SYSTEM [LF, L5]

EMISSION SYSTEM LOCATION INDEX [LF, L5]

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Engine Compartment Side



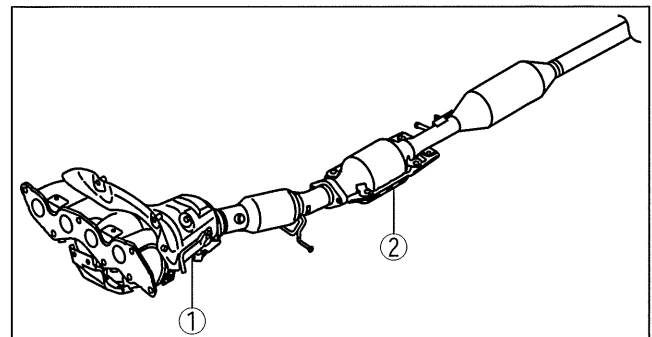
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1	<p>PCV valve (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5].)</p>
2	<p>EGR valve (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-9 EGR VALVE INSPECTION [LF, L5].)</p>

3	<p>Quick release connector (See 01-16A-11 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5].)</p>
4	<p>Purge solenoid valve (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-8 PURGE SOLENOID VALVE INSPECTION [LF, L5].)</p>

Exhaust System Side

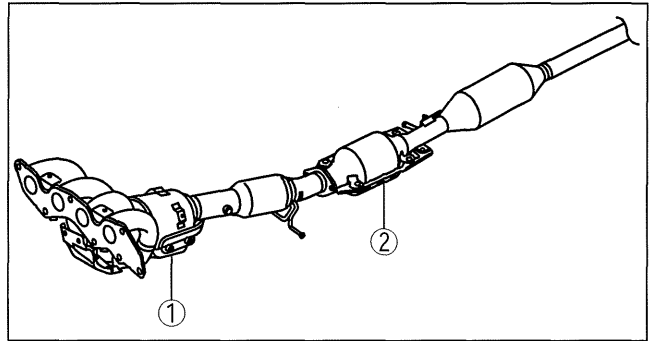
LF (California emission regulation applicable model)



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EMISSION SYSTEM [LF, L5]

LF (Except for california emission regulation applicable model)

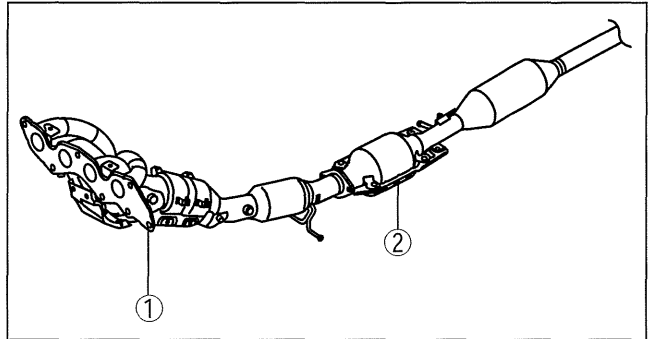


am3uuw0000456

01-16A

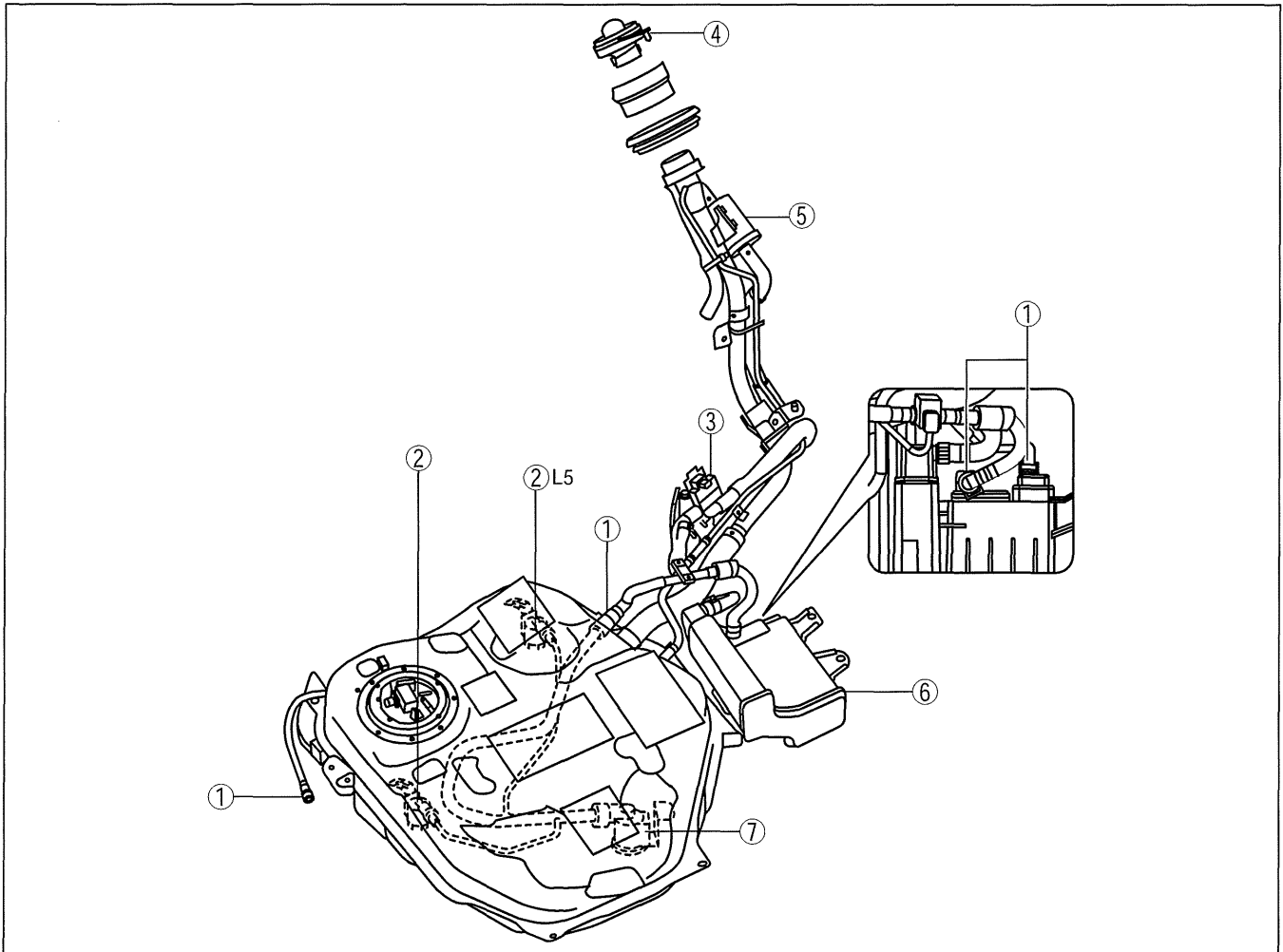
L5

1	WU-TWC (See 01-15A-1 EXHAUST SYSTEM REMOVAL/ INSTALLATION [LF, L5].)
2	TWC (See 01-15A-1 EXHAUST SYSTEM REMOVAL/ INSTALLATION [LF, L5].)



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Fuel Tank Side



am3uuw0000278

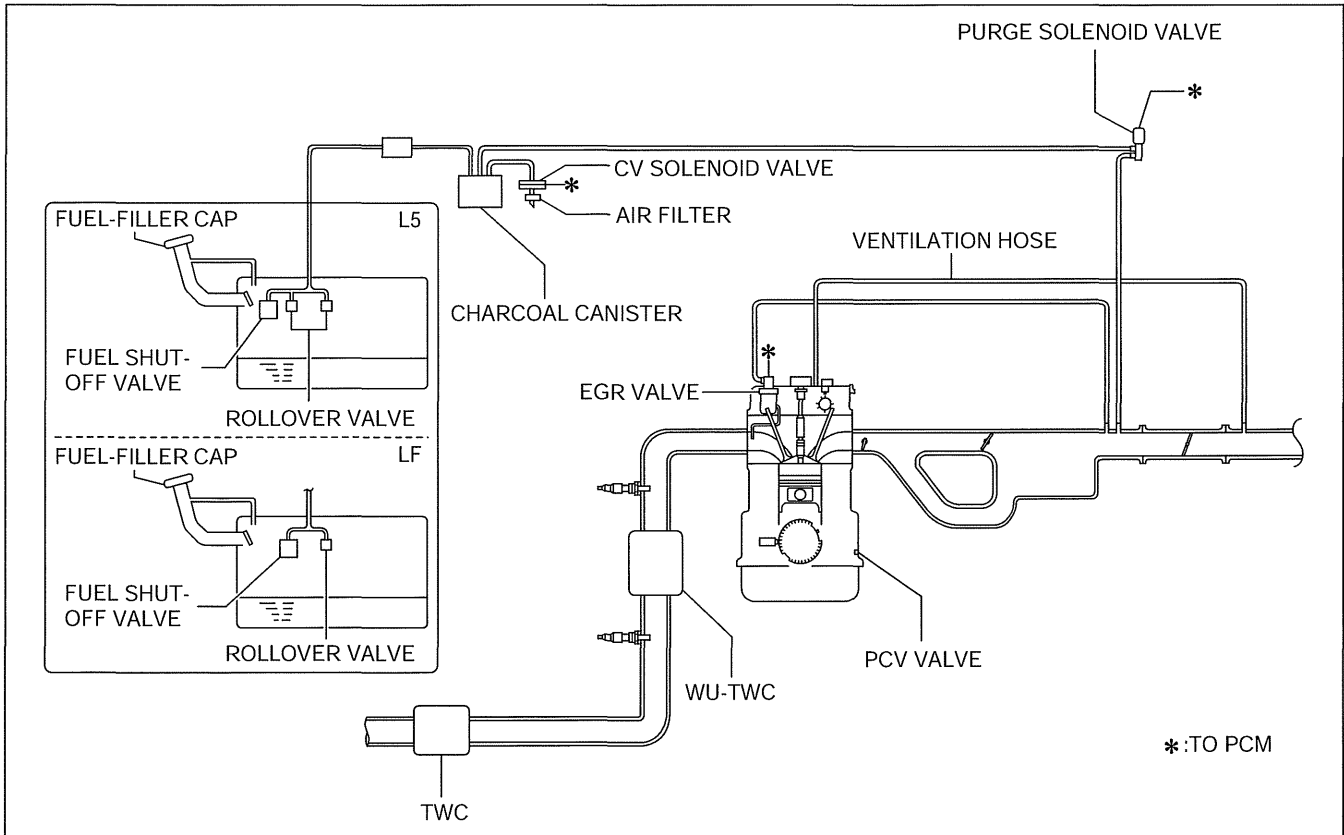
EMISSION SYSTEM [LF, L5]

1	Quick release connector (See 01-16A-11 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5].)
2	Rollover valve (See 01-16A-11 ROLLOVER VALVE REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-11 ROLLOVER VALVE INSPECTION [LF, L5].)
3	CV solenoid valve (See 01-16A-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-16 CANISTER VENT (CV) SOLENOID VALVE INSPECTION [LF, L5].)
4	Fuel-filler cap (See 01-16A-5 FUEL-FILLER CAP INSPECTION [LF, L5].)

5	Air filter (See 01-16A-16 AIR FILTER REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-6 AIR FILTER INSPECTION [LF, L5].)
6	Charcoal canister (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-7 CHARCOAL CANISTER INSPECTION [LF, L5].)
7	Fuel shut-off valve (See 01-16A-11 FUEL SHUT-OFF VALVE REMOVAL/INSTALLATION [LF, L5].) (See 01-16A-11 FUEL SHUT-OFF VALVE INSPECTION [LF, L5].)

EMISSION SYSTEM DIAGRAM [LF, L5]

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FUEL-FILLER CAP INSPECTION [LF, L5]

id0116a7801300

Leakage Inspection

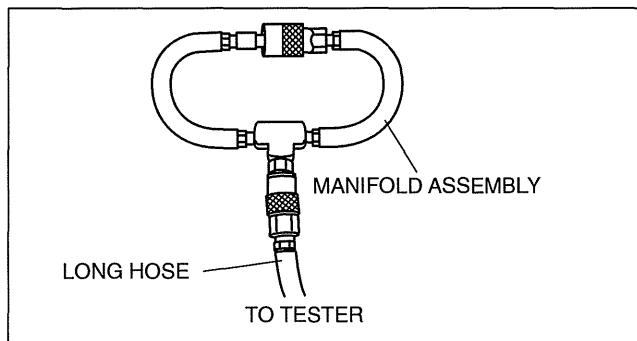
1. Perform the following **SST** (Evaporative Emission System Tester 134-01049A) self-test:

Note

- If the tester does not work correctly during self-test, refer to the tester operators manual for more detailed procedures.

- (1) Verify that the gas cylinder valve is closed and the control valve located on the tester is in the TEST position. All tester displays should be off at this time.

- (2) Connect the long hose (part of **SST**) to the tester.
- (3) Connect the manifold assembly (part of **SST**) to the long hose as shown.
- (4) Open the gas cylinder valve and verify the gas cylinder regulator left gauge reads **69—82 kPa {0.71—0.83 kgf/cm², 10—12 psi}** (preset at factory).



ac9uuw00000195

- If not, refer to the tester operators manual to contact tester manufacturer.

- (5) Press the ON/OFF switch to turn on the **SST** and make sure the left display reads **0.0**.
- (6) Turn the control valve on the tester to the FILL position.

- (7) Verify the left display reading is **within 13.9 to 14.0** in of water.

- If not, adjust the pressure using the regulator knob located on the right side of the tester.

- (8) Turn the control valve to TEST position and press the START switch.

- (9) After the **2-min** countdown (left display) is completed, the right display shows the total pressure loss for that period. A **0.5** in of water loss is acceptable on the self-test.

- If the loss is **more than 0.5** in of water, do one or more self-test. If the failed test repeats, check for leak using the ultrasonic leak detector (part of **SST**).

2. Press the RESET switch to set the left display reading to **0.0**.

3. Connect the fuel cap receiver assembly (part of **SST**) to the manifold assembly and fuel-filler cap from the vehicle.

- If the fuel-filler cap is not a genuine part, replace it.

4. Turn the control valve to the FILL position.

5. Wait (**maximum 20 s**) until the left display reads **13.9 to 14.0** in of water.

- If the reading is slightly below the specification, adjust it using the regulator knob.
- If the reading is far below, the fuel-filler cap has leak. Replace it.

6. Turn the control valve to the TEST position and press the START switch.

7. After the **2-min** countdown (left display) is completed, check the test result (the failed/ passed light on the tester).

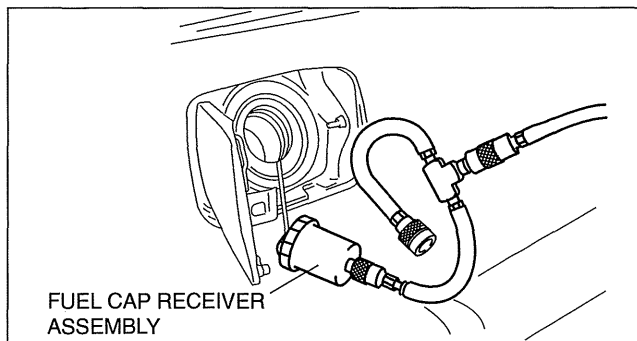
- If the green light turns on, the fuel-filler cap is normal.

- If the red light turns on, the fuel-filler cap has leakage. Replace it.

8. Close the gas cylinder valve.

9. Turn the control valve to the FILL position.

10. Press the ON/OFF switch to turn off the tester.



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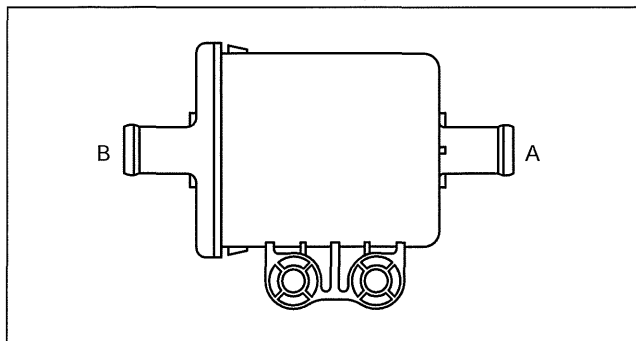
EMISSION SYSTEM [LF, L5]

AIR FILTER INSPECTION [LF, L5]

id0116a7736400

Airflow Inspection

1. Remove the air filter. (See 01-16A-16 AIR FILTER REMOVAL/INSTALLATION [LF, L5].)
2. Blow from port A and verify that there is airflow from port B.
 - If specified, replace the air filter. (See 01-16A-16 AIR FILTER REMOVAL/INSTALLATION [LF, L5].)
3. Blow from port B and verify that there is airflow from port A.
 - If specified, replace the air filter. (See 01-16A-16 AIR FILTER REMOVAL/INSTALLATION [LF, L5].)



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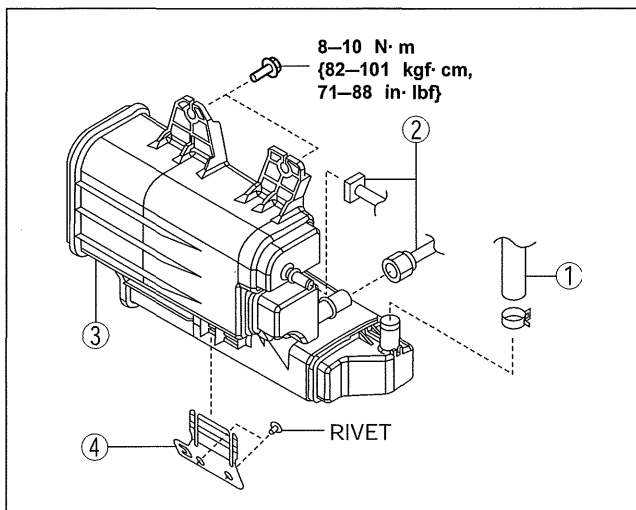
CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5]

id0116a7096400

1. Remove in the order indicated in the table.

1	Evaporative hose
2	Quick release connector (See 01-16A-11 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5].)
3	Charcoal canister (See 01-16A-6 Charcoal Canister Removal Note.)
4	Charcoal canister bracket (See 01-16A-6 Charcoal Canister Bracket Removal Note.)

2. Install in the reverse order of removal.



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Charcoal Canister Removal Note

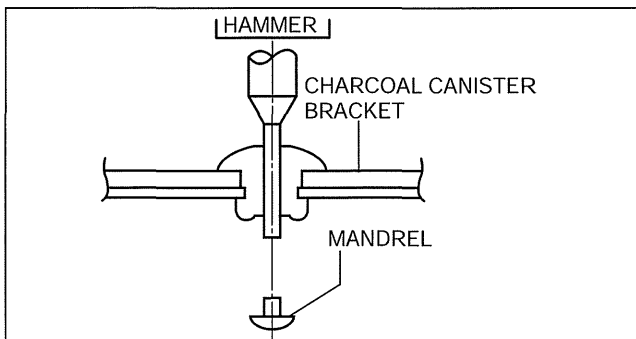
1. Remove the rear stabilizer. (See 02-14-13 REAR STABILIZER REMOVAL/INSTALLATION.)
2. Remove the rear coil spring. (See 02-14-4 REAR COIL SPRING REMOVAL/INSTALLATION.)
3. Remove the rear lower arm. (See 02-14-6 REAR LOWER ARM REMOVAL/INSTALLATION.)
4. Remove the rear crossmember component. (See 02-14-14 REAR CROSSMEMBER REMOVAL/INSTALLATION.)
5. Remove the charcoal canister.

Charcoal Canister Bracket Removal Note

Note

- The charcoal canister bracket is installed using rivets.

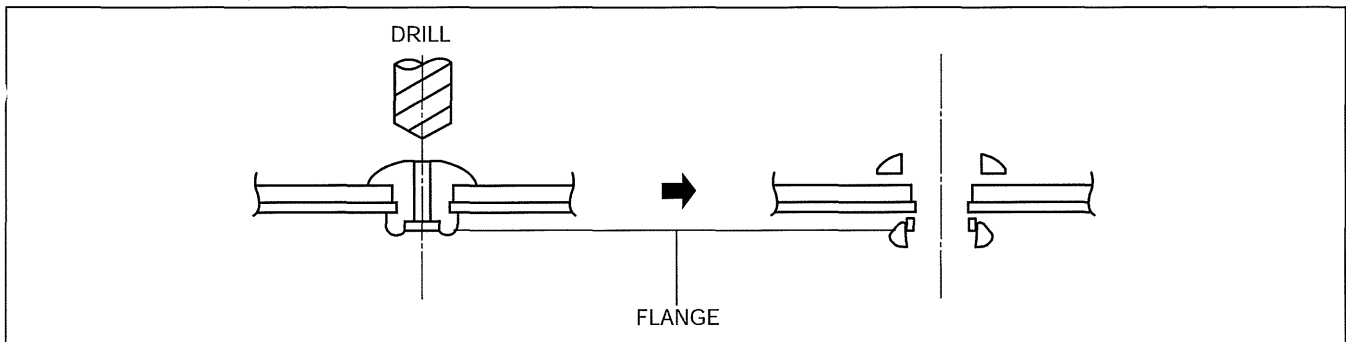
1. Push out the mandrel using a hammer and punch (2—2.8 mm {0.08—0.11 in} diameter).



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EMISSION SYSTEM [LF, L5]

2. Remove the flange using a drill (5 mm {0.20 in} drill bit).



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01-16A

CHARCOAL CANISTER INSPECTION [LF, L5]

id0116a7800500

Airflow Inspection

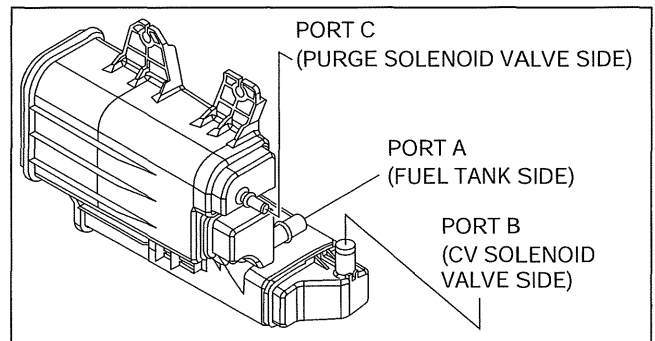
1. Perform the following procedures:

Note

- The ports should not be damaged.
- Assemble the hose used for inspection (bore: **approx. 14.8 mm {0.58 in}**) to port A.
- Cover ports B and C with the caps.

Caution

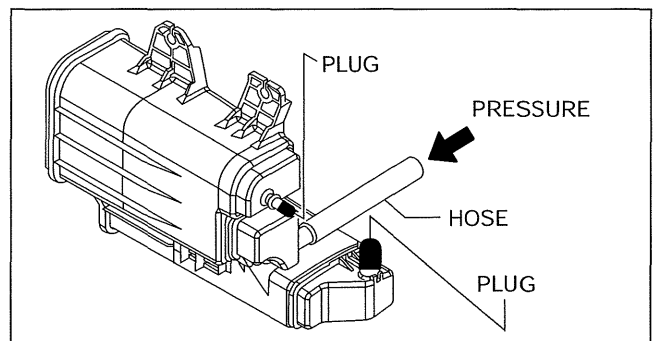
- **Do not apply a pressure 20 kPa {150 mmHg, 5.91 inHg} or more to the charcoal canister for 1 min. or more. Doing so will damage the charcoal canister.**



am3uuw0000250

2. Apply pressure (**19.6 kPa {147 mmHg, 5.79 inHg}**) through the hose, and verify that air does not leak from the charcoal canister.

- If there is airflow, replace the charcoal canister. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].)



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EMISSION SYSTEM [LF, L5]

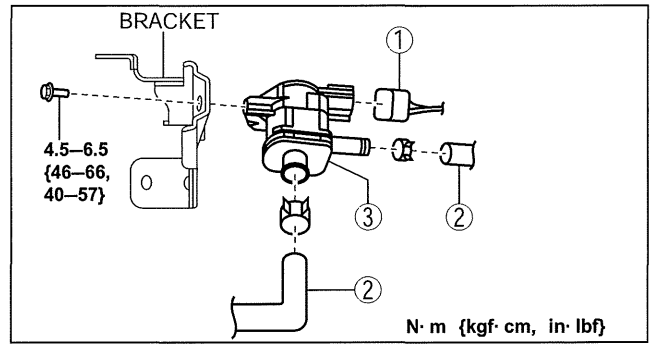
PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5]

id0116a7804300

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove in the order indicated in the table.

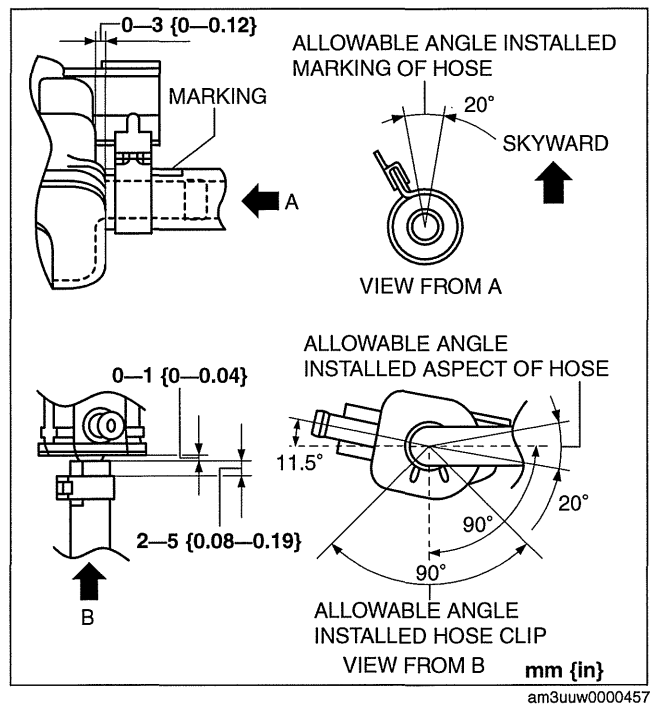
1	Purge solenoid valve connector
2	Evaporative hose (See 01-16A-8 Evaporative Hose Installation Note.)
3	Purge solenoid valve

4. Install in the reverse order of removal.



Evaporative Hose Installation Note

1. Install the evaporative hose and clip as shown in the figure.



PURGE SOLENOID VALVE INSPECTION [LF, L5]

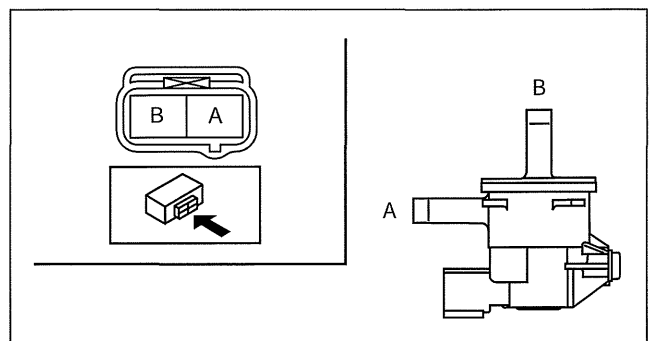
id0116a7800900

Airflow inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
4. Inspect airflow between the ports under the following conditions.

Measured condition	Continuity between A—B
When voltage is not applied between terminals A and B	No airflow
When voltage is applied between terminals A and B	Airflow detected

- If not as specified, replace the purge solenoid valve. (See 01-16A-8 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)



EMISSION SYSTEM [LF, L5]

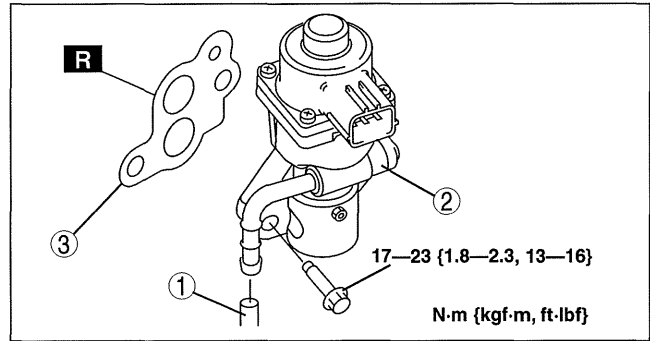
EGR VALVE REMOVAL/INSTALLATION [LF, L5]

id0116a7801000

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Drain the engine coolant from the radiator. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
4. Remove the air cleaner and the air hose as a single unit. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the radiator hose (upper, engine side). (See 01-12A-8 RADIATOR REMOVAL/INSTALLATION [LF, L5].)
6. Disconnect the EGR valve connector.
7. Remove in the order indicated in the table.

1	Water hose
2	EGR valve
3	Gasket

8. Install in the reverse order of removal.



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EGR VALVE INSPECTION [LF, L5]

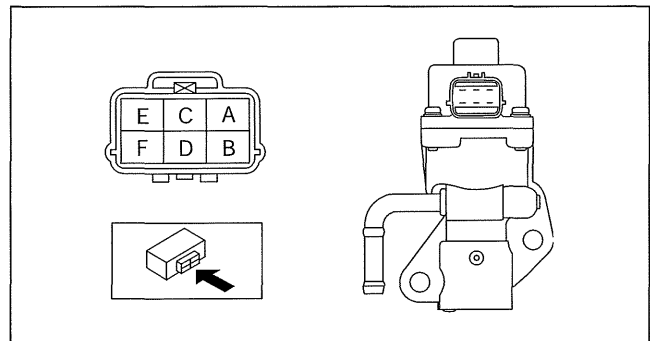
id0116a7801100

Resistance inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the EGR valve connector.
4. Measure the resistance between the EGR valve terminals.

EGR valve terminal	Resistance inspection (ohm)
C—A D—B C—E D—F	12—16

- If not within the specification, replace the EGR valve. (See 01-16A-9 EGR VALVE REMOVAL/INSTALLATION [LF, L5].)



am6xuw0000047

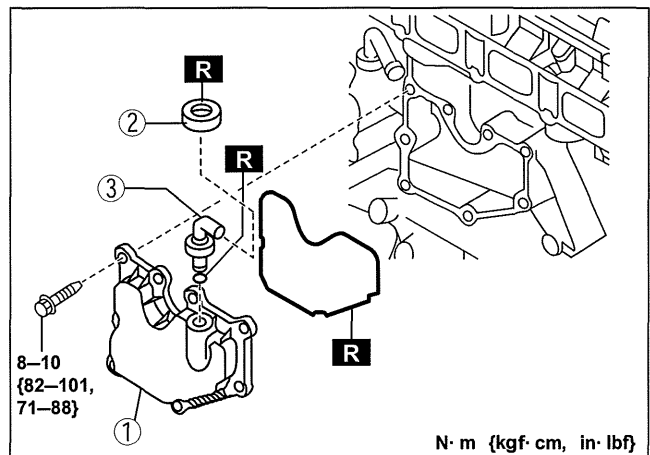
POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5]

id0116a7819800

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove the intake manifold and the fuel distributor component as a single unit. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Remove in the order indicated in the table.

1	Oil separator
2	Retainer (See 01-16A-10 Retainer Removal Note.) (See 01-16A-10 Retainer Installation Note.)
3	PCV valve

5. Install in the reverse order of removal.



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01-16A

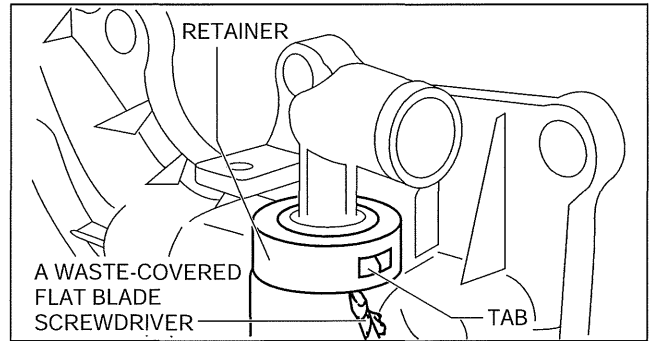
EMISSION SYSTEM [LF, L5]

Retainer Removal Note

Caution

- Be sure to follow the removal procedures below to prevent the leakage of blow-by gas caused by the damage to the tab of the oil separator or the oil separator itself.

1. Insert a flat blade screwdriver with its tip wrapped in a waste cloth into the gap between the retainer and the oil separator as shown in the figure.
2. Spread the side surface of the retainer outward to dismount it with attention to the tab.



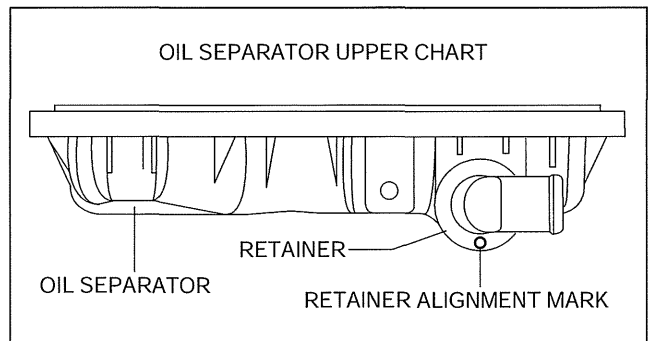
am3uuw0000225

Retainer Installation Note

Caution

- Be sure to replace the old retainer with a new one to prevent the escape of blow-by gas. Reinstalling the old retainer will reduce airtightness.

1. Make sure that the retainer alignment mark is directed as shown in the left diagram before install the retainer to the oil separator.



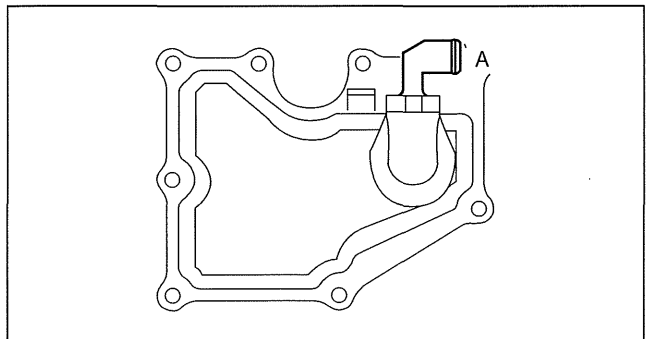
am6xuw0000047

POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF, L5]

id0116a7800400

Airflow Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the intake manifold and the fuel distributor component as a single unit. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Remove the PCV valve and the oil separator as a single unit. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
5. Verify that there is no airflow when pressure is applied to port A.
 - If there is airflow, replace the PCV valve. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)
6. Verify that there is airflow when vacuum is applied to port A.
 - If there is no airflow, replace the PCV valve. (See 01-16A-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [LF, L5].)



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EMISSION SYSTEM [LF, L5]

ROLLOVER VALVE REMOVAL/INSTALLATION [LF, L5]

id0116a7804600

Note

- The rollover valve cannot be removed as it is built into the fuel tank.

ROLLOVER VALVE INSPECTION [LF, L5]

id0116a7804500

Note

- The rollover valve cannot be disassembled and inspected as it is built into the fuel tank.

1. Perform the fuel tank inspection. (See 01-14A-12 FUEL TANK INSPECTION [LF, L5].)
 - If malfunction, replace the fuel tank. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)

FUEL SHUT-OFF VALVE REMOVAL/INSTALLATION [LF, L5]

id0116a7809600

Note

- The fuel shut-off valve cannot be removed as it is built into the fuel tank.

FUEL SHUT-OFF VALVE INSPECTION [LF, L5]

id0116a7809700

Note

- The fuel shut-off valve cannot be removed and inspected as it is built into the fuel tank.

1. Perform the fuel tank inspection. (See 01-14A-12 FUEL TANK INSPECTION [LF, L5].)
 - If malfunction, replace the fuel tank (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)

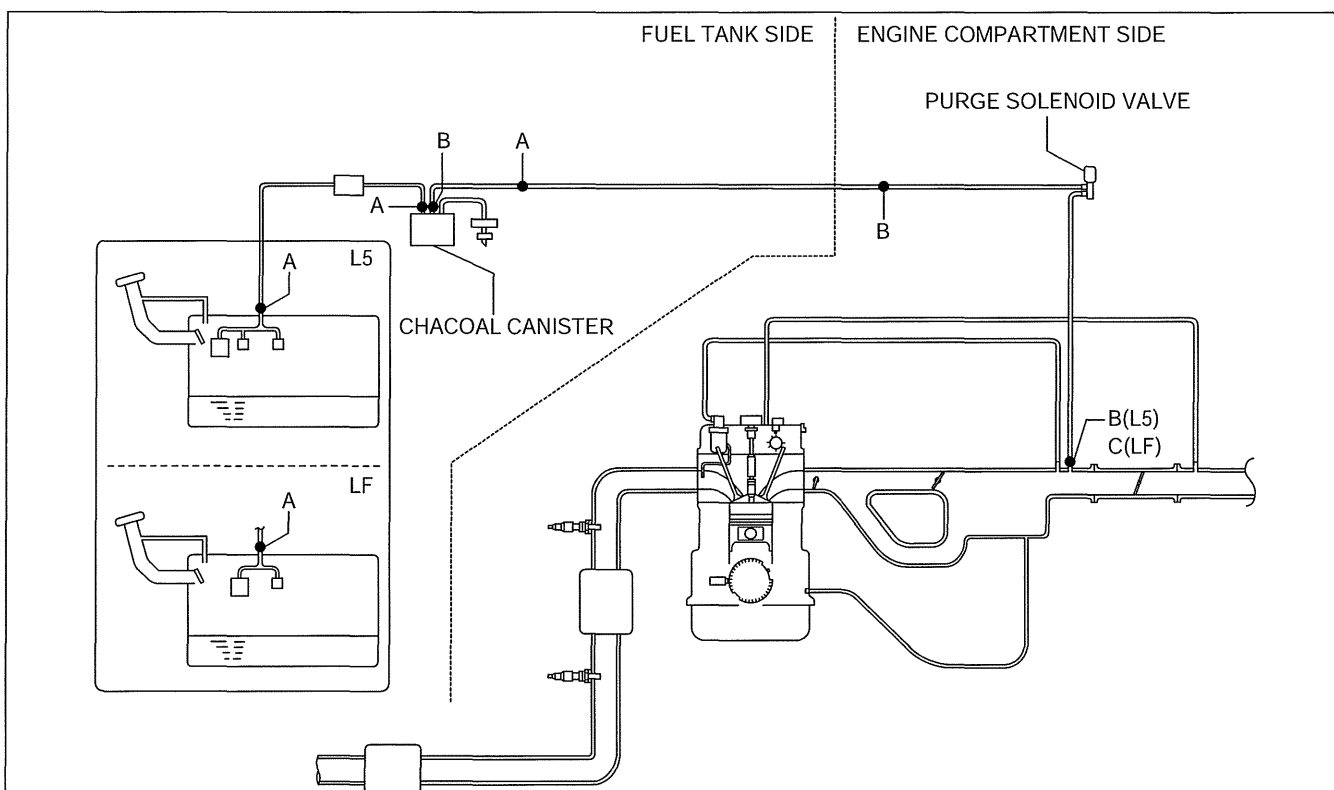
QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5]

id0116a7805500

Quick Release Connector Type

Caution

- There are Three types of quick release connectors. Verify the type and location, and install/remove properly. (LF)
- There are two types of quick release connectors. Verify the type and location, and install/remove properly. (L5)



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EMISSION SYSTEM [LF, L5]

Type A Removal

Caution

- Be careful not to damage the pipe when unlocking the retainer.

Note

- When removing the quick release connector, either SST 49 E042 001 or 49 N013 103A (Part of 49 N013 1A0D) can be used.

When using SST 49 E042 001

Note

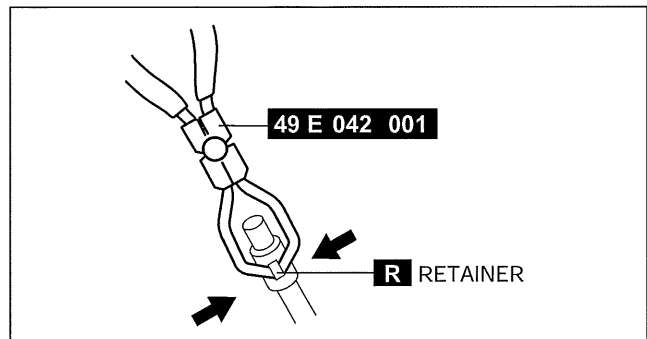
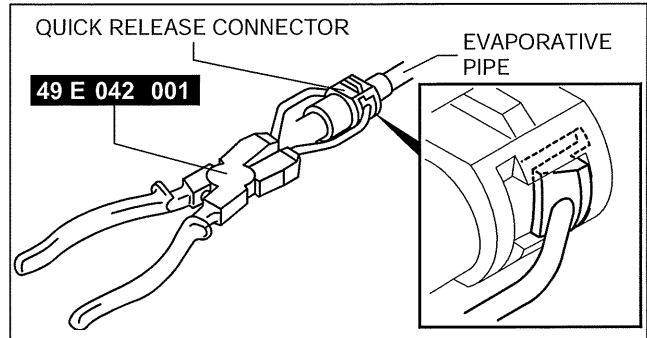
- If the quick release connector is removed, replace the retainer with a new one.

1. Set the SST parallel to the quick release connector.

Note

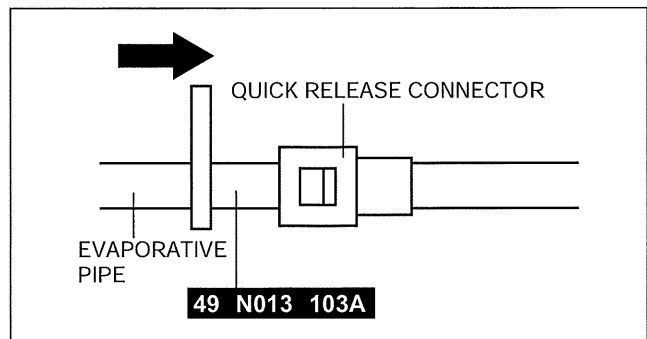
- The quick release connector can be removed by pushing the center of the retainer tabs.
- The retainer is attached to the pipe even after the connector is disconnected.

2. Hold the center of the retainer tabs with the SST ends and press the retainer.
3. Pull the connector side and disconnect the quick release connector.
4. Raise a retainer tab using the SST and remove the retainer.
5. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



When using SST 49 N013 103A (Part of 49 N013 1A0D)

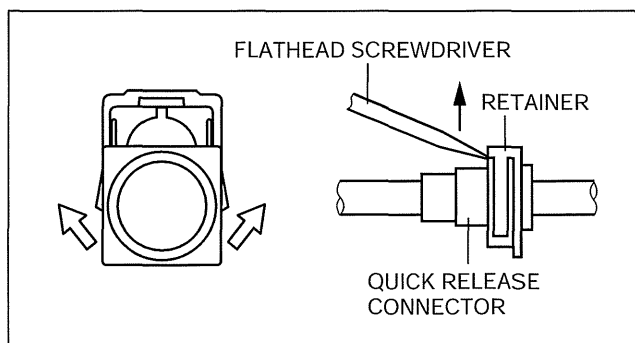
1. Insert the SST into the quick release connector.
2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



EMISSION SYSTEM [LF, L5]

Type B Removal

1. Move the retainer upward using a small flathead screwdriver or a similar tool.
2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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01-16A

Type C Removal

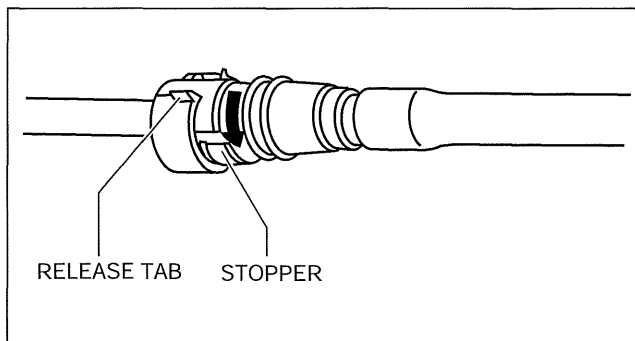
Caution

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

Note

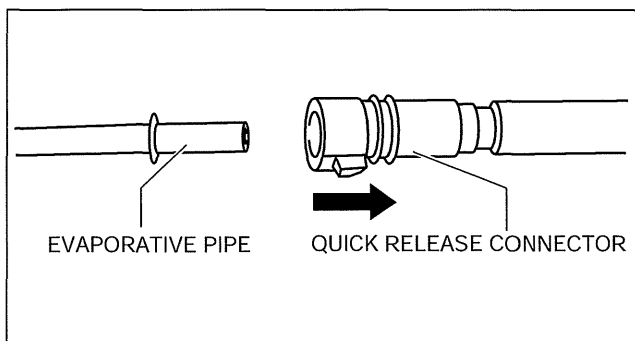
- The evaporative hose can be removed by pushing it to the pipe side to release the lock.

1. Rotate the release tab on the quick release connector to the stopper position.



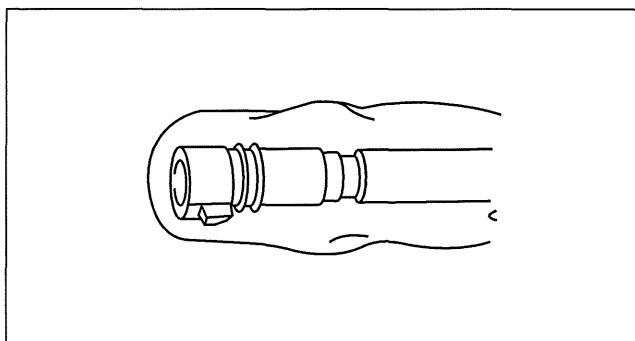
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2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.



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3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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Type A Installation

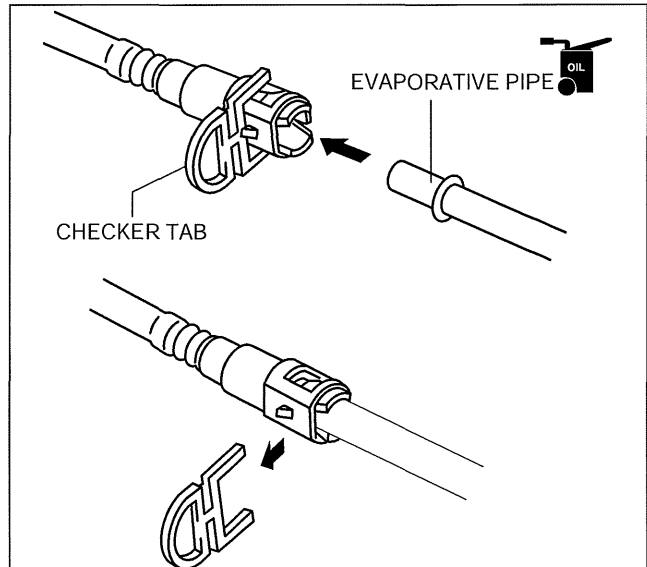
Caution

- Always replace the retainer with a new one when using SST 49 E042 001, otherwise, evaporative leakage could result.

Note

- If the quick release connector O-ring is damaged or has slipped, replace the piping component.
- A checker tab is integrated with the quick release connector for new evaporative hoses and evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the evaporative pipe.

1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
3. Install a new retainer to the quick release connector.
4. Reconnect the hose straight to the pipe until a click is heard.
5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.



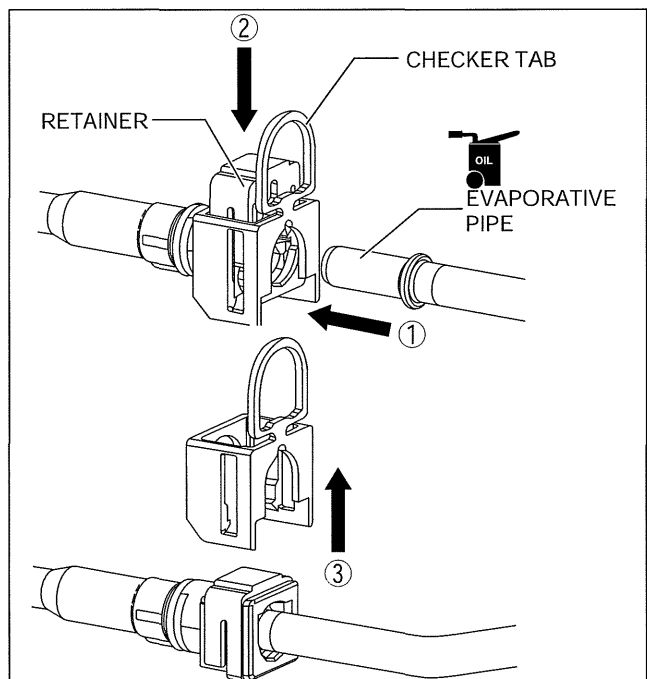
am3uuw0000519

Type B Installation

Note

- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the evaporative pipe.

1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Install the quick release connector.
 - Insert the evaporative pipe straight to the end of the quick release connector.
 - Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the evaporative pipe further to the quick release connector.
3. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.



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Type C Installation

Note

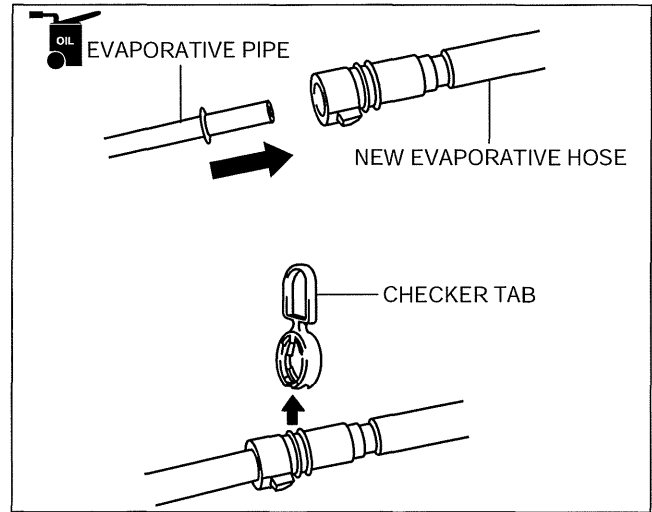
- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the evaporative pipe.

1. Inspect the evaporative hose and evaporative pipe sealing surface for damaged and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
3. Reconnect the evaporative hose straight to the evaporative pipe until a click is heard.

Note

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.

4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move **2.0—3.0 mm {0.08—0.12 in}** and is connected securely.



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01-16A

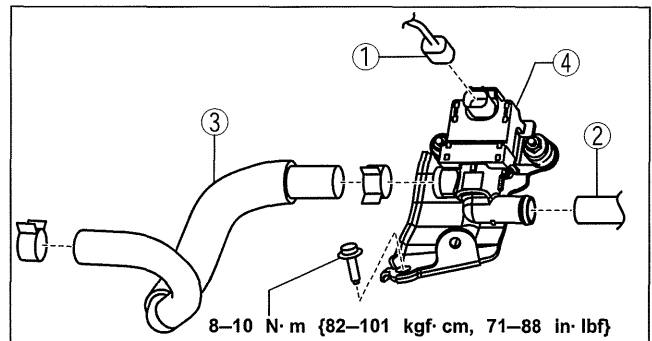
CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5]

id0116a7832100

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove in the order indicated in the table.

1	CV solenoid valve connector
2	Evaporative hose
3	Evaporative hose (See 01-16A-15 Evaporative Hose Removal Note.)
4	CV solenoid valve

4. Install in the reverse order of removal.



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Evaporative Hose Removal Note

1. Disconnect the evaporative hose of fuel tank side.
2. Remove the evaporative hose and CV solenoid valve as a single unit.
3. Remove the evaporative hose.

EMISSION SYSTEM [LF, L5]

CANISTER VENT (CV) SOLENOID VALVE INSPECTION [LF, L5]

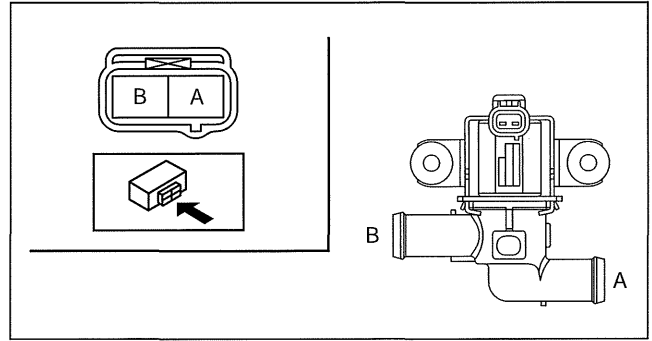
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Airflow Inspection

1. Remove the CV solenoid valve. (See 01-16A-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)
2. Inspect airflow between the ports under the following conditions.

Measured condition	Continuity between A—B
When voltage is not applied between terminals A and B	Airflow detected
When voltage is applied between terminals A and B	No airflow

- If not specified, replace the CV solenoid valve. (See 01-16A-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [LF, L5].)



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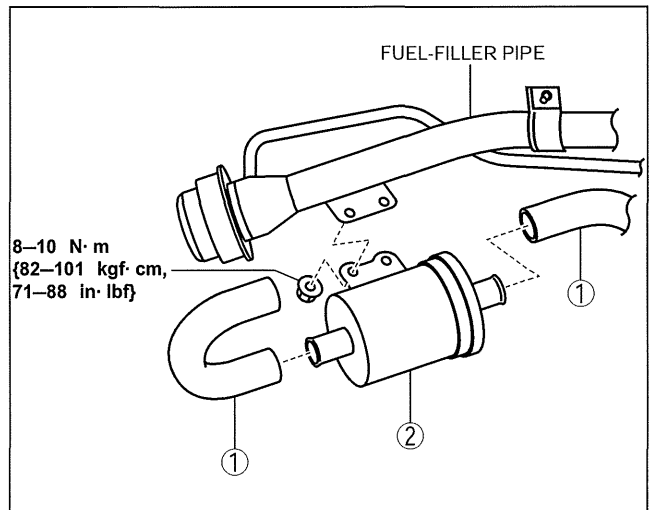
AIR FILTER REMOVAL/INSTALLATION [LF, L5]

id0116a7832300

1. Remove the fuel-filler pipe protector. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
2. Remove in the order indicated in the table.

1	Evaporative hose
2	Air filter

3. Install in the reverse order of removal.



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01-16B EMISSION SYSTEM [L3 WITH TC]

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**POSITIVE CRANKCASE VENTILATION
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**WARM-UP THREE-WAY CATALYTIC
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ROLLOVER VALVE

REMOVAL/INSTALLATION

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ROLLOVER VALVE INSPECTION

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FUEL SHUT-OFF VALVE

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QUICK RELEASE CONNECTOR

(EMISSION SYSTEM)

REMOVAL/INSTALLATION

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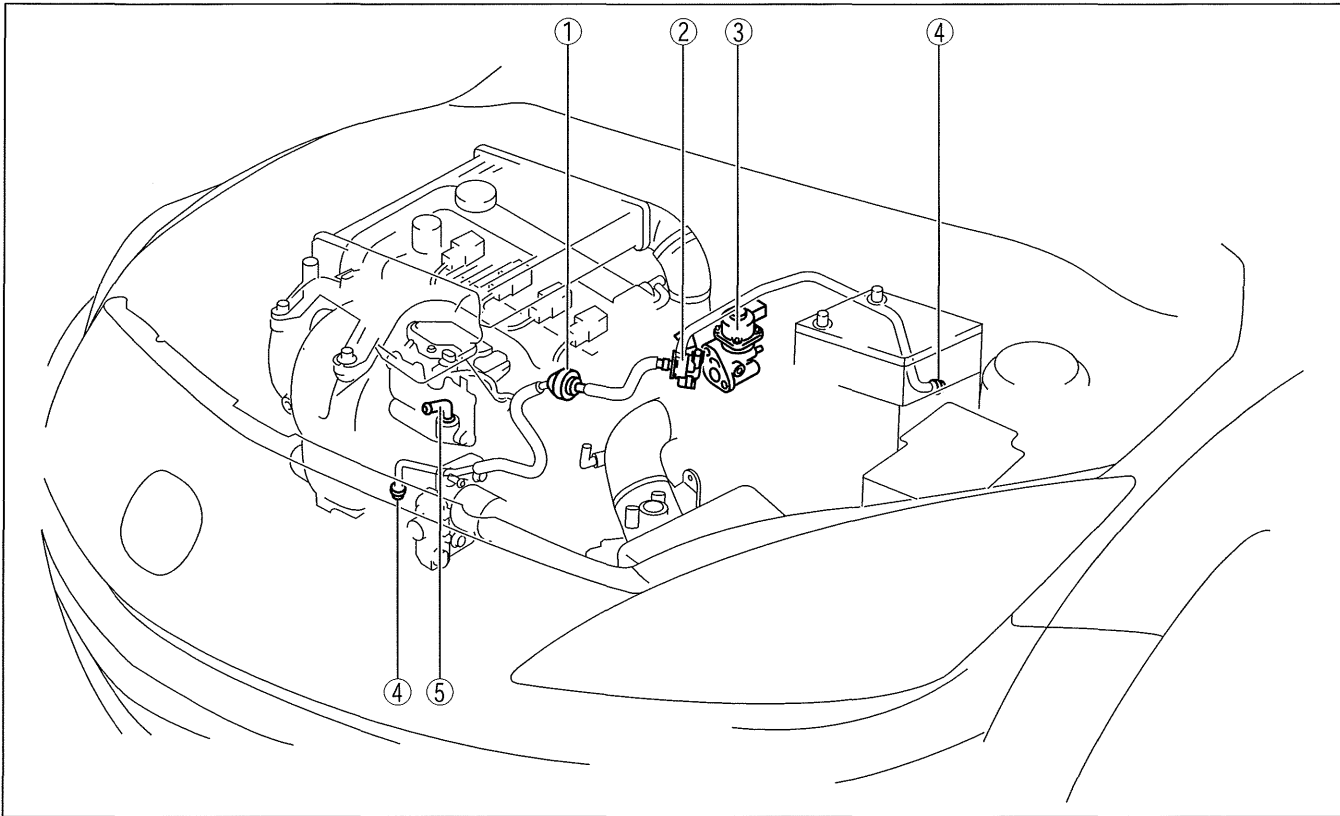
01-16B

EMISSION SYSTEM [L3 WITH TC]

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Engine Compartment Side



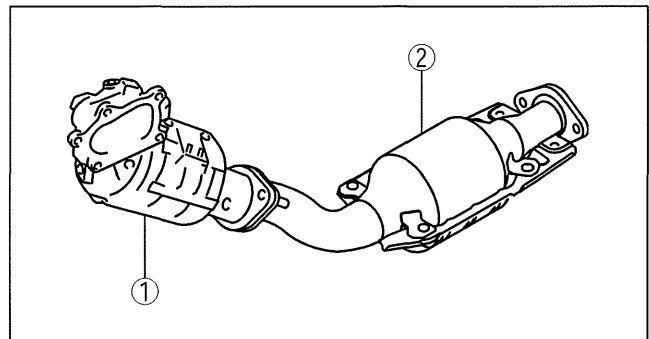
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1	Check valve (See 01-16B-8 CHECK VALVE INSPECTION [L3 WITH TC].)
2	Purge solenoid valve (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-8 PURGE SOLENOID VALVE INSPECTION [L3 WITH TC].)
3	EGR valve (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-9 EGR VALVE INSPECTION [L3 WITH TC].)

4	Quick release connector (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
5	PCV valve (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-10 POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC].)

Exhaust System Side

1	WU-TWC (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-11 WARM-UP THREE-WAY CATALYTIC CONVERTER (WU-TWC) INSPECTION [L3 WITH TC].)
2	TWC (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

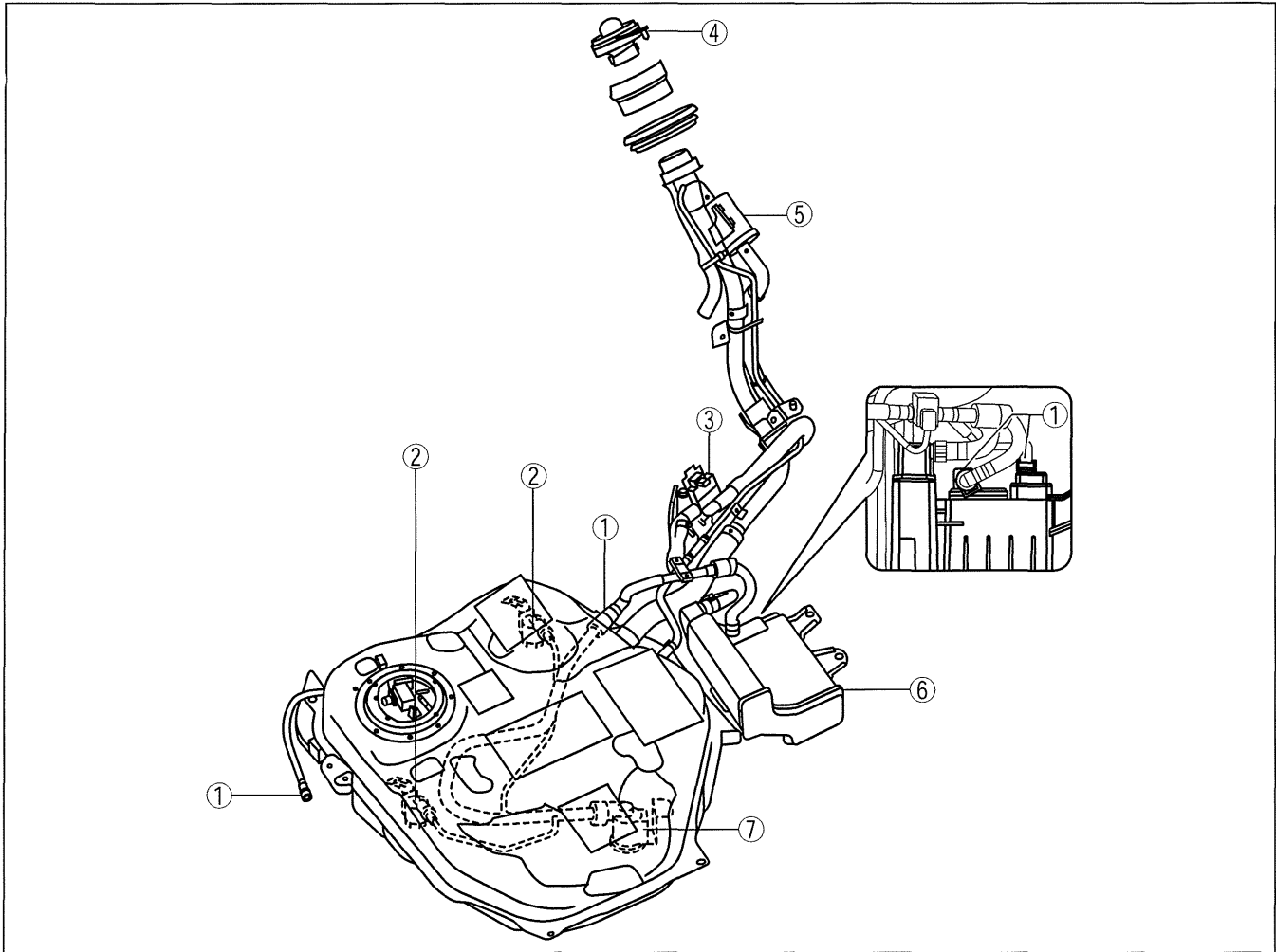


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EMISSION SYSTEM [L3 WITH TC]

Fuel Tank Side

01-16B



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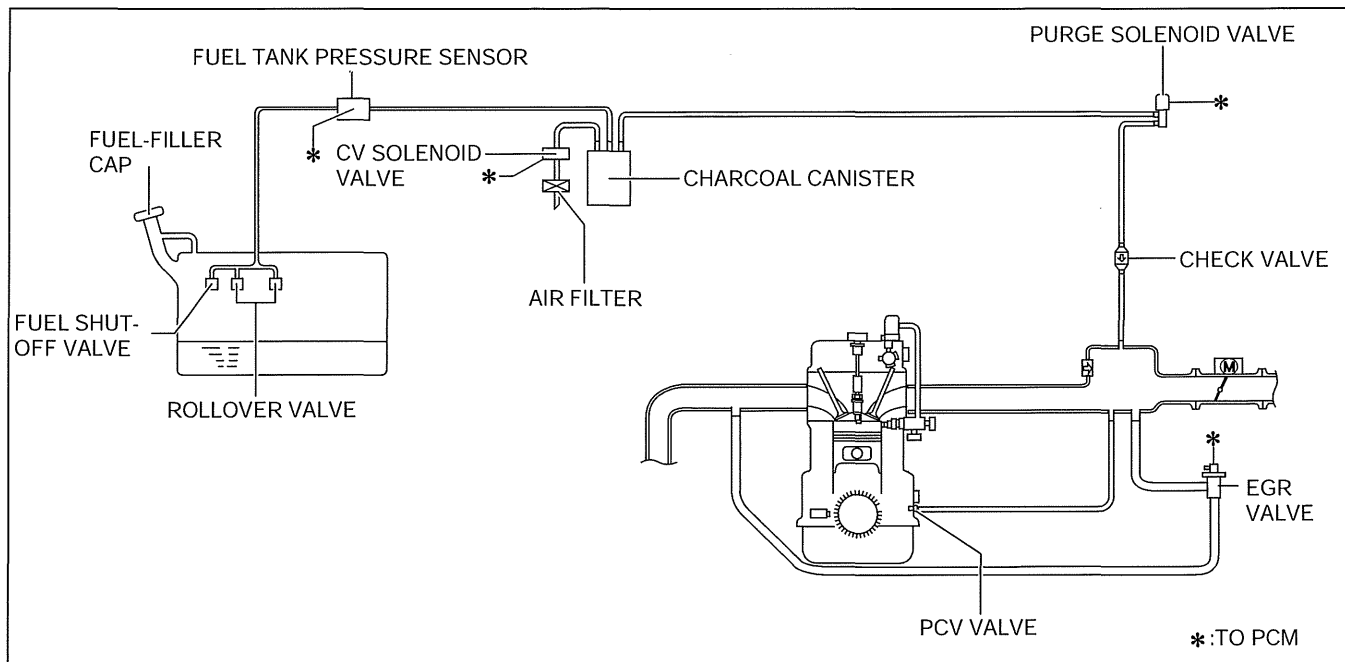
1	Quick release connector (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
2	Rollover valve (See 01-16B-11 ROLLOVER VALVE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-11 ROLLOVER VALVE INSPECTION [L3 WITH TC].)
3	CV solenoid valve (See 01-16B-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-16 CANISTER VENT (CV) SOLENOID VALVE INSPECTION [L3 WITH TC].)
4	Fuel-filler cap (See 01-16B-4 FUEL-FILLER CAP INSPECTION [L3 WITH TC].)

5	Air filter (See 01-16B-16 AIR FILTER REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-5 AIR FILTER INSPECTION [L3 WITH TC].)
6	Charcoal canister (See 01-16B-5 CHARCOAL CANISTER REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-6 CHARCOAL CANISTER INSPECTION [L3 WITH TC].)
7	Fuel shut-off valve (See 01-16B-11 FUEL SHUT-OFF VALVE REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-16B-11 FUEL SHUT-OFF VALVE INSPECTION [L3 WITH TC].)

EMISSION SYSTEM [L3 WITH TC]

EMISSION SYSTEM DIAGRAM [L3 WITH TC]

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FUEL-FILLER CAP INSPECTION [L3 WITH TC]

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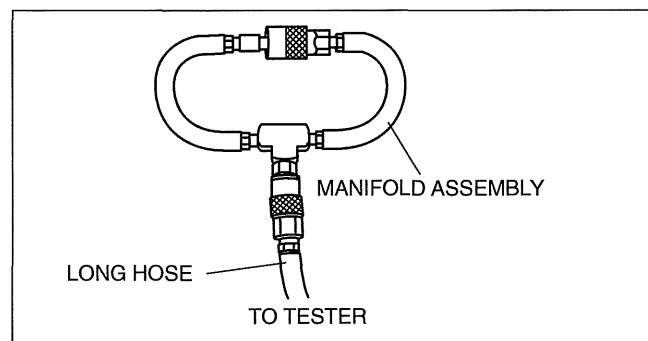
Leakage Inspection

1. Perform the following **SST** (Evaporative Emission System Tester 134-01049A) self-test:

Note

- If the tester does not work correctly during self-test, refer to the tester operators manual for more detailed procedures.

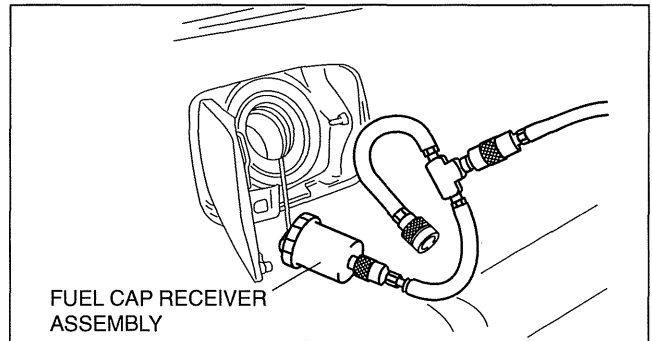
- (1) Verify that the gas cylinder valve is closed and the control valve located on the tester is in the TEST position. All tester displays should be off at this time.
 - (2) Connect the long hose (part of **SST**) to the tester.
 - (3) Connect the manifold assembly (part of **SST**) to the long hose as shown.
 - (4) Open the gas cylinder valve and verify the gas cylinder regulator left gauge reads **69—82 kPa {0.71—0.83 kgf/cm², 10—12 psi}** (preset at factory).
 - If not, refer to the tester operators manual to contact tester manufacturer.
 - (5) Press the ON/OFF switch to turn on the **SST** and make sure the left display reads **0.0**.
 - (6) Turn the control valve on the tester to the FILL position.
 - (7) Verify the left display reading is **within 13.9 to 14.0** in of water.
 - If not, adjust the pressure using the regulator knob located on the right side of the tester.
 - (8) Turn the control valve to TEST position and press the START switch.
 - (9) After the **2-min** countdown (left display) is completed, the right display shows the total pressure loss for that period. A **0.5** in of water loss is acceptable on the self-test.
 - If the loss is **more than 0.5** in of water, do one or more self-test. If the failed test repeats, check for leak using the ultrasonic leak detector (part of **SST**).
2. Press the RESET switch to set the left display reading to **0.0**.
3. Connect the fuel cap receiver assembly (part of **SST**) to the manifold assembly and fuel-filler cap from the vehicle.
- If the fuel-filler cap is not a genuine part, replace it.



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EMISSION SYSTEM [L3 WITH TC]

4. Turn the control valve to the FILL position.
5. Wait (**maximum 20 s**) until the left display reads **13.9** to **14.0** in of water.
 - If the reading is slightly below the specification, adjust it using the regulator knob.
 - If the reading is far below, the fuel-filler cap has leak. Replace it.
6. Turn the control valve to the TEST position and press the START switch.
7. After the **2-min** countdown (left display) is completed, check the test result (the failed/ passed light on the tester).
 - If the green light turns on, the fuel-filler cap is normal.
 - If the red light turns on, the fuel-filler cap has leakage. Replace it.
8. Close the gas cylinder valve.
9. Turn the control valve to the FILL position.
10. Press the ON/OFF switch to turn off the tester.



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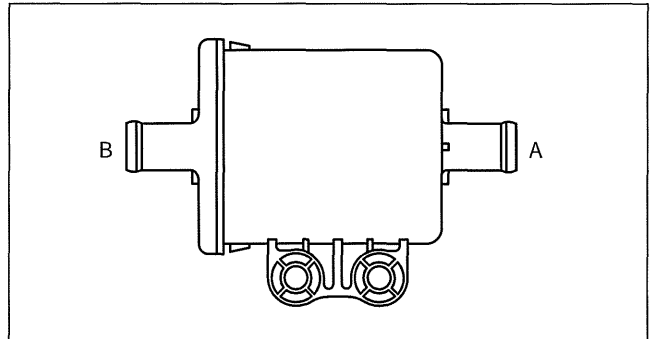
01-16B

AIR FILTER INSPECTION [L3 WITH TC]

id011639736400

Airflow Inspection

1. Remove the air filter. (See 01-16B-16 AIR FILTER REMOVAL/INSTALLATION [L3 WITH TC].)
2. Blow from port A and verify that there is airflow from port B.
 - If malfunction, replace the air filter. (See 01-16B-16 AIR FILTER REMOVAL/INSTALLATION [L3 WITH TC].)
3. Blow from port B and verify that there is airflow from port A.
 - If malfunction, replace the air filter. (See 01-16B-16 AIR FILTER REMOVAL/INSTALLATION [L3 WITH TC].)



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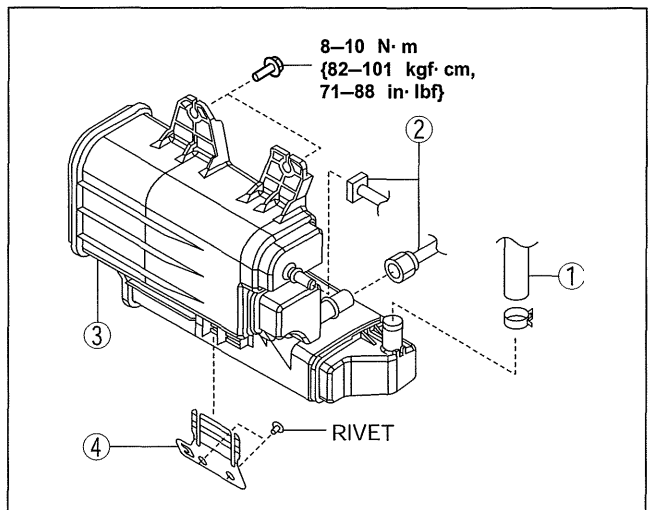
CHARCOAL CANISTER REMOVAL/INSTALLATION [L3 WITH TC]

id011639096400

1. Remove in the order indicated in the table.

1	Evaporative hose
2	Quick release connector (See 01-16B-12 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC].)
3	Charcoal canister (See 01-16B-5 Charcoal Canister Removal Note.)
4	Charcoal canister bracket (See 01-16B-6 Charcoal Canister Bracket Removal Note.)

2. Install in the reverse order of removal.



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Charcoal Canister Removal Note

1. Remove the rear stabilizer. (See 02-14-13 REAR STABILIZER REMOVAL/INSTALLATION.)
2. Remove the rear coil spring. (See 02-14-4 REAR COIL SPRING REMOVAL/INSTALLATION.)
3. Remove the rear lower arm. (See 02-14-6 REAR LOWER ARM REMOVAL/INSTALLATION.)
4. Remove the rear crossmember component. (See 02-14-14 REAR CROSSMEMBER REMOVAL/INSTALLATION.)
5. Remove the charcoal canister.

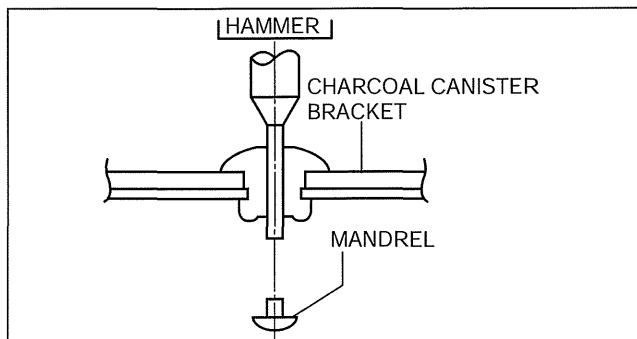
EMISSION SYSTEM [L3 WITH TC]

Charcoal Canister Bracket Removal Note

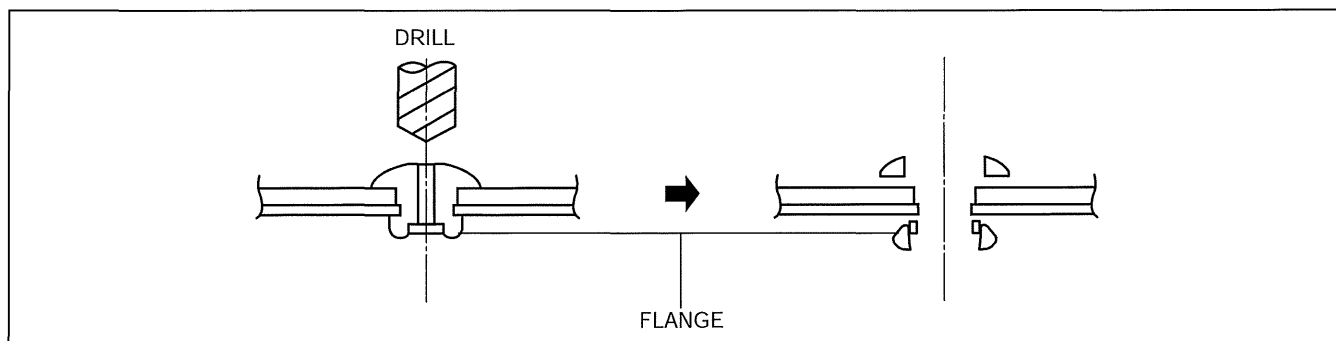
Note

- The charcoal canister bracket is installed using rivets.

- Push out the mandrel using a hammer and punch (2—2.8 mm {0.08—0.11 in} diameter).
- Remove the flange using a drill (5 mm {0.20 in} drill bit).



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CHARCOAL CANISTER INSPECTION [L3 WITH TC]

id011639800500

Airflow Inspection

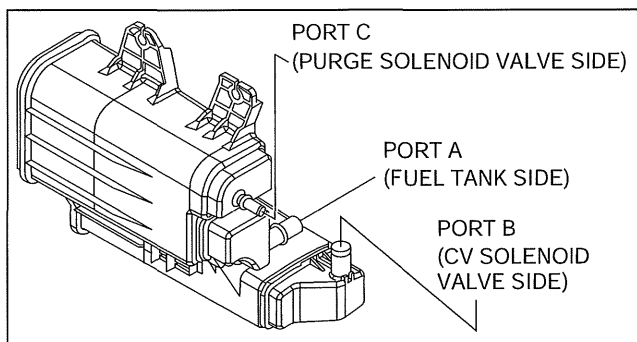
- Perform the following procedures:

Note

- The ports should not be damaged.
- Assemble the hose used for inspection (bore: approx. 14.8 mm {0.58 in}) to port A.
- Cover ports B and C with the caps.

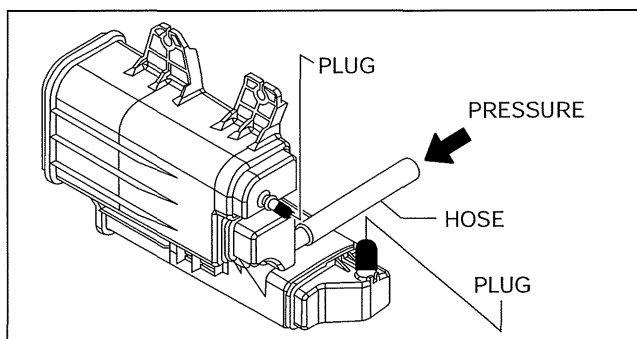
Caution

- Do not apply a pressure 20 kPa {150 mmHg, 5.91 inHg} or more to the charcoal canister for 1 min. or more. Doing so will damage the charcoal canister.**



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- Apply pressure (19.6 kPa {147 mmHg, 5.79 inHg}) through the hose, and verify that air does not leak from the charcoal canister.
 - If there is airflow, replace the charcoal canister. (See 01-16B-5 CHARCOAL CANISTER REMOVAL/INSTALLATION [L3 WITH TC].)



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EMISSION SYSTEM [L3 WITH TC]

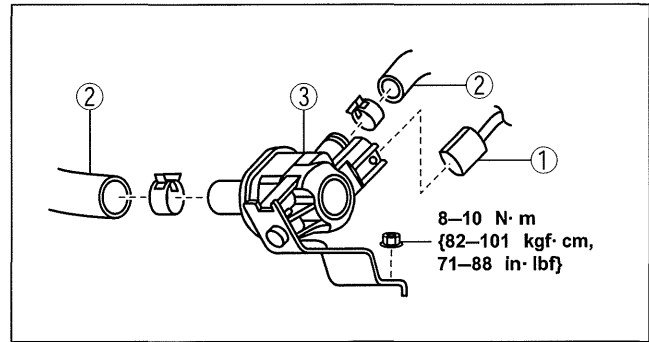
PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC]

id011639804300

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove in the order indicated in the table.

1	Purge solenoid valve connector
2	Evaporative hose (See 01-16B-7 Evaporative Hose Installation Note.)
3	Purge solenoid valve

4. Install in the reverse order of removal.

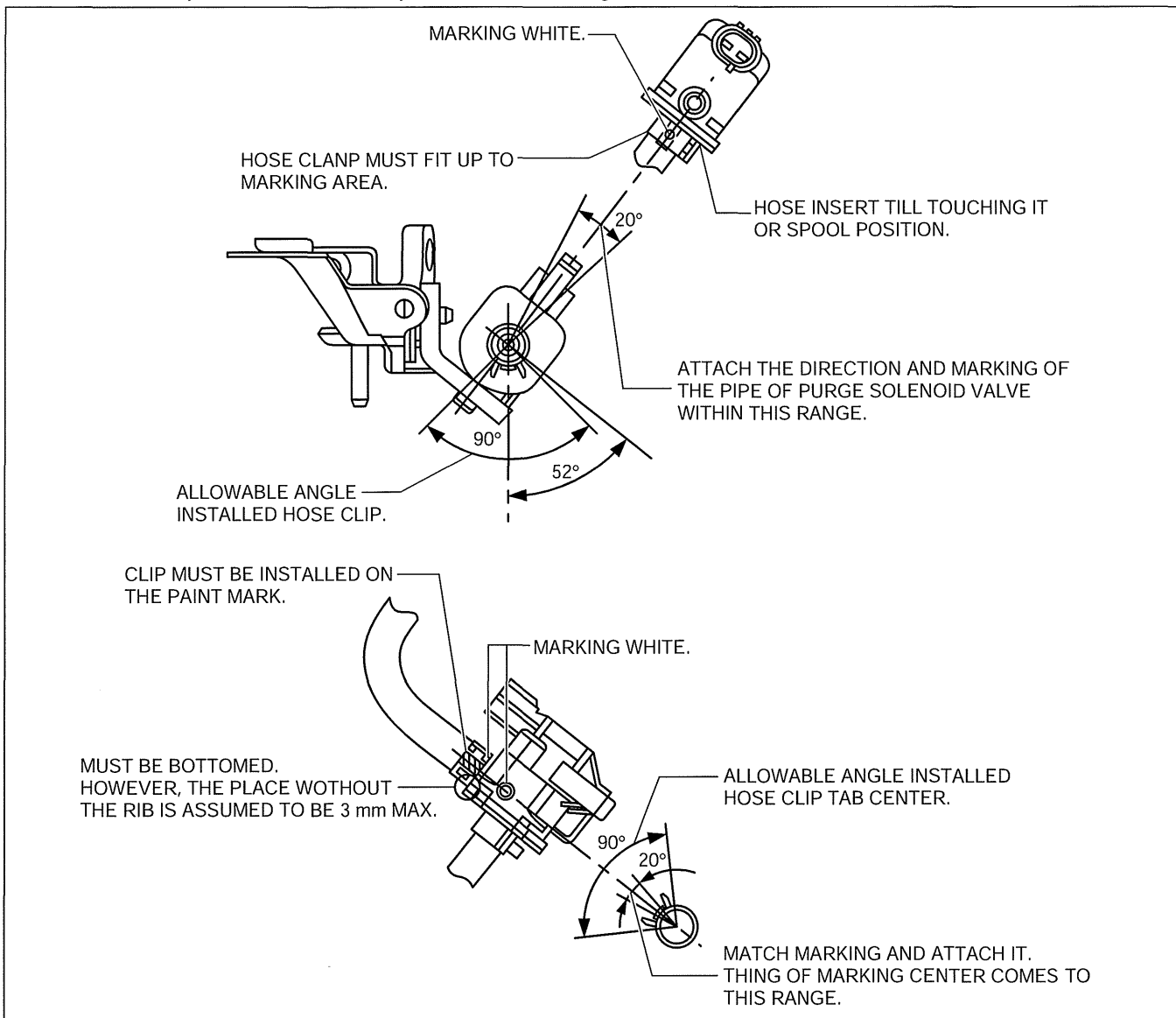


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01-16B

Evaporative Hose Installation Note

1. Install the evaporative hose and clip as shown in the figure.



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EMISSION SYSTEM [L3 WITH TC]

PURGE SOLENOID VALVE INSPECTION [L3 WITH TC]

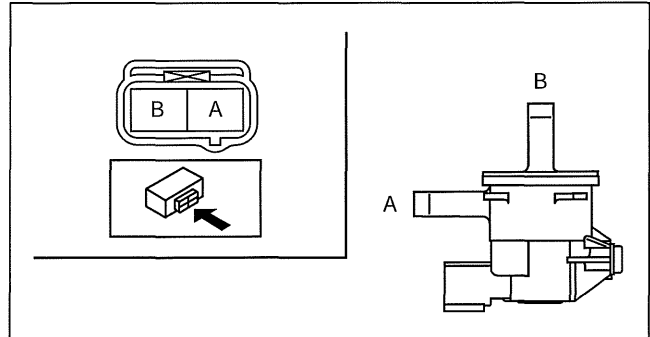
id011639800900

Airflow inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the purge solenoid valve. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
4. Inspect airflow between the ports under the following conditions.

Measured condition	Continuity between A—B
When voltage is not applied between terminals A and B	No airflow
When voltage is applied between terminals A and B	Airflow detected

- If not as specified, replace the purge solenoid valve. (See 01-16B-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)



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CHECK VALVE INSPECTION [L3 WITH TC]

id011639801400

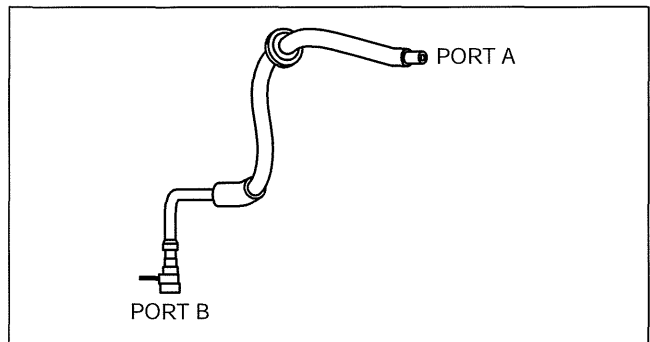
1. Disconnect the vacuum hose connected between the check valve and the purge solenoid valve from the purge solenoid valve.
2. Disconnect the vacuum hose connected between the check valve and the intake manifold from the intake manifold.
3. Blow through the check valve and verify that air flows as specified.

Specification

Condition	Airflow
Air applied from port A to B	Yes
Air applied from port B to A	No*

* : The check valve is normal if the aeration to port A is **3.5 kPa/min {0.03 kgf/cm² min, 0.5 psi/min}** or less when **130 kPa {1.32 kgf/cm², 18.9 psi}** is applied to port B.

- If not as specified, replace the check valve.



acxuuw00003219

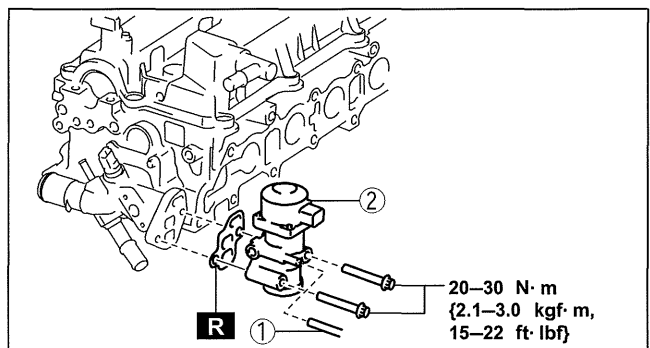
EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC]

id011639801000

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the EGR valve connector.
4. Remove the air hose and air duct. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Drain the engine coolant. (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
6. Remove in the order indicated in the table.

1	Water hose
2	EGR valve

7. Install in the reverse order of removal.



am3uuw0000580

EMISSION SYSTEM [L3 WITH TC]

EGR VALVE INSPECTION [L3 WITH TC]

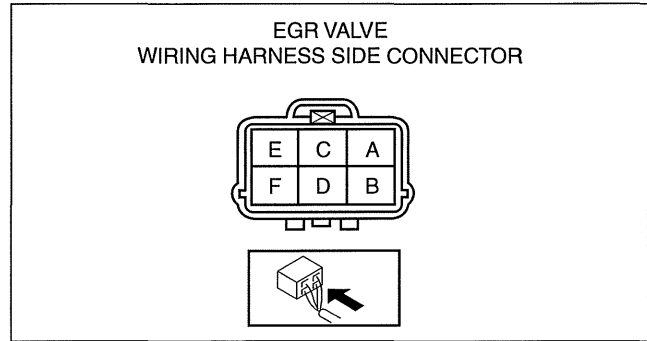
id011639801100

Resistance Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the EGR valve connector.
4. Measure the resistance between the EGR valve terminals.

EGR valve terminals	Resistance (ohms)
C—A	8—9 [20 °C {68 °F}]
D—B	
C—E	
D—F	

- If not as specified, replace the EGR valve. (See 01-16B-8 EGR VALVE REMOVAL/INSTALLATION [L3 WITH TC])



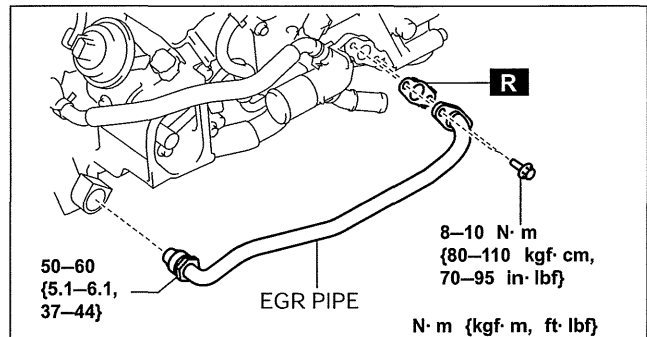
acxuuw0000051

01-16B

EGR PIPE REMOVAL/INSTALLATION [L3 WITH TC]

id011639810000

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the following parts. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - Fresh-air duct
 - Air cleaner
 - Charge air cooler
 - Air hose
 - Air duct
5. Set the throttle body out of the way. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the EGR pipe.
7. Install in the reverse order of removal.



am3uuw0000582

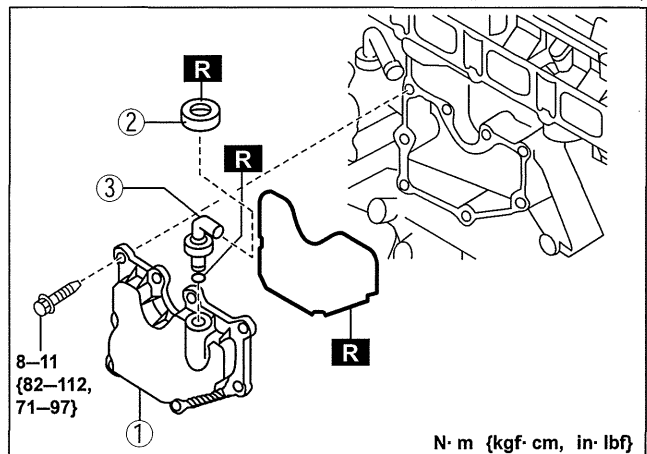
POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC]

id011639819800

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove in the order indicated in the table.

1	Oil separator
2	Retainer (See 01-16B-10 Retainer Removal Note.) (See 01-16B-10 Retainer Installation Note.)
3	PCV valve

5. Install in the reverse order of removal.



am3uuw0000614

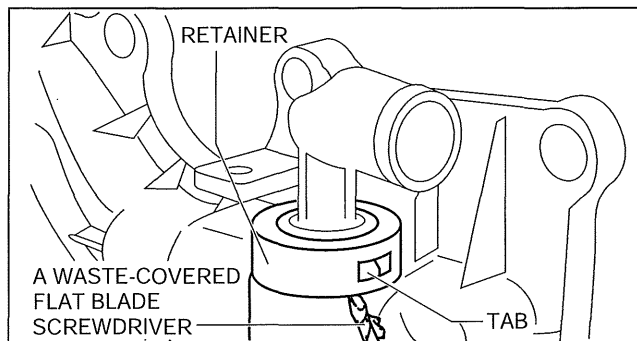
EMISSION SYSTEM [L3 WITH TC]

Retainer Removal Note

Caution

- Be sure to follow the removal procedures below to prevent the leakage of blow-by gas caused by the damage to the tab of the oil separator or the oil separator itself.

1. Insert a flat blade screwdriver with its tip wrapped in a waste cloth into the gap between the retainer and the oil separator as shown in the figure.
2. Spread the side surface of the retainer outward to dismount it with attention to the tab.

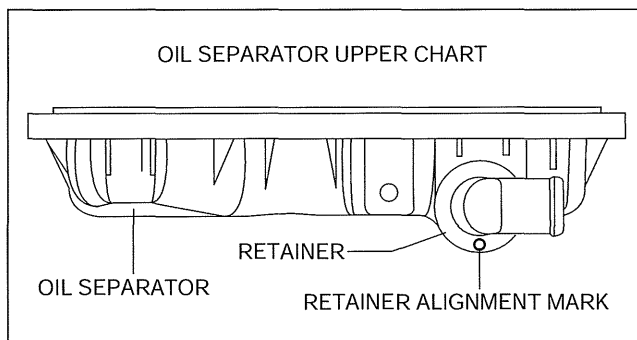


Retainer Installation Note

Caution

- Be sure to replace the old retainer with a new one to prevent the escape of blow-by gas. Reinstalling the old retainer will reduce airtightness.

1. Make sure that the retainer alignment mark is directed as shown in the left diagram before install the retainer to the oil separator.

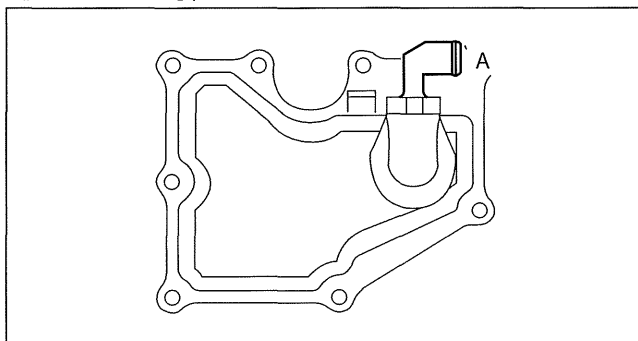


POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [L3 WITH TC]

id011639800400

Airflow Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the PCV valve and the oil separator as a single unit. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
5. Verify that there is no airflow when pressure is applied to port A.
 - If there is airflow, replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
6. Verify that there is airflow when vacuum is applied to port A.
 - If there is no airflow, replace the PCV valve. (See 01-16B-9 POSITIVE CRANKCASE VENTILATION (PCV) VALVE REMOVAL/INSTALLATION [L3 WITH TC].)



EMISSION SYSTEM [L3 WITH TC]

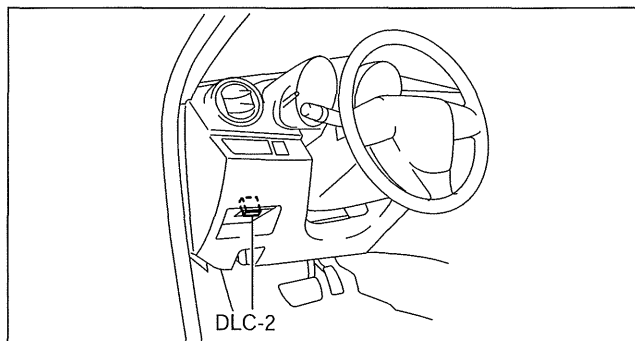
WARM-UP THREE-WAY CATALYTIC CONVERTER (WU-TWC) INSPECTION [L3 WITH TC]

id011639801200

Caution

- Perform the following procedures, DTC P0421 is indicated only.

1. Connect the M-MDS to the DLC-2.
2. Start the engine and warm it up to normal operating temperature.
3. Turn off the engine.
4. Verify that the engine compression is within the specification. (See 01-10B-12 COMPRESSION INSPECTION [L3 WITH TC].)
 - If the compression pressure is not within the specification, repair or replace the malfunction part.
5. Drive the vehicle for **10 min at 65—96 km/h {40—60 mph}** to allow the WU-TWC to reach operating
6. Stop the vehicle and leave it in a safe space.
7. Access Test ID 10:21:80 on the “Diagnostic Monitoring Test Result” function.
8. Verify that the test result is within the specified indicated on the M-MDS.
 - If it is not as specified, replace the WU-TWC. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



am3uuw0000597

01-16B

ROLLOVER VALVE REMOVAL/INSTALLATION [L3 WITH TC]

id011639804600

Note

- The rollover valve cannot be removed as it is built into the fuel tank.

ROLLOVER VALVE INSPECTION [L3 WITH TC]

id011639804500

Note

- The rollover valve cannot be disassembled and inspected as it is built into the fuel tank.

1. Perform the fuel tank inspection. (See 01-14B-12 FUEL TANK INSPECTION [L3 WITH TC].)
 - If malfunction, replace the fuel tank. (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)

FUEL SHUT-OFF VALVE REMOVAL/INSTALLATION [L3 WITH TC]

id011639809600

Note

- The fuel shut-off valve cannot be removed as it is built into the fuel tank.

FUEL SHUT-OFF VALVE INSPECTION [L3 WITH TC]

id011639809700

Note

- The fuel shut-off valve cannot be removed and inspected as it is built into the fuel tank.

1. Perform the fuel tank inspection. (See 01-14B-12 FUEL TANK INSPECTION [L3 WITH TC].)
 - If malfunction, replace the fuel tank (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)

EMISSION SYSTEM [L3 WITH TC]

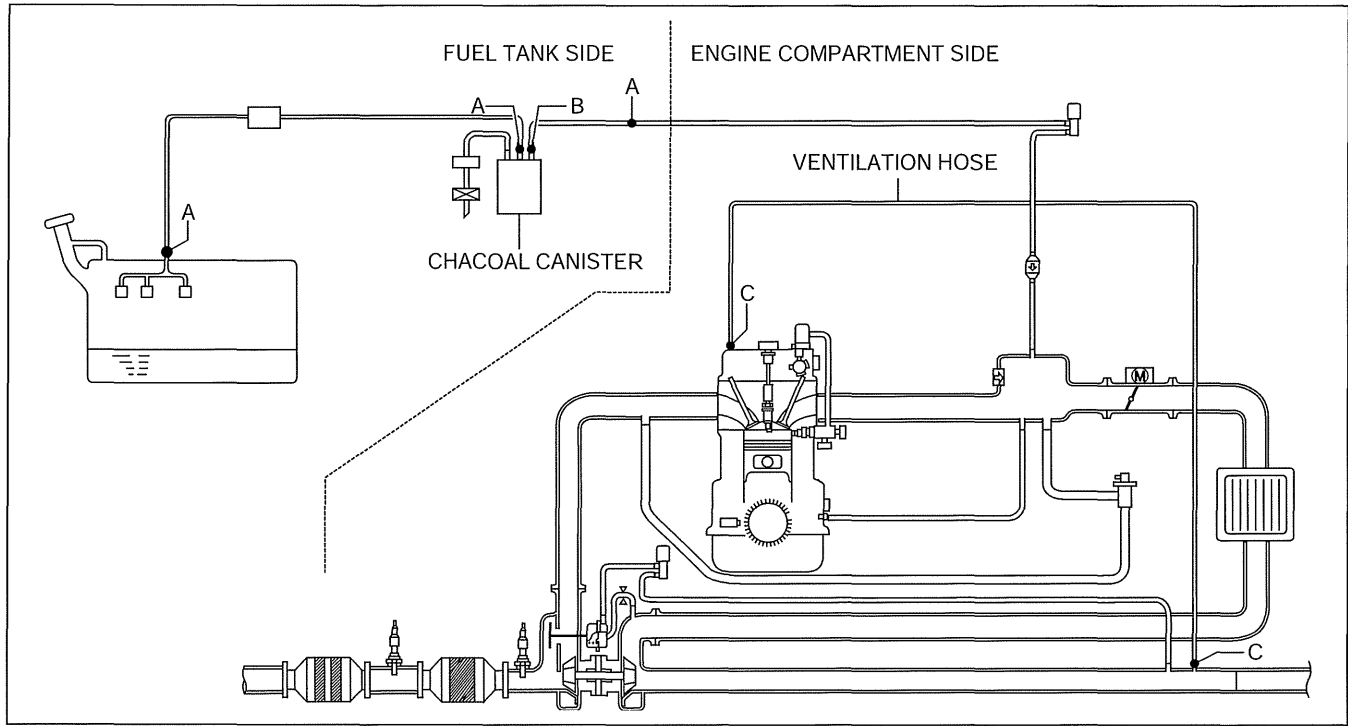
QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [L3 WITH TC]

id011639805500

Quick Release Connector Type

Caution

- There are three types of quick release connectors. Verify the type and location, and install/remove properly.



am3uuw0000581

Type A Removal

Caution

- Be careful not to damage the pipe when unlocking the retainer.

Note

- When removing the quick release connector, either SST 49 E042 001 or 49 N013 103A (Part of 49 N013 1A0D) can be used.

When using SST 49 E042 001

Note

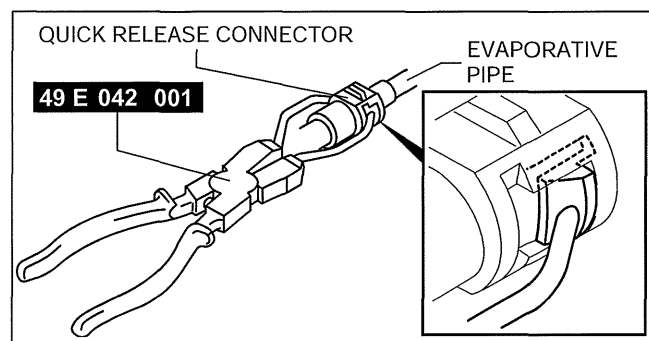
- If the quick release connector is removed, replace the retainer with a new one.

1. Set the SST parallel to the quick release connector.

Note

- The quick release connector can be removed by pushing the center of the retainer tabs.
- The retainer is attached to the pipe even after the connector is disconnected.

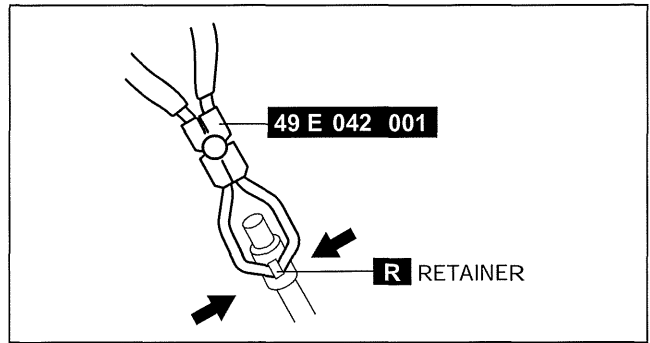
2. Hold the center of the retainer tabs with the SST ends and press the retainer.
3. Pull the connector side and disconnect the quick release connector.



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EMISSION SYSTEM [L3 WITH TC]

4. Raise a retainer tab using the SST and remove the retainer.
5. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

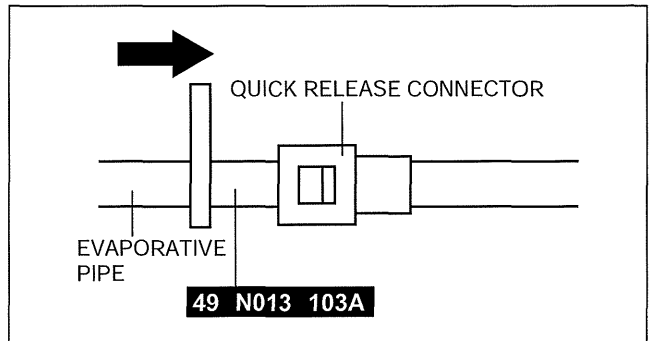


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01-16B

When using SST 49 N013 103A (Part of 49 N013 1A0D)

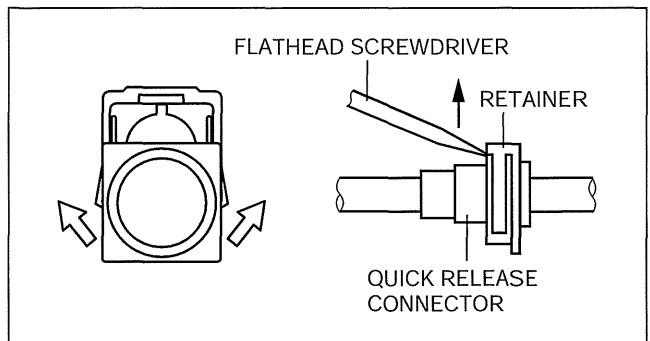
1. Insert the SST into the quick release connector.
2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



am3uuw0000581

Type B Removal

1. Move the retainer upward using a small flathead screwdriver or a similar tool.
2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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Type C Removal

Note

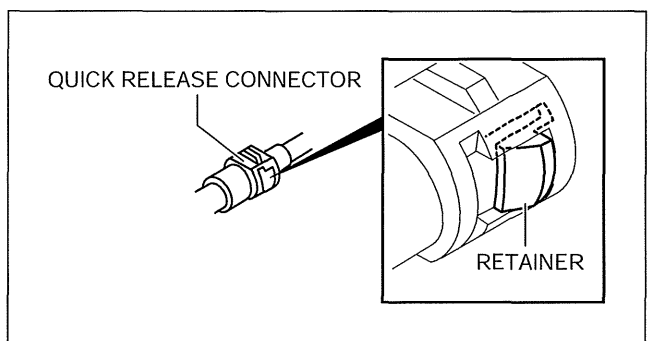
- If the quick release connector is removed, replace the retainer with a new one.

1. Push the retainer.

Note

- The quick release connector can be removed by pushing the center of the retainer tabs.
- The retainer is attached to the pipe even after the connector is disconnected.

2. Pull the connector side and disconnect the quick release connector.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.



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EMISSION SYSTEM [L3 WITH TC]

Type A Installation

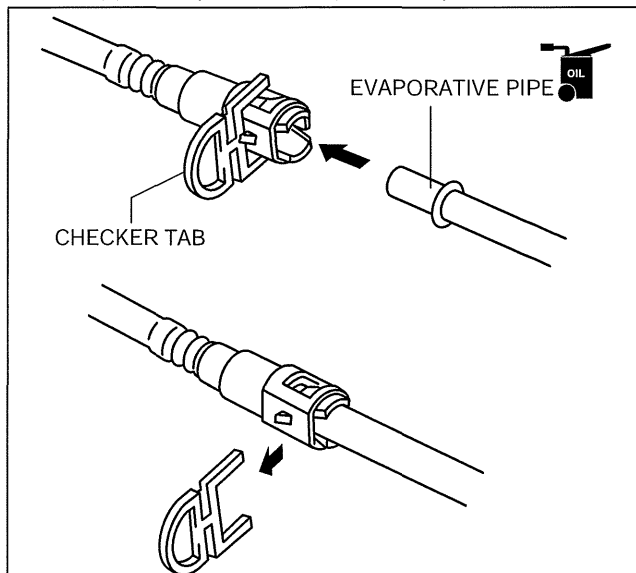
Caution

- Always replace the retainer with a new one when using SST 49 E042 001, otherwise, evaporative leakage could result.

Note

- If the quick release connector O-ring is damaged or has slipped, replace the piping component.
- A checker tab is integrated with the quick release connector for new evaporative hoses and evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the evaporative pipe.

1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
3. Install a new retainer to the quick release connector.
4. Reconnect the hose straight to the pipe until a click is heard.
5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.



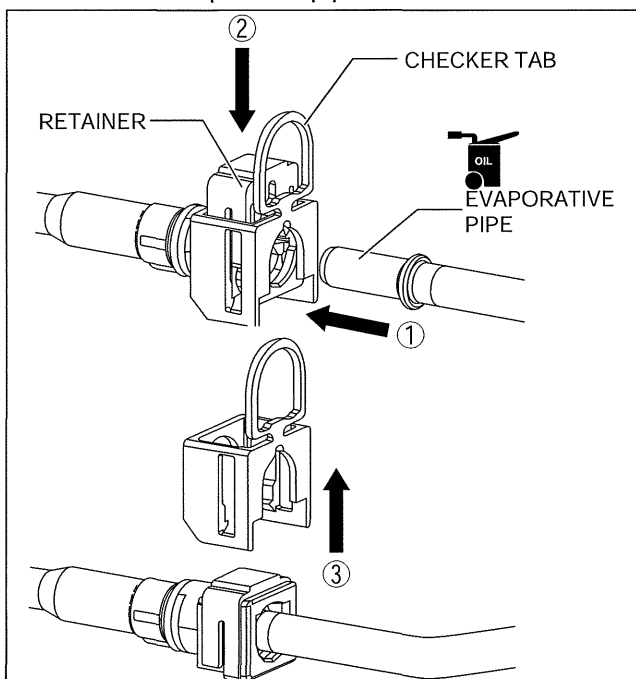
am3uuw0000615

Type B Installation

Note

- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the evaporative pipe.

1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
3. Install the quick release connector.
 - Insert the evaporative pipe straight to the end of the quick release connector.
 - Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the evaporative pipe further to the quick release connector.
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.



am3uuw0000582

Type C Installation

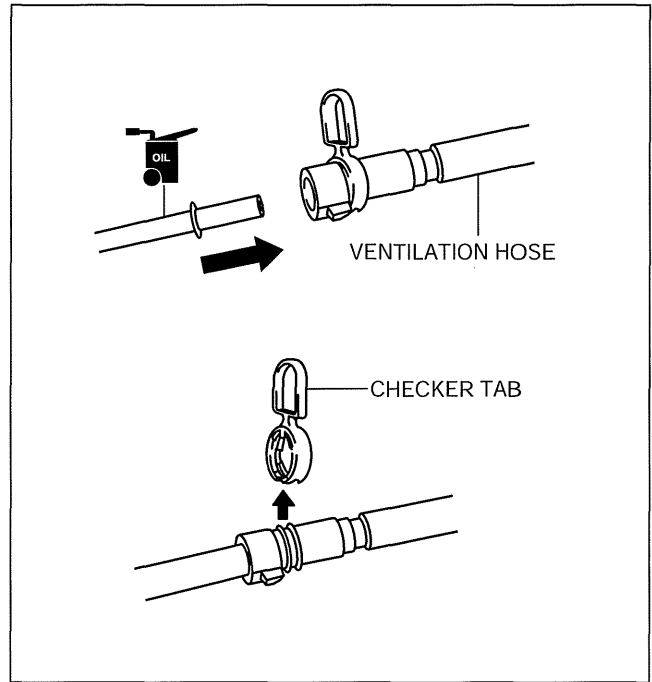
Note

- If the quick release connector O-ring is damaged or has slipped, replace the ventilation hose.
- A checker tab is integrated with the quick release connector for new ventilation hose. Remove the checker tab from the quick release connector after the connector is completely engaged with the pipe.

1. Inspect the ventilation hose and pipe sealing surface for damaged and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the pipe.
3. Reconnect the ventilation hose straight to the pipe until a click is heard.

Note

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move **2.0—3.0 mm {0.08—0.12 in}** and is connected securely.



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01-16B

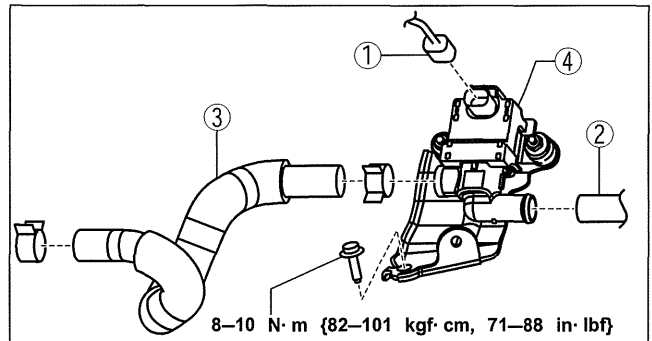
CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC]

id011639832100

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove in the order indicated in the table.

1	CV solenoid valve connector
2	Evaporative hose
3	Evaporative hose (See 01-16B-15 Evaporative Hose Removal Note.)
4	CV solenoid valve

4. Install in the reverse order of removal.



am3uuw0000613

Evaporative Hose Removal Note

1. Disconnect the evaporative hose of fuel tank side.
2. Remove the evaporative hose and CV solenoid valve as a single unit.
3. Remove the evaporative hose.

EMISSION SYSTEM [L3 WITH TC]

CANISTER VENT (CV) SOLENOID VALVE INSPECTION [L3 WITH TC]

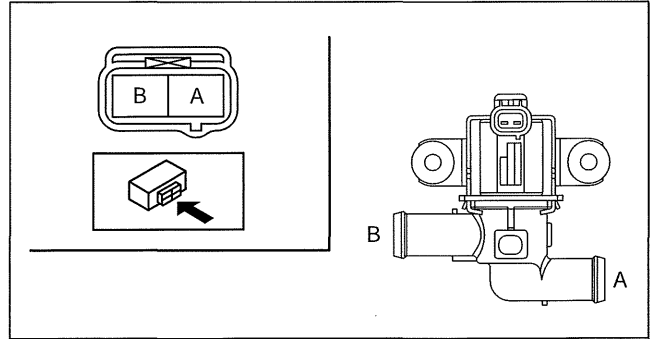
id011639819200

Airflow Inspection

1. Remove the CV solenoid valve. (See 01-16B-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)
2. Inspect airflow between the ports under the following conditions.

Measured condition	Continuity between A—B
When voltage is not applied between terminals A and B	Airflow detected
When voltage is applied between terminals A and B	No airflow

- If not specified, replace the CV solenoid valve. (See 01-16B-15 CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [L3 WITH TC].)



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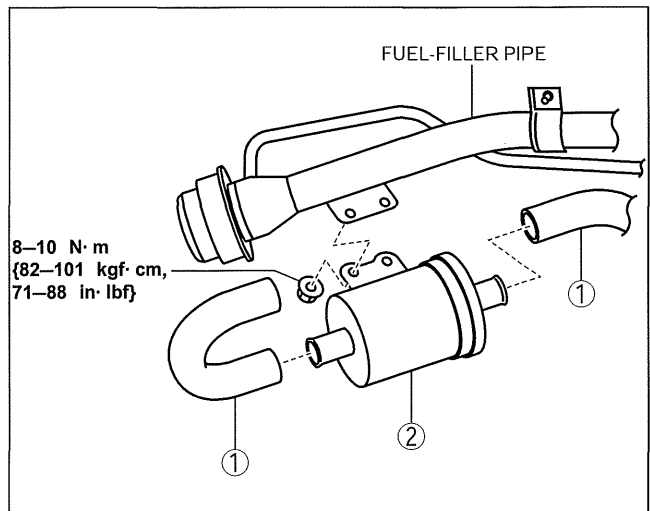
AIR FILTER REMOVAL/INSTALLATION [L3 WITH TC]

id011639832300

1. Remove the fuel-filler pipe protector. (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove in the order indicated in the table.

1	Evaporative hose
2	Air filter

3. Install in the reverse order of removal.



am3uuw000225

01-17A CHARGING SYSTEM [LF, L5]

CHARGING SYSTEM

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BATTERY REMOVAL/INSTALLATION
 [LF, L5] 01-17A-2
 PCM Cover No.1 Installation Note 01-17A-2
 Battery Clamp Installation Note 01-17A-3
 Battery Box Installation Note 01-17A-3
 Battery Cover Installation Note 01-17A-3
BATTERY INSPECTION [LF, L5] 01-17A-4
 Electrolyte Specific Gravity 01-17A-4
 Battery Voltage 01-17A-4
 Back-up Current 01-17A-5
BATTERY RECHARGING [LF, L5] 01-17A-5

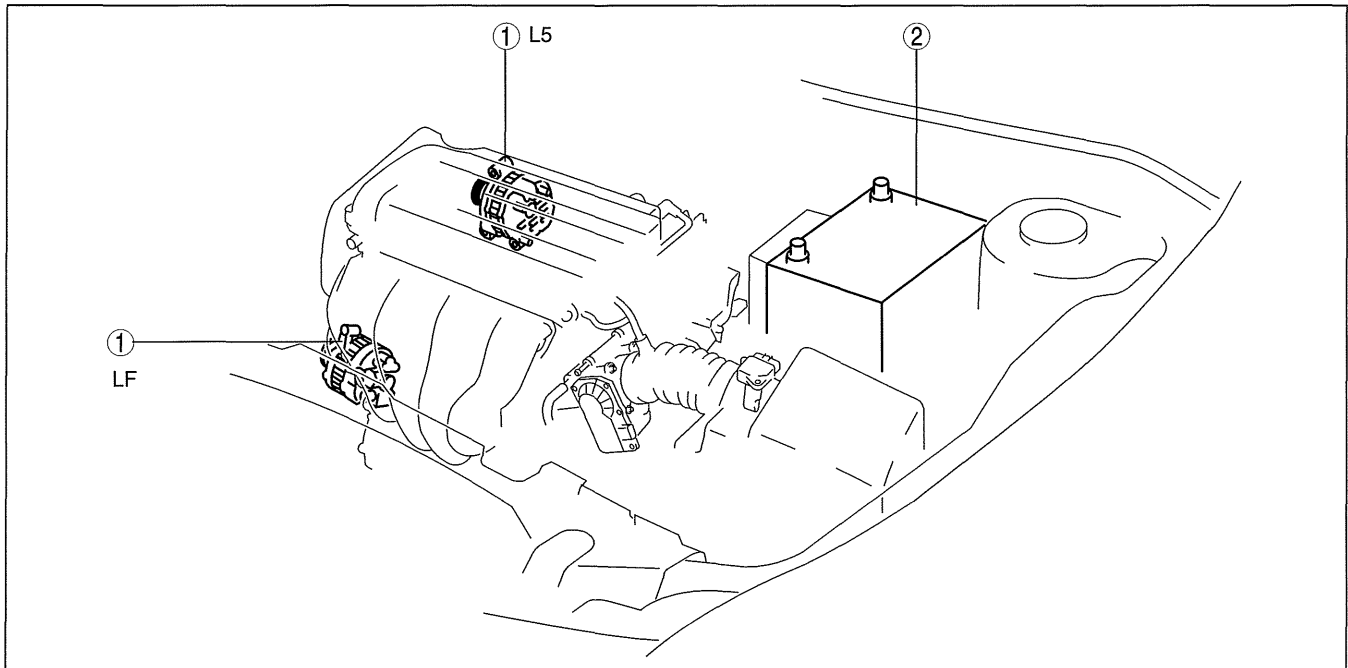
GENERATOR

REMOVAL/INSTALLATION [LF, L5] . . . 01-17A-6
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 Generator Duct Removal Note (L5) 01-17A-7
 Generator Removal Note (L5) 01-17A-7
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 Generator 01-17A-8
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01-17A

CHARGING SYSTEM LOCATION INDEX [LF, L5]

id0117a8800100



am3uuw0000485

1	Generator (See 01-17A-6 GENERATOR REMOVAL/ INSTALLATION [LF, L5].) (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17A-14 GENERATOR DISASSEMBLY/ ASSEMBLY [LF, L5].)
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2	Battery (See 01-17A-2 BATTERY REMOVAL/ INSTALLATION [LF, L5].) (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17A-5 BATTERY RECHARGING [LF, L5].)
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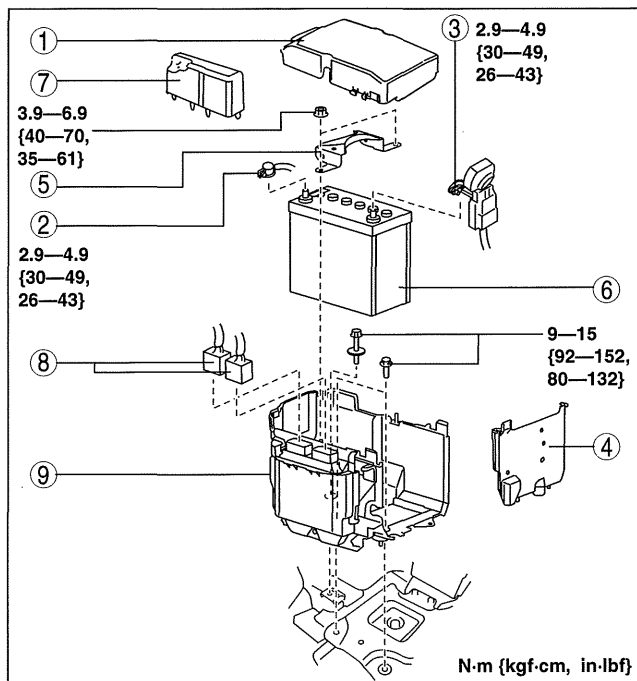
CHARGING SYSTEM [LF, L5]

BATTERY REMOVAL/INSTALLATION [LF, L5]

id0117a8800500

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

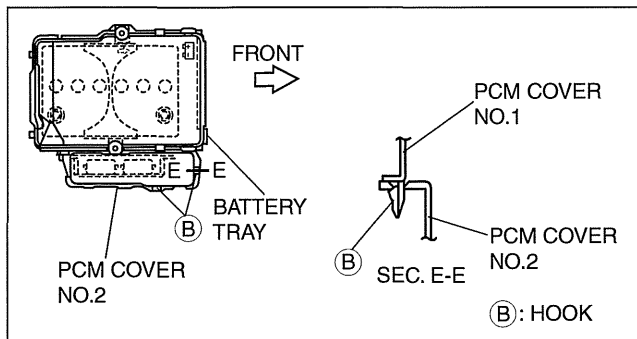
1	Battery cover (See 01-17A-3 Battery Cover Installation Note.)
2	Negative battery cable
3	Positive battery cable
4	Battery box (See 01-17A-3 Battery Box Installation Note.)
5	Battery clamp (See 01-17A-3 Battery Clamp Installation Note.)
6	Battery
7	PCM cover No.1 (See 01-17A-2 PCM Cover No.1 Installation Note.)
8	PCM connectors (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
9	Battery tray and PCM component



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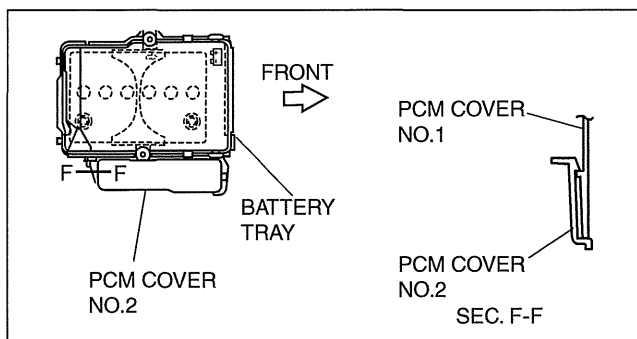
PCM Cover No.1 Installation Note

1. Install with PCM cover No.1 hooks B aligned with the PCM cover No.2 holes at two points.



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2. Install the PCM cover No.1 to the PCM cover No.2 hook.

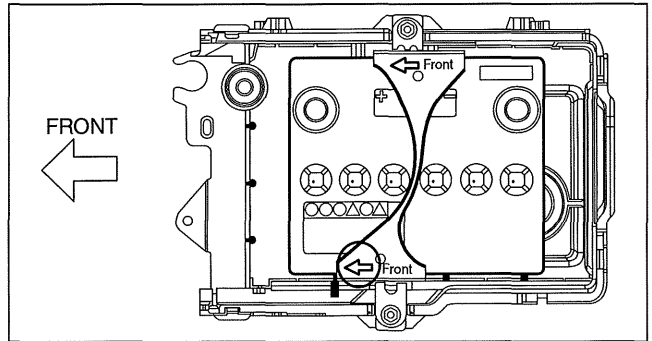


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CHARGING SYSTEM [LF, L5]

Battery Clamp Installation Note

1. Assemble the battery clamp so that the arrow on it is pointed toward the front of the vehicle.

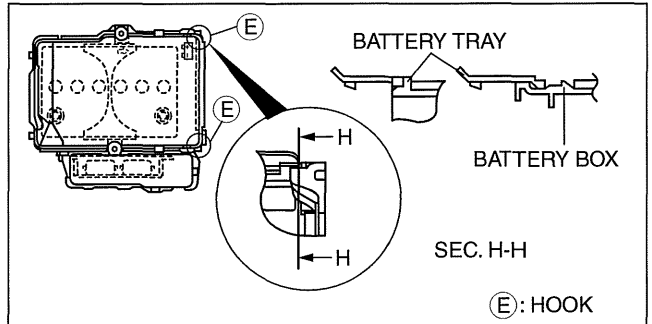


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01-17A

Battery Box Installation Note

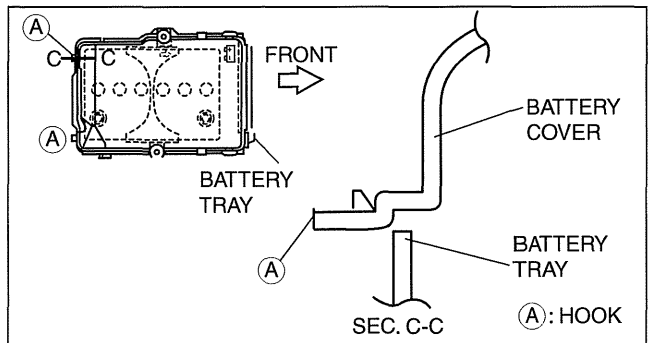
1. Assemble with battery box hooks E aligned with the battery tray holes at two points.



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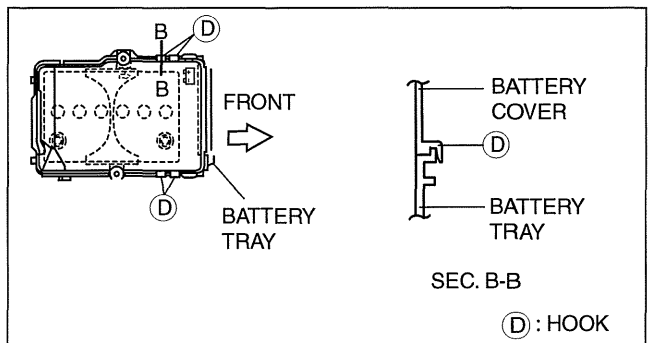
Battery Cover Installation Note

1. Install with battery cover hooks A aligned with the battery tray holes at two points.



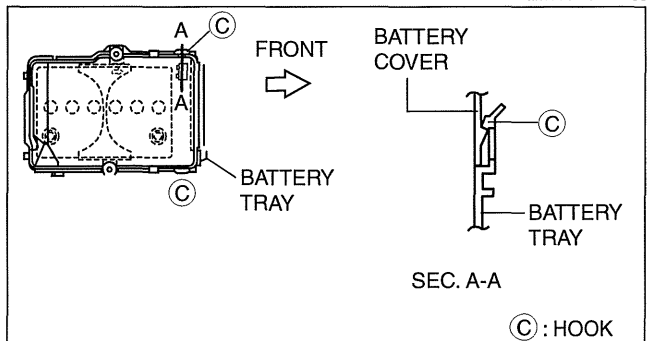
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2. Install with battery cover hooks D aligned with the battery tray flange at four points.



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3. Set the battery cover to battery tray hooks C at two points.



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CHARGING SYSTEM [LF, L5]

BATTERY INSPECTION [LF, L5]

id0117a8800600

Warning

- Since battery acid is toxic, be careful when handling the battery.
- Since battery acid is highly corrosive, be careful not to allow it to contact clothing or the vehicle.
- In case battery acid contacts skin, eyes, or clothing, flush it immediately with running water. Especially if the acid gets in the eyes, flush with water for more than 15 min and get prompt medical attention.

Electrolyte Specific Gravity

1. Measure the electrolyte specific gravity using a hydrometer.
 - If it is less than the specification, recharge the battery. (See 01-17A-5 BATTERY RECHARGING [LF, L5].)

Battery electrolyte specific gravity [20 °C {68 °F}]
1.22—1.29

Battery Voltage

1. Inspect the battery as follows:

Step	Inspection		Action
1	Measure the battery positive voltage.	12.4 V or more	Go to Step 3.
		Less than 12.4 V	Go to the next step.
2	Quick charge for 30 min and recheck voltage.	12.4 V or more	Go to the next step.
		Less than 12.4 V	Replace the battery.
3	Using the battery load tester, apply load current (see battery load test current) and record battery voltage after 15 s . Is voltage more than the specification?	Yes	Normal
		No	Replace the battery.

Battery load test current

50D20L (40): 150 A

55D23L (48): 180 A

75D23L (52): 195 A

Standard specification

Battery temp. (°C {°F})	Minimum voltage (V)
4 {39}	9.3
10 {50}	9.4
16 {61}	9.5
21 {70}	9.6

CHARGING SYSTEM [LF, L5]

Back-up Current

1. Verify that the ignition is off (key has been removed) and that all doors are closed.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable.

Caution

- Operating electrical loads while the back-up current is being measured can damage the tester.

Note

- If the battery is not left undisturbed for **10 min or more, but less than 2.5 hours**, the tester will indicate a high value (**approx. 200 mA**).
 - If the ignition or any electrical accessory is operated after the tester is connected, the battery must be left undisturbed for **10 min or more, but less than 2.5 hours** from that point.
 - For vehicles with the immobilizer system, the system periodically shifts synchronization of the security light flashing. Therefore, **65 mA (0.1 s)** current is supplied when the security light is illuminated, and **40 mA (2 s)** current is supplied when the security light is not illuminated. In addition, the measuring instrument, which shows the average value, indicates around **55 mA**.
4. Connect the tester between the negative battery terminal and negative battery cable, leave the battery undisturbed for **10 min or more, but less than 2.5 hours**, and then measure the back-up current.
 - If not within the specification, measure the back-up current while removing the fuses one by one from the inside of the main fuse block and the inside of the fuse block.
 - Inspect and repair wiring harnesses and connectors of the fuse where the current has decreased.

Battery back-up current (When the ignition is off (key is removed) and all doors are closed.) 40—65 mA

Note

- If the battery is left for **2.5 hours or more**, a battery back-up current value of **25—45 mA** is indicated.

BATTERY RECHARGING [LF, L5]

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Warning

- Keep all flames away from the battery, otherwise evaporated gas from the battery fluid may catch fire, and cause serious injury.
- Remove the battery filler caps when recharging to prevent battery deformation or damage.

Caution

- Do not quick charge for more than 30 min. It will damage the battery.

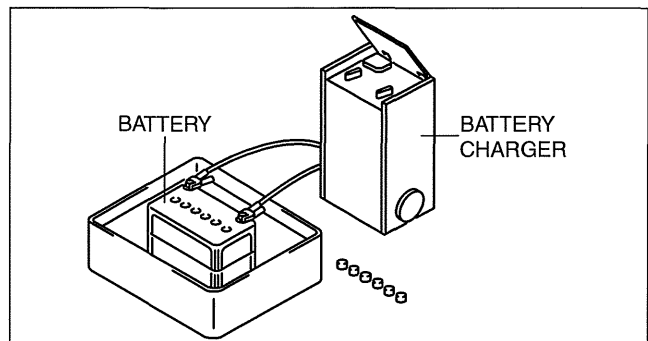
1. Remove the battery and then place it in a pan of water.
2. Remove the battery filler caps.
3. Connect a battery charger to the battery and adjust the charging current as follows.

Battery slow charge current

- 50D20L (40): 4.0—5.0 A
- 55D23L (48): 4.5—5.5 A
- 75D23L (52): 5.0—6.0 A

Battery quick charge current [30 min]

- 50D20L (40): 25 A
- 55D23L (48): 30 A
- 75D23L (52): 35 A



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4. After the battery is recharged, verify that the voltage is within the specification and remains at the same value for **1 h or more** after the recharging has been completed.
 - If not within the specification, replace the battery.

Standard voltage

12.4 V or more

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CHARGING SYSTEM [LF, L5]

GENERATOR REMOVAL/INSTALLATION [LF, L5]

id0117a8800200

Warning

- Remove and install all parts when the engine is cold, otherwise they can cause severe burns or serious injury.
- When the battery cables are connected, touching the vehicle body with generator terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.

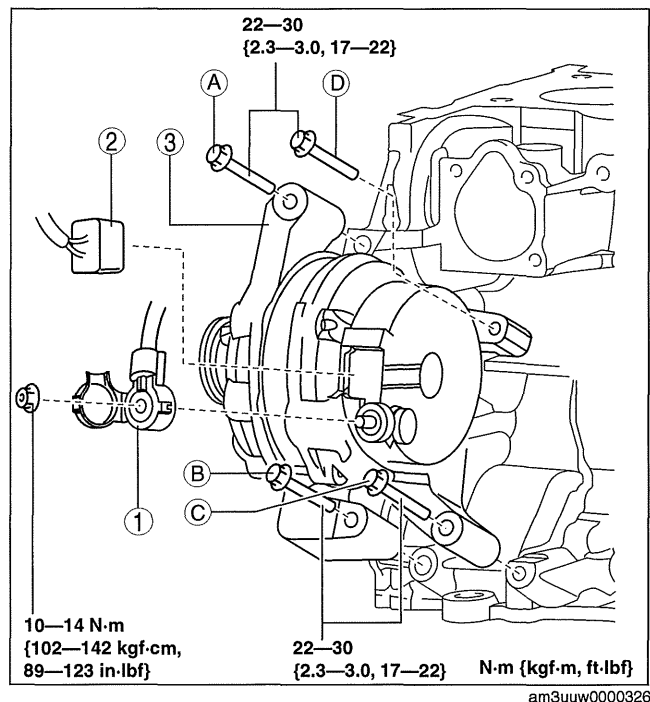
Caution

- The generator can be damaged by the heat from the exhaust manifold. Make sure the generator duct is installed securely (L5).

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION)
4. Remove the generator drive belt with the A/C drive belt still installed and set it out of the way. (LF) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
5. Remove the drive belt. (L5) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.

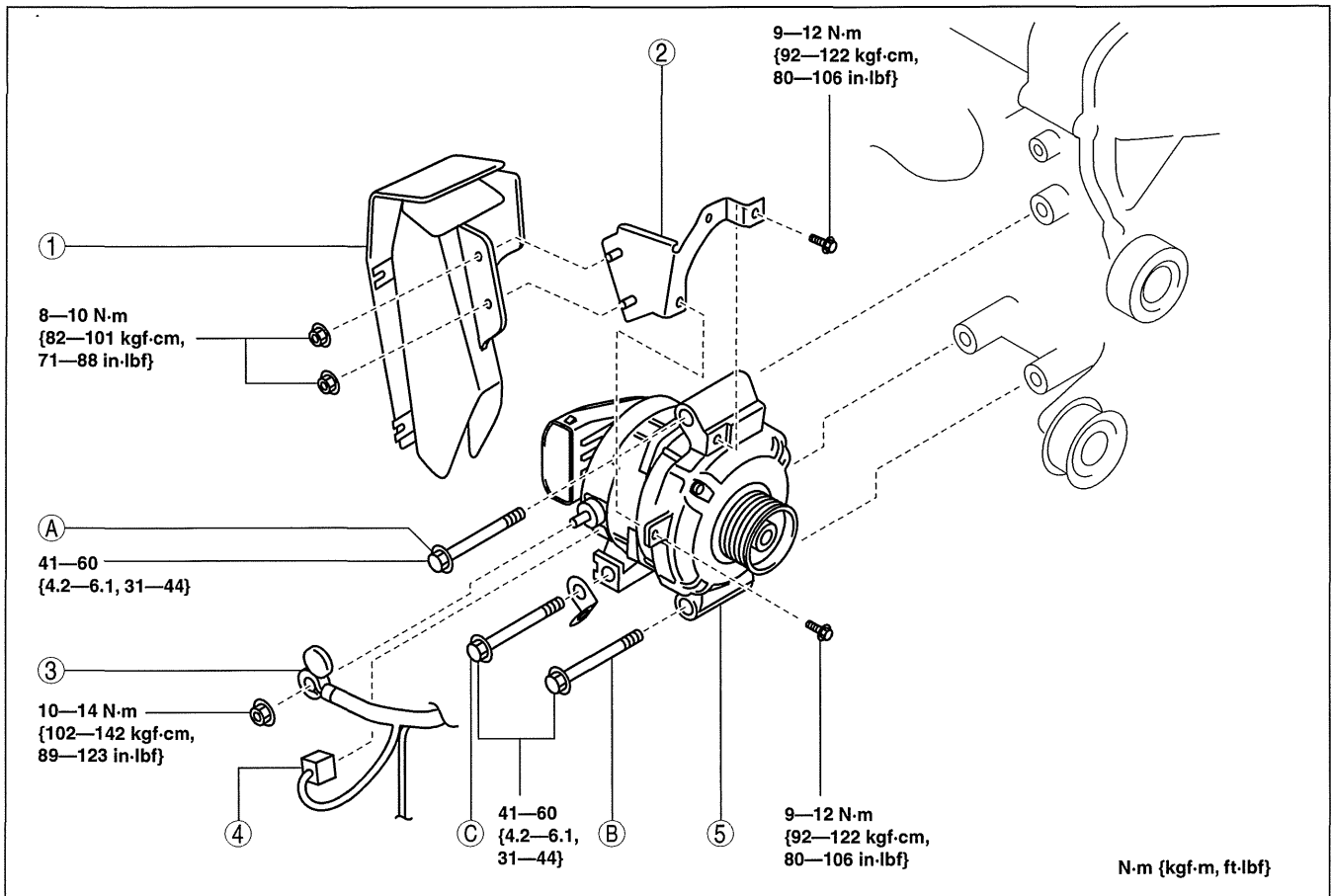
LF

1	Terminal B cable
2	Generator connector
3	Generator (See 01-17A-7 Generator Installation Note (LF).)



CHARGING SYSTEM [LF, L5]

L5



01-17A

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1	Generator duct (See 01-17A-7 Generator Duct Removal Note (L5).) (See 01-17A-8 Generator Duct Installation Note (L5).)
2	Generator duct bracket

3	Terminal B cable
4	Generator connector
5	Generator (See 01-17A-7 Generator Removal Note (L5).) (See 01-17A-8 Generator Installation Note (L5).)

Generator Installation Note (LF)

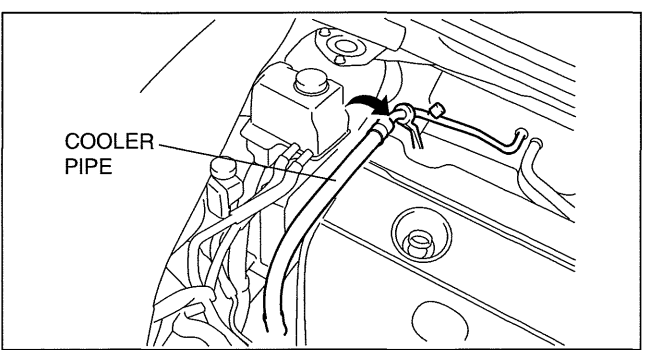
1. Align the generator fixing hole with the engine side hole, then temporarily tighten the generator installation bolts in the order of A, B, C, and D.
2. Securely tighten the generator installation bolts in the order of A, B, C, and D.

Generator Duct Removal Note (L5)

1. Remove the generator duct from above the engine compartment.

Generator Removal Note (L5)

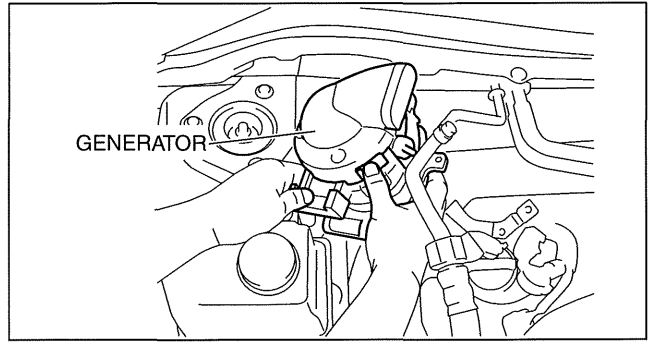
1. Set the cooler pipe out of the way. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)



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CHARGING SYSTEM [LF, L5]

- Remove the generator from above the engine compartment.



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Generator Installation Note (L5)

- Tighten bolt A temporarily.
- Tighten bolt B, C to the specified tightening torque.
- Tighten bolt A to the specified tightening torque.

Generator Duct Installation Note (L5)

- Install the generator duct to the generator duct bracket and tighten nuts temporarily.
- Tighten nuts to the specified tightening torque.

GENERATOR INSPECTION [LF, L5]

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Caution

- Do not apply direct battery positive voltage to generator terminal D, otherwise it could cause damage to the internal parts (power transistor) of the generator.

Generator Warning Light

- Verify that the battery is fully charged.
- Verify that the drive belt is correct. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].)
- Switch the ignition to ON, verify that the generator warning light illuminates.
 - If it does not illuminate, inspect the generator warning light and the wiring harness.
 - If the generator warning light and the wiring harness are normal, inspect the PCM.
- Verify that the generator warning light goes out after the engine is started.
 - If the generator warning light does not go out, perform the DTC inspection, then perform troubleshooting according to the corresponding diagnostic procedure. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02A-17 DTC TABLE [LF, L5].)

Generator Voltage

- Verify that the battery is fully charged.
- Verify that the drive belt is correct. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].)
- Turn off all electrical loads.
- Start the engine.
- Verify that the generator rotates smoothly without any noise while the engine is running.
 - If there is any noise, find the cause and repair or replace the generator.
- Measure the voltage at each terminal using a tester.
 - If it is not as specified, find the cause and repair or replace the applicable part.

Generator standard voltage [IG-ON]

Terminal B: B+

Terminal P: Approx. 1 V or less

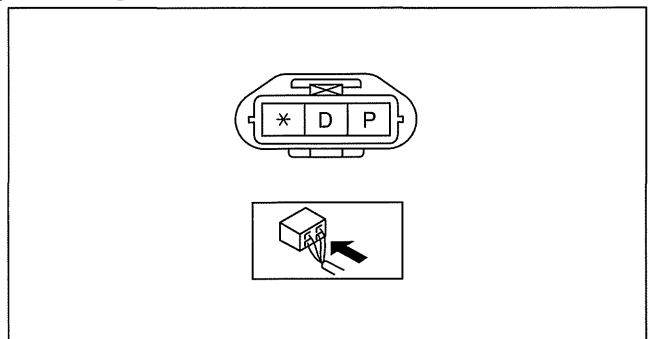
Terminal D: Approx. 0 V

Generator standard voltage [Idle, 20 °C {68 °F}]

Terminal B: 13—15 V

Terminal P: Approx. 3—8 V

Terminal D: Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the voltage reading increases.



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CHARGING SYSTEM [LF, L5]

Current

Note

- Since the charging current decreases rapidly after starting the engine, carry out the following procedure quickly, and read the maximum current value.

1. Verify that the battery is fully charged.
2. Verify that the drive belt is correct. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].)
3. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the negative battery cable.
5. Connect a tester, which can read **120 A or more**, between generator terminal B and the wiring harness.
6. Connect the negative battery cable.
7. Turn off all electrical loads.
8. Start the engine.
9. Increase engine speed to **2,500 rpm**.

Note

- When the electrical load on the vehicle is low, the specified current cannot be verified although the generator is normal. In this case, increase the electrical load (Leave the headlights turned on for a while, then discharge the battery, or use a similar method.) and recheck.
- When the generator itself or the ambient temperature are too high, the specified current also cannot be verified. In this case, cool down the generator and recheck.

10. Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the current reading increases more than the minimum value indicated below.
 - If it is not as specified, go to the PCM and generator shearing inspection. (See 01-17A-9 PCM and generator shearing inspection.)

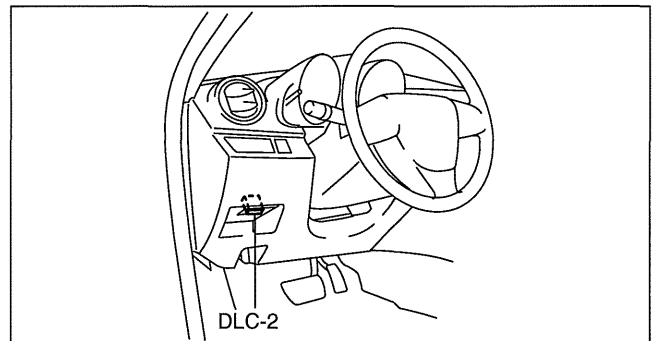
Generator generated current minimum value

70% of the nominal output current (nominal output current: 100 A)

[Ambient temp. 20 °C {68 °F}, voltage 13.0—15.0 V, both engine and generator are hot]

PCM and generator shearing inspection

1. Connect the M-MDS to the DLC-2.



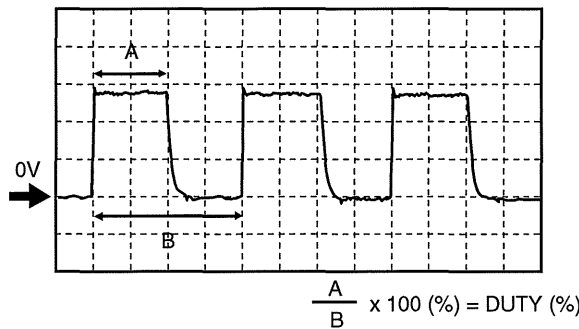
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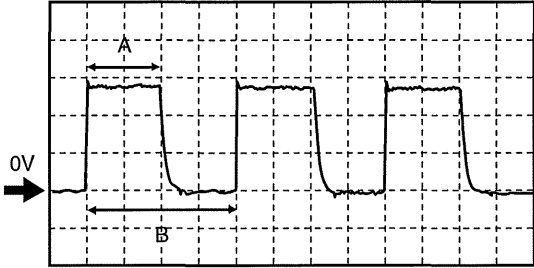
CHARGING SYSTEM [LF, L5]

2. Inspect as follows:

Step	Inspection		Action
1	Measure the generator terminal B voltage when the electrical loads* ¹ are on and off.	15 V or more	Go to Step 2.
		13—15 V	Normal* ²
		13 V or less	Go to Step 3.
2	Monitor the ALTT V PID using the M-MDS, (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) or measure the PCM 2AF terminal waveform using an oscilloscope. (See 01-40A-8 PCM INSPECTION [LF, L5].) Is the value normal?	Yes	Go to Step 4.
		No	Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. <ol style="list-style-type: none"> 1. Wiring harness between PCM terminal 2AF-generator terminal P. 2. Wiring harness between PCM terminal 2AA-generator terminal D. 3. Generator inner parts.
3	Monitor the ALTT V PID using the M-MDS, (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) or measure the PCM 2AF terminal waveform using an oscilloscope. (See 01-40A-8 PCM INSPECTION [LF, L5].) Is the value normal?	Yes	Go to Step 5.
		No	Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. <ol style="list-style-type: none"> 1. Wiring harness between PCM terminal 2AF-generator terminal P. 2. Wiring harness between PCM terminal 2AA-generator terminal D. 3. Generator inner parts.
4	Monitor the ALTF PID using the M-MDS, or calculate the duty value of the PCM terminal 2AA using an oscilloscope. Is the duty value 100%?	Yes	Replace PCM.
		No	Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. <ol style="list-style-type: none"> 1. Wiring harness between PCM terminal 2AA-generator terminal D. 2. Generator inner parts.



CHARGING SYSTEM [LF, L5]

Step	Inspection	Action
5	<p>Monitor the ALTF PID using the M-MDS, or calculate the duty value of the PCM terminal 2AA using an oscilloscope. Is the duty value 0%?</p>  <p style="text-align: center;">$\frac{A}{B} \times 100 (\%) = \text{DUTY} (\%)$</p>	<p>Yes: Replace PCM.</p> <p>No: Inspect followings, then repair or replace as necessary.</p> <ul style="list-style-type: none"> If there is no malfunction, replace the PCM. <ol style="list-style-type: none"> Wiring harness between PCM terminal 2AA-generator terminal D. Generator inner parts.

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*1 : Headlights, blower motor, rear window defroster, brake lights, etc.

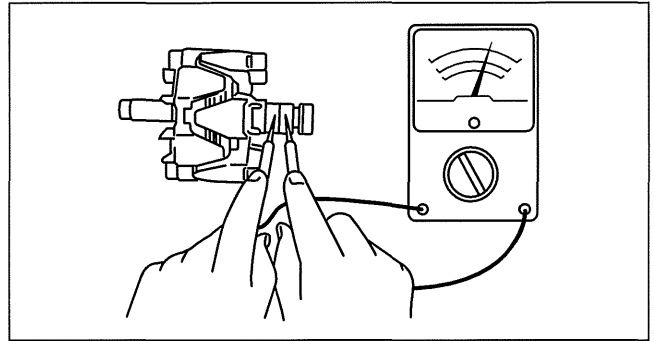
*2 : If the generator field coil duty value does not change when electrical loads (such as headlights, blower motor, rear window defroster, brake lights) are on or off, inspection with discharged battery is needed.

Generator Inner Parts

Rotor

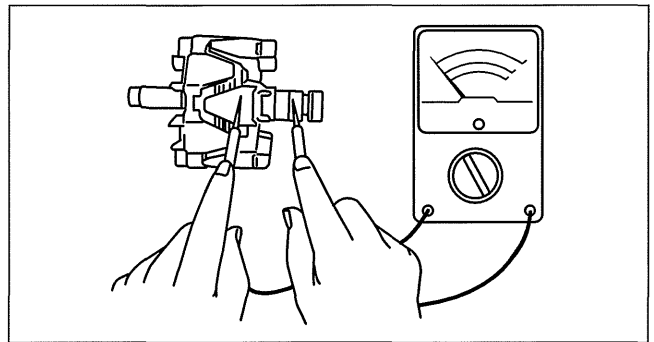
- Measure the resistance between the slip rings using a tester.
 - If not within the specification, replace the rotor.

Generator rotor resistance (between slip rings) [20 °C {68 °F}]
1.9—2.2 ohms



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- Verify that there is no continuity between the slip ring and core using a tester.
 - If there is continuity, replace the rotor.
- Inspect the slip ring surface condition.
 - If the slip ring surface is rough, use a lathe or fine sandpaper to smooth it.



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CHARGING SYSTEM [LF, L5]

Stator coil

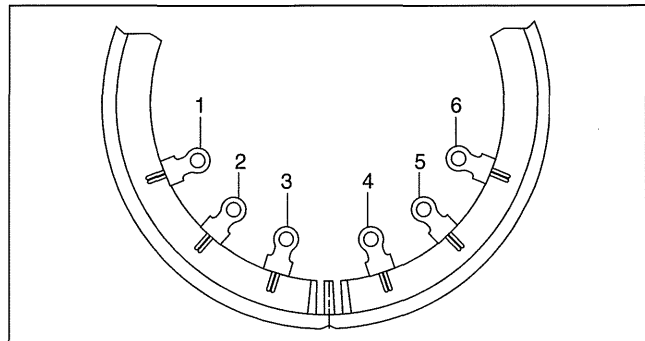
1. Verify that the continuity is as indicated in the table.

○—○ : Continuity

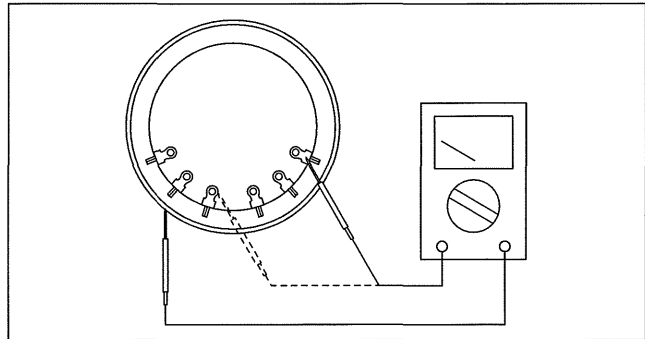
Terminal					
1	2	3	4	5	6
○—○					
○—○		○—○			
	○—○				
			○—○		
			○—○	○—○	
				○—○	

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- If there is any malfunction, replace the stator.
2. Verify that there is no continuity between the stator coil leads and core using a tester.
 - If there is continuity, replace the stator coil.



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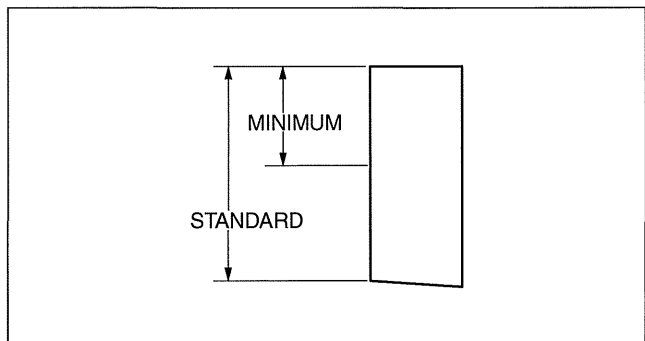
Brush

1. Inspect brushes for wear.
 - If any brush is worn almost to or beyond the limit, replace all of the brushes.

Generator brush length

Standard: 22.5 mm {0.886 in}

Minimum: 5.0 mm {0.20 in}



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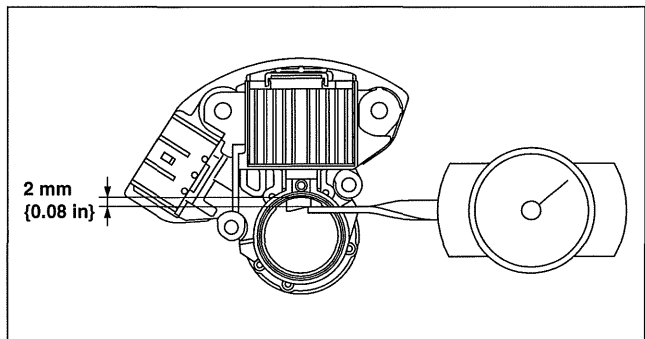
Brush spring

1. Measure the force of the brush spring using a spring pressure gauge.
2. Read the spring pressure gauge at the brush tip projection of **2 mm {0.08 in}**.
 - If not within the specification, replace the brush spring.

Generator brush spring force

Standard: 4.1—5.3 N {0.42—0.54 kgf, 1.0—1.1 lbf}

Minimum: 1.7 N {0.17 kgf, 0.38 lbf}



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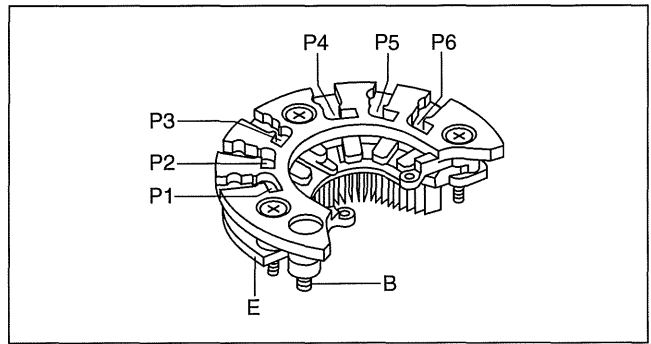
CHARGING SYSTEM [LF, L5]

Rectifier (Using an analog circuit tester)

1. Inspect for continuity of the diodes using an analog circuit tester.
 - If not as specified, replace the rectifier.

Specification

Negative	Positive	Continuity
E	P1, P2, P3, P4, P5, P6	Yes
B		No
P1, P2, P3, P4, P5, P6	E	No
	B	Yes



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Rectifier (Using a digital circuit tester)

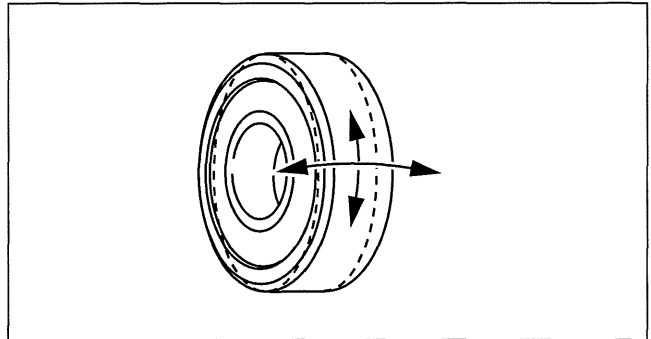
1. Inspect for continuity of the diodes using a digital circuit tester.
 - If not as specified, replace the rectifier.

Specification

Negative	Positive	Continuity
E	P1, P2, P3, P4, P5, P6	No
B		Yes
P1, P2, P3, P4, P5, P6	E	Yes
	B	No

Bearing

1. Inspect for abnormal noise, looseness, and sticking.
 - Replace the bearing if necessary.



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CHARGING SYSTEM [LF, L5]

GENERATOR DISASSEMBLY/ASSEMBLY [LF, L5]

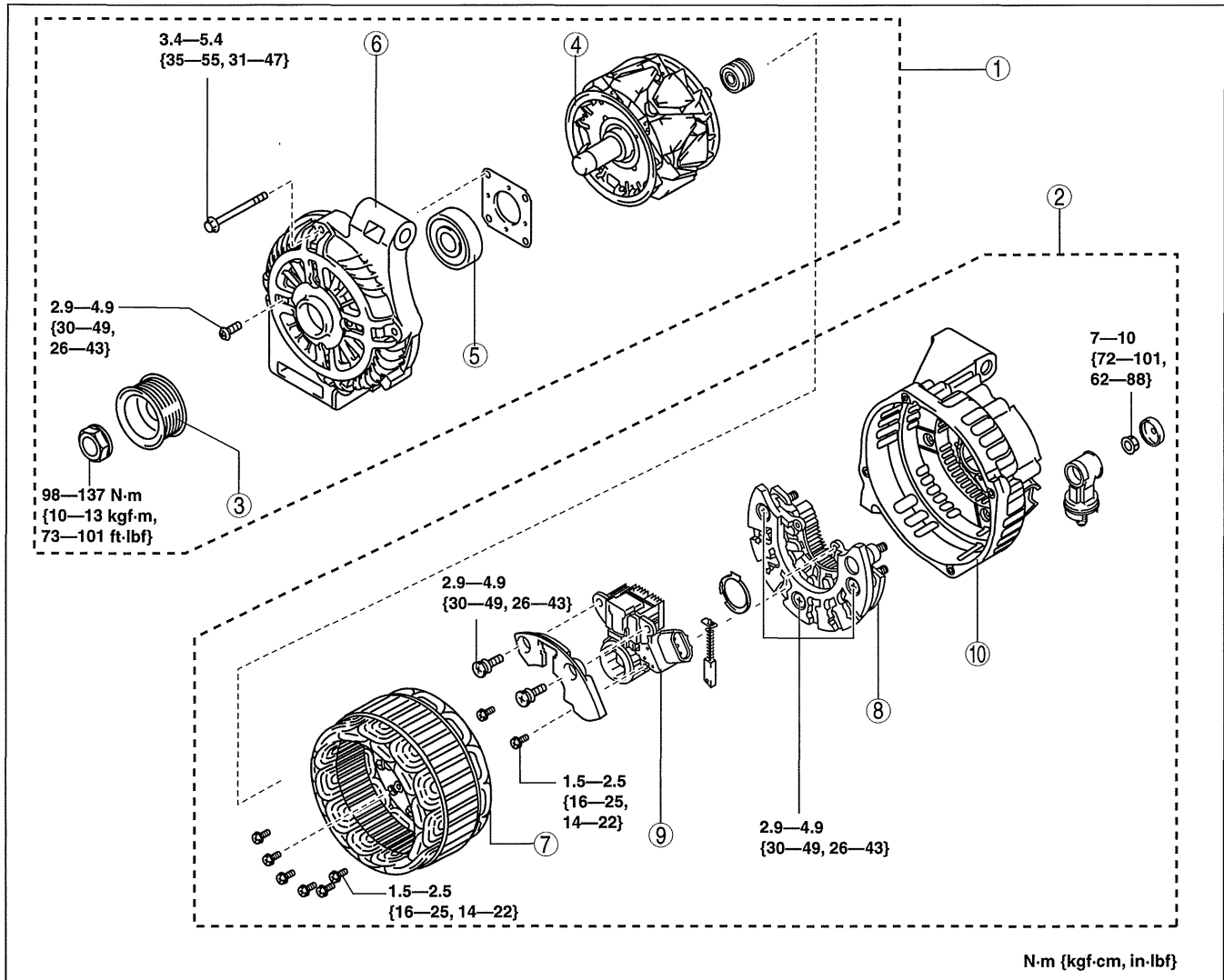
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Caution

- Melt the solder quickly, otherwise the diodes (rectifier) and regulator will be damaged by excessive heat.

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

LF



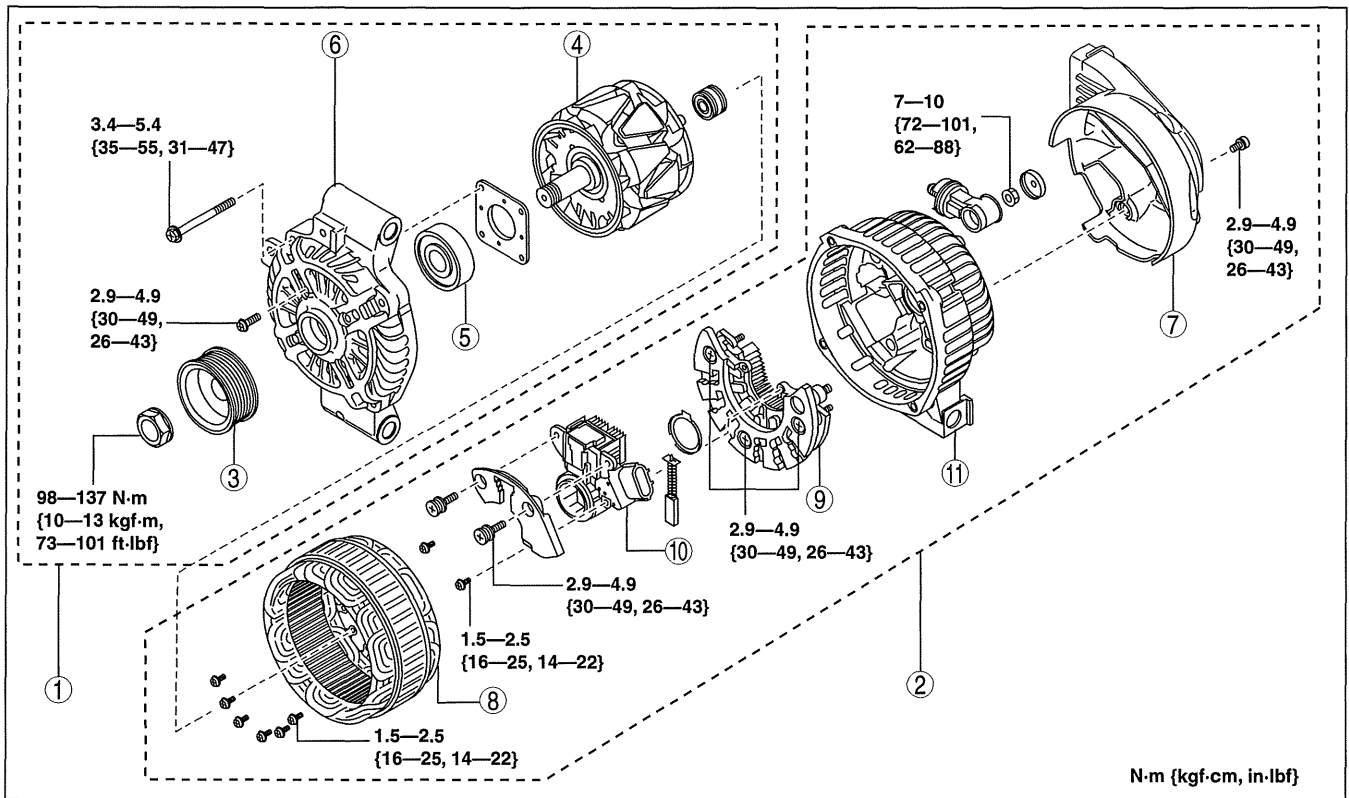
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1	Rotor component
2	Stator coil component
3	Pulley
4	Rotor
5	Front bearing

6	Front cover
7	Stator coil
8	Rectifier
9	Regulator component
10	Rear cover

CHARGING SYSTEM [LF, L5]

L5



am3uuw0000327

1	Rotor component
2	Stator coil component
3	Pulley
4	Rotor
5	Front bearing
6	Front cover

7	Heat insulator
8	Stator coil
9	Rectifier
10	Regulator component
11	Rear cover

01-17A

01-17B CHARGING SYSTEM [L3 WITH TC]

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 PCM Cover No.1 Installation Note 01-17B-3
 Battery Installation Note 01-17B-3
 Battery Clamp Installation Note 01-17B-3
 Battery Box Installation Note 01-17B-4
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BATTERY RECHARGING
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 [L3 WITH TC] 01-17B-6
 Generator Duct Removal Note 01-17B-7
 Generator Removal Note 01-17B-7
 Generator Installation Note 01-17B-7

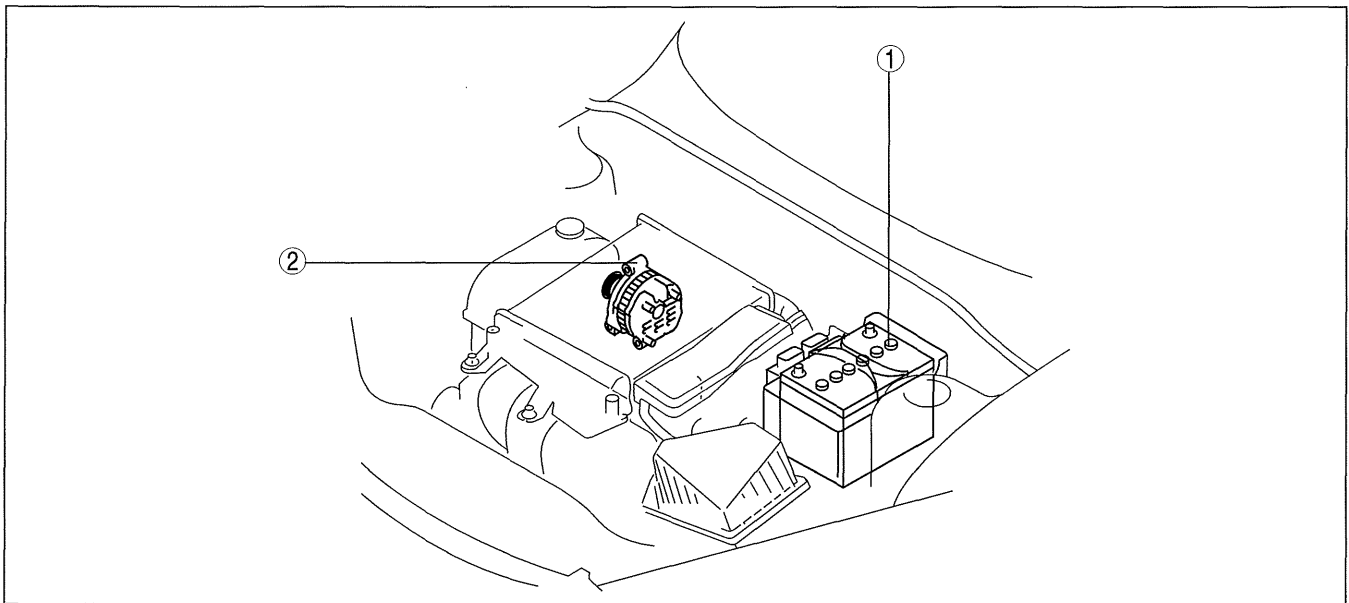
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 Generator 01-17B-8
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CHARGING SYSTEM LOCATION INDEX [L3 WITH TC]

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1	Battery (See 01-17B-2 BATTERY REMOVAL/ INSTALLATION [L3 WITH TC].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].)
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2	Generator (See 01-17B-6 GENERATOR REMOVAL/ INSTALLATION [L3 WITH TC].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) (See 01-17B-13 GENERATOR DISASSEMBLY/ ASSEMBLY [L3 WITH TC].)
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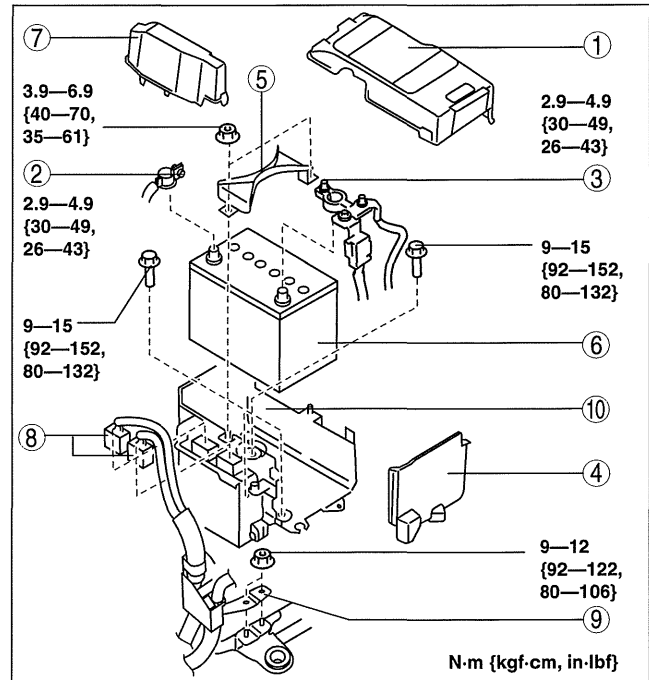
CHARGING SYSTEM [L3 WITH TC]

BATTERY REMOVAL/INSTALLATION [L3 WITH TC]

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1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.

1	Battery cover (See 01-17B-2 Battery Cover Removal Note.) (See 01-17B-4 Battery Cover Installation Note.)
2	Negative battery cable
3	Positive battery cable
4	Battery box (See 01-17B-4 Battery Box Installation Note.)
5	Battery clamp (See 01-17B-3 Battery Clamp Installation Note.)
6	Battery (See 01-17B-3 Battery Installation Note.)
7	PCM cover No.1 (See 01-17B-3 PCM Cover No.1 Installation Note.)
8	PCM connectors (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
9	Wiring harness bracket
10	Battery tray and PCM component

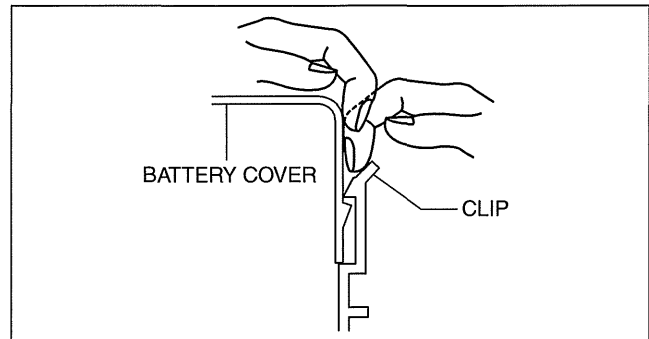


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Battery Cover Removal Note

Caution

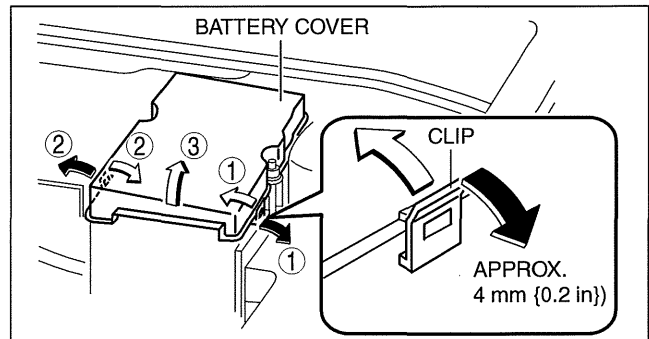
- To prevent component damage, stand at the front of the vehicle and remove the battery cover one side at a time.
- When pulling the clips, do not apply excessive force to a clip using the screwdriver or pair of pliers.
- If excessive force is applied to the clips, they could be damaged. When removing the battery cover, use the following procedure to prevent damaging the clips.



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1. Remove the battery cover using the following procedure.

- (1) Pull the clip (LH) in the outward direction approx.4 mm {0.2 in} and disengage the battery cover tabs.
- (2) Pull the clip (RH) in the outward direction approx.4 mm {0.2 in} and disengage the battery cover tabs.
- (3) Remove the battery cover.

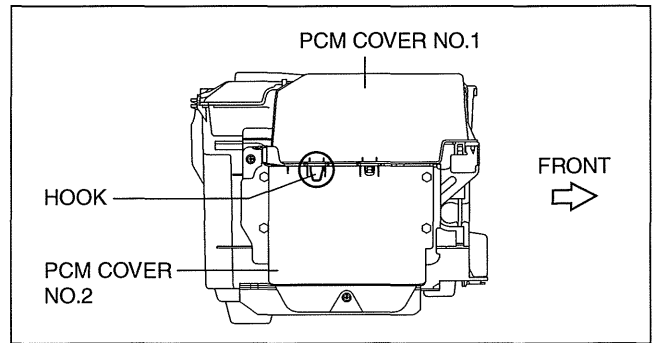


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CHARGING SYSTEM [L3 WITH TC]

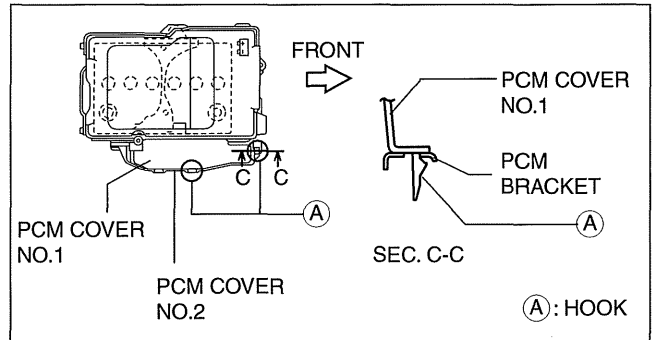
PCM Cover No.1 Installation Note

1. Install the PCM cover No.1 hook to the PCM cover No.2 holes.

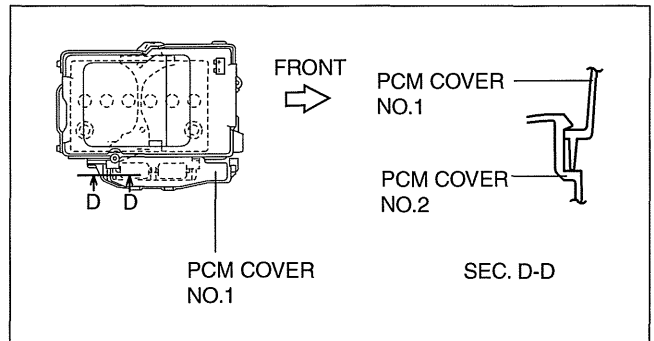


01-17B

2. Install with PCM cover No.1 hooks A aligned with the PCM cover No.2 and PCM bracket holes.



3. Install the PCM cover No.1 to the PCM cover No.2 hook.



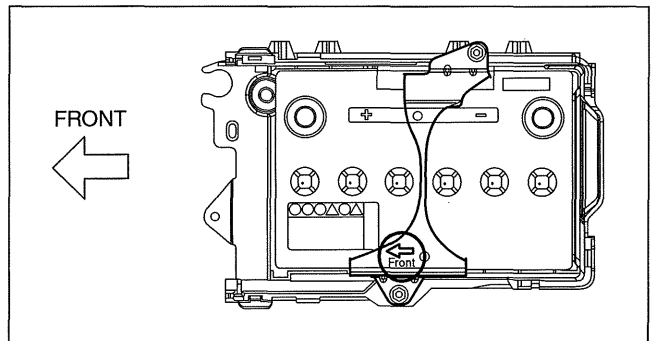
Battery Installation Note

Caution

- To prevent damaging the clips on the battery tray, install the battery carefully so that it does not contact the clips.

Battery Clamp Installation Note

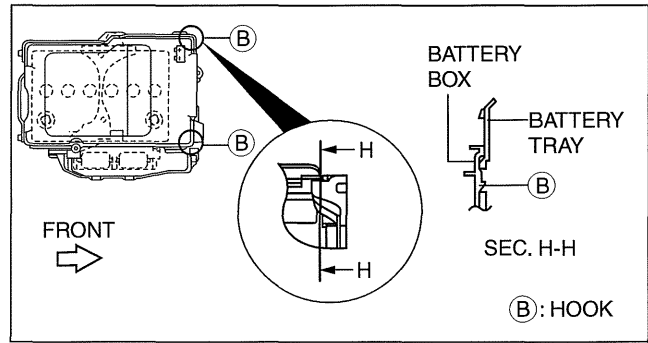
1. Assemble the battery clamp so that the arrow on it is pointed toward the front of the vehicle.



CHARGING SYSTEM [L3 WITH TC]

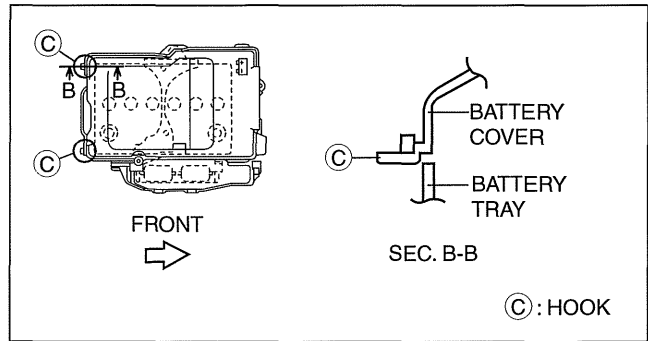
Battery Box Installation Note

1. Assemble with battery box hooks B aligned with the battery tray holes at two points.

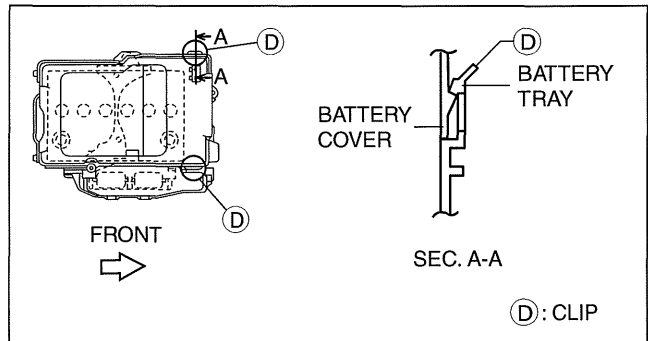


Battery Cover Installation Note

1. Install with battery cover hooks C aligned with the battery tray holes at two points.



2. Set the battery cover to battery tray clips D at two points.



BATTERY INSPECTION [L3 WITH TC]

id011739800600

Warning

- Since battery acid is toxic, be careful when handling the battery.
- Since battery acid is highly corrosive, be careful not to allow it to contact clothing or the vehicle.
- In case battery acid contacts skin, eyes, or clothing, flush it immediately with running water. Especially if the acid gets in the eyes, flush with water for more than 15 min and get prompt medical attention.

Electrolyte Specific Gravity

1. Measure the electrolyte specific gravity using a hydrometer.
 - If it is less than the specification, recharge the battery. (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].)

Battery electrolyte specific gravity [20 °C {68 °F}]
1.22—1.29

CHARGING SYSTEM [L3 WITH TC]

Battery Voltage

1. Inspect the battery as follows:

Step	Inspection		Action
1	Measure the battery positive voltage.	12.4 V or more	Go to Step 3.
		Less than 12.4 V	Go to the next step.
2	Quick charge for 30 min and recheck voltage.	12.4 V or more	Go to the next step.
		Less than 12.4 V	Replace the battery.
3	Using the battery load tester, apply load current (see battery load test current) and record battery voltage after 15 s . Is voltage more than the specification?	Yes	Normal
		No	Replace the battery.

01-17B

Battery load test current

55D23L (48): 180 A

75D23L (52): 195 A

Standard specification

Battery temp. (°C {°F})	Minimum voltage (V)
4 {39}	9.3
10 {50}	9.4
16 {61}	9.5
21 {70}	9.6

Back-up Current

- Verify that the ignition is off (key has been removed) and that all doors are closed.
- Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
- Disconnect the negative battery cable.

Caution

- Operating electrical loads while the back-up current is being measured can damage the tester.

Note

- If the battery is not left undisturbed for **10 min or more, but less than 2.5 hours**, the tester will indicate a high value (**approx. 200 mA**).
 - If the ignition or any electrical accessory is operated after the tester is connected, the battery must be left undisturbed for **10 min or more, but less than 2.5 hours** from that point.
 - For vehicles with the immobilizer system, the system periodically shifts synchronization of the security light flashing. Therefore, **65 mA (0.1 s)** current is supplied when the security light is illuminated, and **40 mA (2 s)** current is supplied when the security light is not illuminated. In addition, the measuring instrument, which shows the average value, indicates around **55 mA**.
- Connect the tester between the negative battery terminal and negative battery cable, leave the battery undisturbed for **10 min or more, but less than 2.5 hours**, and then measure the back-up current.
 - If not within the specification, measure the back-up current while removing the fuses one by one from the inside of the main fuse block and the inside of the fuse block.
 - Inspect and repair wiring harnesses and connectors of the fuse where the current has decreased.

Battery back-up current (When the ignition is off (key is removed) and all doors are closed.)

40—65 mA

Note

- If the battery is left for **2.5 hours or more**, a battery back-up current value of **25—45 mA** is indicated.

CHARGING SYSTEM [L3 WITH TC]

BATTERY RECHARGING [L3 WITH TC]

id011739800700

Warning

- Keep all flames away from the battery, otherwise evaporated gas from the battery fluid may catch fire, and cause serious injury.
- Remove the battery filler caps when recharging to prevent battery deformation or damage.

Caution

- Do not quick charge for more than 30 min. It will damage the battery.

1. Remove the battery and then place it in a pan of water.
2. Remove the battery filler caps.
3. Connect a battery charger to the battery and adjust the charging current as follows.

Battery slow charge current

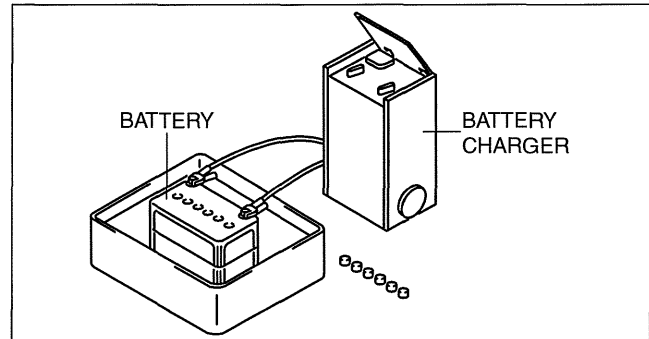
55D23L (48): 4.5—5.5 A

75D23L (52): 5.0—6.0 A

Battery quick charge current [30 min]

55D23L (48): 30 A

75D23L (52): 35 A



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4. After the battery is recharged, verify that the voltage is within the specification and remains at the same value for **1 h or more** after the recharging has been completed.
 - If not within the specification, replace the battery.

Standard voltage

12.4 V or more

GENERATOR REMOVAL/INSTALLATION [L3 WITH TC]

id011739800200

Warning

- Remove and install all parts when the engine is cold, otherwise they can cause severe burns or serious injury.
- When the battery cables are connected, touching the vehicle body with generator terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.

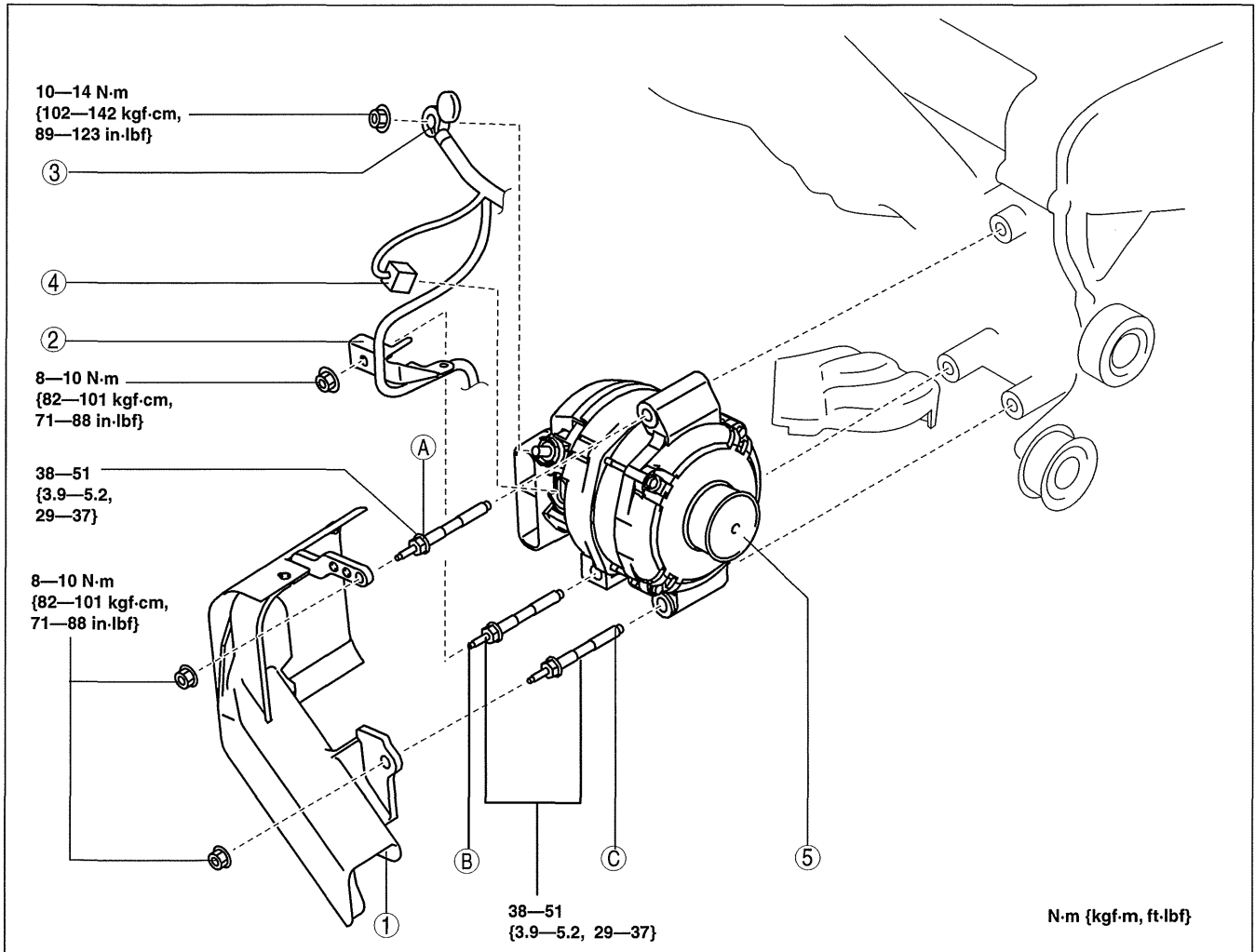
Caution

- The generator can be damaged by the heat from the exhaust manifold. Make sure the generator duct is installed securely.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler and charge air cooler bracket. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the insulator (body side) and exhaust manifold upper insulator. (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the aerodynamic under cover No.2 and splash shield as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
6. Remove the drive belt. (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.

CHARGING SYSTEM [L3 WITH TC]

01-17B



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1	Generator duct (See 01-17B-7 Generator Duct Removal Note.)
2	Wiring harness bracket
3	Terminal B cable

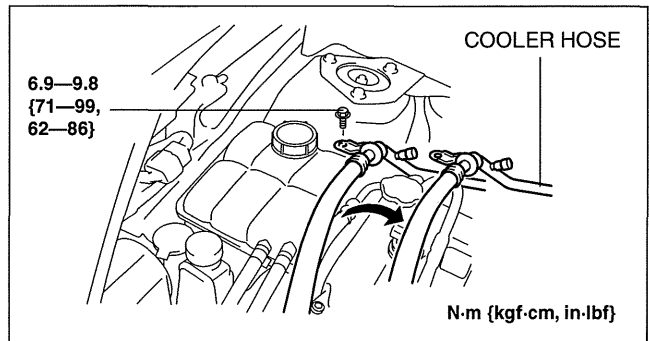
4	Generator connector
5	Generator (See 01-17B-7 Generator Removal Note.) (See 01-17B-7 Generator Installation Note.)

Generator Duct Removal Note

1. Remove the generator duct fitting nuts, and position it in the engine compartment in a location where no part can be damaged.

Generator Removal Note

1. Remove the cooler hose bracket bolt and set the cooler hose out of the way before performing the generator removal/installation.
2. Remove the generator from above the engine compartment.



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Generator Installation Note

1. Tighten bolt A temporarily.
2. Tighten bolt B, C to the specified tightening torque.
3. Tighten bolt A to the specified tightening torque.

CHARGING SYSTEM [L3 WITH TC]

GENERATOR INSPECTION [L3 WITH TC]

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Caution

- Do not apply direct battery positive voltage to generator terminal D, otherwise it could cause damage to the internal parts (power transistor) of the generator.

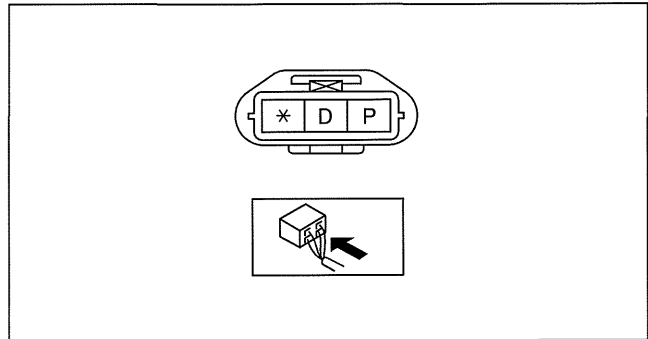
Generator Warning Light

1. Verify that the battery is fully charged.
2. Verify that the drive belt is correct. (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].)
3. Switch the ignition to ON, verify that the generator warning light illuminates.
 - If it does not illuminate, inspect the generator warning light and the wiring harness.
 - If the generator warning light and the wiring harness are normal, inspect the PCM.
4. Verify that the generator warning light goes out after the engine is started.
 - If the generator warning light does not go out, perform the DTC inspection, then perform troubleshooting according to the corresponding diagnostic procedure. (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)

Generator

Voltage

1. Verify that the battery is fully charged.
2. Verify that the drive belt is correct. (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].)
3. Turn off all electrical loads.
4. Start the engine.
5. Verify that the generator rotates smoothly without any noise while the engine is running.
 - If there is any noise, find the cause and repair or replace the generator.
6. Measure the voltage at each terminal using a tester.
 - If it is not as specified, find the cause and repair or replace the applicable part.



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Generator standard voltage [IG-ON]

Terminal B: B+

Terminal P: Approx. 1 V or less

Terminal D: Approx. 0 V

Generator standard voltage [Idle, 20 °C {68 °F}]

Terminal B: 13—15 V

Terminal P: Approx. 3—8 V

Terminal D: Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the voltage reading increases.

Current

Note

- Since the charging current decreases rapidly after starting the engine, carry out the following procedure quickly, and read the maximum current value.

1. Verify that the battery is fully charged.
2. Verify that the drive belt is correct. (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].)
3. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the negative battery cable.
5. Connect a tester, which can read **120 A or more**, between generator terminal B and the wiring harness.
6. Connect the negative battery cable.
7. Turn off all electrical loads.
8. Start the engine.
9. Increase engine speed to **2,500 rpm**.

Note

- When the electrical load on the vehicle is low, the specified current cannot be verified although the generator is normal. In this case, increase the electrical load (Leave the headlights turned on for a while, then discharge the battery, or use a similar method.) and recheck.
- When the generator itself or the ambient temperature are too high, the specified current also cannot be verified. In this case, cool down the generator and recheck.

CHARGING SYSTEM [L3 WITH TC]

10. Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the current reading increases more than the minimum value indicated below.
- If it is not as specified, go to the PCM and generator shearing inspection. (See 01-17B-9 PCM and generator shearing inspection.)

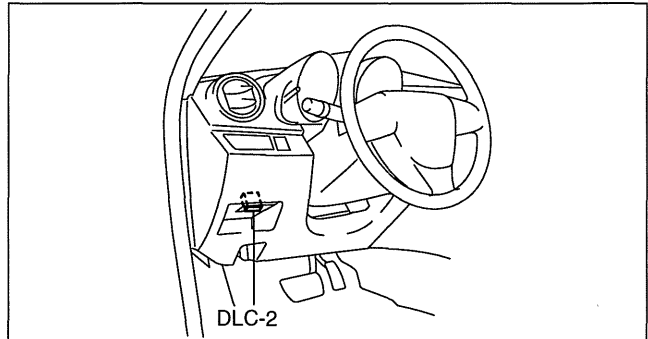
Generator generated current minimum value

70% of the nominal output current (nominal output current: 110 A)

[Ambient temp. 20 °C {68 °F}, voltage 13.0—15.0 V, both engine and generator are hot]

PCM and generator shearing inspection

1. Connect the M-MDS to the DLC-2.
2. Inspect as follows:





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01-17B

Step	Inspection		Action
1	Measure the generator terminal B voltage when the electrical loads* ¹ are on and off.	15 V or more	Go to Step 2.
		13—15 V	Normal* ²
		13 V or less	Go to Step 3.
2	Monitor the ALTT V PID using the M-MDS, (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) or measure the PCM 1AX terminal waveform using an oscilloscope. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) Is the value normal?	Yes	Go to Step 4.
		No	Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. 1. Wiring harness between PCM terminal 1AX-generator terminal P. 2. Wiring harness between PCM terminal 1AW-generator terminal D. 3. Generator inner parts.

CHARGING SYSTEM [L3 WITH TC]

Step	Inspection		Action	
3	Monitor the ALTT V PID using the M-MDS, (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) or measure the PCM 1AX terminal waveform using an oscilloscope. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) Is the value normal?	Yes No	Go to Step 5. Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. 1. Wiring harness between PCM terminal 1AX-generator terminal P. 2. Wiring harness between PCM terminal 1AW-generator terminal D. 3. Generator inner parts.	
4	Monitor the ALTF PID using the M-MDS, or calculate the duty value of the PCM terminal 1AW using an oscilloscope. Is the duty value 100%?	 $\frac{A}{B} \times 100 (\%) = \text{DUTY} (\%)$	Yes No	Replace PCM. Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. 1. Wiring harness between PCM terminal 1AW-generator terminal D. 2. Generator inner parts.
5	Monitor the ALTF PID using the M-MDS, or calculate the duty value of the PCM terminal 1AW using an oscilloscope. Is the duty value 0%?	 $\frac{A}{B} \times 100 (\%) = \text{DUTY} (\%)$	Yes No	Replace PCM. Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. 1. Wiring harness between PCM terminal 1AW-generator terminal D. 2. Generator inner parts.

*1 : Headlights, blower motor, rear window defroster, brake lights, etc.

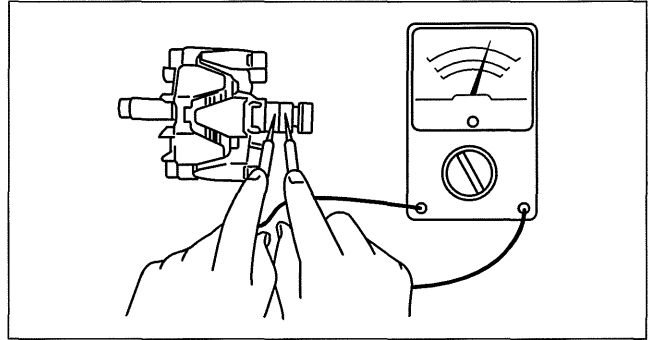
*2 : If the generator field coil duty value does not change when electrical loads (such as headlights, blower motor, rear window defroster, brake lights) are on or off, inspection with discharged battery is needed.

CHARGING SYSTEM [L3 WITH TC]

Generator Inner Parts Rotor

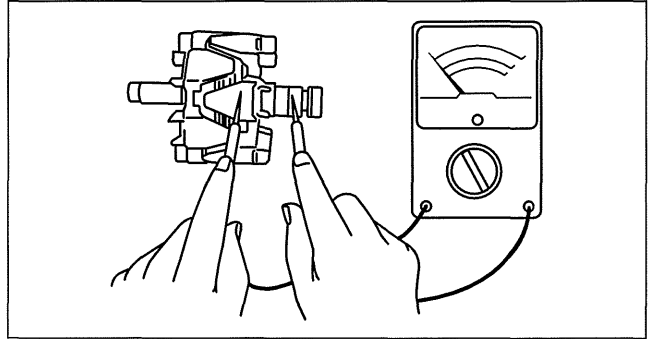
1. Measure the resistance between the slip rings using a tester.
 - If not within the specification, replace the rotor.

Generator rotor resistance (between slip rings) [20 °C {68 °F}]
1.8—2.2 ohms



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2. Verify that there is no continuity between the slip ring and core using a tester.
 - If there is continuity, replace the rotor.
3. Inspect the slip ring surface condition.
 - If the slip ring surface is rough, use a lathe or fine sandpaper to smooth it.



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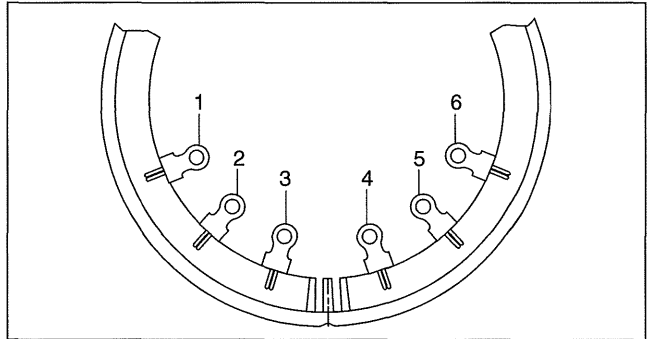
Stator coil

1. Verify that the continuity is as indicated in the table.

○—○ : Continuity

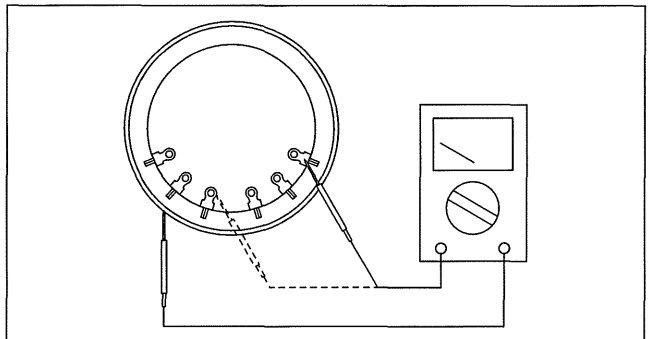
Terminal					
1	2	3	4	5	6
○—○					
○—○		○—○			
	○—○				
			○—○		
			○—○	○—○	
				○—○	○—○

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- If there is any malfunction, replace the stator.
2. Verify that there is no continuity between the stator coil leads and core using a tester.
 - If there is continuity, replace the stator coil.



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01-17B

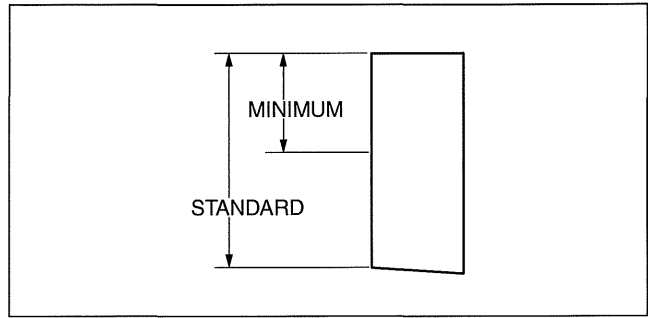
CHARGING SYSTEM [L3 WITH TC]

Brush

- Inspect brushes for wear.
 - If any brush is worn almost to or beyond the limit, replace all of the brushes.

Generator brush length

Standard: 22.5 mm {0.886 in}
Minimum: 5.0 mm {0.20 in}



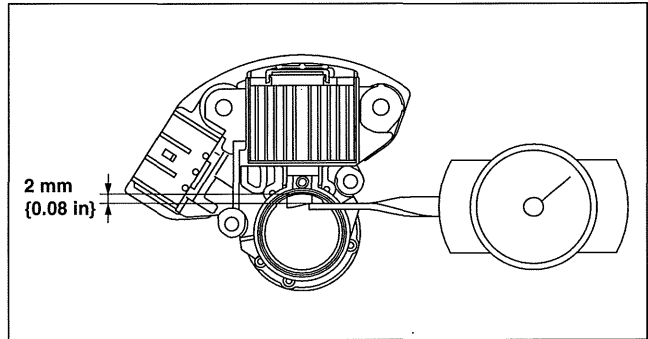
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Brush spring

- Measure the force of the brush spring using a spring pressure gauge.
- Read the spring pressure gauge at the brush tip projection of **2 mm {0.08 in}**.
 - If not within the specification, replace the brush spring.

Generator brush spring force

Standard: 4.1—5.3 N {0.42—0.54 kgf, 1.0—1.1 lbf}
Minimum: 1.7 N {0.17 kgf, 0.38 lbf}



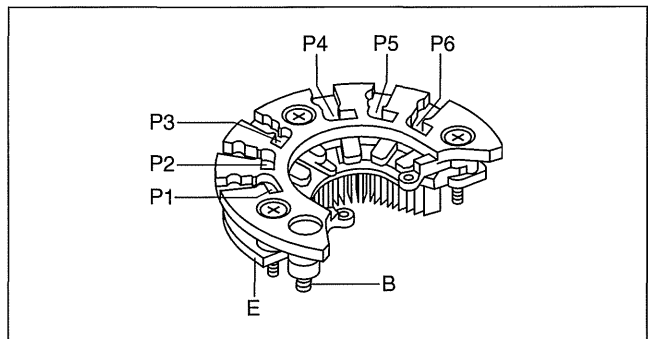
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Rectifier (Using an analog circuit tester)

- Inspect for continuity of the diodes using an analog circuit tester.
 - If not as specified, replace the rectifier.

Specification

Negative	Positive	Continuity
E	P1, P2, P3, P4, P5, P6	Yes
B		No
P1, P2, P3, P4, P5, P6	E	No
	B	Yes



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Rectifier (Using a digital circuit tester)

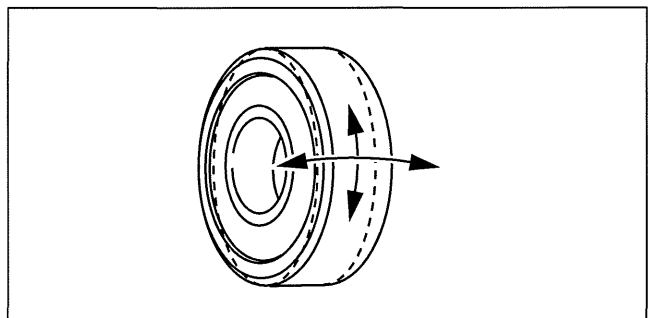
- Inspect for continuity of the diodes using a digital circuit tester.
 - If not as specified, replace the rectifier.

Specification

Negative	Positive	Continuity
E	P1, P2, P3, P4, P5, P6	No
B		Yes
P1, P2, P3, P4, P5, P6	E	Yes
	B	No

Bearing

- Inspect for abnormal noise, looseness, and sticking.
 - Replace the bearing if necessary.



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CHARGING SYSTEM [L3 WITH TC]

GENERATOR DISASSEMBLY/ASSEMBLY [L3 WITH TC]

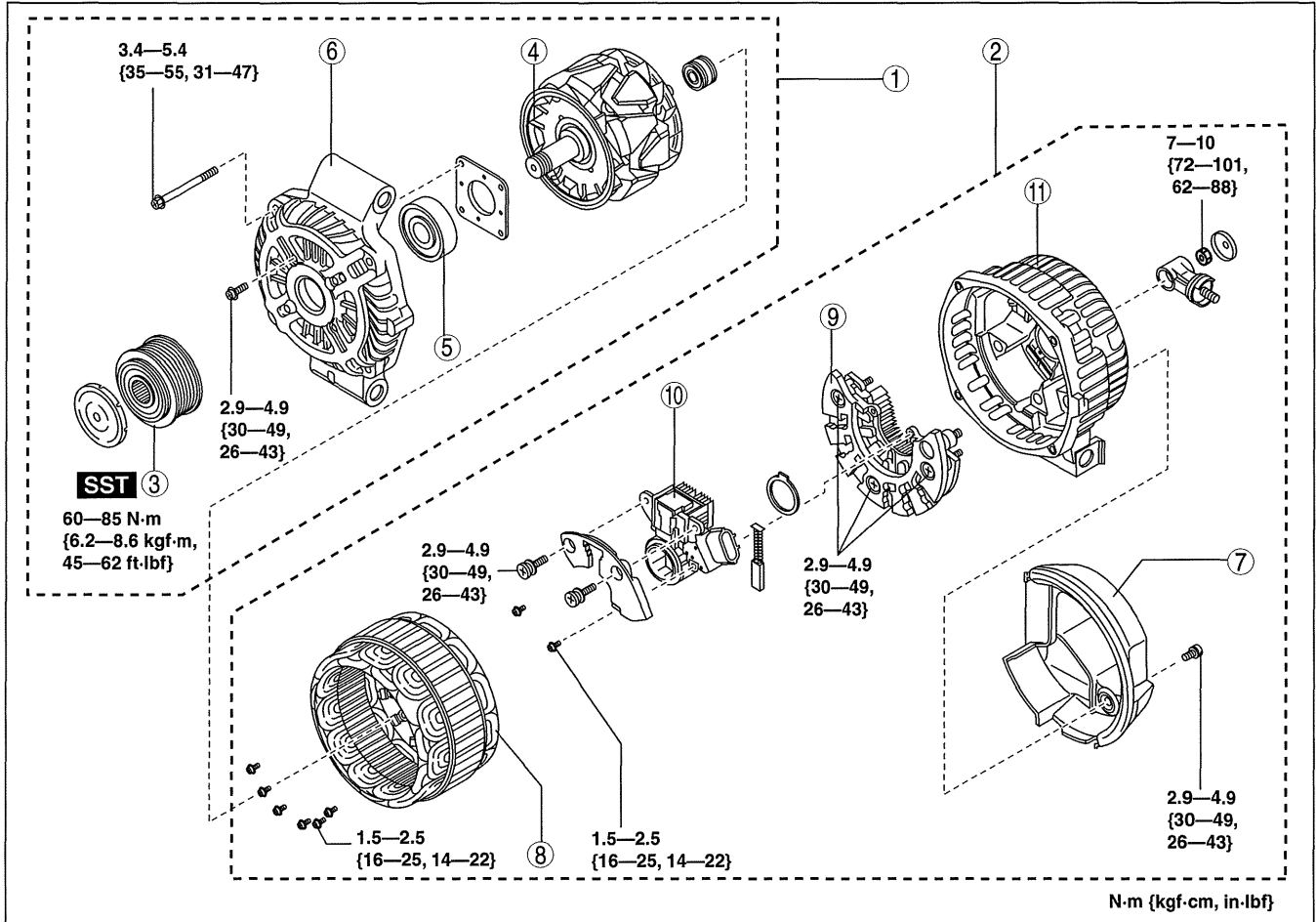
id011739800400

Caution

- Melt the solder quickly, otherwise the diodes (rectifier) and regulator will be damaged by excessive heat.

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

01-17B



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1	Rotor component
2	Stator coil component
3	Pulley (See 01-17B-13 Pulley Disassembly/Assembly Note.)
4	Rotor
5	Bearing

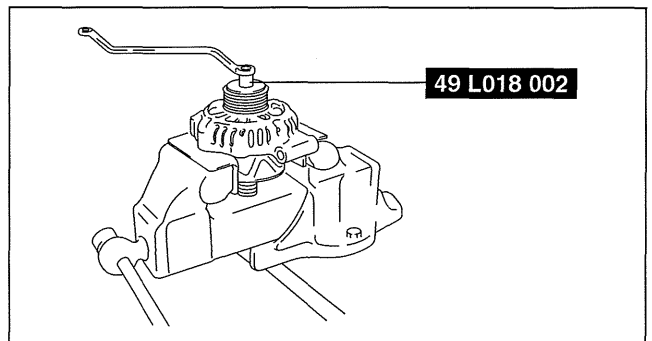
6	Front cover
7	Generator heat insulator
8	Stator coil
9	Rectifier
10	Regulator component
11	Rear bracket

Pulley Disassembly/Assembly Note

1. Disassemble/assemble the pulley using the SST.

Tightening torque

60—85 N·m {6.2—8.6 kgf·m, 45—62 ft·lbf}



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01-17B-13

01-18A IGNITION SYSTEM [LF, L5]

IGNITION SYSTEM LOCATION INDEX

[LF, L5]	01-18A-1
IGNITION COIL	
REMOVAL/INSTALLATION [LF, L5]...	01-18A-2
IGNITION COIL INSPECTION	
[LF, L5]	01-18A-2
Ignition Coil Inspection.....	01-18A-2
Ignition Coil with Built-in Igniter	
Inspection.....	01-18A-2

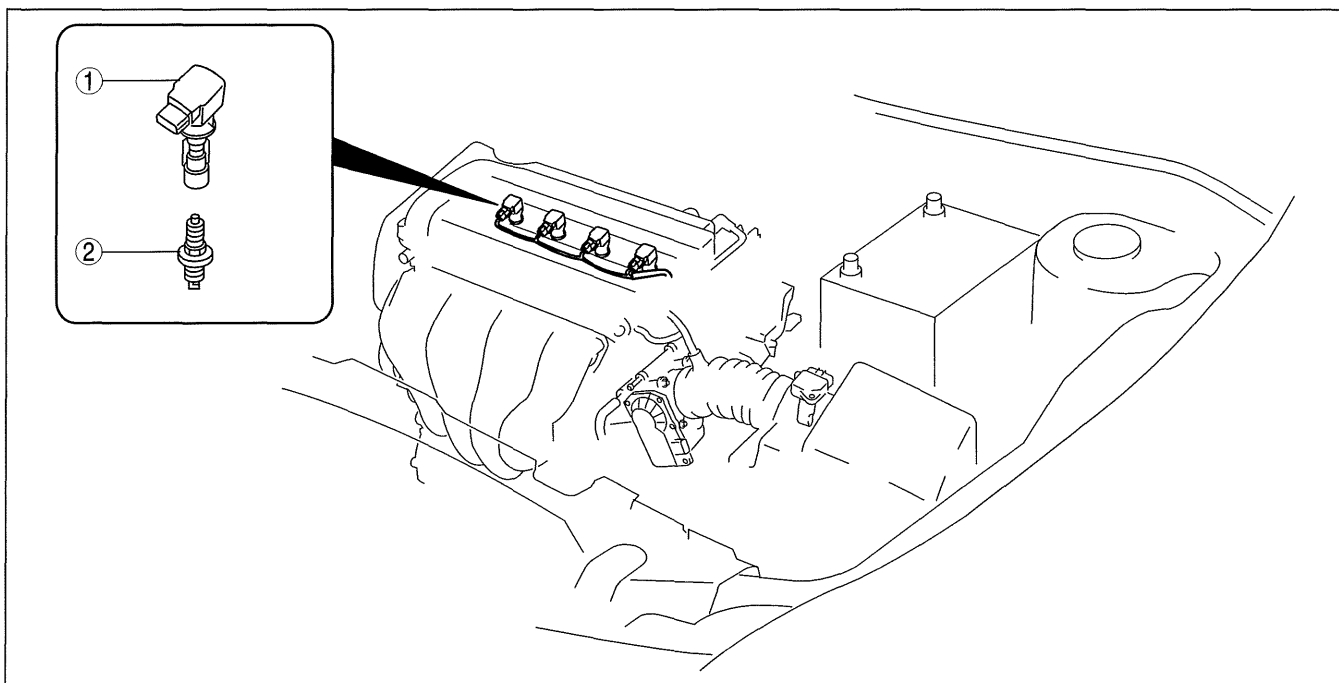
SPARK PLUG

REMOVAL/INSTALLATION [LF, L5] ...	01-18A-3
SPARK PLUG INSPECTION [LF, L5] ...	01-18A-3
Specification	01-18A-3
Plug Gap Inspection	01-18A-3
Cleaning	01-18A-3
Visual Inspection.....	01-18A-4
Resistance Inspection.....	01-18A-4

01-18A

IGNITION SYSTEM LOCATION INDEX [LF, L5]

id0118a8800100



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1	Ignition coil (See 01-18A-2 IGNITION COIL REMOVAL/ INSTALLATION [LF, L5].) (See 01-18A-2 IGNITION COIL INSPECTION [LF, L5].)
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2	Spark plug (See 01-18A-3 SPARK PLUG REMOVAL/ INSTALLATION [LF, L5].) (See 01-18A-3 SPARK PLUG INSPECTION [LF, L5].)
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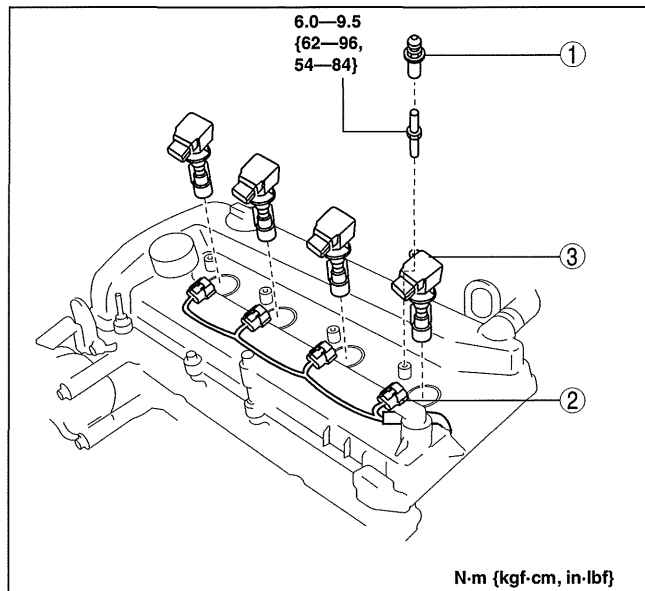
IGNITION SYSTEM [LF, L5]

IGNITION COIL REMOVAL/INSTALLATION [LF, L5]

id0118a8800200

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.

1	Plug hole plate bracket
2	Connector
3	Ignition coil



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IGNITION COIL INSPECTION [LF, L5]

id0118a8800300

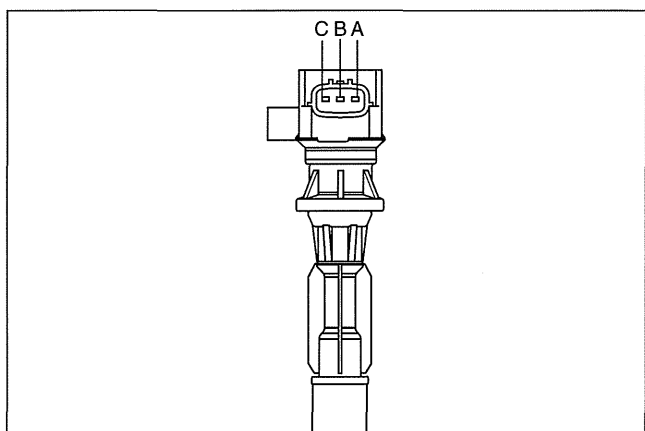
Ignition Coil Inspection

1. Perform the spark test and identify the malfunctioning cylinder.
2. Replace the ignition coil of the malfunctioning cylinder with that of a normal cylinder, and reperform the spark test.
 - If the spark is not normal due to a malfunctioning ignition coil, replace that ignition coil.
 - It is unlikely that all four ignition coils fail to operate properly. To prevent replacing a normal component, perform the above procedure, identify the malfunctioning ignition coil, and replace it.

Ignition Coil with Built-in Igniter Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the ignition coil connector.
5. Measure the resistance between each terminal on the ignition coil connector using an analog circuit tester.
 - If the measurement corresponds to the table, replace the ignition coil.

Item	Tester Connection Position		Condition
	Positive	Negative	
Terminal	C	A	0 ohm is not normal (∞ ohm is normal)
	B	A	
	C	B	∞ or 0 ohm is not normal (several kilohms is normal)



am6xuw0000233

SPARK PLUG REMOVAL/INSTALLATION [LF, L5]

id0118a8800400

Caution

- If a spark plug that is not as specified is installed, engine performance will be deteriorated. Install only the specified spark plug when replacing.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the ignition coils. (See 01-18A-2 IGNITION COIL REMOVAL/INSTALLATION [LF, L5].)
5. Remove the spark plugs using a plug-wrench.
6. Install in the reverse order of removal.

01-18A

Tightening torque

10—14 N·m {102—142 kgf·cm, 89—123 in·lbf}

SPARK PLUG INSPECTION [LF, L5]

id0118a8800500

Specification

Spark plug type

LFG1 18 110 (ILTR5A-13G), L3Y2 18 110

Plug Gap Inspection

Caution

- To avoid possible damage to the tip, do not adjust the plug gap.
- To prevent damaging the tip, use a wire type plug gap gauge when inspecting the plug gap.

1. Measure the spark plug gap using a wire type plug gap gauge.
 - If not within the standard specification, replace the spark plug.

Spark plug gap

Standard: 1.25—1.45 mm {0.0493—0.0570 in}

New spark plug (reference): 1.25—1.35 mm {0.0493—0.0531 in}

Cleaning

Caution

- Carbon may adhere to the tip of the spark plug during vehicle delivery or repeated short distance driving during the winter time. If there is any malfunction such as rough idling or start difficulty due to carbon adhesion causing plug fouling, burn off the carbon by performing no-load racing of the engine.
- When performing the no-load racing, apply the side brake and foot brake, move the shift lever to neutral (MTX), or the selector lever to P position (ATX) to prevent an accident and serious injury.
- To avoid possible damage to the spark plug tip, do not use a wire brush for cleaning.

Note

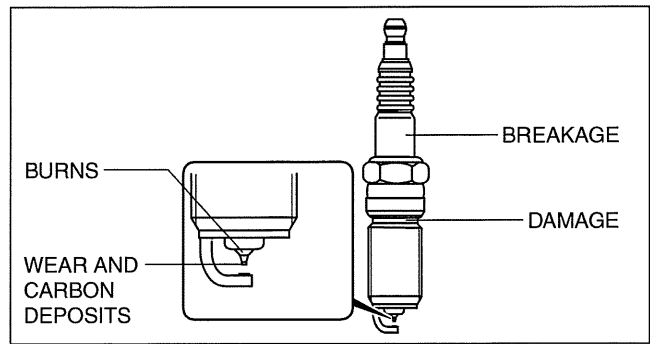
- To avoid possible damage to the tip, use gasoline to clean the spark plugs after removing dirt.
- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the PCM control operation, which prevents overheating, and it does not indicate a malfunction.
- Do not perform no-load racing at high engine speed continuously for **10 s or more**.

1. If there is carbon adhering to the spark plug, perform no-load racing at **4,000 rpm for 2 min, 2 times**.

IGNITION SYSTEM [LF, L5]

Visual Inspection

1. Inspect the following items:
 - If any of the following malfunctions are indicated, replace the spark plug.
 - Insulator breakage
 - Worn electrode
 - Damaged gasket
 - Badly burned insulator (sparking side)

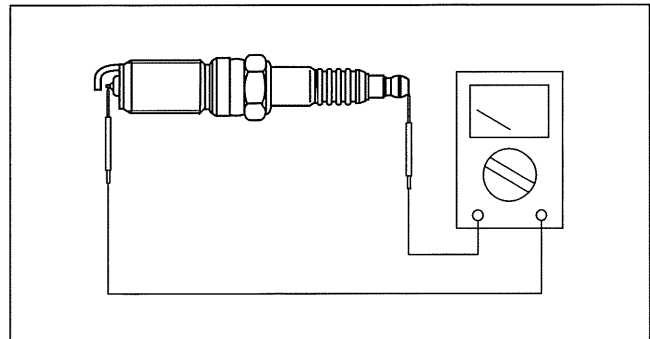


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Resistance Inspection

1. Measure the resistance of the spark plug using a tester as shown in the figure.
 - If not within the specification, replace the spark plug.

Spark plug resistance [25°C {77 °F}]
3.0—7.5 kilohms



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IGNITION SYSTEM [L3 WITH TC]

01-18B IGNITION SYSTEM [L3 WITH TC]

IGNITION SYSTEM LOCATION INDEX

[L3 WITH TC]	01-18B-1
IGNITION COIL	
REMOVAL/INSTALLATION	
[L3 WITH TC]	01-18B-2
IGNITION COIL INSPECTION	
[L3 WITH TC]	01-18B-2
Ignition Coil Inspection	01-18B-2
Ignition Coil with Built-in Igniter	
Inspection	01-18B-2

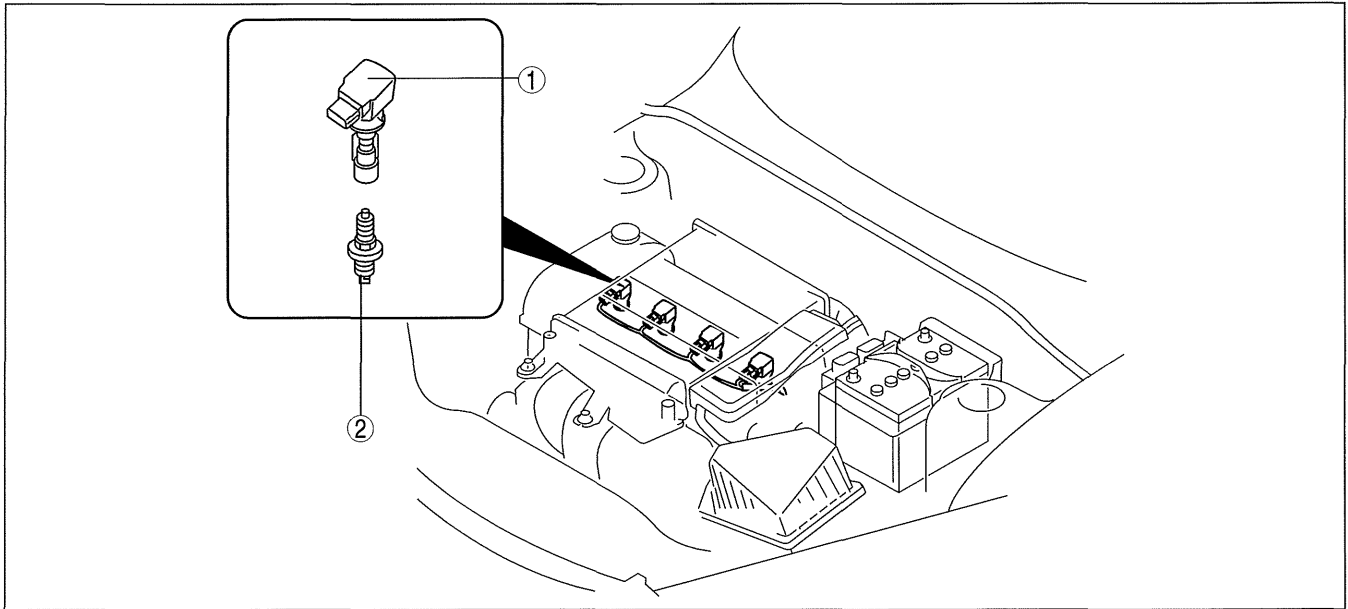
SPARK PLUG

REMOVAL/INSTALLATION	
[L3 WITH TC]	01-18B-3
SPARK PLUG INSPECTION	
[L3 WITH TC]	01-18B-3
Specification	01-18B-3
Plug Gap Inspection	01-18B-3
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01-18B

IGNITION SYSTEM LOCATION INDEX [L3 WITH TC]

id011839800100



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1	Ignition coil (See 01-18B-2 IGNITION COIL REMOVAL/ INSTALLATION [L3 WITH TC].) (See 01-18B-2 IGNITION COIL INSPECTION [L3 WITH TC].)
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2	Spark plug (See 01-18B-3 SPARK PLUG REMOVAL/ INSTALLATION [L3 WITH TC].) (See 01-18B-3 SPARK PLUG INSPECTION [L3 WITH TC].)
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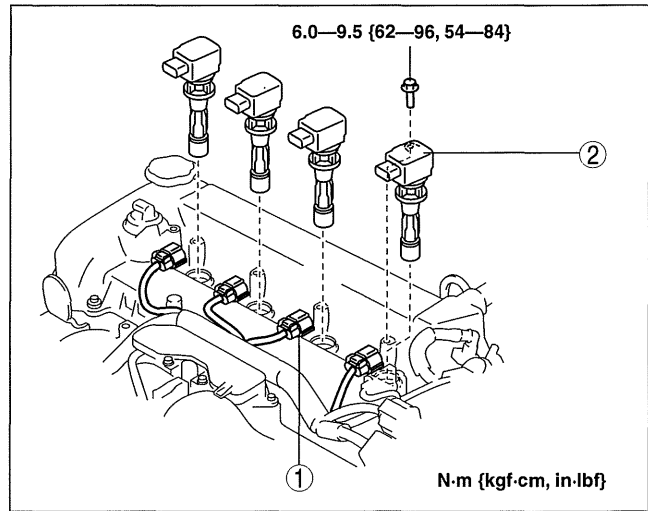
IGNITION SYSTEM [L3 WITH TC]

IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC]

id011839800200

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.

1	Connector
2	Ignition coil



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id011839800300

IGNITION COIL INSPECTION [L3 WITH TC]

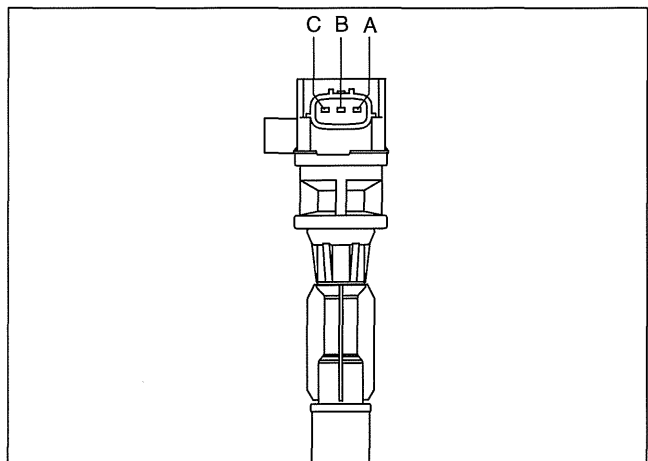
Ignition Coil Inspection

1. Perform the spark test and identify the malfunctioning cylinder.
2. Replace the ignition coil of the malfunctioning cylinder with that of a normal cylinder, and reperform the spark test.
 - If the spark is not normal due to a malfunctioning ignition coil, replace that ignition coil.
 - It is unlikely that all four ignition coils fail to operate properly. To prevent replacing a normal component, perform the above procedure, identify the malfunctioning ignition coil, and replace it.

Ignition Coil with Built-in Igniter Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the ignition coil connector.
5. Measure the resistance between each terminal on the ignition coil connector using an analog circuit tester.
 - If the measurement corresponds to the table, replace the ignition coil.

Item	Tester Connection Position		Condition
	Positive	Negative	
Terminal	C	A	0 ohm is not normal (∞ ohm is normal)
	B	A	
	C	B	∞ or 0 ohm is not normal (several kilohm is normal)



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IGNITION SYSTEM [L3 WITH TC]

SPARK PLUG REMOVAL/INSTALLATION [L3 WITH TC]

id011839800400

Caution

- If a spark plug that is not as specified is installed, engine performance will be deteriorated. Install only the specified spark plug when replacing.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the ignition coils. (See 01-18B-2 IGNITION COIL REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the spark plugs using a plug-wrench.
6. Install in the reverse order of removal.

01-18B

Tightening torque

10—14 N·m {102—142 kgf·cm, 89—123 in·lbf}

SPARK PLUG INSPECTION [L3 WITH TC]

id011839800500

Specification

Spark plug type

L3BD 18 110, L3YD 18 110

Plug Gap Inspection

Caution

- To avoid possible damage to the tip, do not adjust the plug gap.
- To prevent damaging the tip, use a wire type plug gap gauge when inspecting the plug gap.

1. Measure the spark plug gap using a wire type plug gap gauge.
 - If not within the standard specification, replace the spark plug.

Spark plug gap

Standard: 0.60—0.80 mm {0.024—0.031 in}

New spark plug (reference): 0.60—0.70 mm {0.024—0.027 in}

Cleaning

Caution

- Carbon may adhere to the tip of the spark plug during vehicle delivery or repeated short distance driving during the winter time. If there is any malfunction such as rough idling or start difficulty due to carbon adhesion causing plug fouling, burn off the carbon by performing no-load racing of the engine.
- When performing the no-load racing, apply the side brake and foot brake, move the shift lever to neutral to prevent an accident and serious injury.
- To avoid possible damage to the spark plug tip, do not use a wire brush for cleaning.

Note

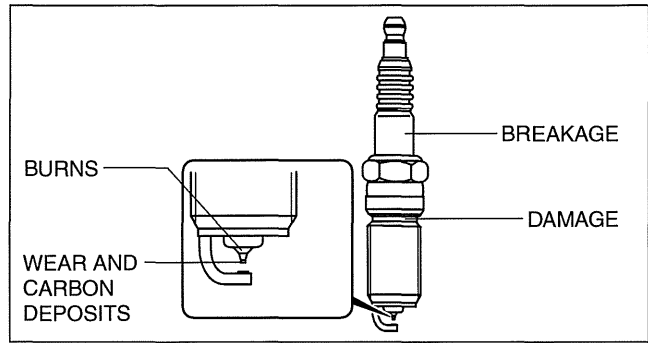
- To avoid possible damage to the tip, use gasoline to clean the spark plugs after removing dirt.
- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the PCM control operation, which prevents overheating, and it does not indicate a malfunction.
- Do not perform no-load racing at high engine speed continuously for **10 s or more**.

1. If there is carbon adhering to the spark plug, perform no-load racing at **4,000 rpm for 2 min, 2 times**.

IGNITION SYSTEM [L3 WITH TC]

Visual Inspection

1. Inspect the following items:
 - If any of the following malfunctions are indicated, replace the spark plug.
 - Insulator breakage
 - Worn electrode
 - Damaged gasket
 - Badly burned insulator (sparking side)

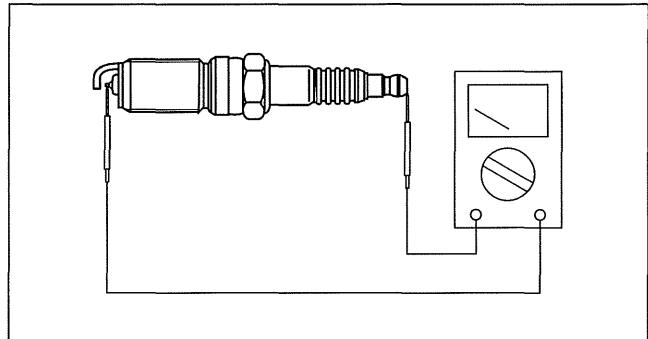


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Resistance Inspection

1. Measure the resistance of the spark plug using a tester as shown in the figure.
 - If not within the specification, replace the spark plug.

Spark plug resistance [25°C {77 °F}]
3.0—7.5 kilohms



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01-19A STARTING SYSTEM [LF, L5]

STARTING SYSTEM LOCATION INDEX

[LF, L5] 01-19A-1

STARTER REMOVAL/INSTALLATION
 [LF, L5] 01-19A-2
 Starter Installation Note 01-19A-3

STARTER INSPECTION [LF, L5] 01-19A-4
 On-vehicle Inspection..... 01-19A-4
 No-load Test..... 01-19A-4

Magnetic Switch Operation
 Inspection01-19A-4

Pinion Gap Inspection.....01-19A-5
 Starter Inner Parts Inspection01-19A-5

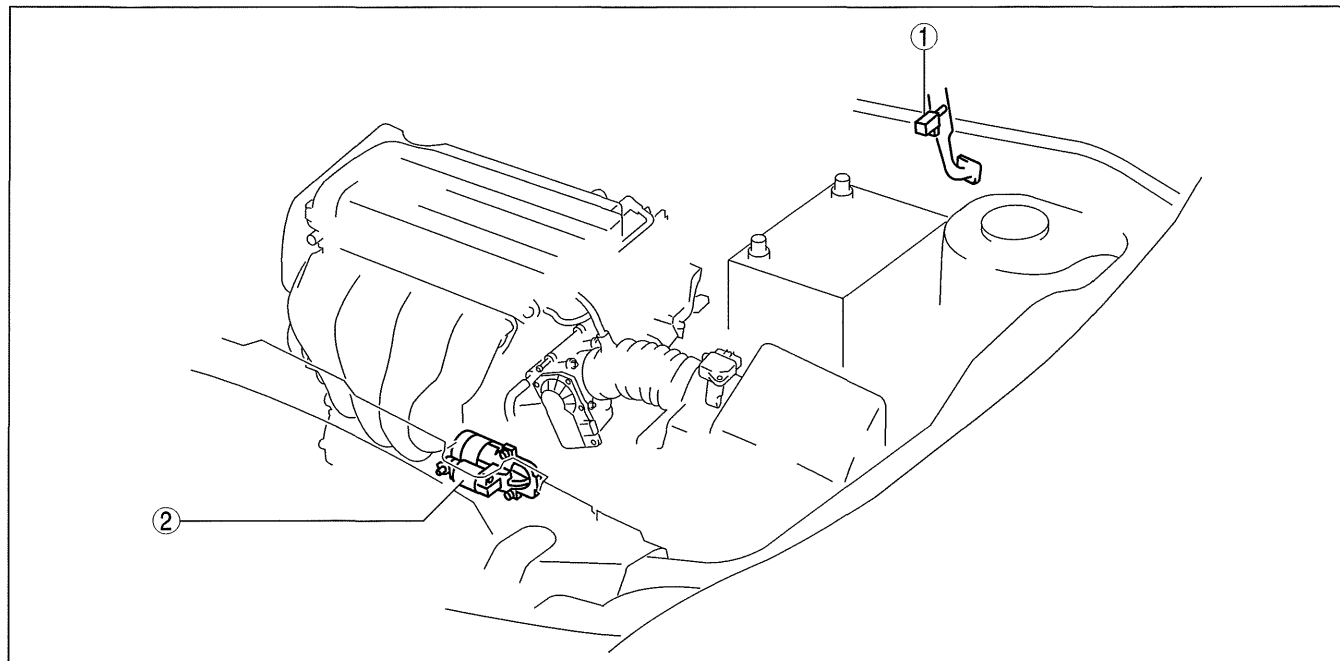
STARTER DISASSEMBLY/ASSEMBLY
 [LF, L5]01-19A-8

STARTER INTERLOCK SWITCH
INSPECTION [LF, L5].....01-19A-8

01-19A

STARTING SYSTEM LOCATION INDEX [LF, L5]

id0119a7103700



am6xuw0000233

1	Starter interlock switch (MTX) (See 01-19A-8 STARTER INTERLOCK SWITCH INSPECTION [LF, L5].)
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2	Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].) (See 01-19A-4 STARTER INSPECTION [LF, L5].) (See 01-19A-8 STARTER DISASSEMBLY/ASSEMBLY [LF, L5].)
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STARTING SYSTEM [LF, L5]

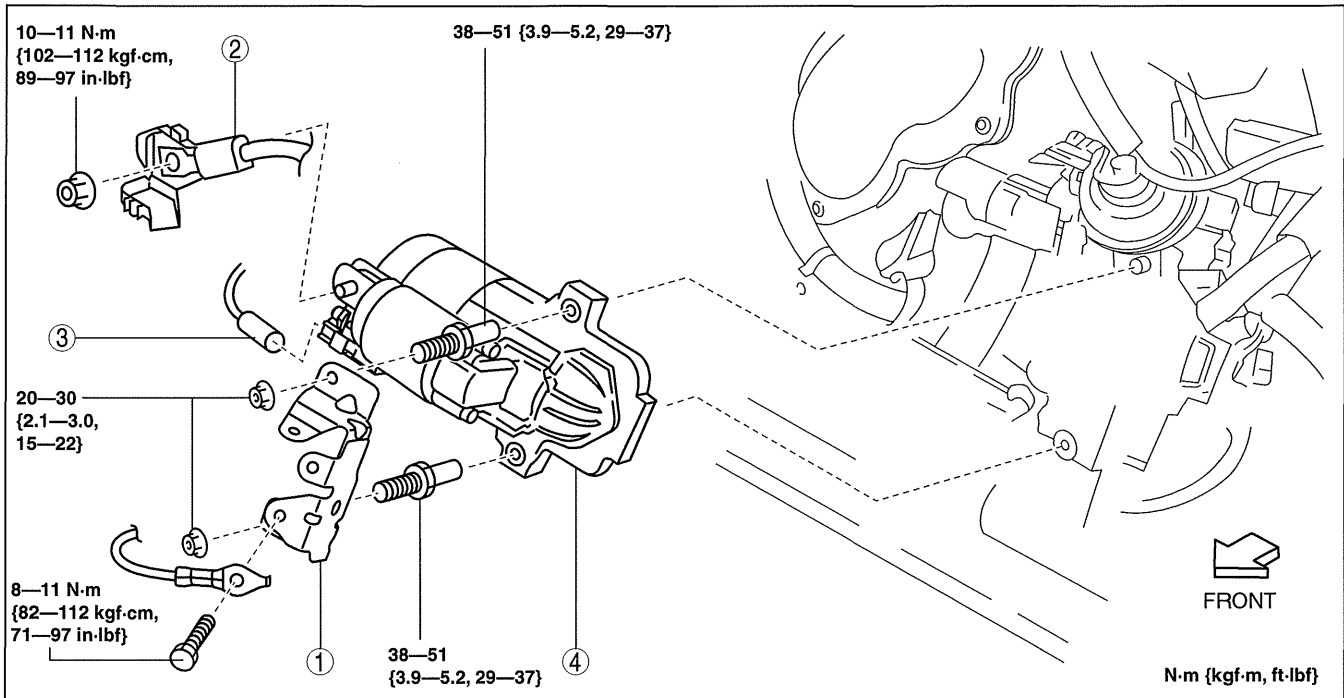
STARTER REMOVAL/INSTALLATION [LF, L5]

id0119a7800200

Warning

- Remove and install all parts when the engine is cold, otherwise they can cause severe burns or serious injury.
- When the battery cables are connected, touching the vehicle body with starter terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.



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1	Wiring harness bracket
2	Terminal B cable

3	Terminal S connector
4	Starter (See 01-19A-3 Starter Installation Note.)

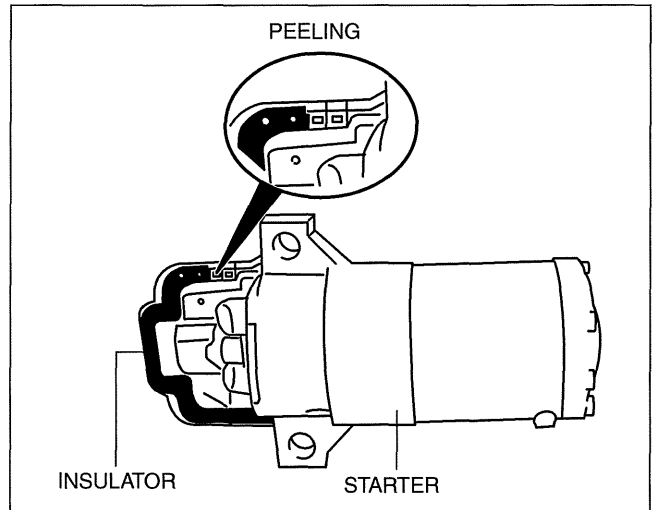
STARTING SYSTEM [LF, L5]

Starter Installation Note

Note

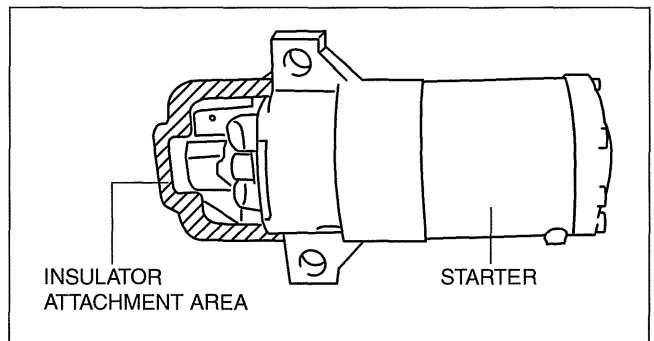
- If there is peeling on or damage to the insulator, attach a new insulator using the following procedure:

1. Peel off the insulator from the starter completely using a scraper.



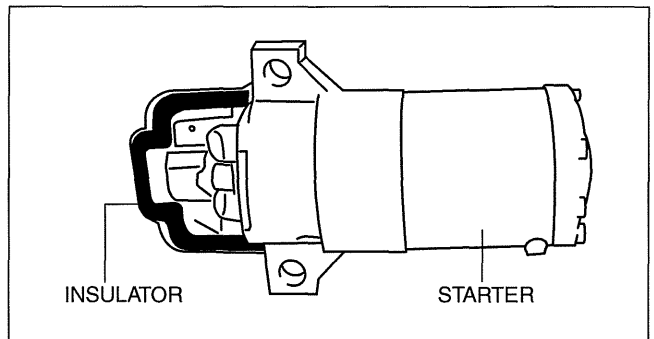
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2. Degrease the insulator attachment area.



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3. Attach a new insulator to the starter.



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01-19A

STARTING SYSTEM [LF, L5]

STARTER INSPECTION [LF, L5]

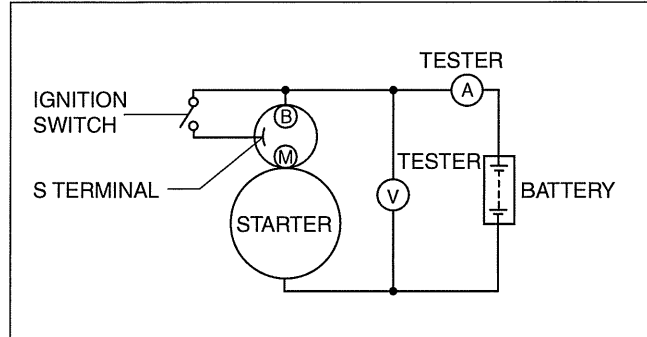
id0119a7800300

On-vehicle Inspection

1. Verify that the battery is fully charged.
2. The starter is normal if it rotates smoothly and without any noise when the engine is cranked.
 - If the starter does not operate, inspect the following:
 - Remove the starter, and inspect the starter unit.
 - Inspect the related wiring harnesses, the ignition switch, and the transaxle range switch (ATX).

No-load Test

1. Verify that the battery is fully charged.
2. Connect the starter, battery, and a tester as shown in the figure.
3. Operate the starter and verify that it rotates smoothly.
 - If the starter does not rotate smoothly, inspect the starter unit.
4. Measure the voltage and current while the starter is operating.
 - If not within the specification, replace the starter.



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Starter no-load test voltage

11 V

Starter no-load test current

LF : 95 A or less

L5 : 90 A or less

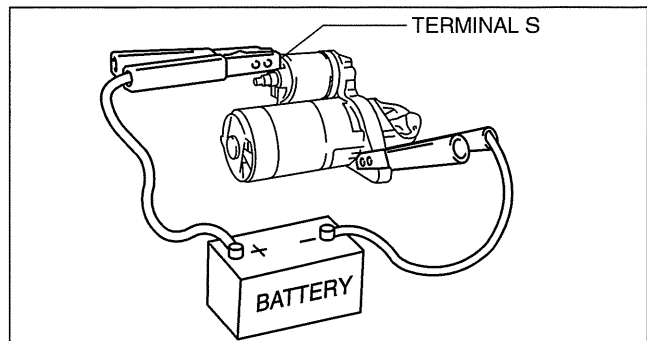
Magnetic Switch Operation Inspection

Pull-out test

Note

- Depending on the battery charge condition, the starter motor pinion may rotate while in an extended state. This is due to current flowing to the starter motor through the pull-in coil to turn the starter motor, and does not indicate an abnormality.

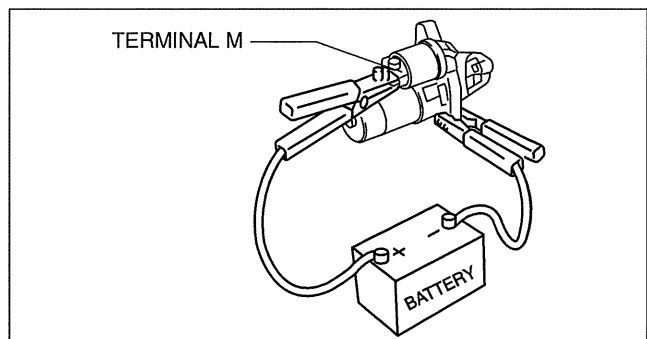
1. Verify that the starter motor pinion is extended while battery positive voltage is connected to terminal S and the starter body is grounded.
 - If the starter motor pinion is not extended, repair or replace the starter.



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Return test

1. Disconnect the motor wire from terminal M.
2. Connect battery positive voltage to terminal M and ground the starter body.
3. Pull out the drive pinion with a screwdriver. Verify that it returns to its original position when released.
 - If it does not return, repair or replace the starter.



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STARTING SYSTEM [LF, L5]

Pinion Gap Inspection

1. Pull out the drive pinion with the battery positive voltage connected to terminal S and the starter body grounded.

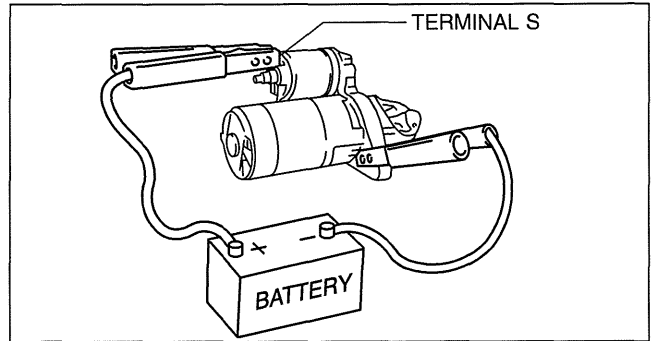
Caution

- Applying power for more than 10 s can damage the starter. Do not apply power for more than 10 s.

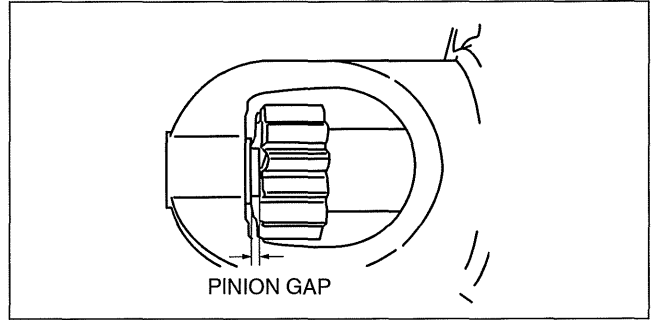
2. Measure the pinion gap while the drive pinion is extended.
 - If not as specified, adjust with an adjustment washer (between drive housing front cover and magnetic switch).

Starter pinion gap

0.5—2.0 mm {0.02—0.07 in}



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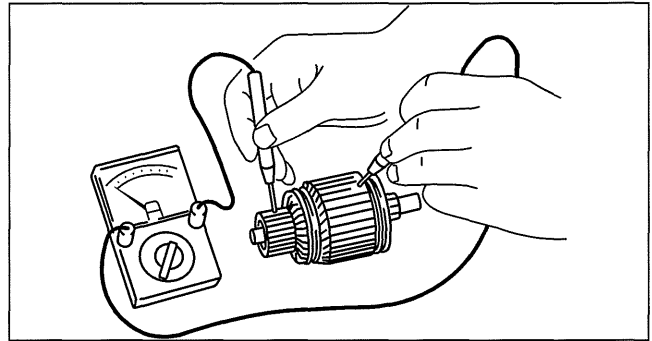


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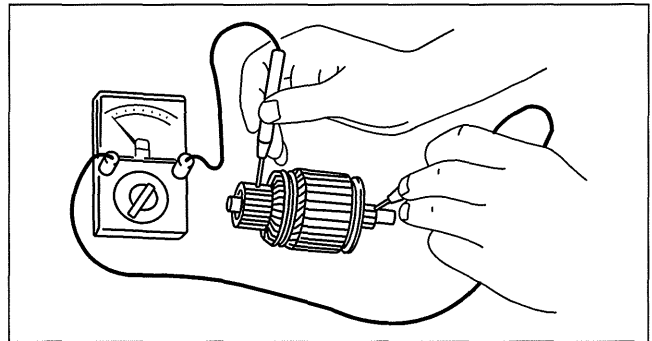
Starter Inner Parts Inspection

Armature

1. Verify that there is no continuity between the commutator and the core at each segment using a tester.
 - If there is continuity, replace the armature.
2. Verify that there is no continuity between the commutator and the shaft using a tester.
 - If there is continuity, replace the armature.



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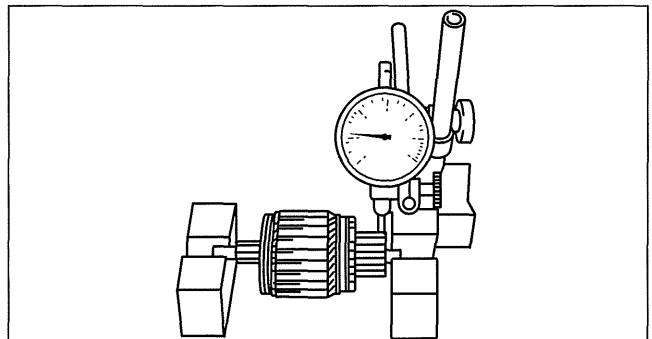


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3. Place the armature on V-blocks, and measure the runout using a dial indicator.
 - If not within the specification, replace the armature.

Starter armature runout

0.1 mm {0.004 in} max.



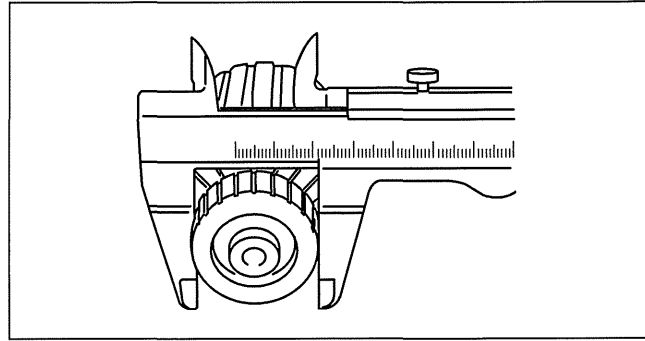
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01-19A

STARTING SYSTEM [LF, L5]

4. Measure the commutator diameter.
 - If not within the minimum specification, replace the armature.

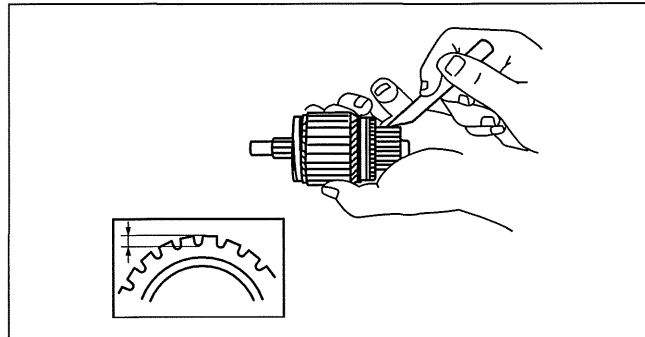
Starter commutator diameter
Standard: 29.4 mm {1.16 in}
Minimum: 28.8 mm {1.13 in}



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5. Measure the segment groove depth of the commutator.
 - If not within the minimum specification, undercut the grooves to the standard depth.

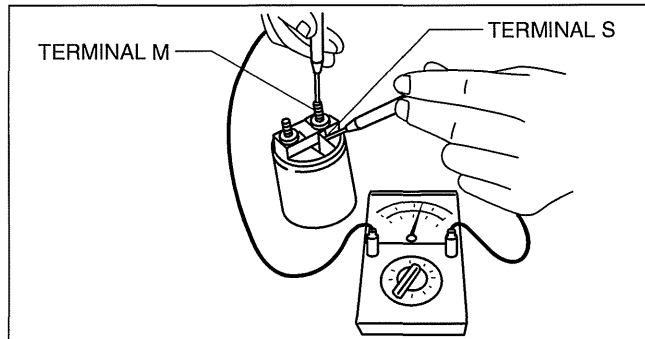
Segment groove depth of starter commutator
Standard: 0.5 mm {0.02 in}
Minimum: 0.2 mm {0.008 in}



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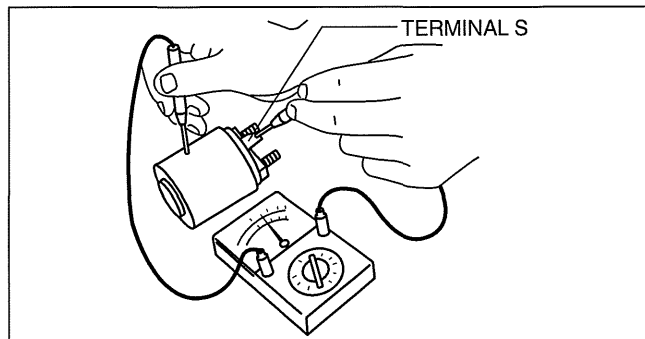
Magnetic switch

1. Inspect for continuity between terminals S and M using a tester.
 - If there is no continuity, replace the magnetic switch.



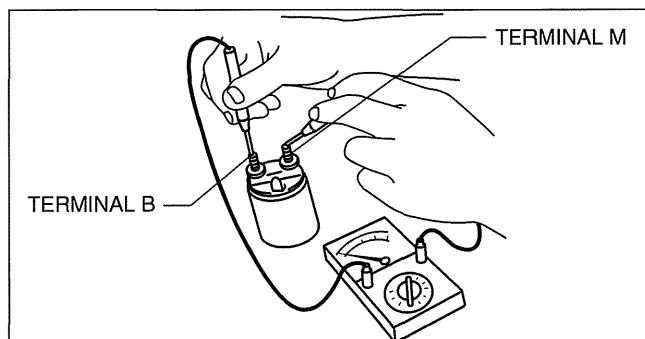
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2. Inspect for continuity between terminal S and the body using a tester.
 - If there is no continuity, replace the magnetic switch.



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3. Verify that there is no continuity between terminals M and B using a tester.
 - If there is continuity, replace the magnetic switch.

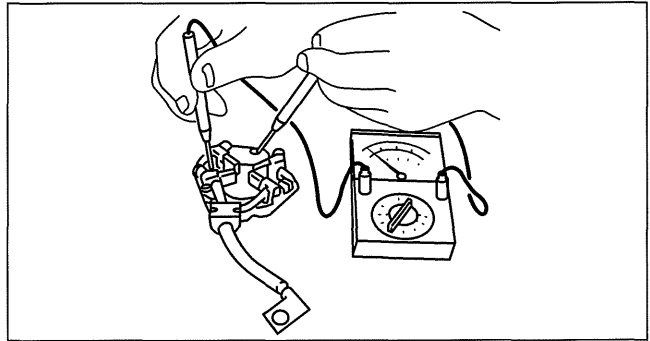


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STARTING SYSTEM [LF, L5]

Brush and brush holder

1. Verify that there is no continuity between each insulated brush and plate using a tester.
 - If there is continuity, replace the brush holder.



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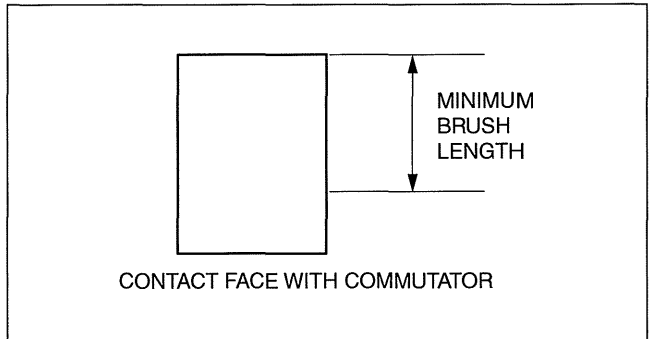
01-19A

2. Measure the brush length.
 - If any brush is worn almost to or beyond the minimum specification, replace all of the brushes.

Starter brush length

Standard: 12.3 mm {0.484 in}

Minimum: 5.5 mm {0.22 in}



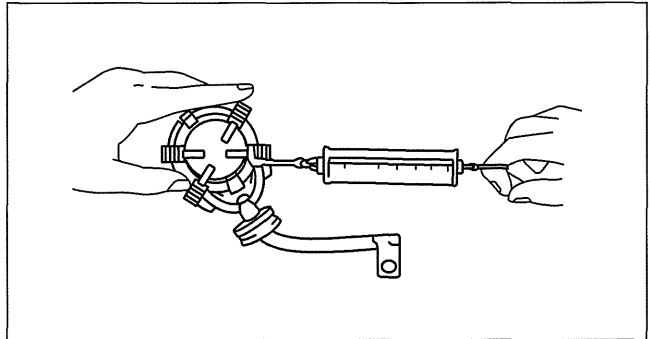
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3. Measure the brush spring force using a spring balance.
 - If not within the minimum specification, replace the brush and brush holder component.

Starter brush spring force

Standard: 15.1—20.4 N {1.54—2.08 kgf, 3.40—4.58 lbf}

Minimum: 2.75 N {0.280 kgf, 0.618 lbf}



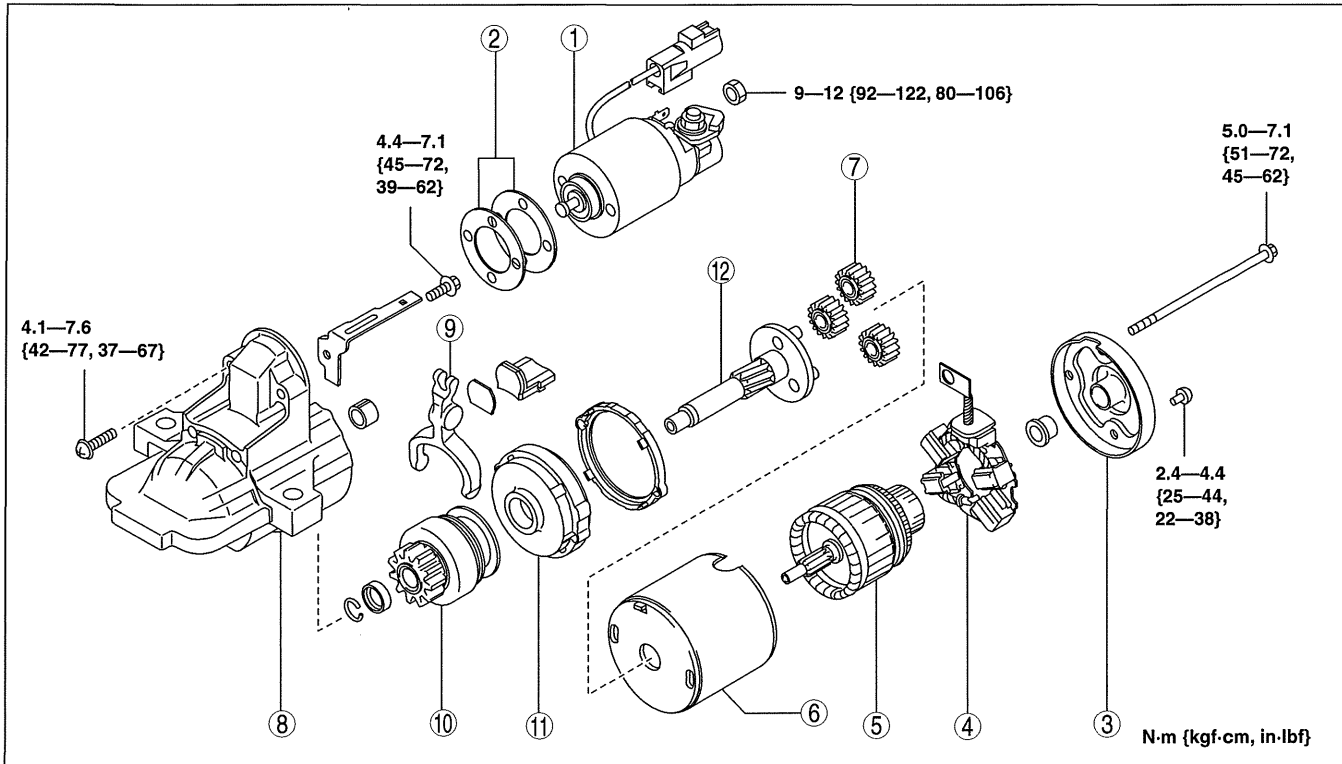
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STARTING SYSTEM [LF, L5]

STARTER DISASSEMBLY/ASSEMBLY [LF, L5]

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1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



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1	Magnetic switch
2	Adjustment washer
3	Rear housing
4	Brush and brush holder
5	Armature
6	Yoke

7	Planetary gear
8	Front cover
9	Lever
10	Drive pinion
11	Internal gear
12	Gear shaft

STARTER INTERLOCK SWITCH INSPECTION [LF, L5]

id0119a7104200

Caution

- Do not reuse the starter interlock switch if it is removed from the vehicle even once. Replace with a new starter interlock switch when installing.

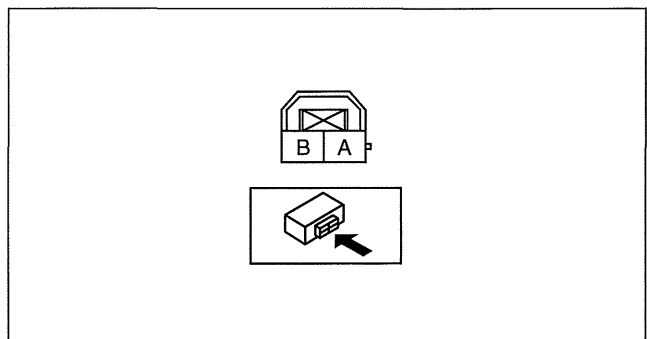
1. Disconnect the negative battery cable.
2. Disconnect the starter interlock switch connector.
3. Verify that the continuity is as indicated in the table using a tester.

○—○ : Continuity

Condition	Terminal	
	A	B
Clutch pedal is depressed	○—○	○—○
Clutch pedal is not depressed	○	○

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- If the continuity is not as indicated in the table, replace the starter interlock switch. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)



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01-19B STARTING SYSTEM [L3 WITH TC]

STARTING SYSTEM LOCATION INDEX

[L3 WITH TC] 01-19B-1

STARTER REMOVAL/INSTALLATION

[L3 WITH TC] 01-19B-2

Heater Pipe Removal Note 01-19B-3

Starter Removal Note 01-19B-3

Starter Installation Note 01-19B-3

STARTER INSPECTION

[L3 WITH TC] 01-19B-4

On-vehicle Inspection 01-19B-4

No-load Test01-19B-4

Magnetic Switch Operation

Inspection01-19B-4

Pinion Gap Inspection.....01-19B-5

Starter Inner Parts Inspection01-19B-5

STARTER DISASSEMBLY/ASSEMBLY

[L3 WITH TC]01-19B-8

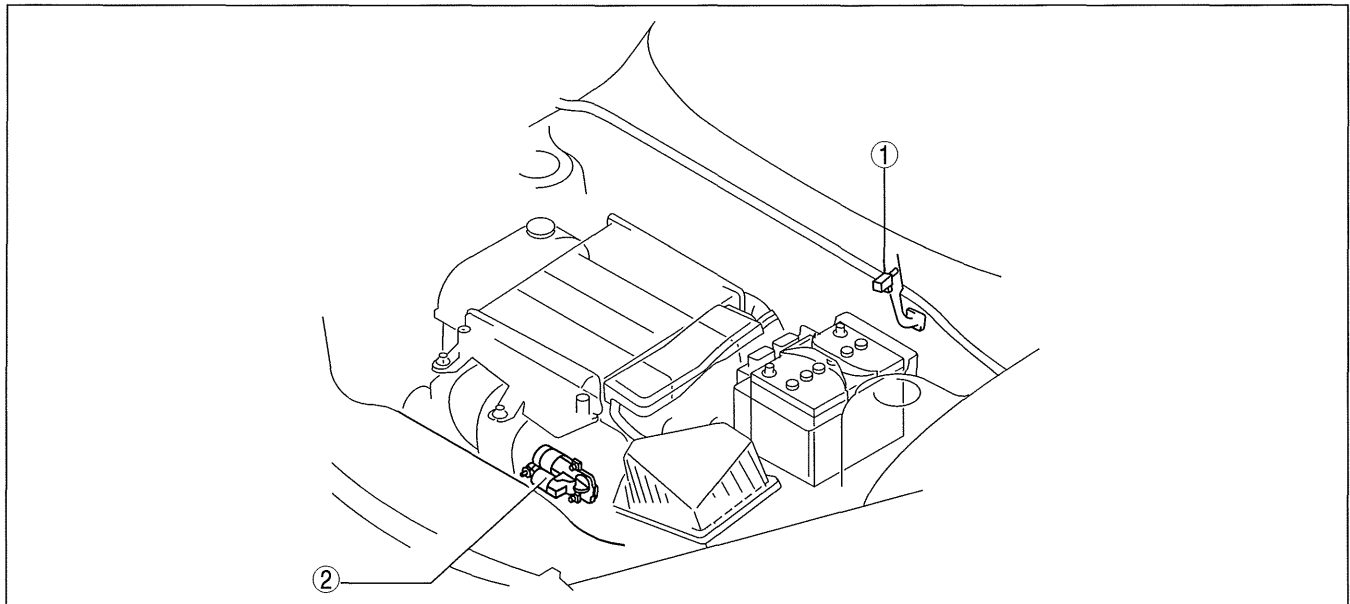
STARTER INTERLOCK SWITCH

INSPECTION [L3 WITH TC].01-19B-8

01-19B

STARTING SYSTEM LOCATION INDEX [L3 WITH TC]

id011939800100



am3uuw0000610

1	Starter interlock switch (See 01-19B-8 STARTER INTERLOCK SWITCH INSPECTION [L3 WITH TC].)
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2	Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-19B-4 STARTER INSPECTION [L3 WITH TC].) (See 01-19B-8 STARTER DISASSEMBLY/ASSEMBLY [L3 WITH TC].)
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STARTING SYSTEM [L3 WITH TC]

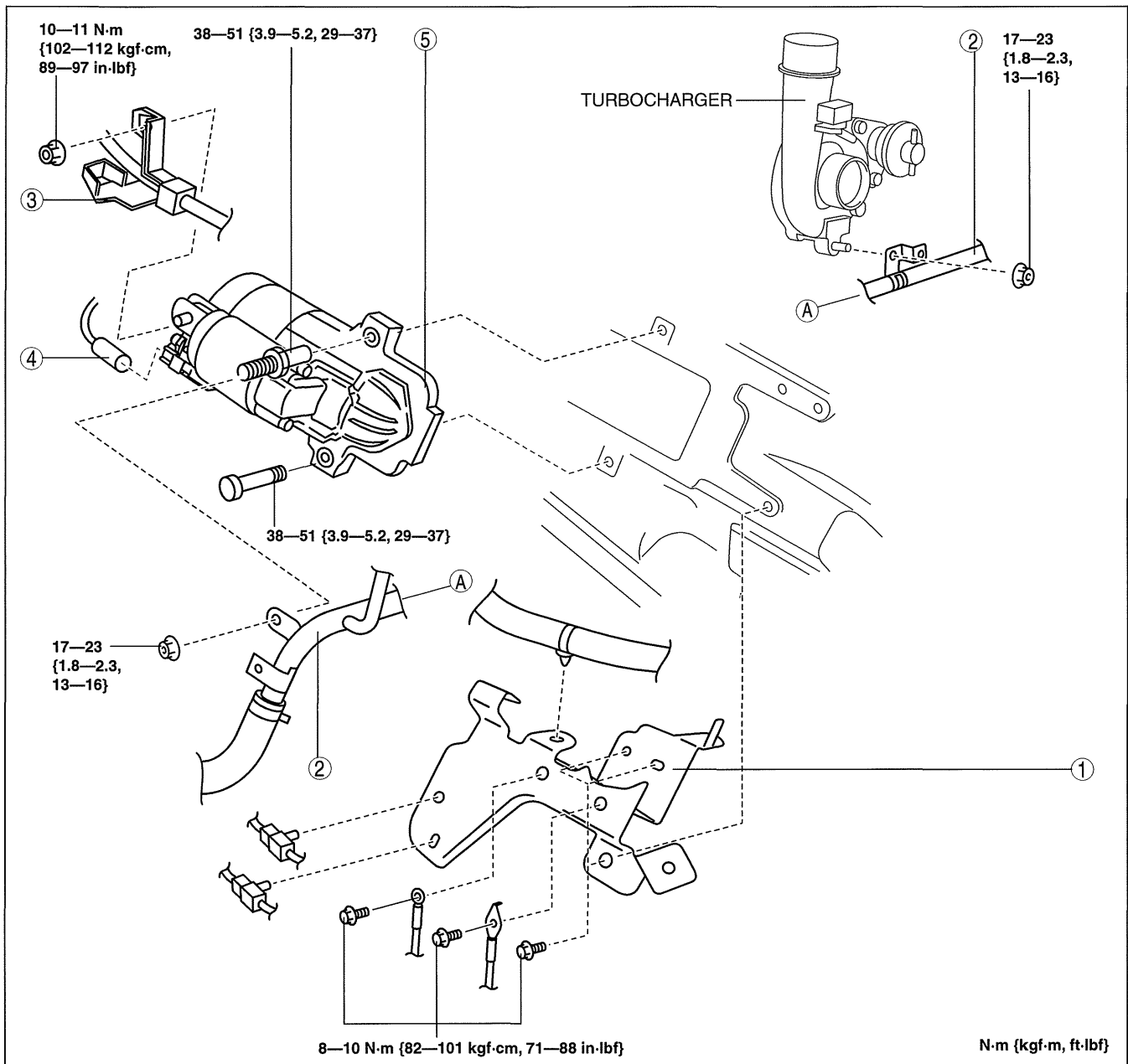
STARTER REMOVAL/INSTALLATION [L3 WITH TC]

id011939800200

Warning

- Remove and install all parts when the engine is cold, otherwise they can cause severe burns or serious injury.
- When the battery cables are connected, touching the vehicle body with starter terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.

1. Remove the battery, battery tray and PCM component. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the air cleaner, charge air cooler cover, and air hose and air duct component. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.



am3uuw0000610

1	Wiring harness and wiring harness bracket
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2	Heater pipe (See 01-19B-3 Heater Pipe Removal Note.)
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STARTING SYSTEM [L3 WITH TC]

3	Terminal B cable
4	Terminal S connector

5	Starter (See 01-19B-3 Starter Removal Note.) (See 01-19B-3 Starter Installation Note.)
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Heater Pipe Removal Note

1. Remove the heater pipe with the water hoses still connected. Position the heater pipe so that it is out of the way.

01-19B

Starter Removal Note

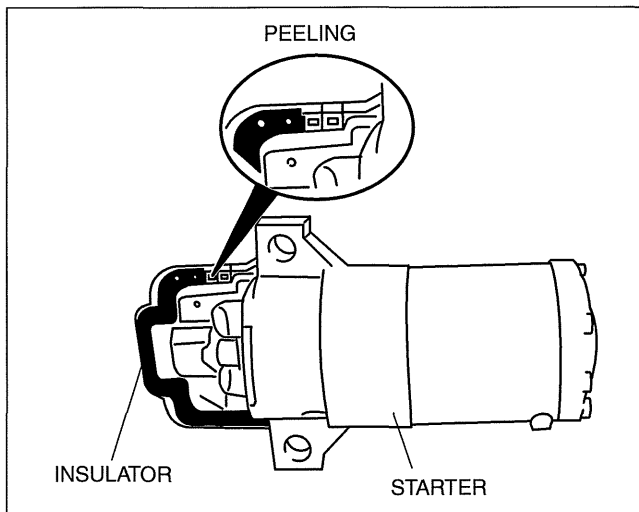
1. Remove the starter from below the engine compartment.

Starter Installation Note

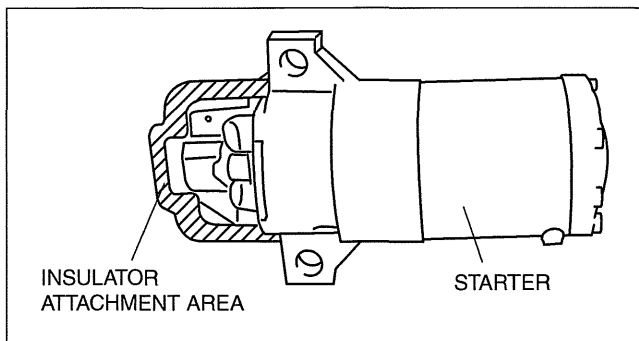
Note

- If there is peeling on or damage to the insulator, attach a new insulator using the following procedure:

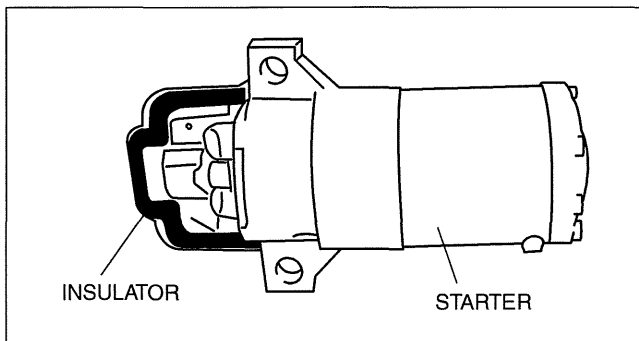
1. Peel off the insulator from the starter completely using a scraper.



2. Degrease the insulator attachment area.



3. Attach a new insulator to the starter.



STARTING SYSTEM [L3 WITH TC]

STARTER INSPECTION [L3 WITH TC]

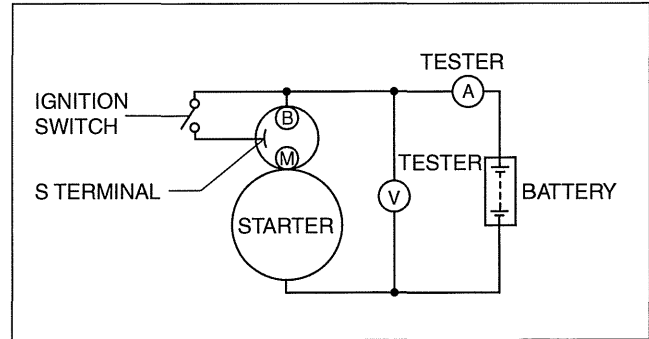
id011939800300

On-vehicle Inspection

1. Verify that the battery is fully charged.
2. The starter is normal if it rotates smoothly and without any noise when the engine is cranked.
 - If the starter does not operate, inspect the following:
 - Remove the starter, and inspect the starter unit.
 - Inspect the related wiring harnesses and the ignition switch.

No-load Test

1. Verify that the battery is fully charged.
2. Connect the starter, battery, and a tester as shown in the figure.
3. Operate the starter and verify that it rotates smoothly.
 - If the starter does not rotate smoothly, inspect the starter unit.
4. Measure the voltage and current while the starter is operating.
 - If not within the specification, replace the starter.



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Starter no-load test voltage

11 V

Starter no-load test current

90 A or less

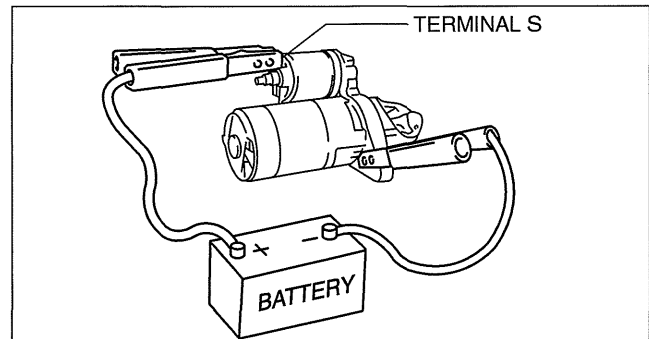
Magnetic Switch Operation Inspection

Pull-out test

Note

- Depending on the battery charge condition, the starter motor pinion may rotate while in an extended state. This is due to current flowing to the starter motor through the pull-in coil to turn the starter motor, and does not indicate an abnormality.

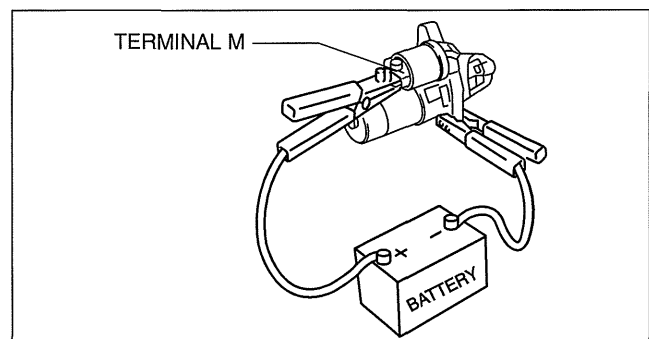
1. Verify that the starter motor pinion is extended while battery positive voltage is connected to terminal S and the starter body is grounded.
 - If the starter motor pinion is not extended, repair or replace the starter.



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Return test

1. Disconnect the motor wire from terminal M.
2. Connect battery positive voltage to terminal M and ground the starter body.
3. Pull out the drive pinion with a screwdriver. Verify that it returns to its original position when released.
 - If it does not return, repair or replace the starter.



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STARTING SYSTEM [L3 WITH TC]

Pinion Gap Inspection

1. Pull out the drive pinion with the battery positive voltage connected to terminal S and the starter body grounded.

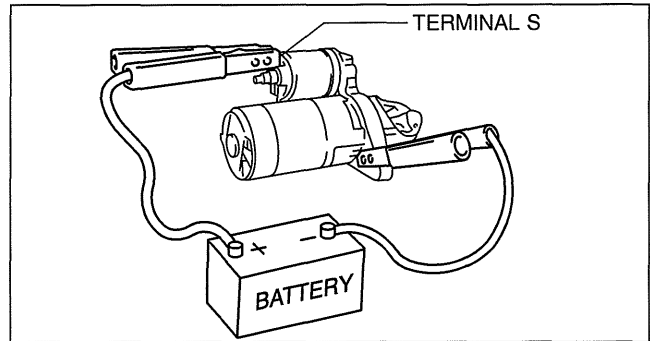
Caution

- Applying power for more than 10 s can damage the starter. Do not apply power for more than 10 s.

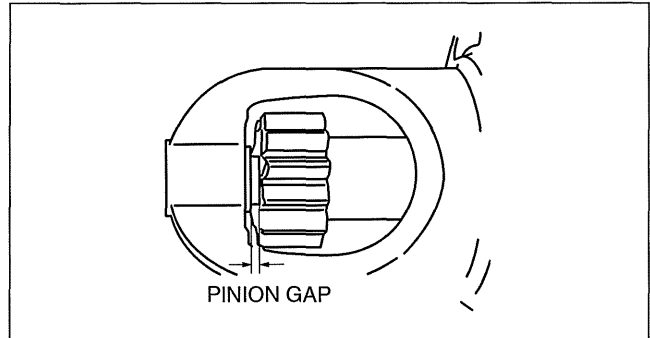
2. Measure the pinion gap while the drive pinion is extended.
 - If not as specified, adjust with an adjustment washer (between drive housing front cover and magnetic switch).

Starter pinion gap

0.5—2.0 mm {0.02—0.07 in}



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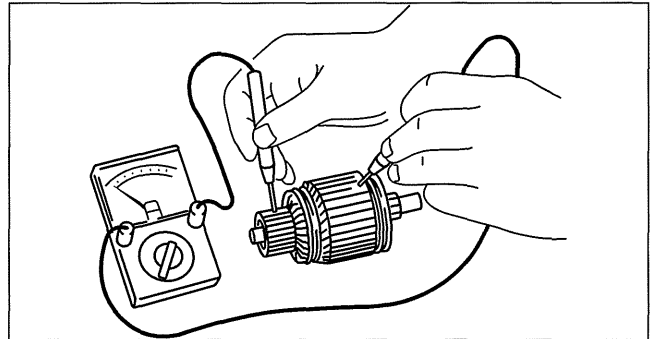


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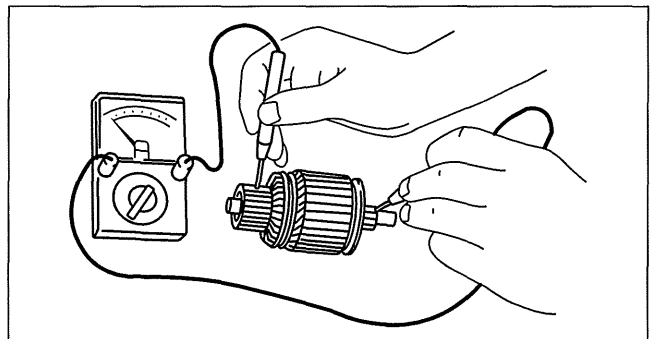
Starter Inner Parts Inspection

Armature

1. Verify that there is no continuity between the commutator and the core at each segment using a tester.
 - If there is continuity, replace the armature.
2. Verify that there is no continuity between the commutator and the shaft using a tester.
 - If there is continuity, replace the armature.



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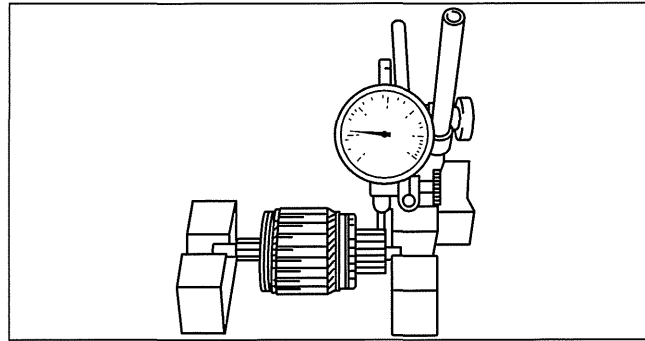
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01-19B

STARTING SYSTEM [L3 WITH TC]

- Place the armature on V-blocks, and measure the runout using a dial indicator.
 - If not within the specification, replace the armature.

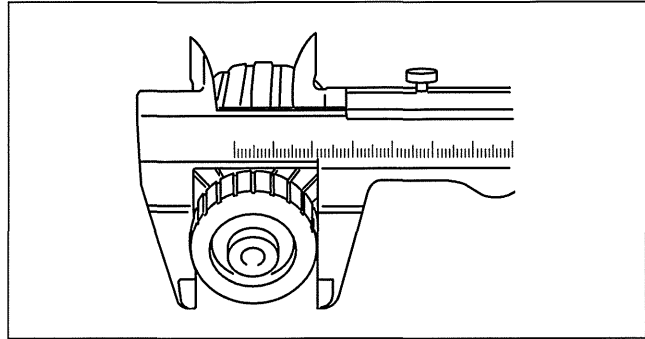
Starter armature runout
0.1 mm {0.004 in} max.



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- Measure the commutator diameter.
 - If not within the minimum specification, replace the armature.

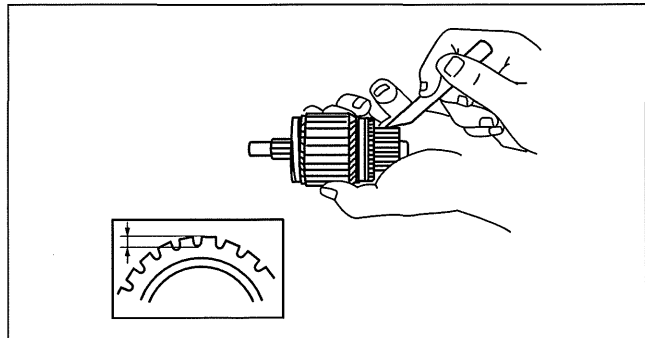
Starter commutator diameter
Standard: 29.4 mm {1.16 in}
Minimum: 28.8 mm {1.13 in}



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- Measure the segment groove depth of the commutator.
 - If not within the minimum specification, undercut the grooves to the standard depth.

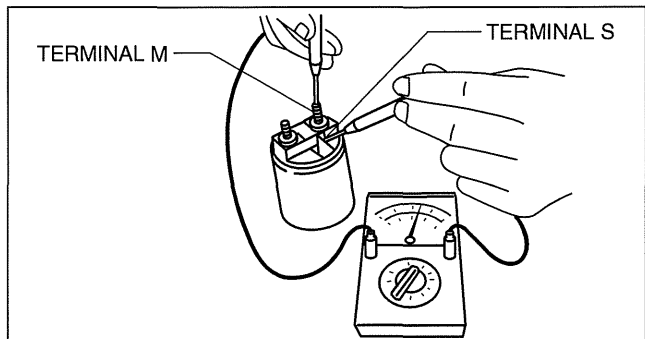
Segment groove depth of starter commutator
Standard: 0.5 mm {0.02 in}
Minimum: 0.2 mm {0.008 in}



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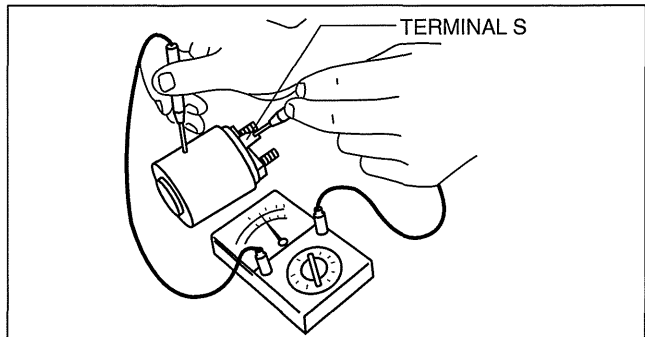
Magnetic switch

- Inspect for continuity between terminals S and M using a tester.
 - If there is no continuity, replace the magnetic switch.



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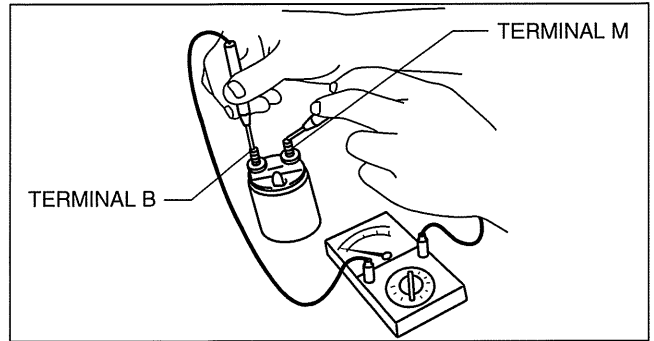
- Inspect for continuity between terminal S and the body using a tester.
 - If there is no continuity, replace the magnetic switch.



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STARTING SYSTEM [L3 WITH TC]

3. Verify that there is no continuity between terminals M and B using a tester.
 - If there is continuity, replace the magnetic switch.

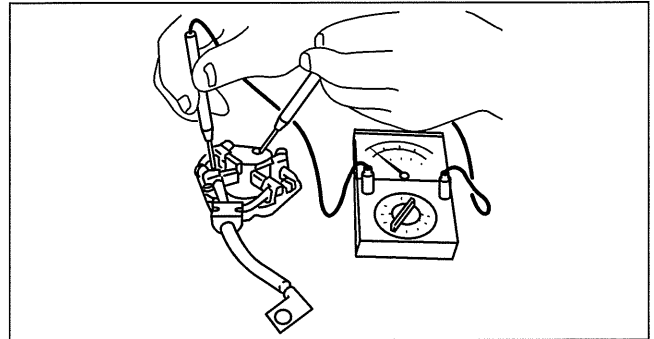


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01-19B

Brush and brush holder

1. Verify that there is no continuity between each insulated brush and plate using a tester.
 - If there is continuity, replace the brush holder.



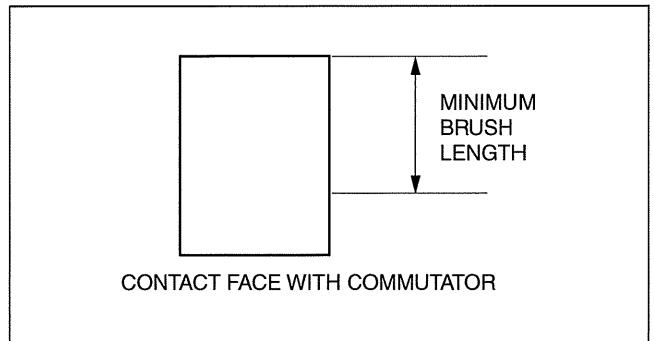
am6zzw0000238

2. Measure the brush length.
 - If any brush is worn almost to or beyond the minimum specification, replace all of the brushes.

Starter brush length

Standard: 12.3 mm {0.484 in}

Minimum: 5.5 mm {0.22 in}



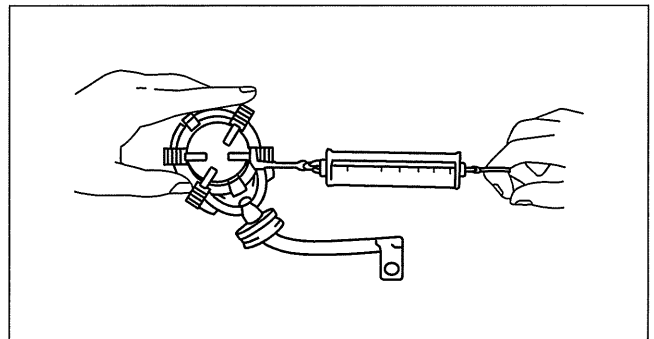
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3. Measure the brush spring force using a spring balance.
 - If not within the minimum specification, replace the brush and brush holder component.

Starter brush spring force

Standard: 15.1—20.4 N {1.54—2.08 kgf, 3.40—4.58 lbf}

Minimum: 2.75 N {0.280 kgf, 0.618 lbf}



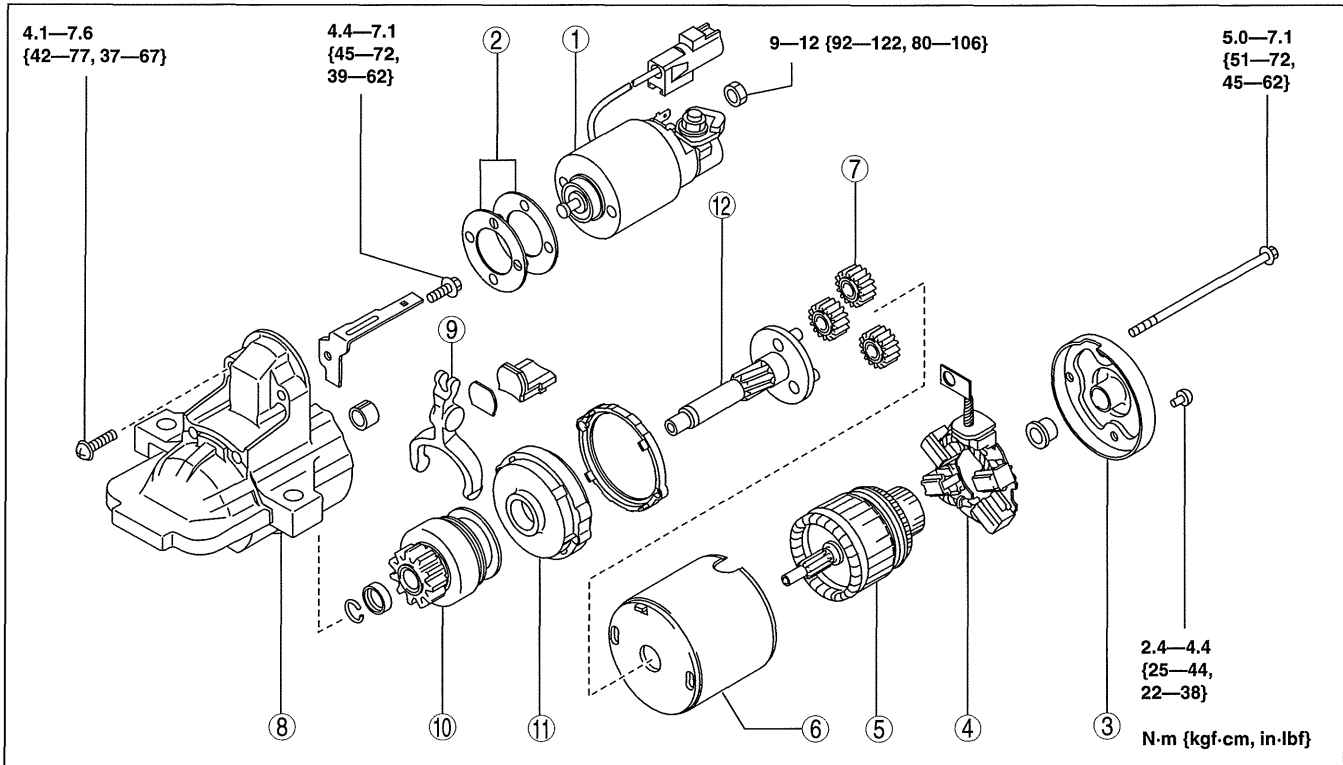
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STARTING SYSTEM [L3 WITH TC]

STARTER DISASSEMBLY/ASSEMBLY [L3 WITH TC]

id011939104500

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



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1	Magnetic switch
2	Adjustment washer
3	Rear housing
4	Brush and brush holder
5	Armature
6	Yoke

7	Planetary gear
8	Front cover
9	Lever
10	Drive pinion
11	Internal gear
12	Gear shaft

STARTER INTERLOCK SWITCH INSPECTION [L3 WITH TC]

id011939104200

Caution

- Do not reuse the starter interlock switch if it is removed from the vehicle even once. Replace with a new starter interlock switch when installing.

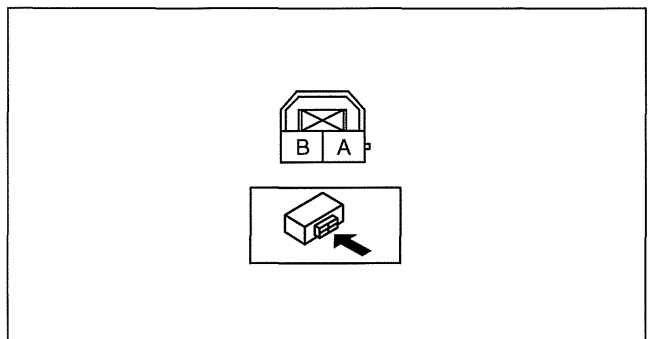
1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the starter interlock switch connector.
4. Verify that the continuity is as indicated in the table using a tester.

○—○ : Continuity

Condition	Terminal	
	A	B
Clutch pedal is depressed	○—○	○—○
Clutch pedal is not depressed		

am6zzw0000236

- If the continuity is not as indicated in the table, replace the starter interlock switch. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)



am6xuw0000234

01-20A CRUISE CONTROL SYSTEM [LF, L5]

CRUISE CONTROL SWITCH

INSPECTION [LF, L5] 01-20A-1

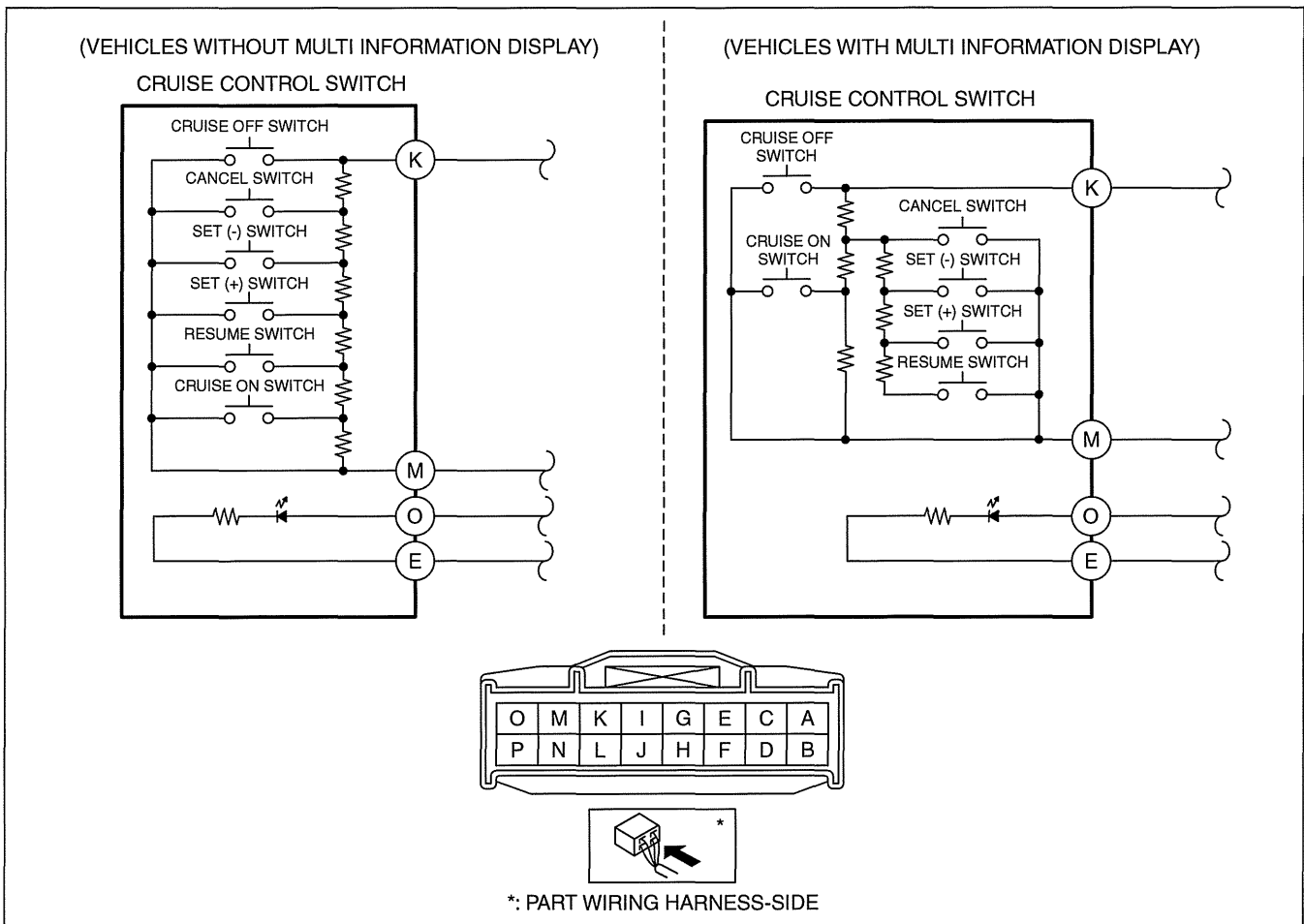
CRUISE CONTROL SWITCH INSPECTION [LF, L5]

id0120b5800100

01-20A

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
4. Disconnect the cruise control switch connector.
5. Inspect for resistance and continuity between cruise control switch terminals K and M (part wiring harness-side) using a tester.
 - If not as specified, replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)

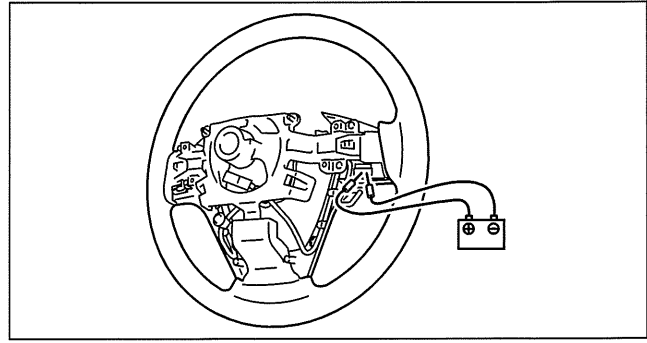
Switch Condition	Resistance (ohm)
Cruise OFF switch held at on	Continuity
CANCEL switch held at on	Approx. 120
SET (-) switch held at on	Approx. 300
SET (+) switch held at on	Approx. 600
RESUME switch held at on	Approx. 1,110
Cruise ON switch held at on	Approx. 2,110
Neutral	Approx. 4,310



am3uuw0000267

CRUISE CONTROL SYSTEM [LF, L5]

6. Apply battery positive voltage to cruise control switch connector terminal O (part wiring harness-side), and terminal E (part wiring harness-side) to ground.
7. Verify that the LED illuminates.
 - If the LED does not illuminate, replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)



am3uuw0000333

01-20B CRUISE CONTROL SYSTEM [L3 WITH TC]

CRUISE CONTROL SWITCH INSPECTION [L3 WITH TC] 01-20B-1

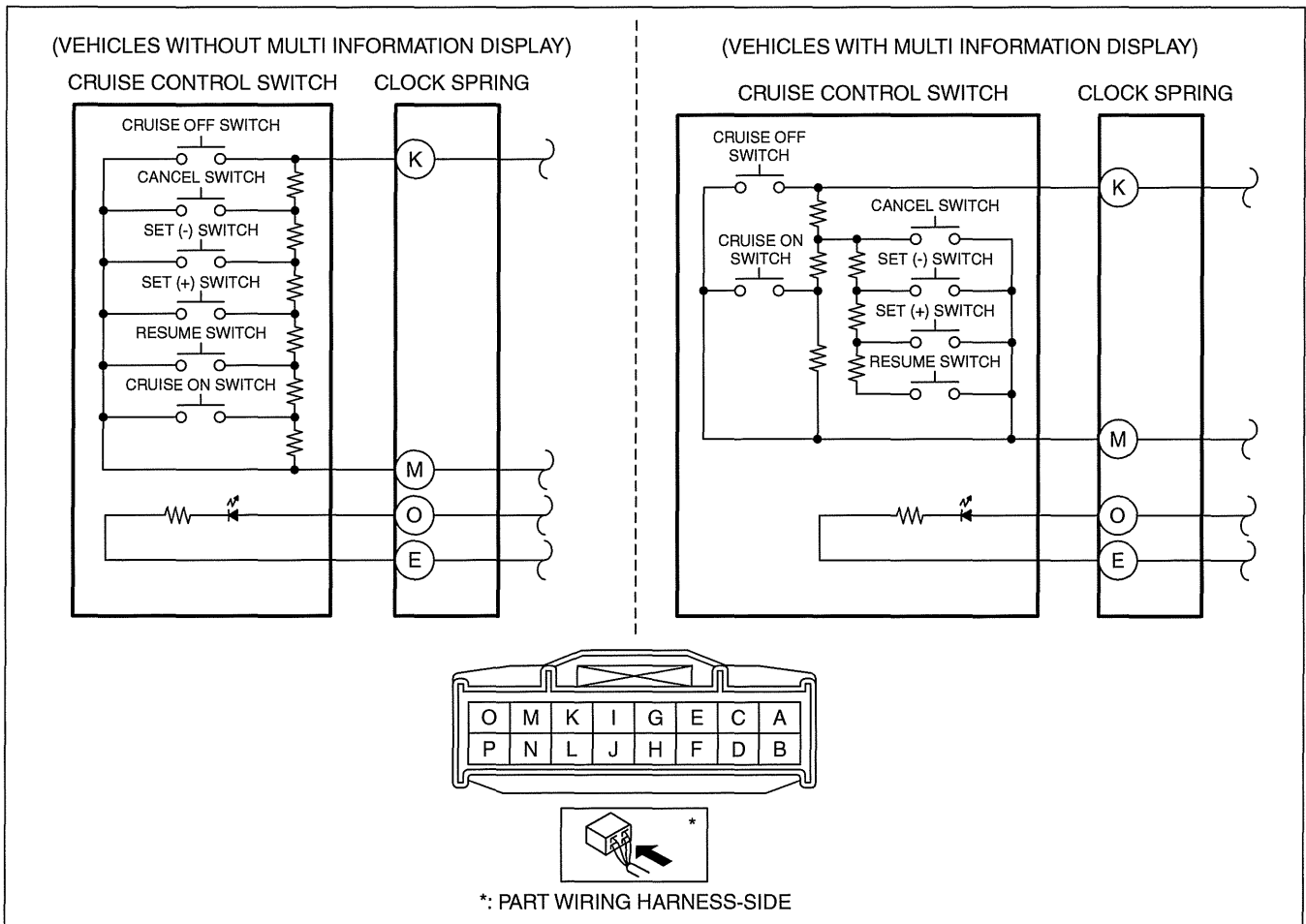
CRUISE CONTROL SWITCH INSPECTION [L3 WITH TC]

id012039800100

01-20B

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
4. Disconnect the clock spring connector (part wiring harness-side).
5. Inspect for resistance and continuity between clock spring terminals K and M (part wiring harness-side) using a tester.
 - If not as specified, replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)

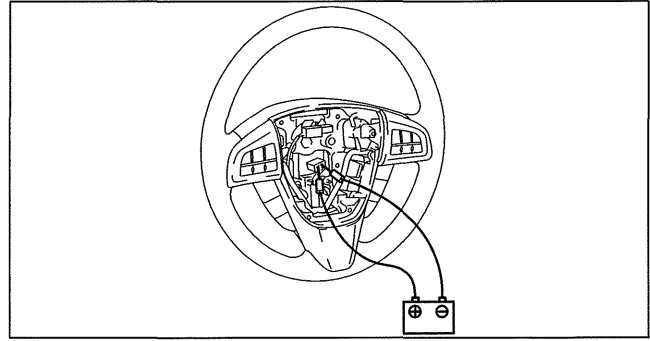
Switch Condition	Resistance (ohm)
Cruise OFF switch held at on	Continuity
CANCEL switch held at on	Approx. 120
SET (-) switch held at on	Approx. 300
SET (+) switch held at on	Approx. 600
RESUME switch held at on	Approx. 1,110
Cruise ON switch held at on	Approx. 2,110
Neutral	Approx. 4,310



am3uuw0000586

CRUISE CONTROL SYSTEM [L3 WITH TC]

6. Apply battery positive voltage to clock spring connector terminal O (part wiring harness-side), and terminal E (part wiring harness-side) to ground.
7. Verify that the LED illuminates.
 - If the LED does not illuminate, replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)



am3zzw0000702

01-40A CONTROL SYSTEM [LF, L5]

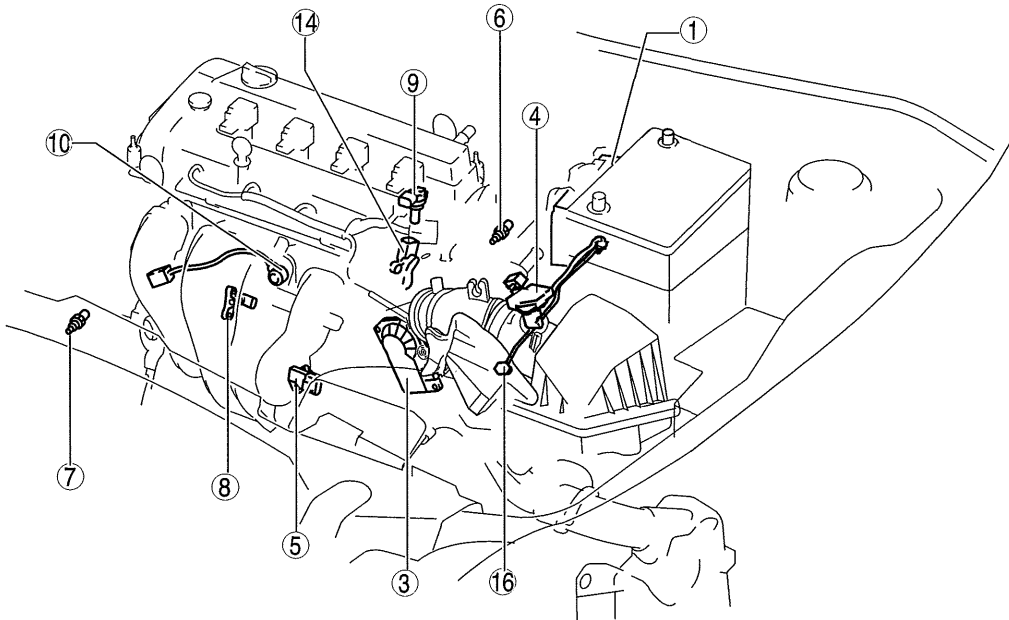
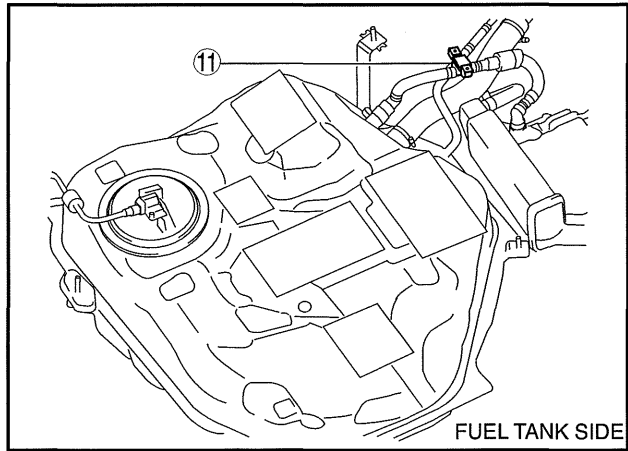
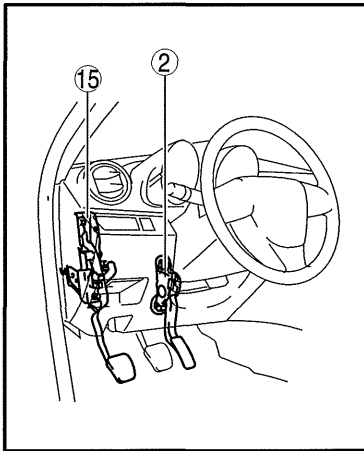
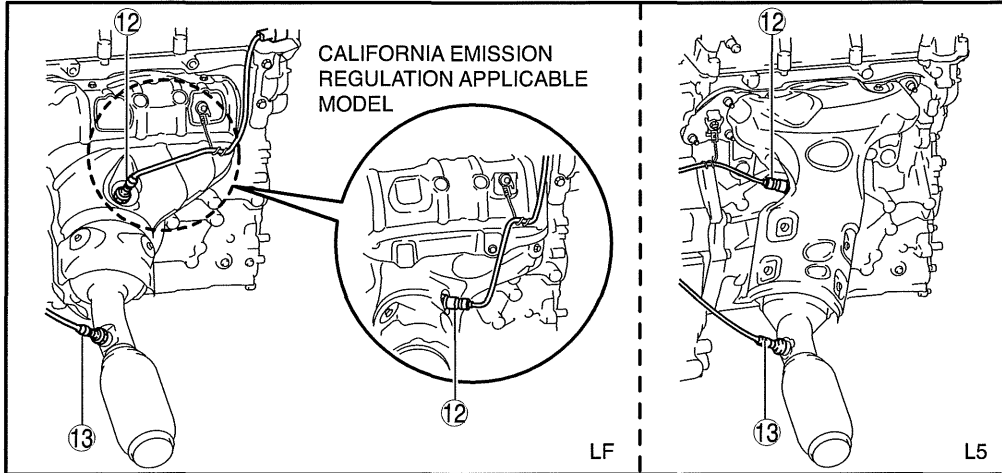
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ECT Sensor No.2 Inspection	01-40A-24
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INSPECTION [LF, L5]	01-40A-25
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Voltage Inspection	01-40A-25
INTAKE AIR TEMPERATURE (IAT)	
SENSOR INSPECTION [LF, L5]	01-40A-25
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(MAP) SENSOR	
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(MAP) SENSOR INSPECTION	
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SENSOR INSPECTION [LF, L5]	01-40A-26
THROTTLE POSITION (TP) SENSOR	
INSPECTION [LF, L5]	01-40A-26
ACCELERATOR PEDAL POSITION	
(APP) SENSOR INSPECTION	
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CAMSHAFT POSITION (CMP) SENSOR	
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01-40A

CONTROL SYSTEM [LF, L5]

CONTROL SYSTEM LOCATION INDEX [LF, L5]

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1	<p>PCM (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40A-22 PCM CONFIGURATION [LF, L5].)</p>
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2	<p>APP sensor (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-26 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5].)</p>
---	--

CONTROL SYSTEM [LF, L5]

3	TP sensor (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-26 THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5].)
4	MAF/IAT sensor (See 01-40A-25 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [LF, L5].) (See 01-40A-25 MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5].)
5	MAP sensor (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-26 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5].)
6	ECT sensor No.1 (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].)
7	ECT sensor No.2 (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].)
8	CKP sensor (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].)

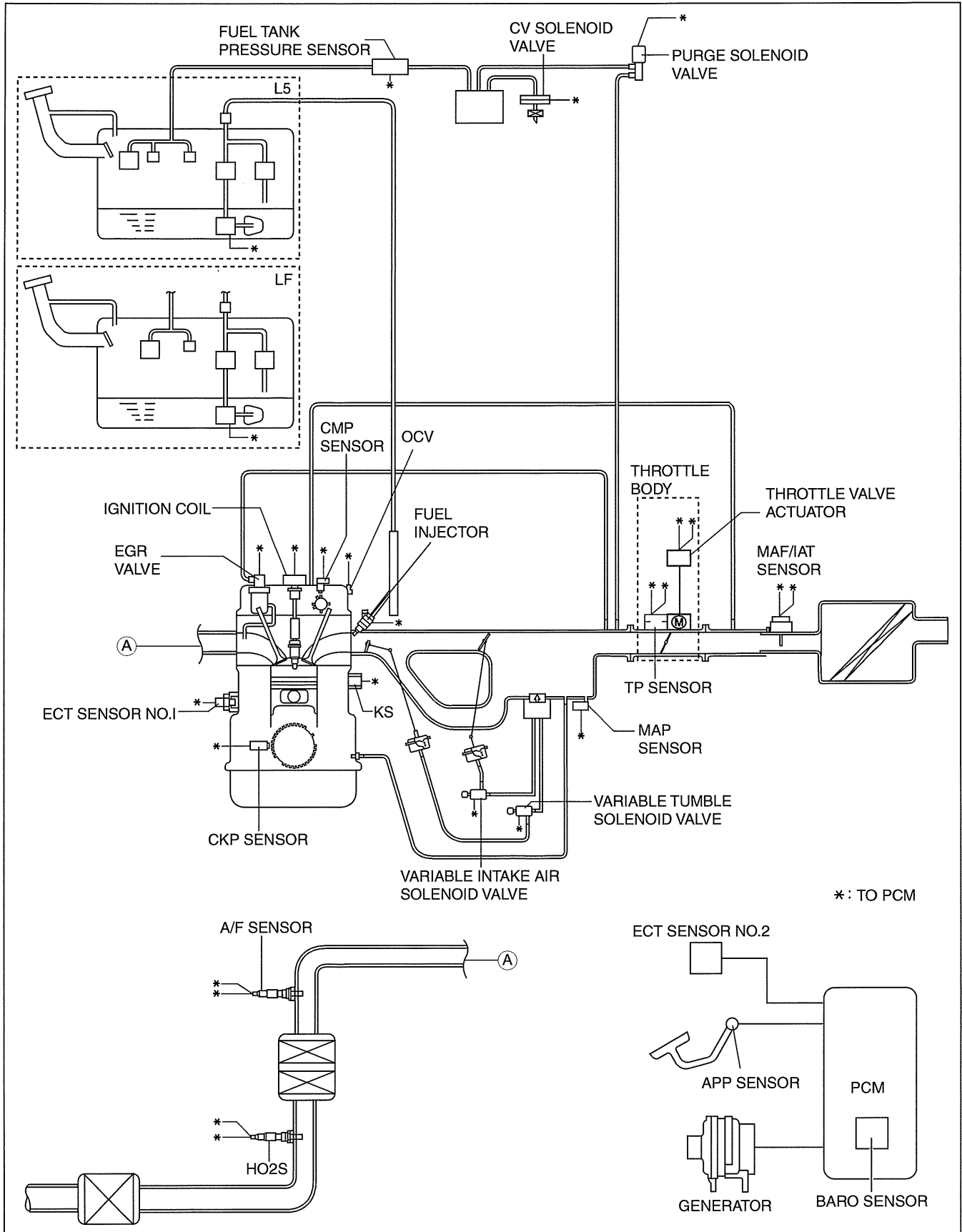
9	CMP sensor (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-33 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5].)
10	KS (See 01-40A-33 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-33 KNOCK SENSOR (KS) INSPECTION [LF, L5].)
11	Fuel tank pressure sensor (See 01-40A-33 FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5].)
12	A/F sensor (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-28 AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5].)
13	HO2S (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5].)
14	Variable tumble shutter valve switch (See 01-40A-23 VARIABLE TUMBLE SHUTTER VALVE SWITCH INSPECTION [LF, L5].)
15	Clutch pedal position (CPP) switch (MTX) (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].)
16	Neutral switch (MTX) (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].)

01-40A

CONTROL SYSTEM [LF, L5]

CONTROL SYSTEM DIAGRAM [LF, L5]

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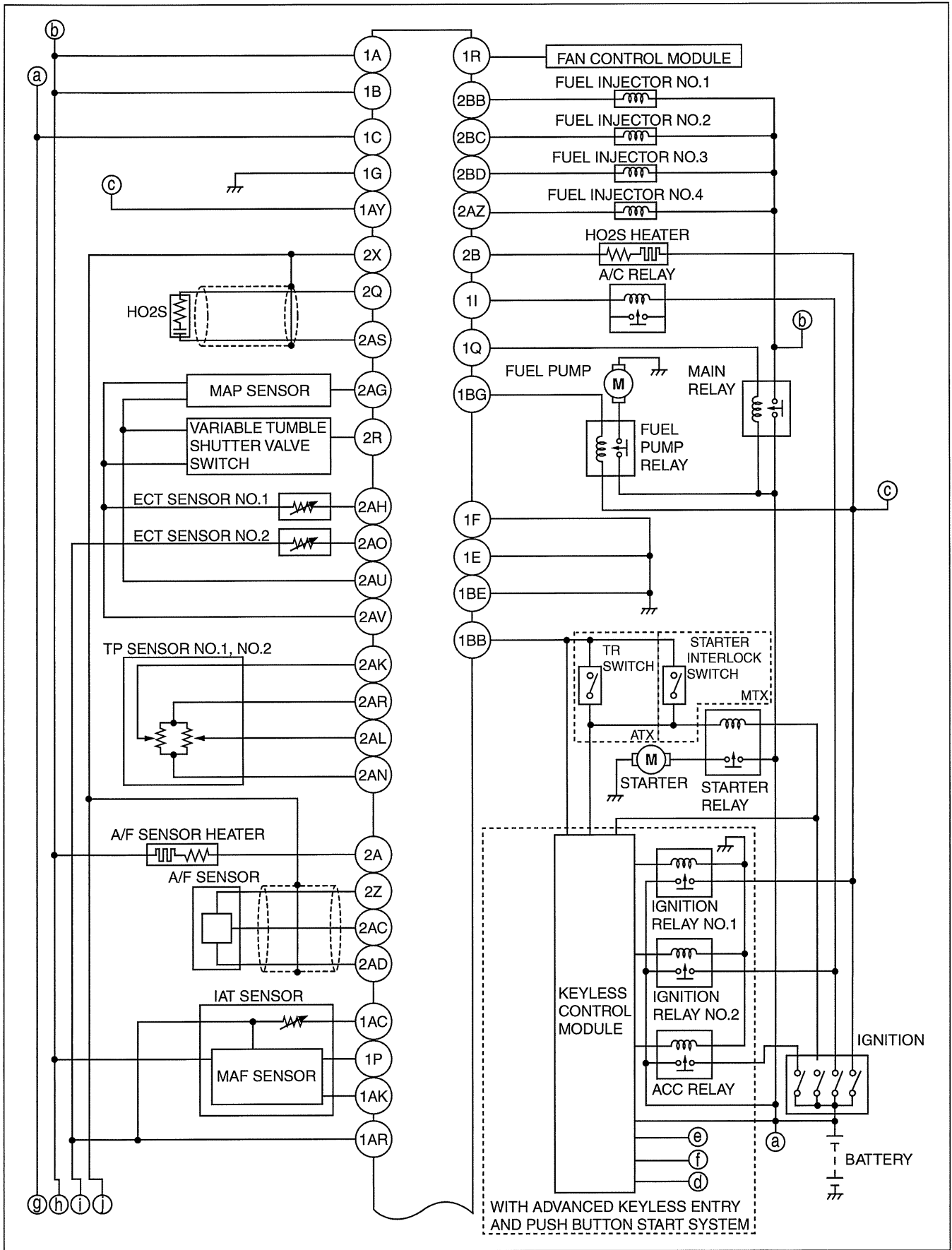
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CONTROL SYSTEM [LF, L5]

CONTROL SYSTEM WIRING DIAGRAM [LF, L5]

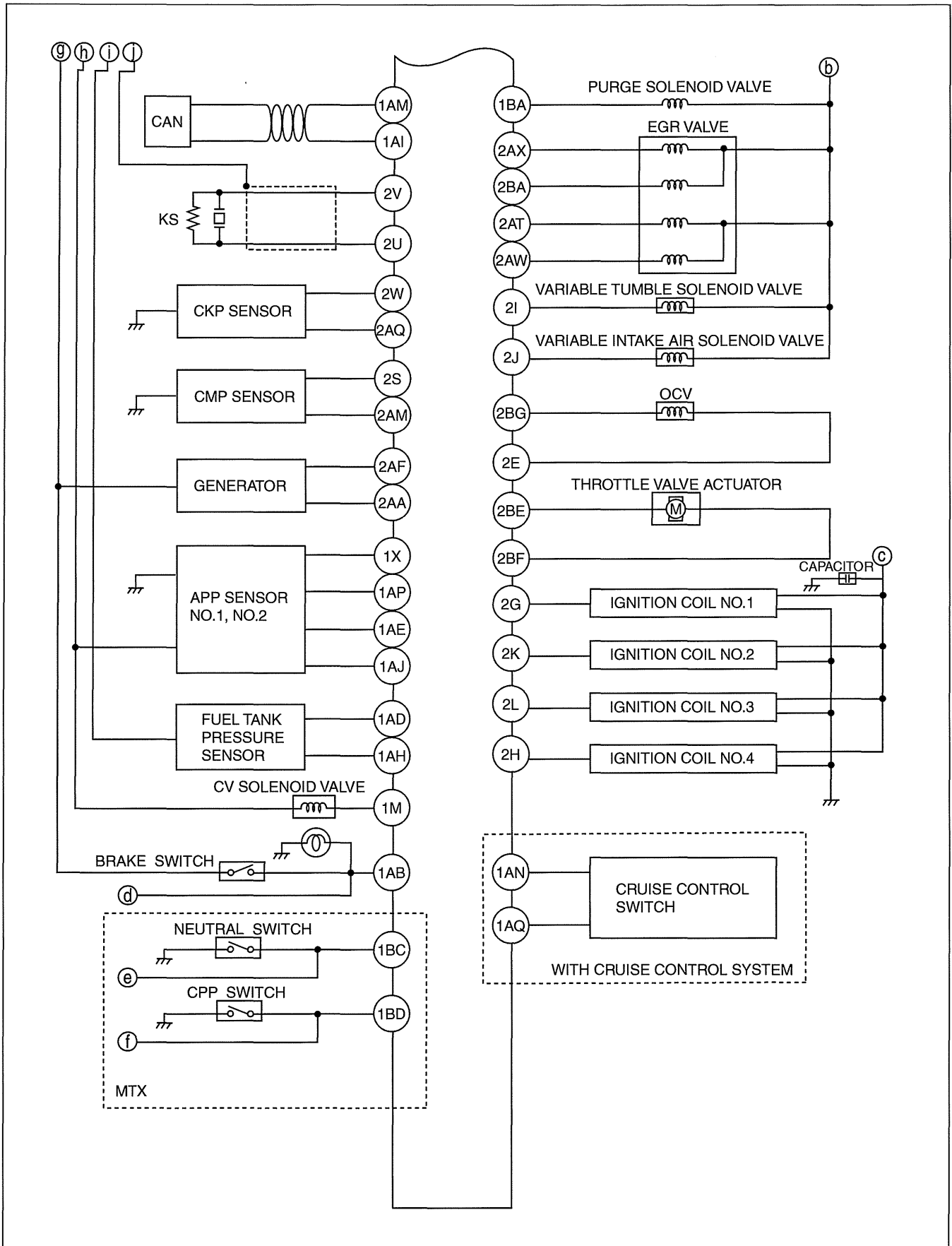
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01-40A



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CONTROL SYSTEM [LF, L5]



am3uun000045

CONTROL SYSTEM [LF, L5]

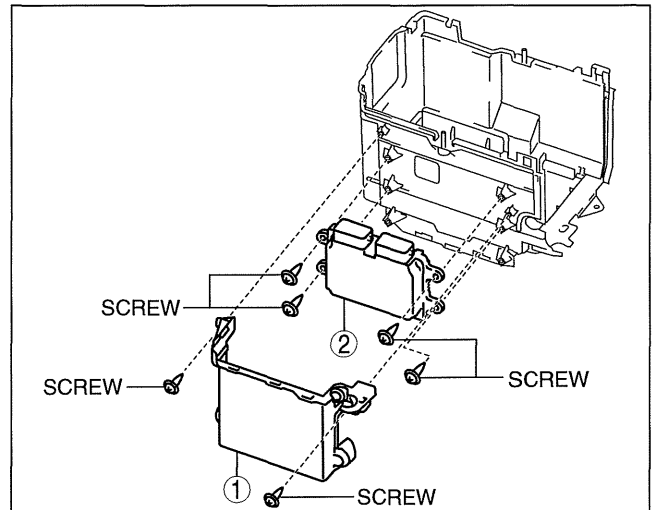
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PCM REMOVAL/INSTALLATION [LF, L5]

01-40A

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the following items: (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - Battery
 - PCM cover No.1
5. Disconnect the PCM connector.
6. Remove the battery tray and PCM component. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
7. Remove in the order indicated in the table.

1	PCM cover No.2
2	PCM

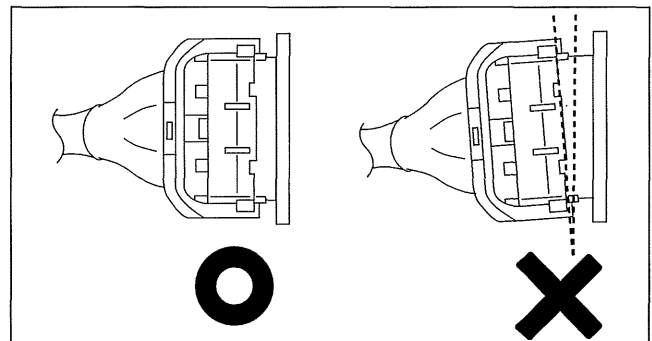


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8. Install in the reverse order of removal.

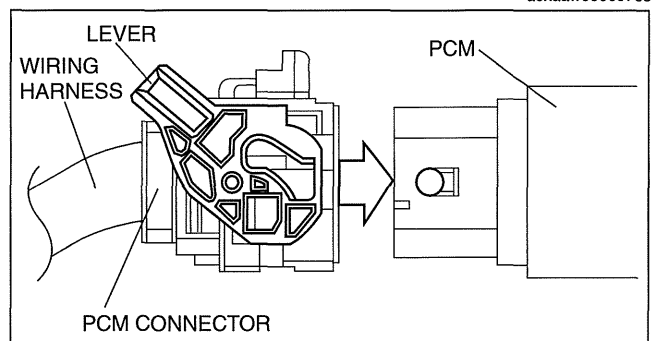
Caution

- If the PCM connector is connected incorrectly it could be damaged. When connecting the PCM connector, connect it using the following procedure.
- If the PCM connector is inserted at an angle and the lever is moved, the connector could be damaged. Verify that the PCM connector is inserted straight.



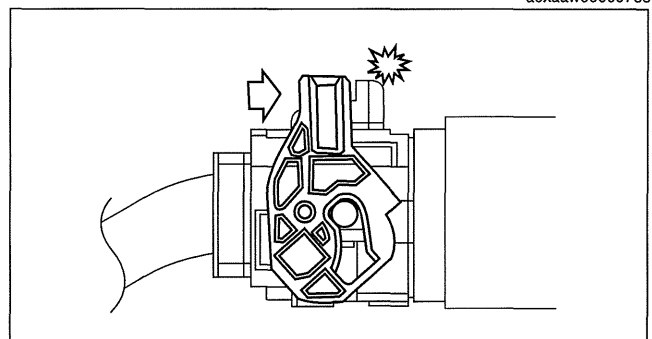
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9. Verify that the PCM connector lever is tilted towards the wiring harness side as shown in the figure.
10. Insert the PCM connector straight until it contacts the PCM and verify that the lever reverts upward naturally.



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11. Push the lever until a click is heard.
12. When replacing the PCM on the vehicles, perform the following:
 - PCM configuration (See 01-40A-22 PCM CONFIGURATION [LF, L5].)
 - Immobilizer system component replacement/ key addition and clearing (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)(See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START



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CONTROL SYSTEM [LF, L5]

SYSTEM].)

PCM INSPECTION [LF, L5]

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Using M-MDS

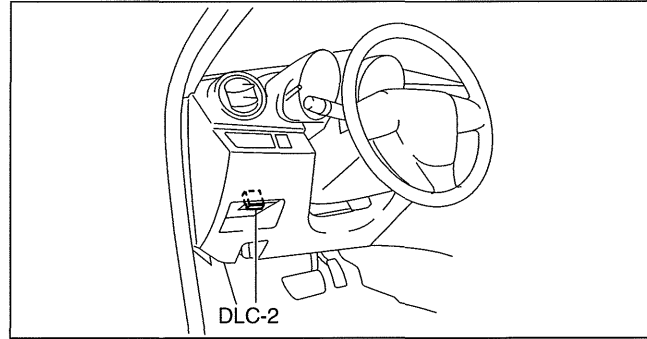
Note

- PIDs for the following parts are not available on this model. Go to the appropriate part inspection page.
 - CMP sensor
 - Main relay

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Measure the PID value.
 - If PID value is not within the specification, follow the instructions in Action column.

Note

- The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the PCM. Therefore, an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device. If a monitored value of an output device is out of specification, inspect the monitored value of the input device related to the output control.
- For input/output signals except those of the monitoring items, use a voltmeter to measure the PCM terminal voltage.
- The simulation items that are used in the ENGINE CONTROL SYSTEM OPERATION INSPECTION are as follows.
 - ACCS, ALTF, ARPMDES, EVAPCP, EVAPCV, FAN_DUTY, FP, IMRC, IMTV, INJ_1~4, SEGRP, TEST, VT Duty1 wt



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PID/DATA monitor table (reference)

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Inspection item	PCM terminal
	°C	°F			
AAT (Ambient air temperature)	°C	°F	Indicates the ambient air temperature	IAT sensor	1AT
AC_REQ (A/C request signal)	OFF/ON		A/C switch OFF: OFF A/C switch ON: ON	Perform applicable DTC troubleshooting	—
ACCS (A/C relay)	OFF/ON		A/C relay OFF: OFF A/C relay ON: ON	A/C relay Inspect following PIDs: RPM, TP REL, ECT.	1I
AFR (Target air fuel ratio)	—		Target air fuel ratio is displayed	A/F sensor	2Z 2AC 2AD
AFR_ACT (Actual air fuel ratio)	—		Actual air fuel ratio is displayed	A/F sensor	2Z 2AC 2AD
ALTF (Generator field coil control duty value)	%		Just after A/C switch ON and fan switch ON at idle: Duty value rises	Generator Inspect following PIDs: IAT, ECT, RPM, VPWR, ALTT V.	2AA
ALTT V (Generator output voltage)	V		Switch the ignition to ON: 0 V Idle: approx. 14 V*1 (E/L not operating)	Generator	2AF
APP (APP sensor)	%		<ul style="list-style-type: none"> • Accelerator pedal released: approx. 0 % • Accelerator pedal depressed: approx. 100 % 	APP sensor	1X 1AP

CONTROL SYSTEM [LF, L5]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Inspection item	PCM terminal
APP 1 (APP sensor No.1)	%	<ul style="list-style-type: none"> Accelerator pedal released: approx. 15 % Accelerator pedal depressed: approx. 80 % 	APP sensor	1AP
	V	<ul style="list-style-type: none"> Accelerator pedal released: approx. 0.4 V Accelerator pedal depressed: approx. 3.3 V 		
APP 2 (APP sensor No.2)	%	<ul style="list-style-type: none"> Accelerator pedal released: approx. 7.5 % Accelerator pedal depressed: approx. 42 % 	APP sensor	1X
	V	<ul style="list-style-type: none"> Accelerator pedal released: approx. 0.4 V Accelerator pedal depressed: approx. 2.0 V 		
ARPMDES (Target engine speed)	RPM	<ul style="list-style-type: none"> Indicate the target engine speed 	Inspect following PIDs: IAT, RPM, MAP, ECT, MAF, TP REL, INGEAR, ALTT V.	—
BARO (Barometric pressure)	kPa, psi, Bar	Indicate the BARO	BARO sensor	—
	V	<ul style="list-style-type: none"> Switch the ignition to ON (at sea level): approx. 4.1 V 		
BOO (Brake switch)	OFF/ON	Brake pedal depressed: ON Brake pedal released: OFF	Brake switch	1AB
BPA*3 (Brake pressure applied switch)	OFF/ON	Brake pedal depressed: ON Brake pedal released: OFF	Brake switch	—
CATT11_DSD (Desired catalyst temperature bank one, sensor one)	°C	Indicate the estimated catalytic converter temperature	Perform applicable DTC troubleshooting.	—
CHRGLP (Generator warning light)	OFF/ON	Switch the ignition to ON: ON Idle: OFF	Perform applicable DTC troubleshooting.	—
COLP (Refrigerant pressure sensor)	OFF/ON	Refrigerant pressure is above 1.96 Mpa {20.0kgf/cm ² , 284 psi}: ON	Refrigerant pressure sensor	—
CPP*2 (Clutch pedal position)	OFF/ON	Clutch pedal depressed: ON Clutch pedal released: OFF	CPP switch	1BD
CPP/PNP*2 (Shift lever position)	OFF/ON	Neutral position: ON Others: OFF	Neutral switch	1BC
ECT (Engine coolant temperature No.1)	°C °F	Indicate the ECT No.1	ECT sensor No.1	2AH
	V	ECT 20 °C {68 °F}: 3.04—3.14 V ECT 80 °C {176 °F}: 0.76—0.83 V		
ECT2 (Engine coolant temperature No.2)	°C °F	Indicate the ECT No.2	ECT sensor No.2	2AO
	V	ECT 20 °C {68 °F}: 3.04—3.14 V ECT 80 °C {176 °F}: 0.76—0.83 V		
EQ_RAT11 (Equivalence ratio (lambda))	—	Idling after warm-up: approx. 1	Perform applicable DTC troubleshooting.	2Z 2AC 2AD
EQ_RAT11_DSD (Desired equivalence ratio (lambda))	—	Idling after warm-up: approx. 1	Perform applicable DTC troubleshooting.	—
ETC_ACT (Electronic throttle control actual)	°	Indicate the desired TP by angle	Perform applicable DTC troubleshooting.	2BE, 2BF
ETC_DSD (Electronic throttle control desired)	%	Indicate the desired TP by percent	TP sensor Inspect following PIDs: APP1, APP2, ETC_ACT.	—
	°	Indicate the desired TP by angle		
EVAPCP (Purge solenoid valve duty value)	%	Switch the ignition to ON: 0% Idle: 0%	Inspect following PIDs: IAT, RPM, ECT, MAF, O2S11, INGEAR, VPWR.	1BA

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CONTROL SYSTEM [LF, L5]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Inspection item	PCM terminal
EVAPCV (Evaporative emission canister vent valve)	OFF/ON	Simulation item (EVAPCV) is ON: ON	CV solenoid valve	1M
FAN_DUTY (Fan control module)	%	<ul style="list-style-type: none"> When all of following condition are met: 50% <ul style="list-style-type: none"> — Test mode ON — WOT 	Fan control module	1R
FCL (Fuel cap warning light)	OFF/ON	<ul style="list-style-type: none"> Fuel cap warning light not illuminated: OFF Fuel cap warning light illuminated: ON 	Perform applicable DTC troubleshooting.	—
FLI (Fuel level)	%	<ul style="list-style-type: none"> Fuel gauge level F: approx. 100% Fuel gauge level E: approx. 0% 	Perform applicable DTC troubleshooting.	—
FP (Fuel pump relay)	OFF/ON	Switch the ignition to ON: OFF Idle: ON Cranking: ON	Fuel pump relay Inspect following PIDs: RPM.	1BG
FTP (Fuel tank pressure sensor)	kPa, psi, Bar	Indicate the fuel tank pressure	Fuel tank pressure sensor	1AH
	V	Fuel tank pressure is equal to barometric pressure: approx. 2.625 V		
FUELPW (Fuel injector duration)	sec	Idle (after warm up): approx. 2.2 ms	Fuel injector Inspect following PIDs: IAT, MAF, TP REL, MAP, ECT, RPM, O2S11, O2S12, INGEAR, VPWR, ALTT V.	2AZ 2BB 2BC 2BD
FUELSYS (Fuel system status)	OL/CL/CL-Fault/OL-Fault/OL-Drive	Idle (after warm up): CL	Fuel injector Inspect following PIDs: IAT, MAF, TP REL, MAP, ECT, RPM, O2S11, O2S12, INGEAR, VPWR, ALTT V.	—
HTR11 (A/F sensor heater)	OFF/ON	Idle (after warm up): ON⇔OFF	A/F sensor Inspect following PIDs: IAT, MAF, TP REL, ECT, RPM.	2A
HTR12 (HO2S heater)	OFF/ON	Idle (after warm up): ON⇔OFF	HO2S heater Inspect following PIDs: IAT, MAF, ECT, RPM.	2B
IAT (Intake air temperature)	°C °F	Indicate the IAT	IAT sensor	1AC
	V	IAT 20 °C {68 °F}: approx. 2.38 V IAT 60 °C {140 °F}: approx. 0.89 V		
IMRC (Variable tumble solenoid valve)	OFF/ON	<ul style="list-style-type: none"> ECT below 60 °C {140 °F} (LF) / 63 °C {145 °F} (L5) and engine speed below 3,750 rpm : On ECT above 60 °C {140 °F} (LF) / 63 °C {145 °F} (L5) while idling.: Off 	Variable tumble solenoid valve Inspect following PIDs: TP REL, ECT, RPM.	2I
IMRC_POS (Variable tumble shutter valve switch)	V	<ul style="list-style-type: none"> ECT below 60 °C {140 °F} (LF) / 63 °C {145 °F} (L5) and engine speed below 3,750 rpm : 3.408—4.432 V ECT above 60 °C {140 °F} (LF) / 63 °C {145 °F} (L5) while idling.: 0.808—1.832 V 	Variable tumble shutter valve switch	2R
IMTV (Variable Intake air control solenoid valve)	OFF/ON	Engine speed is below approx. 4,400 rpm (LF) / 4,600rpm (L5): On Others: Off	Variable intake air control solenoid valve Inspect following PIDs: RPM.	2J
INGEAR (Load/no load condition)	OFF/ON	MTX <ul style="list-style-type: none"> When the following conditions are satisfied: On <ul style="list-style-type: none"> — Other than neutral — Clutch pedal released Except above: Off 	CPP switch Neutral switch	1BC IBD
		ATX <ul style="list-style-type: none"> Driving range: On Except above: Off 	TR switch	—
IVS (CTP condition)	Idle/Off_Idle	<ul style="list-style-type: none"> CTP: Idle Others: Off Idle 	Perform applicable DTC troubleshooting.	—

CONTROL SYSTEM [LF, L5]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Inspection item	PCM terminal
KNOCKR (Knocking retard)	°	Switch the ignition to ON: 0° Idle: 0°	KS	2U 2V
LOAD (Engine load)	%	Switch the ignition to ON: 0% Idle (after warm up): approx. 15%	Inspect following PIDs: MAP, IAT, MAF, RPM.	—
LONGFT1 (long term fuel trim)	%	Idle (after warm up): -15—20%	Perform applicable DTC troubleshooting.	—
MAF (Mass airflow)	g/sec	Indicate the MAF	MAF sensor	1AK
	V	Switch the ignition to ON: approx. 0.7 V Idle (after warm up): approx. 1.2 V		
MAP (Manifold absolute pressure)	kPa, psi, Bar	Indicate the MAP	MAP sensor	2AG
	V	<ul style="list-style-type: none"> • Switch the ignition to ON (at sea level): approx. 4.1 V • Idle: approx. 1.2 V 		
MIL (Malfunction indicator lamp)	OFF/ON	<ul style="list-style-type: none"> • DTC stored: On • DTC not stored: Off 	Perform applicable DTC troubleshooting.	—
MIL_DIS (Travelled distance since the MIL illuminated)	km miles	Indicate the travelled distance since the MIL illuminated		
O2S11 (A/F sensor)	A	Idle (After warm up): approx. 0 mA	A/F sensor	2Z 2AC 2AD
O2S12 (HO2S)	V	Idle (After warm up): 0—1.0 V	HO2S	2Q
RO2FT1 (HO2S fuel trim)	%	Idle (after warm up): approx. -0.03— 0.03	Perform applicable DTC troubleshooting.	—
RPM (Engine speed)	RPM	Indicate the engine speed	CKP sensor	2W
SC_CANCEL*3 (CANCEL switch)	Inactive/ Active	CANCEL switch pressed in: Active Except above: Inactive	Cruise control switch	1AQ
SC_OFF*3 (ON/OFF switch)	Inactive/ Active	ON/OFF switch pressed in (OFF): Active Except above: Inactive	Cruise control switch	1AQ
SC_ON*3 (ON/OFF switch)	Inactive/ Active	ON/OFF switch pressed in (ON): Active Except above: Inactive	Cruise control switch	1AQ
SC_RES*3 (RESUME switch)	Inactive/ Active	RESUME switch pressed in: Active Except above: Inactive	Cruise control switch	1AQ
SC_SET-3 (SET(-) switch)	Inactive/ Active	SET(-) switch pressed in: Active Except above: Inactive	Cruise control switch	1AQ
SC_SET+3 (SET(+) switch)	Inactive/ Active	SET(+) switch pressed in: Active Except above: Inactive	Cruise control switch	1AQ
SCCS*3 (Cruise control switch)	V	ON/OFF switch pressed in (OFF): approx. 0 V CANCEL switch pressed in: approx. 1.3 V SET(-) switch pressed in: approx. 2.4 V SET(+) switch pressed in: approx. 3.2 V RESUME switch pressed in: approx. 3.9 V ON/OFF switch pressed in (ON): approx. 4.3 V	Cruise control switch	1AQ
SEGRP (EGR valve (stepping motor) position)	—	Switch the ignition to ON: 0 Idle: 0 step Cranking: 0—52	EGR valve Inspect following PIDs: MAF, TP REL, ECT, RPM, VSS.	2AT, 2AX, 2AW, 2BA

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CONTROL SYSTEM [LF, L5]

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Inspection item	PCM terminal
SEGRP DSD (Desired EGR valve position)	%		Indicate the desired EGR valve position	Inspect following PIDs: MAF, TP REL, ECT, RPM, VSS.	—
SHRTFT1 (Short term fuel trim)	%		Idle (after warm up): approx. -25— 25%	Perform applicable DTC troubleshooting.	—
SPARKADV (Ignition timing)	°		Indicate the ignition timing	Inspect following PIDs: MAF, TP REL, ECT, RPM, INGEAR, VPWR.	2G, 2H, 2K, 2L
TEST (Test mode)	OFF/ON		Test mode ON: On Test mode OFF: Off	—	—
THM_1 (Thermostat monitor engine coolant temperature No.1)	°C	°F	Indicates engine coolant temperature No.1 when thermostat monitoring is finished	Thermostat	—
THM_2 (Thermostat monitor engine coolant temperature No.2)	°C	°F	Indicates engine coolant temperature No.2 when thermostat monitoring is finished	Thermostat	—
THM_MAX_2 (Thermostat monitor engine coolant temperature No.2 max limit)	°C	°F	Indicates upper limit of engine coolant temperature No.2 for thermostat monitoring execution	Thermostat	—
THM_MIN_1 (Thermostat monitor engine coolant temperature No.1 min limit)	°C	°F	Indicates lower limit of engine coolant temperature No.1 for thermostat monitoring execution	Thermostat	—
THM_MIN_2 (Thermostat monitor engine coolant temperature No.2 min limit)	°C	°F	Indicates lower limit of engine coolant temperature No.2 for thermostat monitoring execution	Thermostat	—
TP REL (Relative throttle position)	%		Accelerator pedal released: approx. 3% Accelerator pedal depressed: approx. 75%	TP sensor	2AK 2AL
TP 1 (TP sensor No.1)	%		Accelerator pedal released: approx. 12% Accelerator pedal depressed: approx. 84%	TP sensor	2AK
	V		Accelerator pedal released: approx. 0.7 V Accelerator pedal depressed: approx. 4.4 V		
TP 2 (TP sensor No.2)	%		Accelerator pedal released: approx. 12% Accelerator pedal depressed: approx. 84%	TP sensor	2AL
	V		Accelerator pedal released: approx. 4.3 V Accelerator pedal depressed: approx. 0.6 V		
TPCT (TP sensor voltage at CTP)	V		approx. 0.5 V	TP sensor	2AK 2AL
VPWR (Battery positive voltage)	V		Switch the ignition to ON: B+	Battery	1C
VSS (Vehicle speed)	KPH		Indicate the vehicle speed	Perform applicable DTC troubleshooting.	—
VT ACT1 (Actual valve timing)	°		Idle: approx. 0° Racing after warm up: 0—25°	CMP sensor	2S

CONTROL SYSTEM [LF, L5]

Monitor item (Definition)	Unit/Condition	Condition/Specification (Reference)	Inspection item	PCM terminal
VT DIFF1 (Difference between target and actual valve timing)	°	Idle: approx. 0°	CMP sensor OCV Inspect following PIDs: TP REL, ECT, RPM.	2E 2S
VT DUTY1 (Oil control valve duty value)	%	Idle: approx. 11.5%	OCV Inspect following PIDs: TP REL, ECT, RPM.	2E

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- *1 : Calculated value; differs from terminal voltage
- *2 : MTX
- *3 : With cruise control switch

- Following PIDs are for the ATX models. If inspects for following PIDs, (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].)

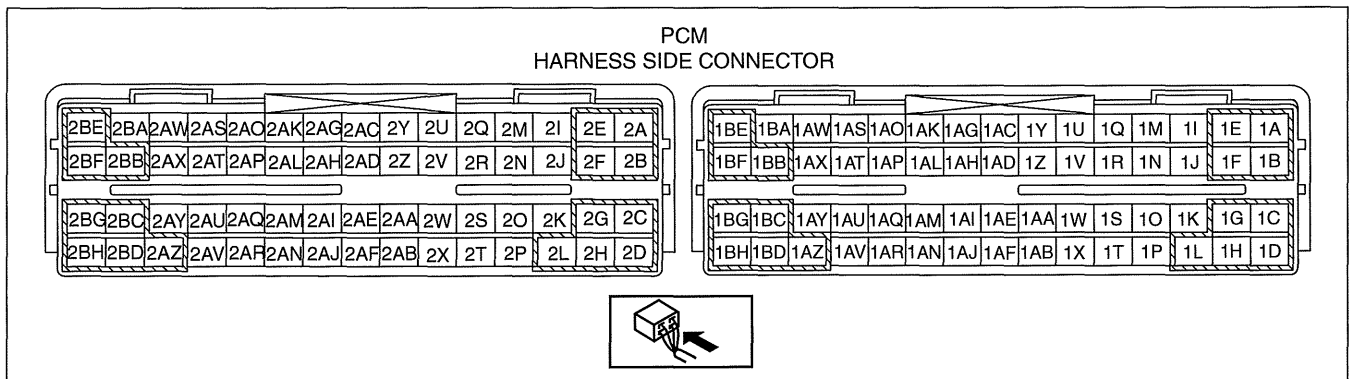
Without Using the M-MDS

Caution

- The PCM terminal voltages vary with change in measuring conditions and vehicle conditions. Always carry out a total inspection of the input systems, output systems, and PCM to determine the cause of trouble. Otherwise, a wrong diagnosis will be made.

1. Measure the voltage at each terminal.
 - If any incorrect voltage is detected, inspect the related system(s), wiring harnesses and connector(s) referring to the Action column in the terminal voltage table.

Terminal voltage table (Reference)



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Terminal	Signal	Connected to	Test condition	Voltage (V)	inspection item
1A	Power supply	Main relay	Switch the ignition to off	Below 1.0	• Related wiring harness
			Switch the ignition to ON	B+	
1B	Power supply	Main relay	Switch the ignition to off	Below 1.0	• Related wiring harness
			Switch the ignition to ON	B+	
1C	Back-up power supply	Battery (positive terminal)	Switch the ignition to ON	B+	• Battery • Related wiring harness
1D	—	—	—	—	—
1E	GND	Ground	Under any condition	Below 1.0	• Related wiring harness
1F	GND	Ground	Under any condition	Below 1.0	• Related wiring harness
1G	GND	Ground	Under any condition	Below 1.0	• Related wiring harness
1H	—	—	—	—	—
1I	A/C	A/C relay	A/C operating	Below 1.0	• A/C relay • Related wiring harness
			A/C not operating	B+	

CONTROL SYSTEM [LF, L5]

Terminal	Signal	Connected to	Test condition	Voltage (V)	inspection item	
1J	—	—	—	—	—	
1K	—	—	—	—	—	
1L	—	—	—	—	—	
1M	CV solenoid control	CV solenoid valve	Switch the ignition to ON	B+	<ul style="list-style-type: none"> CV solenoid valve Related wiring harness 	
			Idle (CV solenoid valve not operating)	B+		
			Idle (CV solenoid valve operating)	Below 1.0		
1N	—	—	—	—	—	
1O	—	—	—	—	—	
1P	MAF sensor GND	MAF/IAT sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1Q	Main relay control	Main relay	Switch the ignition to off	B+	<ul style="list-style-type: none"> Main relay Related wiring harness 	
			Switch the ignition to ON	Below 1.0		
1R	Cooling fan control	Fan control module	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fan control module Related wiring harness 	
1S	—	—	—	—	—	
1T	—	—	—	—	—	
1U	—	—	—	—	—	
1V	—	—	—	—	—	
1W	—	—	—	—	—	
1X	APP sensor 2	APP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> APP sensor No.2 Related wiring harness 	
1Y	—	—	—	—	—	
1Z	—	—	—	—	—	
1AA	—	—	—	—	—	
1AB	Brake	Brake switch	Brake pedal depressed	B+	<ul style="list-style-type: none"> Brake switch Related wiring harness 	
			Brake pedal released	Below 1.0		
1AC	IAT	MAF/IAT sensor	IG SW ON	IAT 20 °C {68 °F}	Approx. 2.38	<ul style="list-style-type: none"> IAT sensor Related wiring harness
				IAT 60 °C {140 °F}	Approx. 0.89	
1AD	Constant voltage (Vref)	Fuel tank pressure sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness 	
1AE	Constant voltage (Vref)	APP sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness 	
1AF	—	—	—	—	—	
1AG	—	—	—	—	—	
1AH	Fuel tank pressure	Fuel tank pressure sensor	Fuel tank pressure is 10 kPa {0.10 kgf/cm ² , 1.5 psi} lower than barometric pressure	Approx. 1.2	<ul style="list-style-type: none"> Fuel tank pressure sensor Related wiring harness 	
			Fuel tank pressure is equal to barometric pressure	Approx. 2.6		
			Fuel tank pressure is 6 kPa {0.06 kgf/cm ² , 0.9 psi} higher than barometric pressure	Approx. 3.7		
1AI	CAN (–)	CAN system related modules	Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Related wiring harness 	
1AJ	APP sensor GND	APP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1AK	MAF	MAF/IAT sensor	Switch the ignition to ON	Approx. 0.7	<ul style="list-style-type: none"> MAF sensor Related wiring harness 	
			Idle (after warm up)	Approx. 1.2		

CONTROL SYSTEM [LF, L5]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
1AL	—	—	—	—	—	
1AM	CAN (+)	CAN system related modules	Because this terminal is for CAN, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Related wiring harness 	
1AN*1	Cruise control switch ground	Cruise control switch	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1AO	—	—	—	—	—	
1AP	APP sensor 1	APP sensor	IG SW ON	Accelerator pedal released	Approx. 0.4	<ul style="list-style-type: none"> APP sensor No.1 Related wiring harness
				Accelerator pedal depressed	Approx. 3.3	
1AQ*1	Cruise control switch	Cruise control switch	IG SW ON	ON/OFF switch pressed in (OFF)	Approx. 0	<ul style="list-style-type: none"> Cruise control switch Related wiring harnesses
				CANCEL switch pressed in	Approx. 1.3	
				SET (-) switch pressed in	Approx. 2.4	
				SET (+) switch pressed in	Approx. 3.2	
				RESUME switch pressed in	Approx. 3.9	
				ON/OFF switch pressed in (ON)	Approx. 4.3	
1AR	IAT sensor GND	MAF/IAT sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1AS	—	—	—	—	—	
1AT	—	—	—	—	—	
1AU	—	—	—	—	—	
1AV	—	—	—	—	—	
1AW	—	—	—	—	—	
1AX	—	—	—	—	—	
1AY	Ignition switch (IG1)	Ignition switch*2, Ignition relay No.1*3	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Ignition switch*2, Ignition relay No.1*3 Related wiring harness 	
			Switch the ignition to ON	B+		
1AZ	—	—	—	—	—	
1BA	Purge control	Purge solenoid valve	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Purge solenoid valve Related wiring harness 	
1BB	Starter relay control	Starter relay	Cranking	B+	<ul style="list-style-type: none"> Starter relay Related wiring harness 	
1BC*4	Neutral position	Neutral switch	Shift lever is at neutral position	Below 1.0	<ul style="list-style-type: none"> Neutral switch Related wiring harness 	
			Shift lever is not at neutral position	B+		
1BD*4	Clutch operation	CPP switch	Clutch pedal depressed	Below 1.0	<ul style="list-style-type: none"> CPP switch Related wiring harness 	
			Clutch pedal released	B+		
1BE	GND	Ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1BF	—	—	—	—	—	
1BG	Fuel pump control	Fuel pump relay	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Fuel pump relay Related wiring harness 	
			Cranking	Below 1.0		
			Idle	Below 1.0		
1BH	—	—	—	—	—	

01-40A

CONTROL SYSTEM [LF, L5]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item
2A	A/F sensor heater control	A/F sensor heater	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> A/F sensor heater Related wiring harness
2B	HO2S heater control	HO2S heater	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> HO2S heater Related wiring harness
2C	—	—	—	—	—
2D	—	—	—	—	—
2E	OCV control	OCV	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> OCV Related wiring harness
2F	—	—	—	—	—
2G	IGT1	Ignition coil No.1	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.1 Related wiring harness
2H	IGT4	Ignition coil No.4	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.4 Related wiring harness
2I	Variable tumble control	Variable tumble solenoid valve	ECT above 60 °C {140 °F} (LF) / 63 °C {145 °F} (L5) while idling.	B+	<ul style="list-style-type: none"> Variable tumble solenoid valve Related wiring harness
			ECT below 60 °C {140 °F} (LF) / 63 °C {145 °F} (L5) and engine speed below 3,750 rpm	Below 1.0	
2J	Variable intake air control	Variable intake air solenoid valve	Engine speed: above 4,400 rpm (LF) / 4,600 rpm (L5)	B+	<ul style="list-style-type: none"> Variable intake air solenoid valve Related wiring harness
			Engine speed: below 4,400 rpm (LF) / 4,600 rpm (L5)	Below 1.0	
2K	IGT2	Ignition coil No.2	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.2 Related wiring harness
2L	IGT3	Ignition coil No.3	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.3 Related wiring harness
2M	—	—	—	—	—
2N	—	—	—	—	—
2O	—	—	—	—	—
2P	—	—	—	—	—
2Q	HO2S	HO2S	Idle (after warm up)	0↔1.0	<ul style="list-style-type: none"> HO2S Related wiring harness
2R	Variable tumble shutter valve monitor	Variable tumble shutter valve switch	ECT above 60 °C {140 °F} while idling.	0.808— 1.832	<ul style="list-style-type: none"> Variable tumble shutter valve switch Related wiring harness
			ECT below 60 °C {140 °F} and engine speed below 3,750 rpm	3.408— 4.432	
2S	CMP signal	CMP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> CMP sensor Related wiring harness
2T	—	—	—	—	—
2U	Knocking (+)	KS	Switch the ignition to ON (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Approx. 4.0	<ul style="list-style-type: none"> KS Related wiring harness
2V	Knocking (-)	KS	Switch the ignition to ON (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Below 1.0	<ul style="list-style-type: none"> KS Related wiring harness

CONTROL SYSTEM [LF, L5]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
2W	CKP signal	CKP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> CKP sensor Related wiring harness 	
2X	GND	Sensor shield	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2Y	—	—	—	—	—	
2Z	A/F sensor	A/F sensor	Idle (after warm up)	Approx. 5.1	<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2AA	Generator field coil control	Generator (terminal D)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Generator Related wiring harness 	
2AB	—	—	—	—	—	
2AC	A/F sensor	A/F sensor	Idle (after warm up): Approx. 0 mA		<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2AD	A/F sensor	A/F sensor	<ul style="list-style-type: none"> Verify that the voltage increases when the engine speed increases. 		<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2AE	—	—	—	—	—	
2AF	Generator output voltage	Generator (terminal P)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Generator Related wiring harness 	
2AG	MAP	MAP sensor	Switch the ignition to ON	Approx. 4.1	<ul style="list-style-type: none"> MAP sensor Related wiring harness 	
			Idle	Approx. 1.2		
2AH	ECT (No.1)	ECT sensor No.1	Switch the ignition to ON	ECT 20 °C {68 °F}	3.04— 3.14	<ul style="list-style-type: none"> ECT sensor No.1 Related wiring harness
				ECT 80 °C {176 °F}	0.76— 0.83	
2AI	—	—	—	—	—	
2AJ	—	—	—	—	—	
2AK	TP sensor No.1	TP sensor	Switch the ignition to ON	Accelerator pedal released	Approx. 0.7	<ul style="list-style-type: none"> TP sensor No.1 Related wiring harness
				Accelerator pedal depressed	Approx. 4.4	
2AL	TP sensor No.2	TP sensor	Switch the ignition to ON	Accelerator pedal released	Approx. 4.3	<ul style="list-style-type: none"> TP sensor No.2 Related wiring harness
				Accelerator pedal depressed	Approx. 0.6	
2AM	CMP power	CMP sensor	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Related wiring harness 	
			Switch the ignition to off (after 10 s)	Below 1.0		
2AN	TP sensor GND	TP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2AO	ECT (No.2)	ECT sensor No.2	Switch the ignition to ON	ECT 20 °C {68 °F}	3.04— 3.14	<ul style="list-style-type: none"> ECT sensor No.2 Related wiring harness
				ECT 80 °C {176 °F}	0.76— 0.83	
2AP	—	—	—	—	—	
2AQ	CKP power	CKP sensor	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Related wiring harness 	
			Switch the ignition to off	Below 1.0		
2AR	Constant voltage (Vref)	TP sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness 	
2AS	HO2S GND	HO2S	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	

01-40A

CONTROL SYSTEM [LF, L5]

Terminal	Signal	Connected to	Test condition	Voltage (V)	inspection item
2AT	EGR valve control	EGR valve	Idle	B+	<ul style="list-style-type: none"> EGR valve Related wiring harness
2AU	Constant voltage (Vref)	MAP sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness
2AV	MAP sensor GND	MAP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness
2AW	EGR valve control	EGR valve	Idle	Below 1.0	<ul style="list-style-type: none"> EGR valve Related wiring harness
2AX	EGR valve control	EGR valve	Idle	Below 1.0	<ul style="list-style-type: none"> EGR valve Related wiring harness
2AY	—	—	—	—	—
2AZ	Fuel injection (#4)	Fuel injector No.4	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.4 Related wiring harness
2BA	EGR valve control	EGR valve	Idle	B+	<ul style="list-style-type: none"> EGR valve Related wiring harness
2BB	Fuel injection (#1)	Fuel injector No.1	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.1 Related wiring harness
2BC	Fuel injection (#2)	Fuel injector No.2	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.2 Related wiring harness
2BD	Fuel injection (#3)	Fuel injector No.3	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40A-18 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.3 Related wiring harness
2BE	Throttle valve actuator control (+)	Throttle body (throttle valve actuator)	Idle (after warm up)	B+	<ul style="list-style-type: none"> Throttle valve actuator Related wiring harness
2BF	Throttle valve actuator control (-)	Throttle body (throttle valve actuator)	Idle (after warm up)	3.5—5.5	<ul style="list-style-type: none"> Throttle valve actuator Related wiring harness
2BG	OCV control	OCV	Switch the ignition to ON	B+	<ul style="list-style-type: none"> OCV Related wiring harness
2BH	—	—	—	—	—

*1 : With cruise control system

*2 : Without advanced keyless entry and push button start system

*3 : With advanced keyless entry and push button start system

*4 : MTX

Inspection Using An Oscilloscope (Reference)

Cooling fan control

PCM terminals

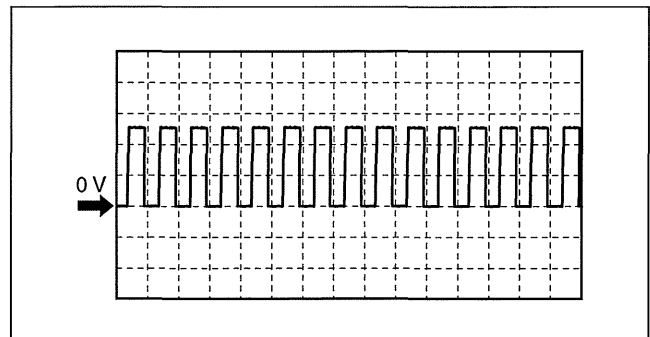
- 1R(+)—body ground(-)

Oscilloscope setting

- 5 V/DIV (Y), 20 ms/DIV (X), DC range

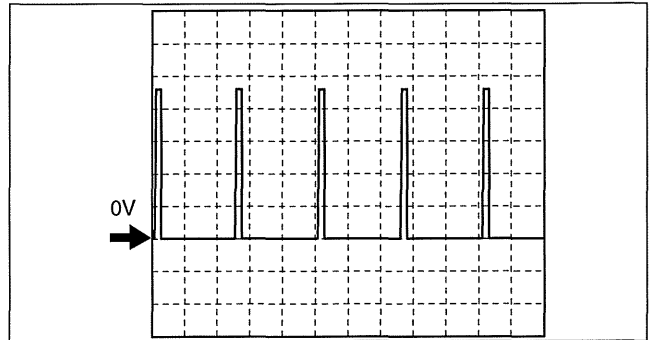
Vehicle condition

- Idle after warm up



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APP sensor No.2 signal
Accelerator pedal released



aaxjw00002881

01-40A

Accelerator pedal depressed

PCM terminals

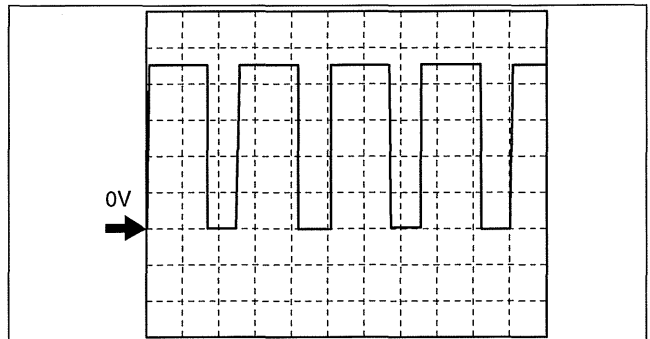
- 1X(+)—body ground(-)

Oscilloscope setting

- 2.5 V/DIV (Y), 2 ms/DIV (X), DC range

Vehicle condition

- Switch the ignition to ON.



aaxjw00002882

Purge control

PCM terminals

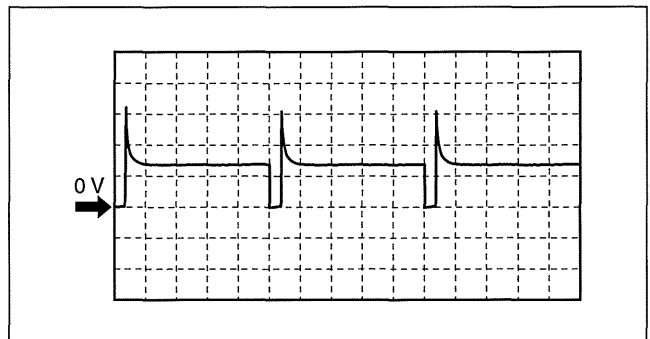
- 1BA(+)—body ground(-)

Oscilloscope setting

- 10 V/DIV (Y), 20 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



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A/F sensor heater control

PCM terminals

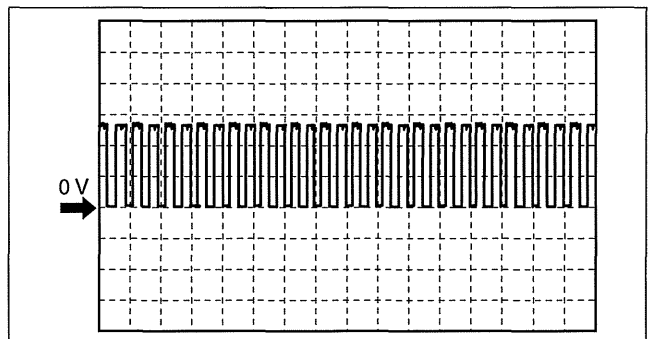
- 2A(+)—body ground(-)

Oscilloscope setting

- 5 V/DIV (Y), 200 ms/DIV (X), DC range

Vehicle condition

- Idle (immediately after starting the engine)



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CONTROL SYSTEM [LF, L5]

HO2S heater control

PCM terminals

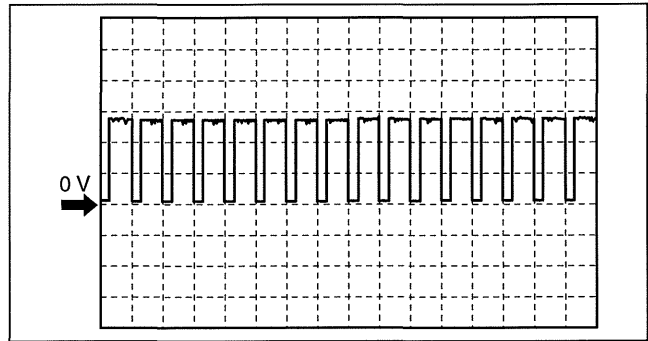
- 2B(+)—body ground(-)

Oscilloscope setting

- 5 V/DIV (Y), 1 s/DIV (X), DC range

Vehicle condition

- Idle (immediately after starting the engine)



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OCV control signal

PCM terminals

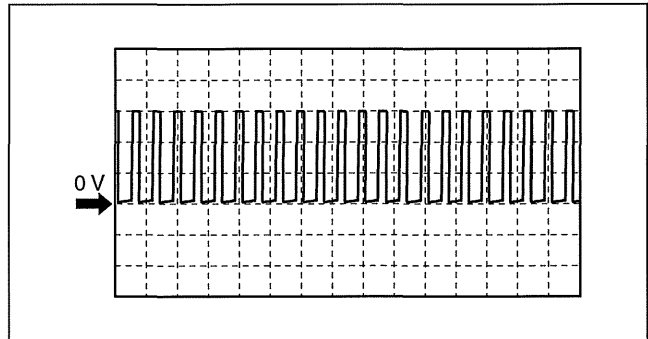
- 2E(+)—body ground(-)

Oscilloscope setting

- 2 V/DIV (Y), 0.8 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



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CMP signal

PCM terminals

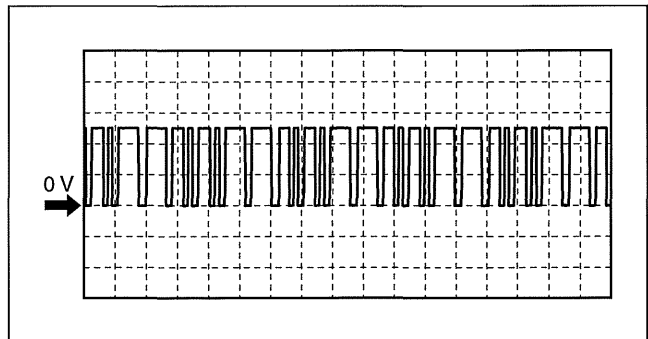
- 2S(+)—body ground(-)

Oscilloscope setting

- 1 V/DIV (Y), 25 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



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CKP signal

PCM terminals

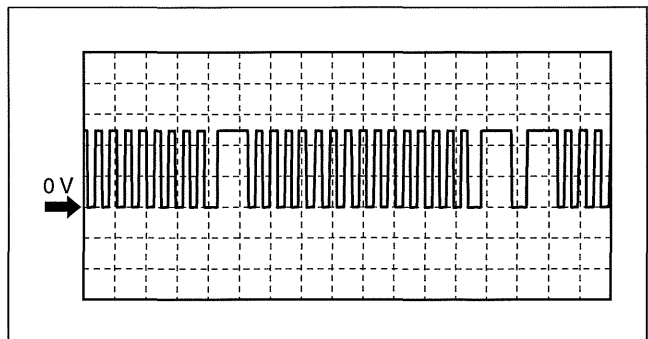
- 2W(+)—body ground(-)

Oscilloscope setting

- 1 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



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IGT1, IGT2, IGT3, IGT4 control

PCM terminals

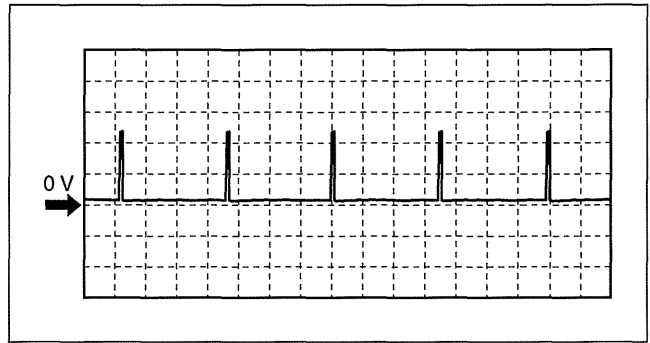
- IGT1(ignition coil No.1): 2G(+)—body ground(-)
- IGT2(ignition coil No.2): 2K(+)—body ground(-)
- IGT3(ignition coil No.3): 2L(+)—body ground(-)
- IGT4(ignition coil No.4): 2H(+)—body ground(-)

Oscilloscope setting

- 1 V/DIV (Y), 50 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



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01-40A

Generator field coil control

PCM terminals

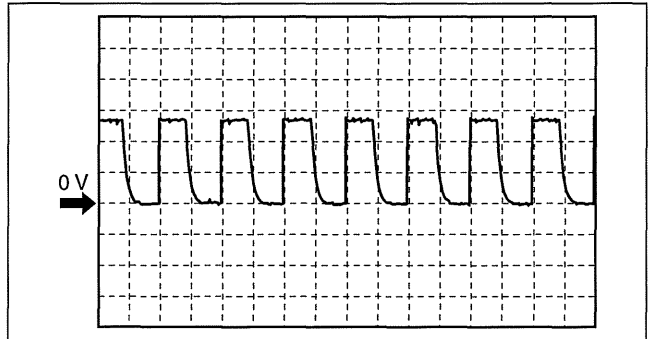
- 2AA(+)—body ground(-)

Oscilloscope setting

- 0.5 V/DIV (Y), 2 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



ampjiw00001520

Generator output voltage

PCM terminals

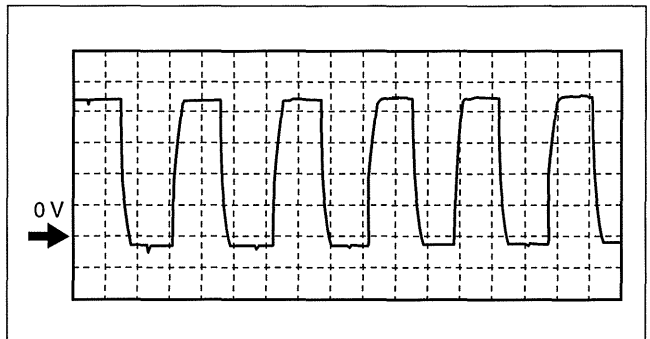
- 2AF(+)—body ground(-)

Oscilloscope setting

- 2 V/DIV (Y), 2 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



am3uuw0000238

Fuel injection (#1, #2, #3, #4) control

PCM terminals

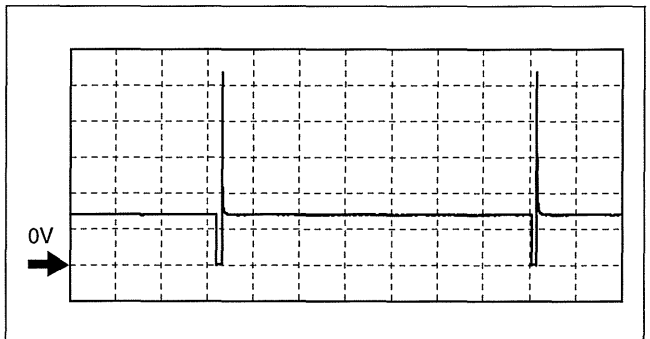
- Fuel Injection No.1: 2BB(+)—body ground(-)
- Fuel Injection No.2: 2BC(+)—body ground(-)
- Fuel Injection No.3: 2BD(+)—body ground(-)
- Fuel Injection No.4: 2AZ(+)—body ground(-)

Oscilloscope setting

- 10 V/DIV (Y), 25 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



am3zzw0000002

CONTROL SYSTEM [LF, L5]

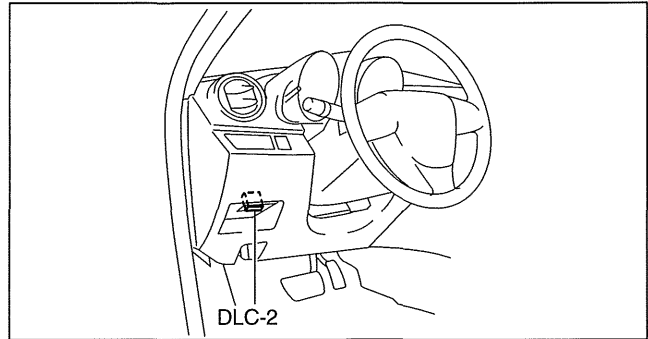
PCM CONFIGURATION [LF, L5]

id0140i8802600

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the PCM CONFIGURATION.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "PCM".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC(s) is detected, perform the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)



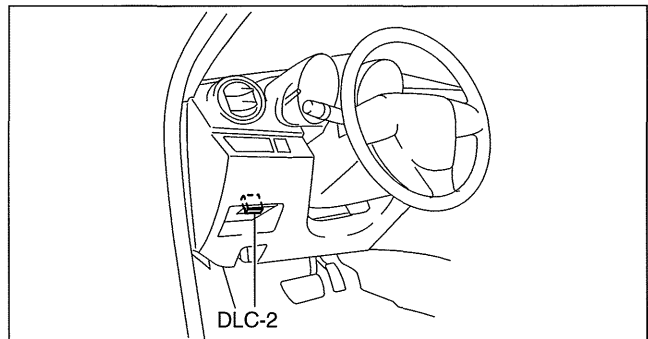
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Wheel And Tire Size change

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the PCM CONFIGURATION.

1. Connect the M-MDS to DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Parameters".
 2. Select "Tire Size" or "Tire Size / Axle Ratio".
4. Select an item name, and then select option.



am3uuw000239

Caution

- The same parameter should be set in Tire dimension, Tire Circumference and Tire Size.

Items of "Tire Size"

- Tire dimension (195/70R15, 195/65R15, 205/55R16 205/50R17, 225/40R18)
- Tire Circumference (195/70R15, 195/65R15, 205/55R16 205/50R17, 225/40R18)

Items of "Tire Size / Axle Ratio"

- Tire Size (195/70R15, 195/65R15, 205/55R16 205/50R17, 225/40R18)

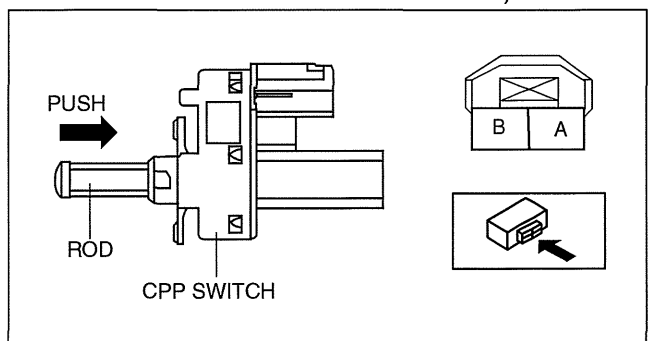
CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5]

id0140i8801600

1. Verify that the CPP switch is installed properly.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable.
4. Disconnect the CPP switch connector. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)
5. Inspect for continuity between the CPP switch terminals using an ohmmeter.
 - If not as specified, replace the CPP switch. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)

Specification

Measured condition	Clutch pedal position	Continuity
Rod pushed	Clutch pedal released	Continuity detected
Except above	Clutch pedal depressed	No continuity



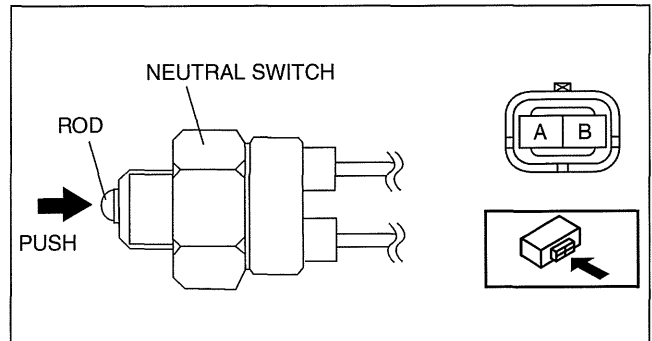
am3uuw000279

CONTROL SYSTEM [LF, L5]

NEUTRAL SWITCH INSPECTION [LF, L5]

id0140i8800800

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the neutral switch. (See 05-15A-1 NEUTRAL SWITCH REMOVAL/INSTALLATION [G35M-R].) (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].) (See 05-15C-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [A26M-R].)
4. Inspect for continuity between the neutral switch terminals using an ohmmeter.
 - If not as specified, replace the neutral switch. (See 05-15A-1 NEUTRAL SWITCH REMOVAL/INSTALLATION [G35M-R].) (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].) (See 05-15C-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [A26M-R].)



am6xuw0000134

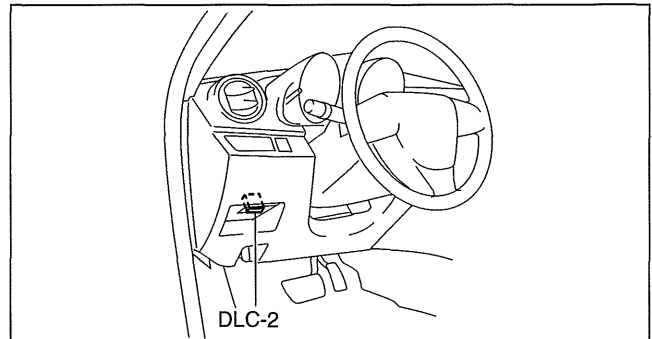
Specification

Measured condition	Continuity
Rod pushed	Continuity detected
Except above	No continuity

VARIABLE TUMBLE SHUTTER VALVE SWITCH INSPECTION [LF, L5]

id0140i8808200

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the voltage (M-MDS PID: IMRC_POS) within the specification. (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If not as specified, replace the intake manifold. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)



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ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5]

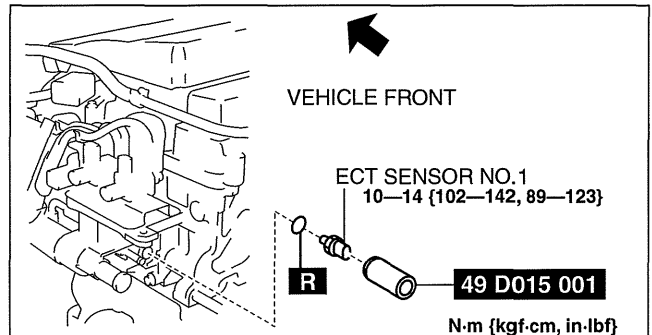
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Warning

- When the engine is hot, it can badly burn. Turn off the engine and wait until it is cool before removing the ECT sensor.

ECT Sensor No.1

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12A-2 COOLING SYSTEM SERVICE WARNINGS [LF, L5].)
4. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
5. Disconnect the ECT sensor No.1 connector.
6. Remove the ECT sensor No.1 using the SST.
7. Install in the reverse order of removal.
8. Refill the engine coolant. (See 01-12A-2 COOLING SYSTEM SERVICE WARNINGS [LF, L5].)



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01-40A

CONTROL SYSTEM [LF, L5]

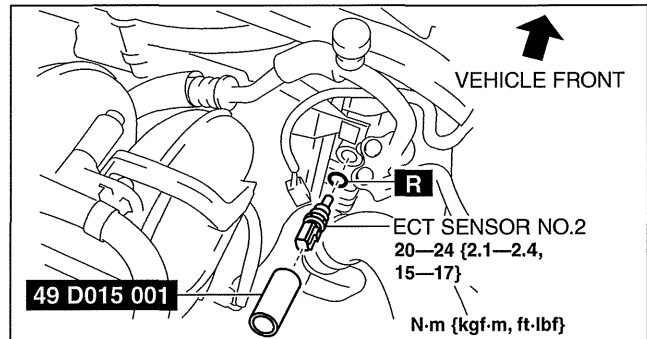
ECT Sensor No.2

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12A-2 COOLING SYSTEM SERVICE WARNINGS [LF, L5].)
4. Disconnect the ECT sensor No.2 connector.
5. Remove the ECT sensor No.2 using the SST.

Note

- Wipe off any oil or engine coolant if it gets on the ECT sensor No.2 installation area.

6. Install in the reverse order of removal.
7. Refill the engine coolant. (See 01-12A-2 COOLING SYSTEM SERVICE WARNINGS [LF, L5].)



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ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5]

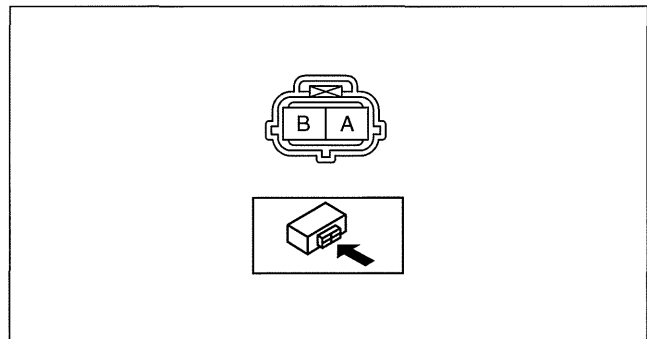
id0140i8802000

ECT Sensor No.1 Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12A-2 COOLING SYSTEM SERVICE WARNINGS [LF, L5].)
4. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
5. Disconnect the ECT sensor No.1 connector.
6. Remove the ECT sensor No.1. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
7. Place the ECT sensor No.1 in water with a thermometer, and heat the water gradually.
8. Measure the resistance between the ECT sensor No.1 terminals A and B using an ohmmeter.
 - If not as specified, replace the ECT sensor No.1. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)

ECT sensor No.1 Specification

ECT (°C {°F})	Resistance (kilohms)
20{68}	Approx. 37.3
80{176}	Approx. 3.84



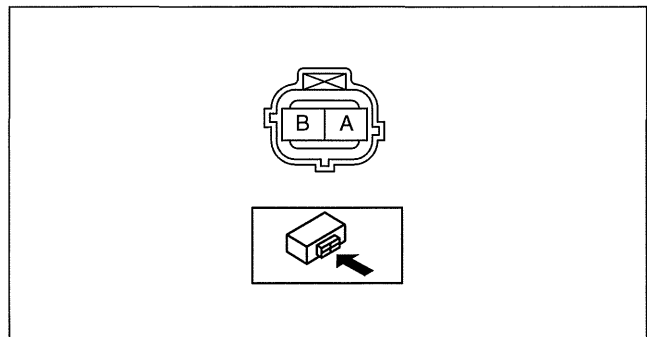
am5ezw0000155

ECT Sensor No.2 Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12A-2 COOLING SYSTEM SERVICE WARNINGS [LF, L5].)
4. Disconnect the ECT sensor No.2 connector.
5. Remove the ECT sensor No.2. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)
6. Place the ECT sensor No.2 in water with a thermometer, and heat the water gradually.
7. Measure the resistance between the ECT sensor No.2 terminals A and B using an ohmmeter.
 - If not as specified, replace the ECT sensor No.2. (See 01-40A-23 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [LF, L5].)

ECT sensor No.2 Specification

ECT (°C {°F})	Resistance (kilohms)
20{68}	Approx. 2.45
80{176}	Approx. 0.318



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CONTROL SYSTEM [LF, L5]

MASS AIR FLOW (MAF) SENSOR INSPECTION [LF, L5]

id0140i8800700

Visual Inspection

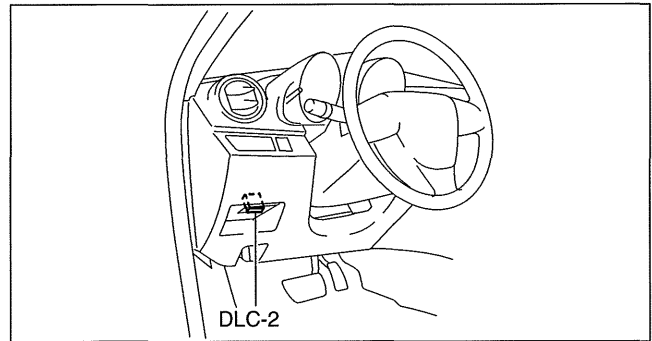
1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the MAF/IAT sensor connector.
4. Remove the MAF/IAT sensor. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Visually inspect the MAF/IAT sensor for the following:
 - Damage, cracks, soiling
 - Rusted sensor terminal
 - Bent sensor terminal

— If there is any malfunction, repair or replace the MAF/IAT sensor.
(See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

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Voltage Inspection

1. Remove the MAF/IAT sensor without disconnect the MAF/IAT sensor connector.
2. Connect the M-MDS to the DLC-2.
3. Switch the ignition to ON.
4. As the air gradually approaches the MAF detection part of the MAF/IAT sensor, verify that the voltage (M-MDS PID: MAF) varies.
 - If not as verified, replace the MAF/IAT sensor.
(See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)



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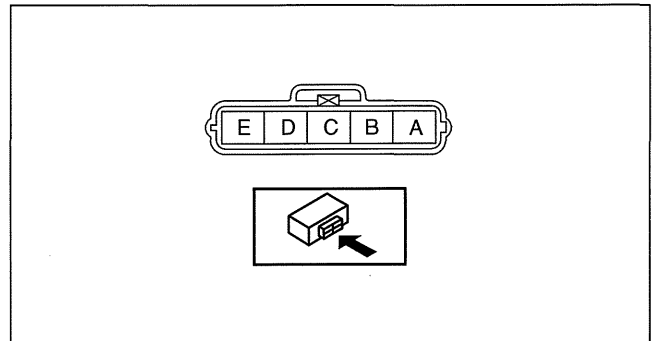
INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [LF, L5]

id0140i8802200

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the MAF/IAT sensor connector.
4. Measure the resistance between the MAF/IAT sensor terminals D and E using an ohmmeter.
 - If not as specified, replace the MAF/IAT sensor.
(See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

IAT sensor Specification

Ambient temperature (°C {°F})	Resistance (kilohm)
20{68}	2.21—2.69
60{140}	0.493—0.667

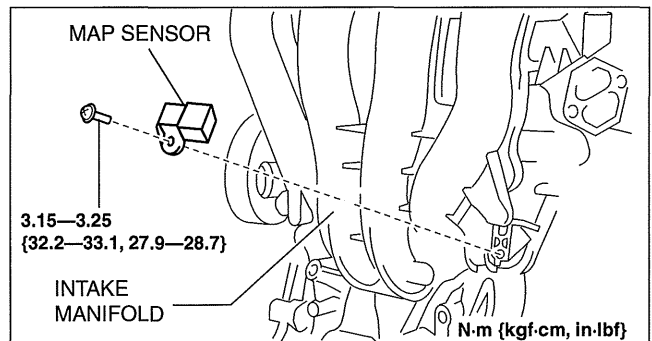


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MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5]

id0140i8804300

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the MAP sensor connector.
5. Remove the MAP sensor.
6. Install in the reverse order of removal.



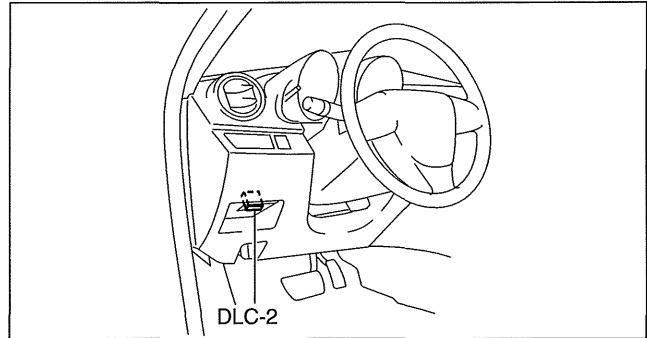
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CONTROL SYSTEM [LF, L5]

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [LF, L5]

id0140i8800900

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the voltage (M-MDS PID: MAP) within the specification. (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If not as specified, replace the MAP sensor. (See 01-40A-25 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [LF, L5].)



BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [LF, L5]

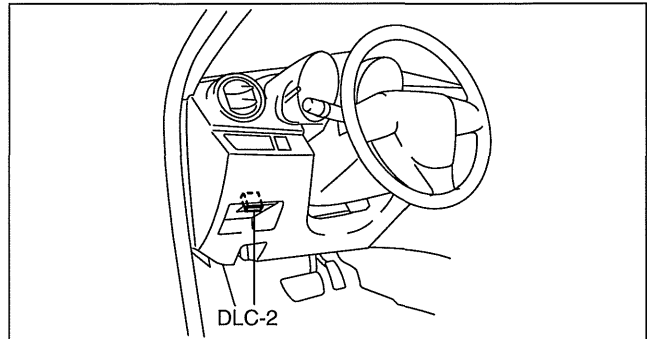
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id0140i8801100

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the voltage (M-MDS PID: BARO) within the specification. (See 01-40A-8 PCM INSPECTION [LF, L5].)

Note

- Because the PCM is integrated in the BARO sensor, replacing the BARO sensor includes replacement of the PCM.
- If not as specified, replace the PCM. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)



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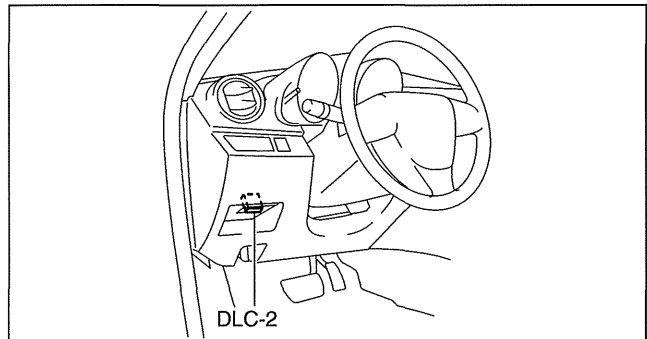
THROTTLE POSITION (TP) SENSOR INSPECTION [LF, L5]

id0140i8802700

Caution

- The inspection cannot be performed with this method correctly if there is a malfunction of the APP sensor or throttle valve actuator. Verify that no DTCs related to the APP sensor or throttle valve actuator are stored before the inspection.

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the TP sensor output voltage (M-MDS PID: TP1, TP2) is within the specification. (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If not as specified, replace the throttle body. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

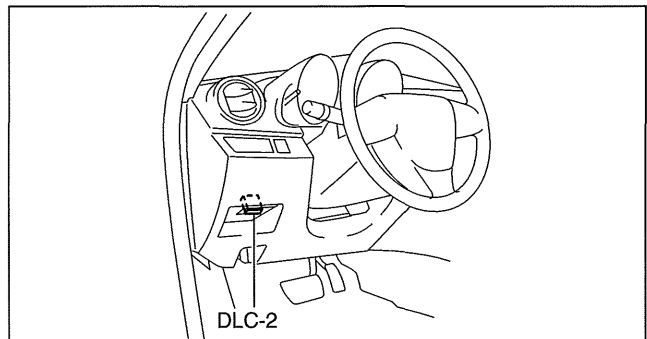


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ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [LF, L5]

id0140i8803200

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the APP sensor output voltage (PID: APP1, APP2) increases according to the increase in the accelerator opening angle when the accelerator opening angle is gradually increased.
 - If verified, go to the next step.
 - If not as verified, replace the accelerator pedal. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)
4. Verify that the APP sensor output voltage (PID: APP1, APP2) is within the specification when the accelerator pedal is depressed and not depressed.
 - If not as specified, replace the accelerator pedal. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].)



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CONTROL SYSTEM [LF, L5]

AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5]

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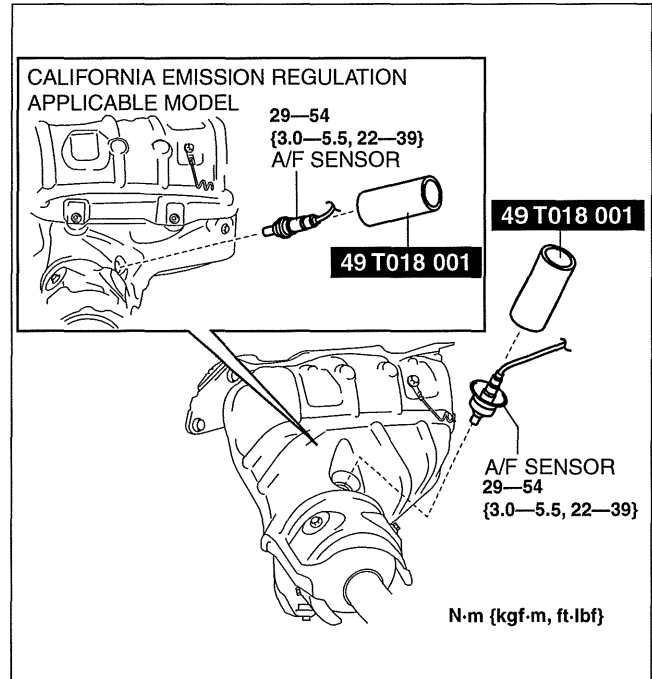
Warning

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before removing the exhaust system.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner assembly. (L5) (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Disconnect the A/F sensor connector.
6. Remove the A/F sensor using the SST.

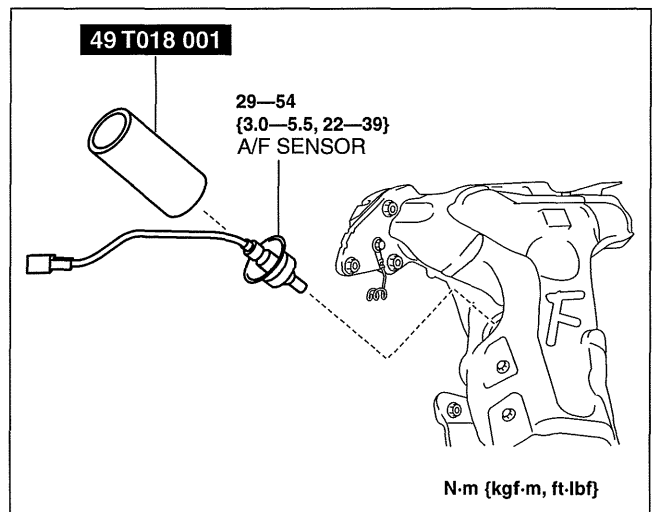
LF

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L5



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7. Install in the reverse order of removal.

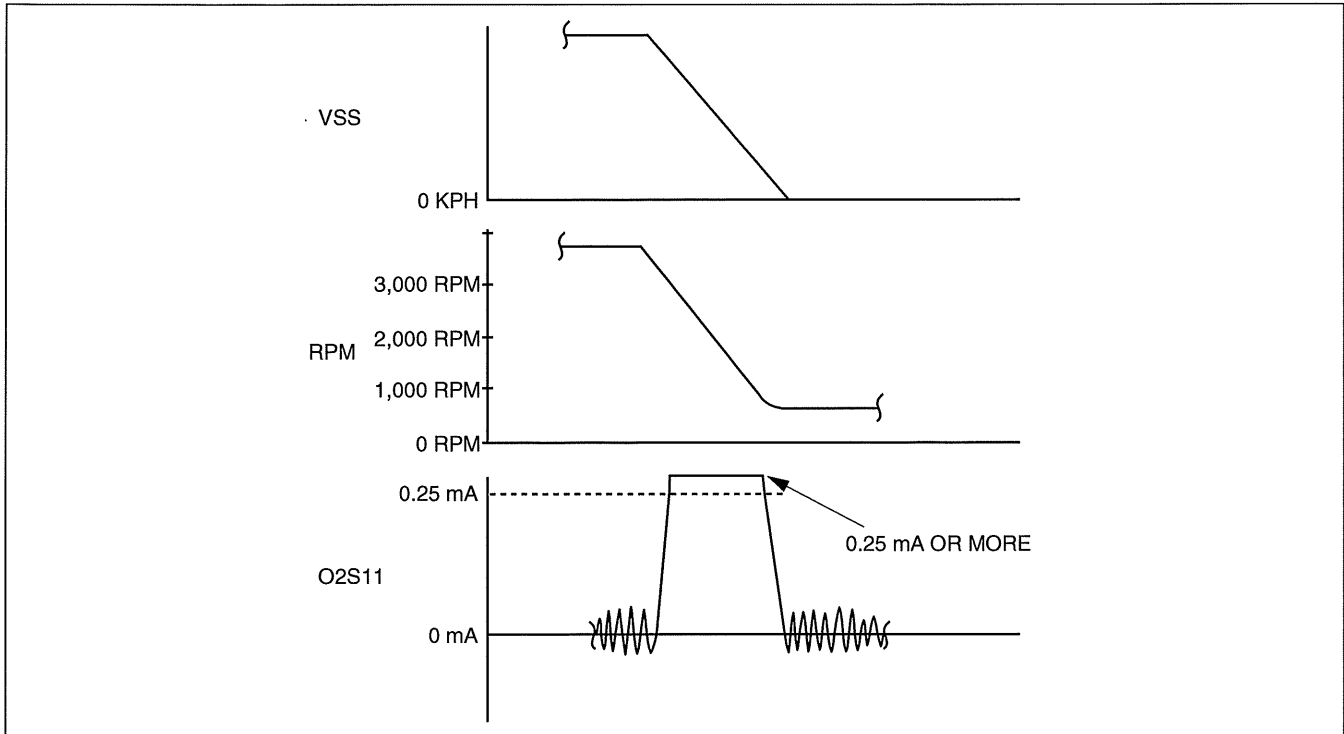
CONTROL SYSTEM [LF, L5]

AIR FUEL RATIO (A/F) SENSOR INSPECTION [LF, L5]

id0140i8899600

A/F Sensor Inspection

1. Warm up the engine to normal operating temperature.
2. Using the M-MDS, monitor the following:
 - Vehicle speed (PID: VSS)
 - Engine speed (PID: RPM)
 - A/F sensor current (PID: O2S11)
3. Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is 3,000 rpm or more.
4. Verify that the A/F sensor current (PID: O2S11) is 0.25 mA or more while decelerating as shown in the figure.



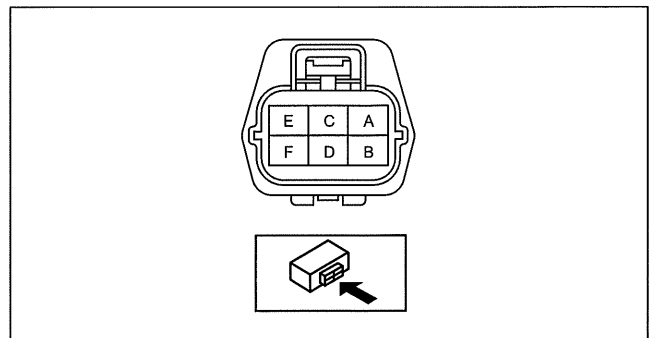
acxuuw0000099

- If not as specified, replace the A/F sensor. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)

A/F Sensor Heater Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the A/F sensor connector.
4. Measure the resistance between A/F sensor terminals A and E.
 - If not as specified, replace the A/F sensor. (See 01-40A-27 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [LF, L5].)

A/F sensor heater resistance
1—10 ohms [normal temperature]



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CONTROL SYSTEM [LF, L5]

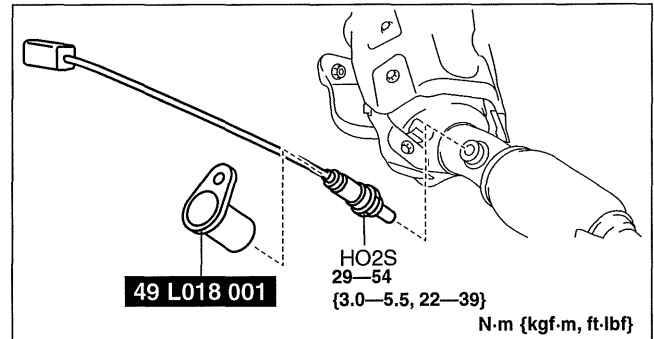
HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5]

id0140i8804000

Warning

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before removing the exhaust system.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the HO2S connector.
4. Remove the HO2S using the SST.
5. Install in the reverse order of removal.



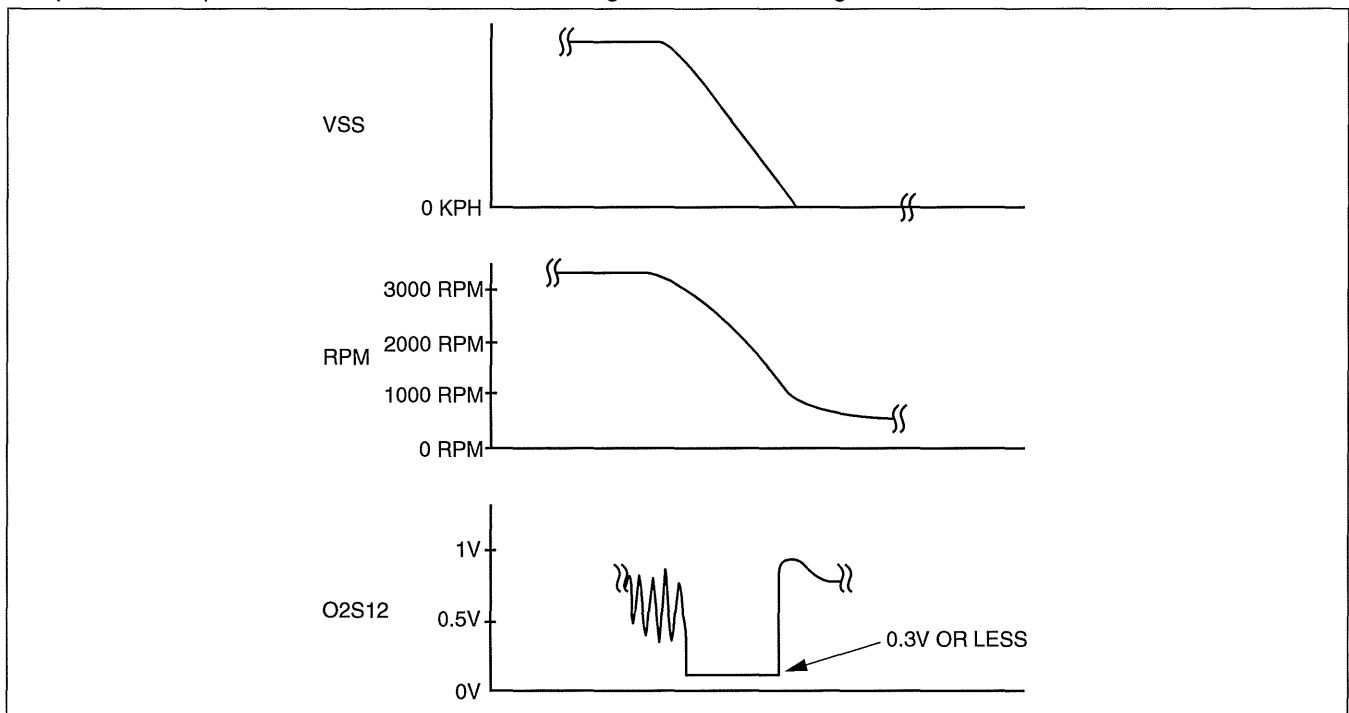
am3uuw0000240

HEATED OXYGEN SENSOR (HO2S) INSPECTION [LF, L5]

id0140i8802300

HO2S Inspection

1. Warm up the engine to normal operating temperature.
2. Using the M-MDS, monitor the following:
 - Vehicle speed (PID: VSS)
 - Engine speed (PID: RPM)
 - HO2S voltage (PID: O2S12)
3. Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is **3,000 rpm or more**.
4. Verify that the HO2S outputs a voltage of **0.6 V or more**, one time or more, then verify that the HO2S voltage (PID: O2S12) is **0.3 V or less** while decelerating as shown in the figure.



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- If not as specified, replace the HO2S.
(See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)

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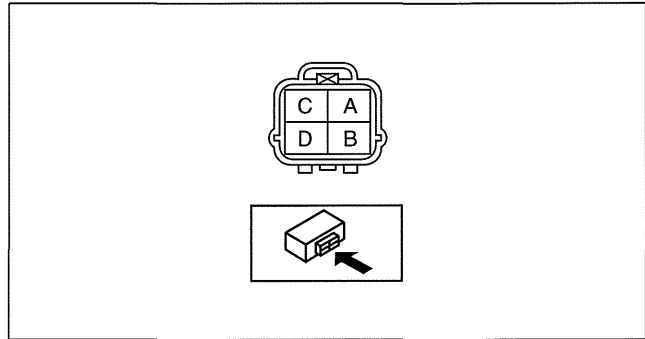
CONTROL SYSTEM [LF, L5]

HO2S Heater Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the HO2S connector.
4. Measure the HO2S resistance between terminals C and D.
 - If not as specified, replace the HO2S.
(See 01-40A-29 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [LF, L5].)

HO2S heater resistance

2—50 ohms [normal temperature]



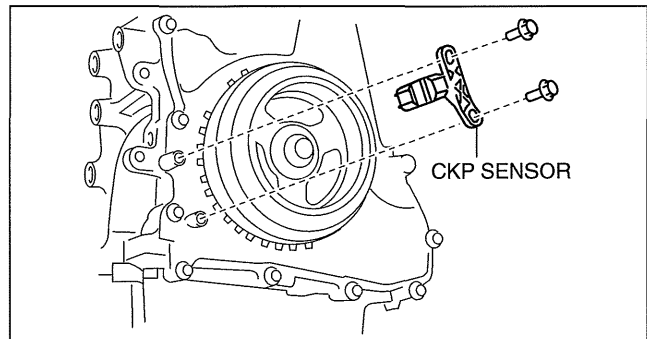
am3uuw0000256

CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5]

id0140i8800600

Removal

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Perform the following procedure for easier access.
 - (1) Remove the under cover.
 - (2) Remove the splash shield.
4. Disconnect the CKP sensor connector.
5. Remove the CKP sensor.



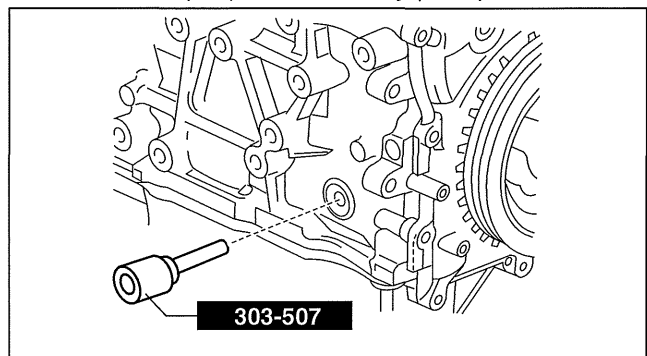
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Installation

Caution

- When foreign material such as an iron chip is on the CKP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect the engine control. Be sure there is no foreign material on the CKP sensor when replacing.

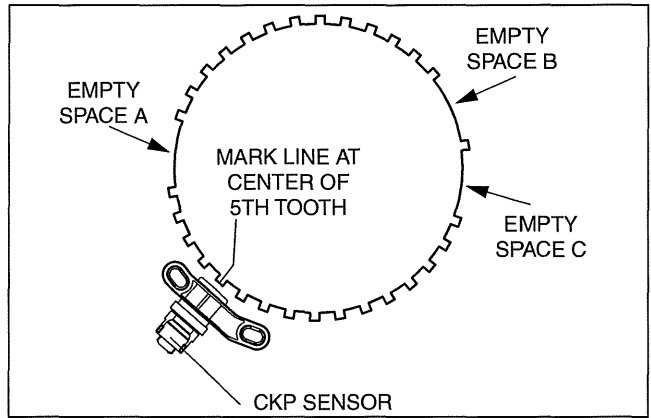
1. Perform the following procedure so that cylinder No.1 is at TDC.
 - (1) Remove the wheel and tire (front right side).
 - (2) Disconnect the drive shaft (RH) from joint shaft, set the drive shaft (RH) out of the way.(MTX)
 - (3) Remove the cylinder block lower blind plug and install the **SST**.
 - (4) Rotate the crankshaft pulley clockwise until the crank weight contacts the **SST** so that cylinder No.1 is at TDC.



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CONTROL SYSTEM [LF, L5]

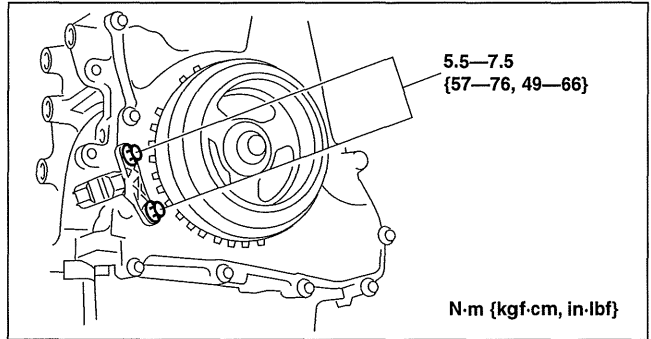
2. Fit the center of the CKP sensor with the fifth tooth (counting counterclockwise from the empty space A as shown in the figure) of the pulse wheel.



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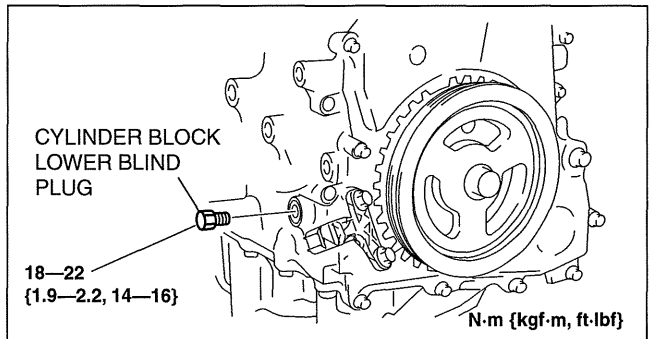
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3. Install the CKP sensor fitting bolts.



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4. Remove the **SST** then install the cylinder block lower blind plug.



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CONTROL SYSTEM [LF, L5]

CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5]

id0140i8800500

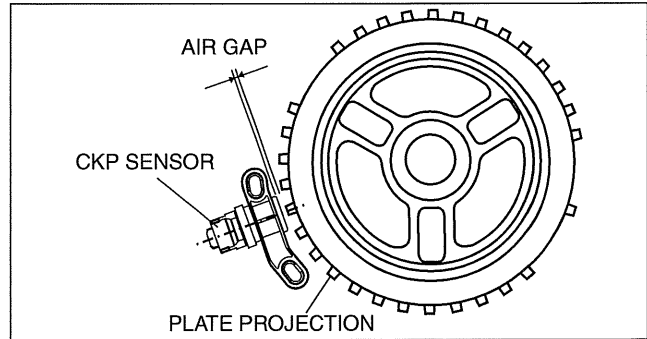
Visual inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the under cover.
4. Remove the splash shield (RH).
5. Disconnect the CKP sensor connector.
6. Remove the CKP sensor. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
7. Verify that there are no metal shavings on the sensor.
 - Remove any metal shavings that are adhering.

Air Gap Inspection

1. Verify that the CKP sensor is securely installed.
2. Using a thickness gauge, measure the air gap between the plate projections at the back of crankshaft pulley and the CKP sensor.
 - If not within the specification, inspect the plate projections for cracks or bending.
 - If there is any malfunction, replace the crankshaft pulley. (See 01-10A-34 FRONT OIL SEAL REPLACEMENT [LF, L5].)

CKP sensor air gap
0.5—1.5 mm {0.02—0.05 in}



am8rrw00002301

Voltage Inspection

1. Idle the engine.
2. Measure the CKP sensor output wave pattern using an oscilloscope. (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If not within the specification, replace the CKP sensor. (See 01-40A-30 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [LF, L5].)

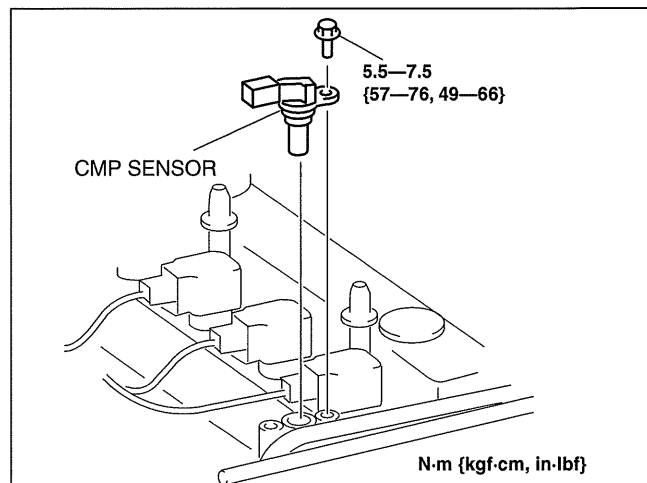
CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5]

id0140i8801500

Caution

- When replacing the CMP sensor, make sure there is no foreign material on it such as metal shavings. If it is installed with foreign material, the sensor output signal will malfunction resulting from fluctuation in magnetic flux and cause a deterioration in engine control.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the CMP sensor connector.
5. Remove the CMP sensor.
6. Install in the reverse order of removal.



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CAMSHAFT POSITION (CMP) SENSOR INSPECTION [LF, L5]

id0140i8801400

Visual Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Disconnect the CMP sensor connector.
5. Remove the CMP sensor. (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].)
6. Verify that there are no metal shavings on the CMP sensor.
 - Remove any metal shavings that are adhering.

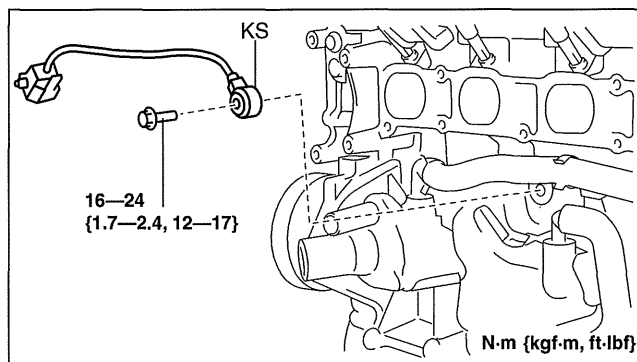
Voltage Inspection

1. Idle the engine.
2. Measure the CMP sensor output wave pattern using an oscilloscope. (See 01-40A-8 PCM INSPECTION [LF, L5].)
 - If not within the specification, replace the CMP sensor. (See 01-40A-32 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [LF, L5].)

KNOCK SENSOR (KS) REMOVAL/INSTALLATION [LF, L5]

id0140i8802900

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the plug hole plate. (See 01-10A-5 PLUG HOLE PLATE REMOVAL/INSTALLATION [LF, L5].)
4. Remove the intake manifold. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Disconnect the KS connector.
6. Remove the KS.
7. Install in the reverse order of removal.



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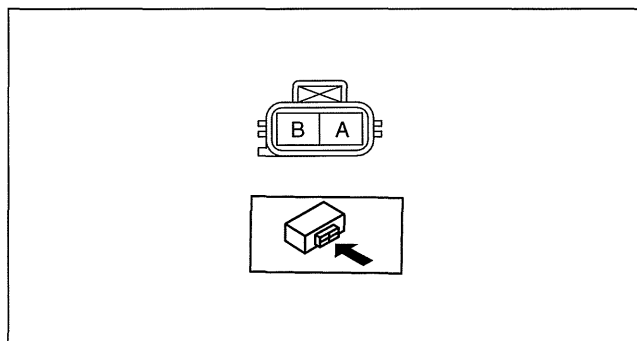
KNOCK SENSOR (KS) INSPECTION [LF, L5]

Resistance Inspection

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Disconnect the KS connector.
4. Measure the resistance between the KS terminals A and B using an ohmmeter.
 - If not as specified, replace the KS. (See 01-40A-33 KNOCK SENSOR (KS) INSPECTION [LF, L5].)

Specification

Approx. 4.63—5.11 megohms [ECT: 25 °C {77 °F}]



am3uuw0000256

id0140i8857400

FUEL TANK PRESSURE SENSOR INSPECTION [LF, L5]

Voltage Inspection

1. Remove the evaporative hose component. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)
2. Switch the ignition to ON.
3. Plug one end of the evaporative hose component and verify that the output voltage from the fuel tank pressure sensor changes when pressure is applied from the other hose end.
 - If not as verified, replace the evaporative hose component. (See 01-14A-8 FUEL TANK REMOVAL/INSTALLATION [LF, L5].)

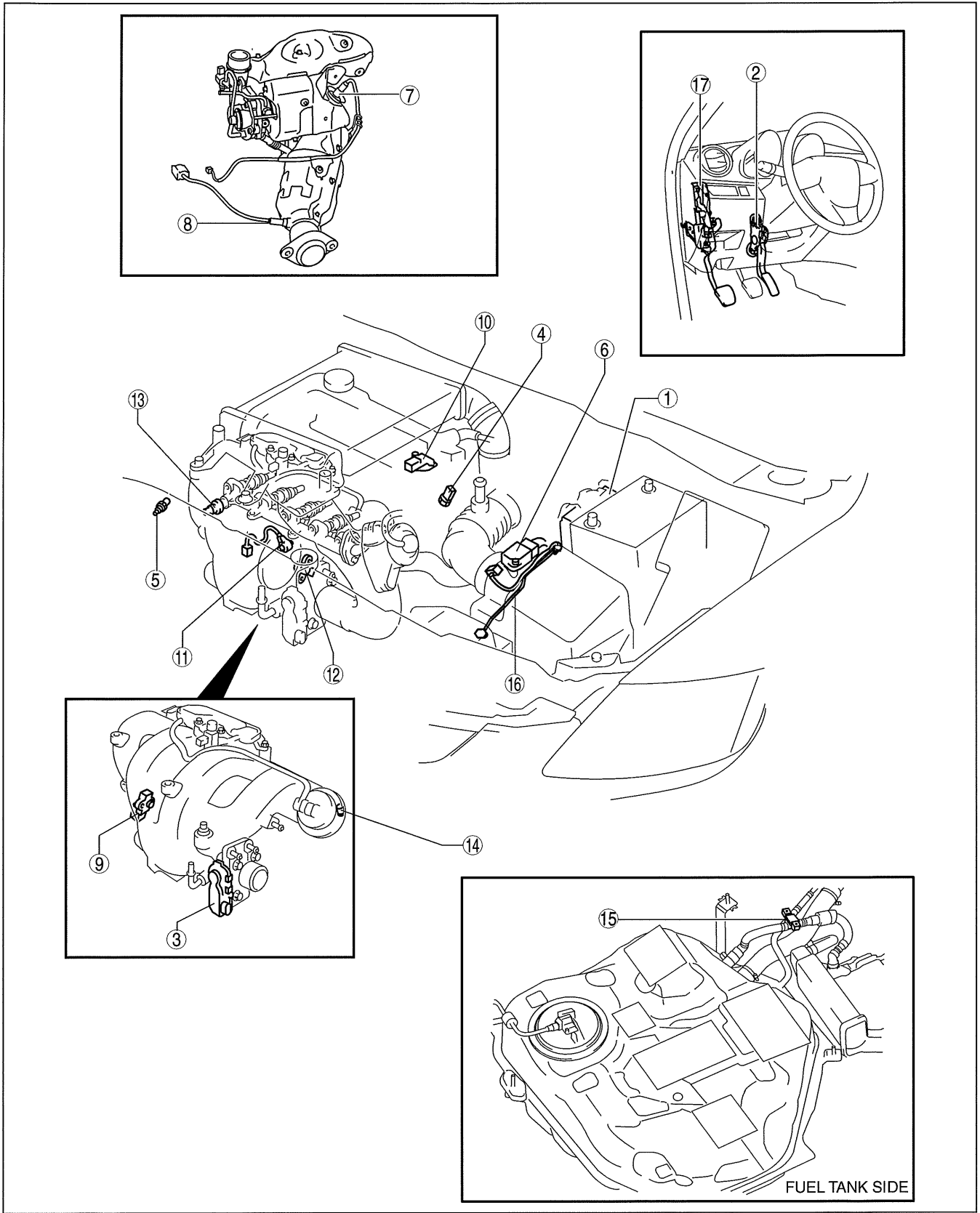
01-40B CONTROL SYSTEM [L3 WITH TC]

CONTROL SYSTEM COMPONENT		BOOST AIR TEMPERATURE SENSOR	
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NEUTRAL SWITCH INSPECTION		A/F Sensor Inspection.....	01-40B-30
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VARIABLE SWIRL SHUTTER VALVE		HEATED OXYGEN SENSOR (HO2S)	
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INTAKE AIR TEMPERATURE (IAT)		REMOVAL/INSTALLATION	
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CONTROL SYSTEM [L3 WITH TC]

CONTROL SYSTEM COMPONENT LOCATION INDEX [L3 WITH TC]

id014039800200



am3uuw0000574

CONTROL SYSTEM [L3 WITH TC]

1	PCM (Built-in BARO sensor) (See01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-8 PCM INSPECTION [L3 WITH TC].) (See01-40B-23 PCM CONFIGURATION [L3 WITH TC].) (See01-40B-27 BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [L3 WITH TC].)
2	APP sensor (See01-40B-28 ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC].)
3	TP sensor (See01-40B-28 THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC].)
4	ECT sensor No.1 (See01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)
5	ECT sensor No.2 (See01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)
6	MAF/IAT sensor (See01-40B-26 MASS AIR FLOW (MAF) SENSOR INSPECTION [L3 WITH TC].) (See01-40B-26 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC].)
7	A/F sensor (See01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].)
8	HO2S (See01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-30 AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC].)

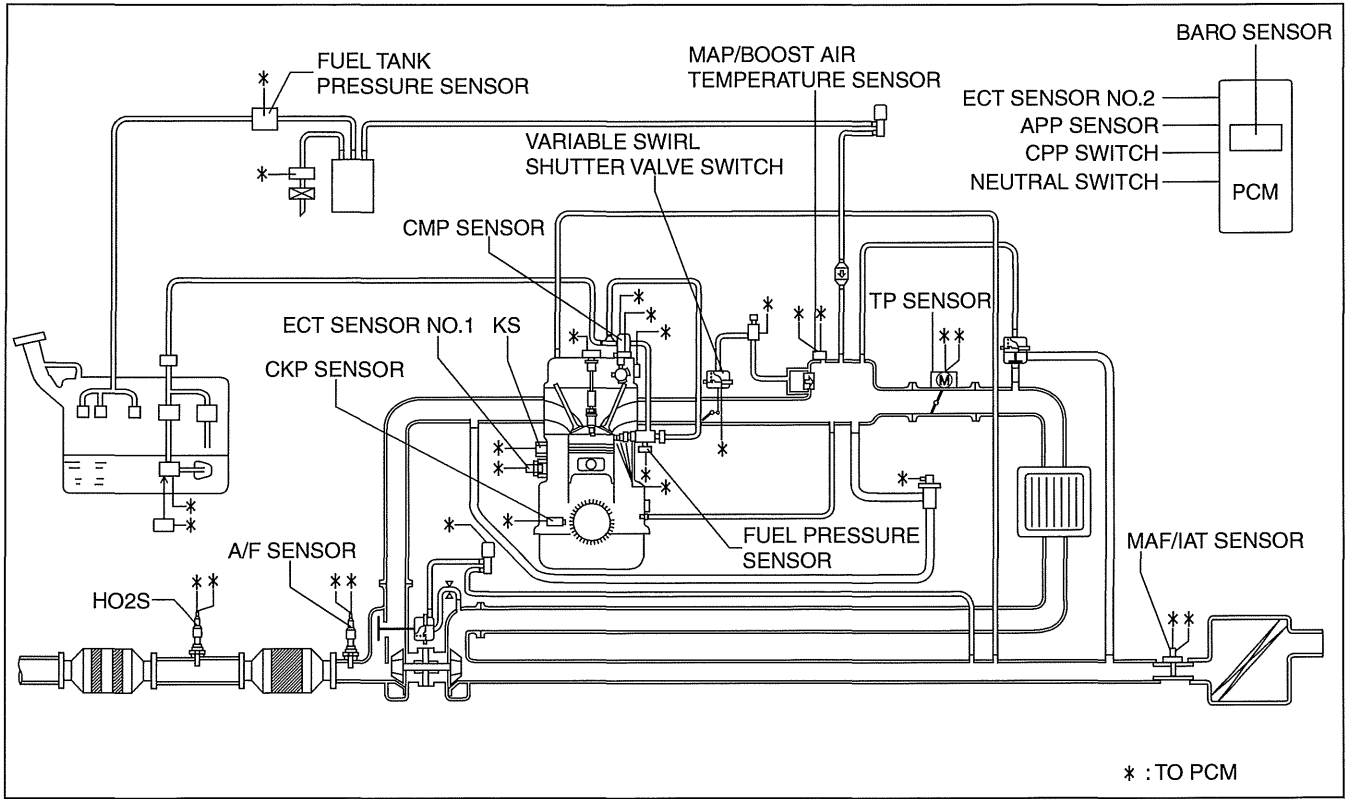
9	MAP/boost air temperature sensor (See01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [L3 WITH TC].) (See01-40B-28 BOOST AIR TEMPERATURE SENSOR INSPECTION [L3 WITH TC].)
10	CMP sensor (See01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-34 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC].)
11	KS (See01-40B-34 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-35 KNOCK SENSOR (KS) INSPECTION [L3 WITH TC].)
12	CKP sensor (See01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].)
13	Fuel pressure sensor (See01-40B-29 FUEL PRESSURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].) (See01-40B-29 FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC].)
14	Variable swirl shutter valve switch (See01-40B-24 VARIABLE SWIRL SHUTTER VALVE SWITCH INSPECTION [L3 WITH TC].)
15	Fuel tank pressure sensor (See01-40B-35 FUEL TANK PRESSURE SENSOR INSPECTION [L3 WITH TC].)
16	Neutral switch (See01-40B-23 NEUTRAL SWITCH INSPECTION [L3 WITH TC].)
17	CPP switch (See01-40B-23 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [L3 WITH TC].)

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CONTROL SYSTEM [L3 WITH TC]

CONTROL SYSTEM DIAGRAM [L3 WITH TC]

id014039800300

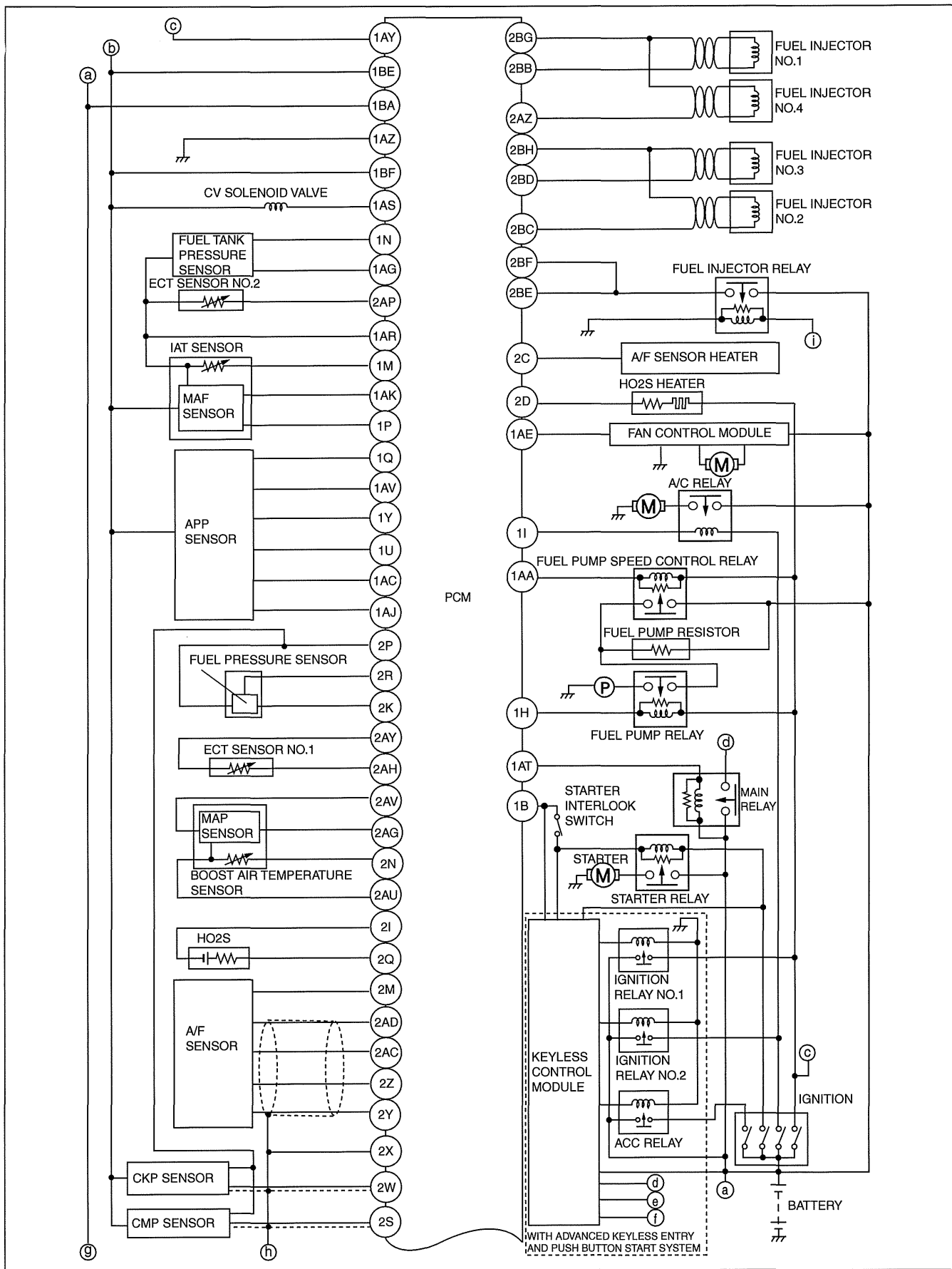


CONTROL SYSTEM [L3 WITH TC]

CONTROL SYSTEM WIRING DIAGRAM [L3 WITH TC]

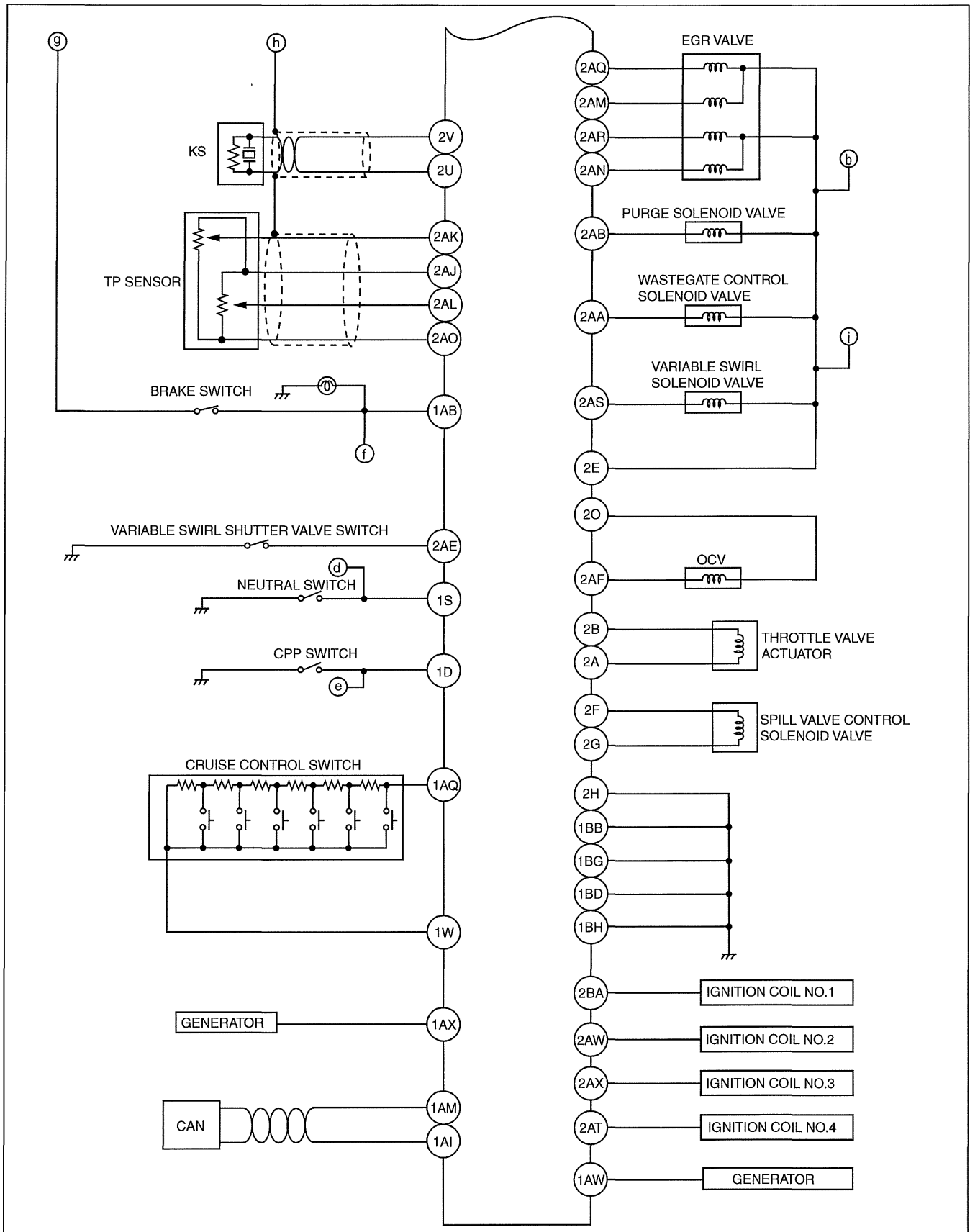
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01-40B



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CONTROL SYSTEM [L3 WITH TC]



am3uuw000594

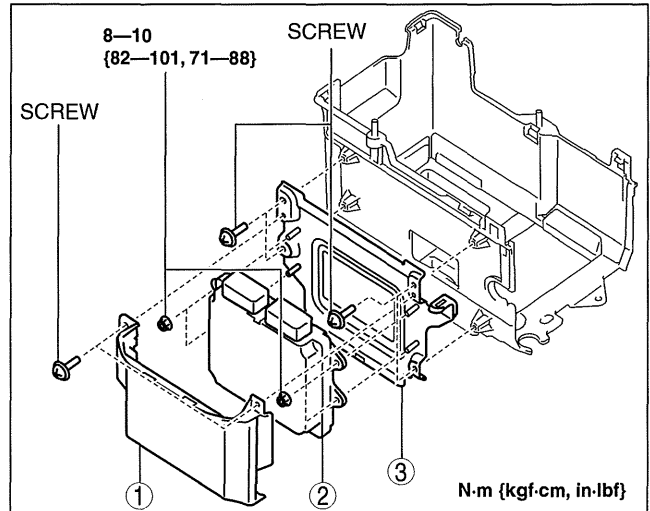
CONTROL SYSTEM [L3 WITH TC]

PCM REMOVAL/INSTALLATION [L3 WITH TC]

id014039802400

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the following items: (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - Battery
 - PCM cover No.1
5. Disconnect the PCM connector.
6. Remove the battery tray and PCM component. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove in the order indicated in the table.

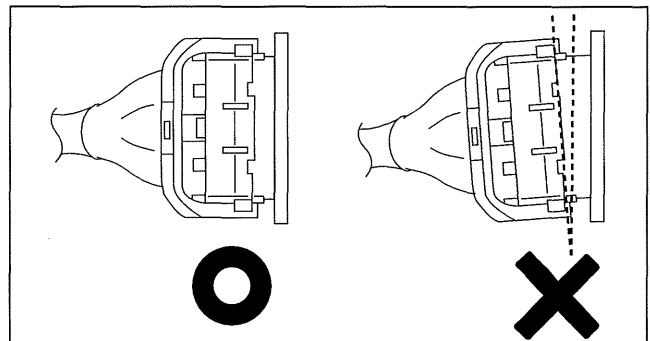
1	PCM cover No.2
2	PCM
3	PCM bracket



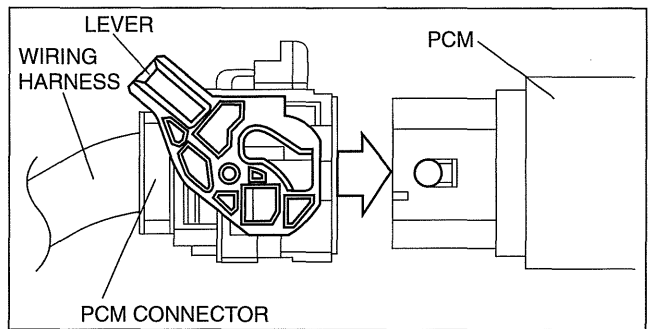
8. Install in the reverse order of removal.

Caution

- If the PCM connector is connected incorrectly it could be damaged. When connecting the PCM connector, connect it using the following procedure.
- If the PCM connector is inserted at an angle and the lever is moved, the connector could be damaged. Verify that the PCM connector is inserted straight.



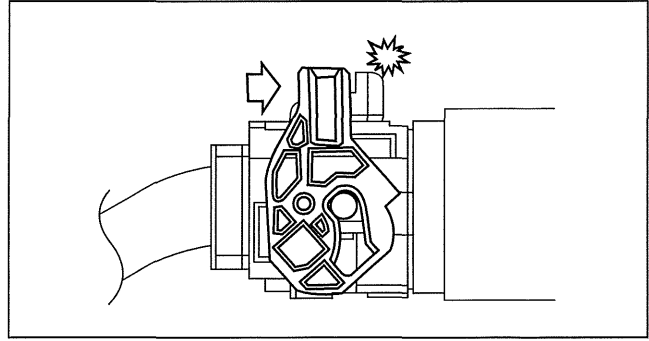
9. Verify that the PCM connector lever is tilted towards the wiring harness side as shown in the figure.
10. Insert the PCM connector straight until it contacts the PCM and verify that the lever reverts upward naturally.



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CONTROL SYSTEM [L3 WITH TC]

11. Push the lever until a click is heard.
12. When replacing the PCM on the vehicles, perform the following:
 - PCM configuration (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].)
 - Immobilizer system component replacement/ key addition and clearing (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)(See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)



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PCM INSPECTION [L3 WITH TC]

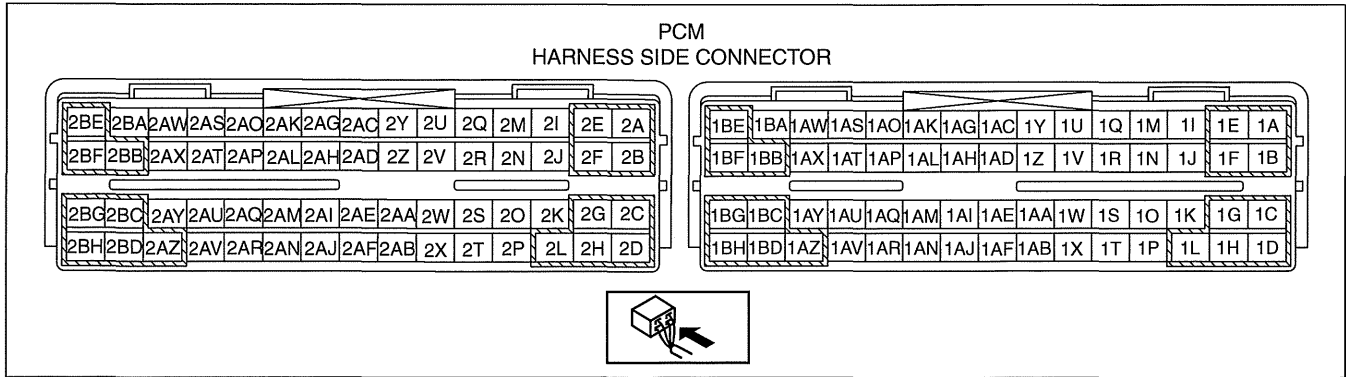
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Without Using the M-MDS

Note

- The PCM terminal voltage can vary with the conditions when measuring and changes due to aged deterioration on the vehicle, causing false diagnosis. Therefore determine comprehensively where the malfunction occurs among the input systems, output systems, and the PCM.

PCM terminal voltage table (Reference)



am6zzw000012

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
1A	—	—	—	—	—	
1B	Starter relay control	Starter relay	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> • Starter relay • Related wiring harness 	
			Switch the ignition to ON	Below 1.0		
1C	—	—	—	—	—	
1D	Clutch operation	CPP switch	Clutch pedal depressed	Approx. 1.5	<ul style="list-style-type: none"> • CPP switch • Related wiring harness 	
			Clutch pedal released	B+		
1E	—	—	—	—	—	
1F	—	—	—	—	—	
1G	—	—	—	—	—	
1H	Fuel pump control	Fuel pump relay	Switch the ignition to ON	B+	<ul style="list-style-type: none"> • Fuel pump relay • Related wiring harness 	
			Cranking	B+		
			Idle	Below 1.0		
1I	A/C	A/C relay	Idle	A/C operating	Below 1.0	<ul style="list-style-type: none"> • A/C relay • Related wiring harness
				A/C not operating	B+	
1J	—	—	—	—	—	
1K	—	—	—	—	—	
1L	—	—	—	—	—	

CONTROL SYSTEM [L3 WITH TC]

Terminal	Signal	Connected to	Test condition		Voltage (V)	Inspection item
1M	IAT	MAF/IAT sensor	Switch the ignition to ON	IAT 20 °C {68 °F}	2.4—2.6	<ul style="list-style-type: none"> MAF/IAT sensor Related wiring harness
				IAT 30 °C {86 °F}	1.7—1.9	
1N	Constant voltage (Vref)	Fuel tank pressure sensor	Switch the ignition to ON		Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness
1O	—	—	—		—	—
1P	MAF sensor ground	MAF/IAT sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1Q	APP sensor voltage	APP sensor	Switch the ignition to ON		Approx. 5.0	<ul style="list-style-type: none"> APP sensor Related wiring harness
1R	—	—	—		—	—
1S	Neutral position	Neutral switch	Shift lever is at neutral position		Approx. 1.5	<ul style="list-style-type: none"> Neutral switch Related wiring harness
			Shift lever is not at neutral position		B+	
1T	—	—	—		—	—
1U	APP sensor ground	APP sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> APP sensor Related wiring harness
1V	—	—	—		—	—
1W	Cruise control switch ground	Cruise control switch	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1X	—	—	—		—	—
1Y	APP sensor (No.1)	APP sensor No.1	Switch the ignition to ON	When the accelerator pedal is released	Approx. 0.4	<ul style="list-style-type: none"> APP sensor Related wiring harness
				When the accelerator pedal is depressed	Approx. 3.4	
1Z	—	—	—		—	—
1AA	Fuel pump speed control	Fuel pump speed control relay	Switch the ignition to ON		B+	<ul style="list-style-type: none"> Fuel pump speed control relay Related wiring harness
			Cranking		Below 1.0	
			Idle		Below 1.0	
1AB	Brake	Brake switch	Brake pedal depressed		B+	<ul style="list-style-type: none"> Brake switch Related wiring harness
			Brake pedal released		Below 1.0	
1AC	APP sensor (No.2)	APP sensor No.2	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		—	<ul style="list-style-type: none"> APP sensor Related wiring harness
1AD	—	—	—		—	—
1AE	Fan control module	Fan control module	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		—	<ul style="list-style-type: none"> Fan control module Related wiring harness
1AF	—	—	—		—	—
1AG	Fuel tank pressure	Fuel tank pressure sensor	Fuel tank pressure is 10 kPa {0.10 kgf/cm ² , 1.5 psi} lower than barometric pressure		Approx. 1.2	<ul style="list-style-type: none"> Fuel tank pressure sensor Related wiring harness
			Fuel tank pressure is equal to barometric pressure		Approx. 2.6	
			Fuel tank pressure is 6 kPa {0.06 kgf/cm ² , 0.9 psi} higher than barometric pressure		Approx. 3.7	
1AH	—	—	—		—	—
1AI	CAN (L)	CAN system related modules	Because this terminal is for CAN, no valid determination of terminal voltage is possible		—	<ul style="list-style-type: none"> Related wiring harness

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CONTROL SYSTEM [L3 WITH TC]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
1AJ	Constant voltage	APP sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness 	
1AK	MAF	MAF/IAT sensor	Switch the ignition to ON	Approx. 0.7	<ul style="list-style-type: none"> MAF/IAT sensor Related wiring harness 	
			Idle	Approx. 1.3		
1AL	—	—	—	—	—	
1AM	CAN (H)	CAN system related modules	Because this terminal is for CAN, no valid determination of terminal voltage is possible	—	<ul style="list-style-type: none"> Related wiring harness 	
1AN	—	—	—	—	—	
1AO	—	—	—	—	—	
1AP	—	—	—	—	—	
1AQ	Cruise control switch	Cruise control switch	Switch the ignition to ON	OFF switch pressed in	Approx. 0	<ul style="list-style-type: none"> Cruise control switch Related wiring harness
				CANCEL switch pressed in	Approx. 1.4	
				SET/- switch pressed in	Approx. 2.4	
				RES/+ switch pressed in	Approx. 3.9	
				ON switch pressed in	Approx. 4.3	
				Except above	Approx. 4.7	
1AR	IAT sensor ground	MAF/IAT sensor, fuel tank pressure sensor, ECT sensor No.2	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1AS	CV solenoid control	CV solenoid valve	Switch the ignition to ON	B+	<ul style="list-style-type: none"> CV solenoid valve Related wiring harness 	
			Idle (CV solenoid valve not operating)	B+		
			Idle (CV solenoid valve operating)	Below 1.0		
1AT	Main relay control	Main relay	Switch the ignition to off	B+	<ul style="list-style-type: none"> Main relay Related wiring harness 	
			Switch the ignition to ON	Below 1.0		
1AU	—	—	—	—	—	
1AV	APP sensor ground	APP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1AW	Generator field coil control	Generator (terminal D)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Generator Related wiring harness 	
1AX	Generator output voltage	Generator (terminal P)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Generator Related wiring harness 	
1AY	Ignition switch	Ignition switch ^{*1} , Ignition relay No.1 ^{*2}	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Ignition switch^{*1}, Ignition relay No.1^{*2} Related wiring harness 	
			Switch the ignition to ON	B+		
1AZ	Ground	Ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1BA	Back-up power supply	Battery (positive terminal)	Under any condition	B+	<ul style="list-style-type: none"> Battery Related wiring harness 	
1BB	Ground	Ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1BC	—	—	—	—	—	
1BD	Ground	Ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	

CONTROL SYSTEM [L3 WITH TC]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
1BE	Power supply	Main relay	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
			Switch the ignition to ON	B+		
1BF	Power supply	Main relay	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
			Switch the ignition to ON	B+		
1BG	Ground	Ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
1BH	Ground	Ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2A	Throttle valve actuator control (+)	Throttle body (throttle valve actuator)	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Throttle valve actuator Related wiring harness 	
2B	Throttle valve actuator control (-)	Throttle body (throttle valve actuator)	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Throttle valve actuator Related wiring harness 	
2C	A/F sensor heater control	A/F sensor heater	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2D	HO2S heater control	HO2S heater	Idle (after warm up)	B+	<ul style="list-style-type: none"> HO2S heater Related wiring harness 	
2E	Power supply	Main relay	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Main relay Related wiring harness 	
			Switch the ignition to ON	B+		
2F	High pressure fuel pump control (+)	High pressure fuel pump (Spill valve control solenoid valve)	Switch the ignition to ON	Approx. 9.2	<ul style="list-style-type: none"> Spill valve control solenoid valve Related wiring harness 	
			Idle	Approx. 9.5		
2G	High pressure fuel pump control (-)	High pressure fuel pump (Spill valve control solenoid valve)	Switch the ignition to ON	Approx. 9.5	<ul style="list-style-type: none"> Spill valve control solenoid valve Related wiring harness 	
			Idle	Approx. 9.0		
2H	Ground	Body ground	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2I	Sensor ground	HO2S	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> HO2S Related wiring harness 	
			Switch the ignition to ON	Approx. 1.5		
2J	—	—	—	—	—	
2K	Constant voltage (Vref)	Fuel pressure sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness 	
2L	—	—	—	—	—	
2M	Sensor ground	A/F sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2N	Boost air temperature	MAP/boost air temperature sensor	Switch the ignition to ON	IAT 20 °C {68 °F}	2.4—2.6	<ul style="list-style-type: none"> Boost air temperature sensor Related wiring harness
				IAT 30 °C {86 °F}	1.7—1.9	
2O	OCV control	OCV	Switch the ignition to ON	B+	<ul style="list-style-type: none"> OCV Related wiring harness 	
2P	Sensor ground	Fuel pressure sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Fuel pressure sensor Related wiring harness 	
2Q	HO2S	HO2S	Idle	0—1	<ul style="list-style-type: none"> HO2S Related wiring harness 	

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CONTROL SYSTEM [L3 WITH TC]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
2R	Fuel pressure sensor	Fuel pressure sensor	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Fuel pressure sensor Related wiring harness 	
			Switch the ignition to ON	Approx. 1.4		
			Idle	Approx. 1.4		
2S	CMP	CMP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> CMP sensor Related wiring harness 	
2T	—	—	—	—	—	
2U	Knocking (+)	KS	Switch the ignition to ON (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Approx. 4.3	<ul style="list-style-type: none"> KS Related wiring harness 	
2V	Knocking (-)	KS	Switch the ignition to ON (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Below 1.0	<ul style="list-style-type: none"> KS Related wiring harness 	
2W	CKP	CKP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> CKP sensor Related wiring harness 	
2X	Internal ground	KS, CMP sensor, CKP sensor, A/F sensor, TP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2Y	A/F sensor calibration resistor	A/F sensor	Switch the ignition to ON	Approx. 1.5	<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2Z	A/F sensor power supply	A/F sensor	Idle (after warm up)	Approx. 4.0	<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2AA	Wastegate control solenoid valve	Wastegate control solenoid valve	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Wastegate control solenoid valve Related wiring harness 	
2AB	Purge solenoid valve	Purge solenoid valve	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Purge solenoid valve Related wiring harness 	
2AC	A/F sensor VSIP	A/F sensor	Idle (after warm up)	Approx. 3.6	<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2AD	A/F sensor IP+	A/F sensor	Idle (after warm up)	Approx. 3.5	<ul style="list-style-type: none"> A/F sensor Related wiring harness 	
2AE	Variable swirl shutter valve monitor	Variable swirl shutter valve switch	variable swirl shutter valve close	Below 1.0	<ul style="list-style-type: none"> Variable swirl shutter valve switch Related wiring harness 	
			variable swirl shutter valve open	B+		
2AF	OCV control	OCV	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> OCV valve Related wiring harness 	
2AG	Manifold absolute pressure	MAP sensor	Switch the ignition to ON	Approx. 1.9	<ul style="list-style-type: none"> MAP sensor Related wiring harness 	
			Idle (after warm up)	Below 1.0		
2AH	ECT (No.1)	ECT sensor (No.1)	Switch the ignition to ON	ECT 20 °C {68 °F}	3.04—3.14	<ul style="list-style-type: none"> ECT sensor No.1 Related wiring harness
				ECT 60 °C {140 °F}	1.29—1.39	
2AI	—	—	—	—	—	

CONTROL SYSTEM [L3 WITH TC]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item	
2AJ	TP sensor ground	TP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> TP sensor Related wiring harness 	
2AK	TP sensor (No. 1)	TP sensor (No. 1)	Note <ul style="list-style-type: none"> When the ignition switch is in the ON position (engine is off), the throttle valve is fully closed regardless of the accelerator pedal opening angle. 		<ul style="list-style-type: none"> TP sensor Related wiring harness 	
			Switch the ignition to ON (after warm up)	<table border="1"> <tr> <td>APP is released</td> <td>Approx. 0.85</td> </tr> <tr> <td>APP is depressed</td> <td>Approx. 0.85</td> </tr> </table>		APP is released
APP is released	Approx. 0.85					
APP is depressed	Approx. 0.85					
2AL	TP sensor (No. 2)	TP sensor (No. 2)	Note <ul style="list-style-type: none"> When the ignition switch is in the ON position (engine is off), the throttle valve is fully closed regardless of the accelerator pedal opening angle. 		<ul style="list-style-type: none"> TP sensor Related wiring harness 	
			Switch the ignition to ON (after warm up)	<table border="1"> <tr> <td>APP is released</td> <td>Approx. 4.15</td> </tr> <tr> <td>APP is depressed</td> <td>Approx. 4.15</td> </tr> </table>		APP is released
APP is released	Approx. 4.15					
APP is depressed	Approx. 4.15					
2AM	EGR valve #2 coil control	EGR valve	Switch the ignition to ON	B+	<ul style="list-style-type: none"> EGR valve Related wiring harness 	
			Idle	B+		
2AN	EGR valve #4 coil control	EGR valve	Switch the ignition to ON	B+	<ul style="list-style-type: none"> EGR valve Related wiring harness 	
			Idle	B+		
2AO	Constant voltage (Vref)	TP sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> TP sensor Related wiring harness 	
2AP	ECT (No.2)	ECT sensor No.2	Switch the ignition to ON	ECT 20 °C {68 °F}	3.04—3.14	<ul style="list-style-type: none"> ECT sensor No.2 Related wiring harness
				ECT 60 °C {140 °F}	1.29—1.39	
2AQ	EGR valve #1 coil control	EGR valve	Switch the ignition to ON	Below 1.0	<ul style="list-style-type: none"> EGR valve Related wiring harness 	
			Idle	Below 1.0		
2AR	EGR valve #3 coil control	EGR valve	Switch the ignition to ON	B+	<ul style="list-style-type: none"> EGR valve Related wiring harness 	
			Idle	B+		
2AS	Variable swirl control	Variable swirl solenoid valve	ECT 0 °C {32 °F} or more or engine speed 3,250 rpm or more	B+	<ul style="list-style-type: none"> Variable swirl solenoid valve Related wiring harness 	
			ECT less than 0 °C {32 °F} and engine speed less than 3,250 rpm	Below 1.0		
2AT	IGT4	Ignition coil (No.4 cylinders)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.4 Related wiring harness 	
2AU	Constant voltage (Vref)	MAP sensor	Switch the ignition to ON	Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness 	
2AV	Sensor ground	MAP sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness 	
2AW	IGT2	Ignition coil (No.2 cylinders)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.2 Related wiring harness 	
2AX	IGT3	Ignition coil (No.3 cylinders)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.3 Related wiring harness 	
2AY	Sensor ground	ECT sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> ECT sensor Related wiring harness 	

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CONTROL SYSTEM [L3 WITH TC]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item
2AZ	Fuel injection (-)(#4)	Fuel injector (No.4)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.4 Related wiring harness
2BA	IGT1	Ignition coil (No.1 cylinders)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Ignition coil No.1 Related wiring harness
2BB	Fuel injection (-)(#1)	Fuel injector (No.1)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.1 Related wiring harness
2BC	Fuel injection (-)(#2)	Fuel injector (No.2)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.2 Related wiring harness
2BD	Fuel injection (-)(#3)	Fuel injector (No.3)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.3 Related wiring harness
2BE	Fuel injector power supply 1	Fuel Injector relay	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Fuel Injector relay Related wiring harness
			Switch the ignition to ON	B+	
2BF	Fuel injector power supply 2	Fuel Injector relay	Switch the ignition to off	Below 1.0	<ul style="list-style-type: none"> Fuel Injector relay Related wiring harness
			Switch the ignition to ON	B+	
2BG	Fuel injection (+)(#1, #4)	Fuel injector (No.1, No.4)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.1, No.4 Related wiring harness
2BH	Fuel injection (+)(#2, #3)	Fuel injector (No.2, No.3)	<ul style="list-style-type: none"> Inspect using the wave profile. (See01-40B-14 Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Fuel injector No.2, No.3 Related wiring harness

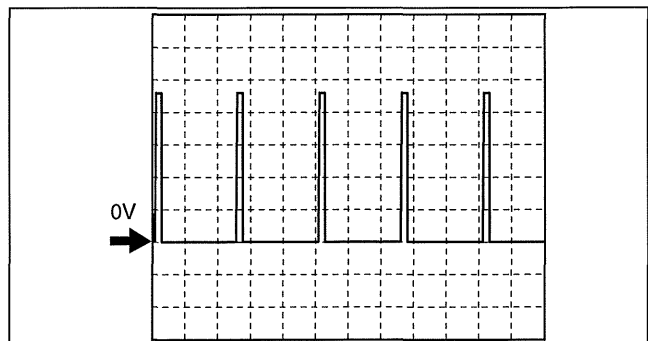
*1 : Without advanced keyless entry and push button start system

*2 : With advanced keyless entry and push button start system

Inspection Using An Oscilloscope (Reference)

APP sensor (No.2) signal

Accelerator pedal released



aaaxjw00002881

Accelerator pedal depressed

PCM terminals

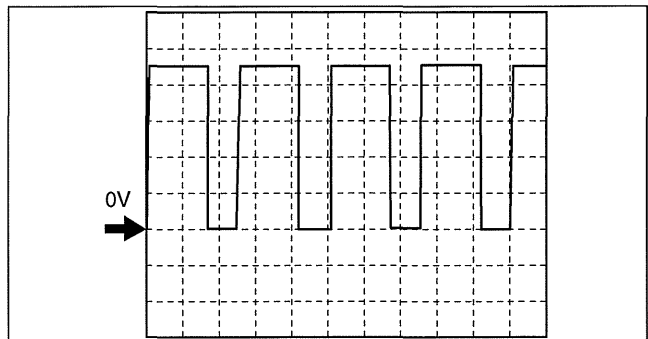
- 1AC (+)—body ground (-)

Oscilloscope setting

- 5 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



aaaxjw00002882

CONTROL SYSTEM [L3 WITH TC]

Fan control module signal

PCM terminals

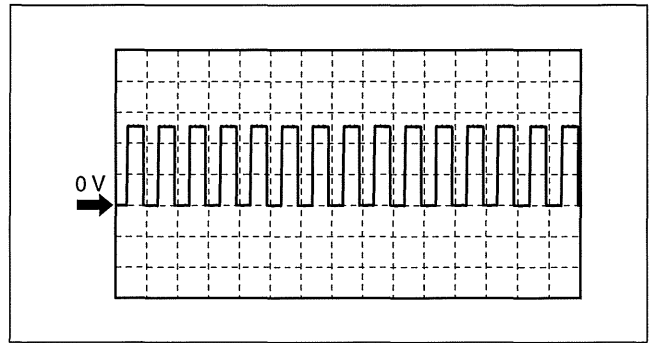
- 1AE (+)—body ground (-)

Oscilloscope setting

- 5 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



am3uuw0000238

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Generator field coil control signal

PCM terminals

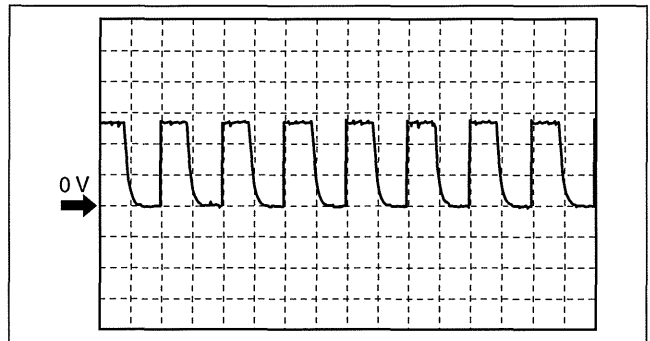
- 1AW (+)—body ground (-)

Oscilloscope setting

- 0.5 V/DIV (Y), 2 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



ampjjw00001528

Generator output voltage signal

PCM terminals

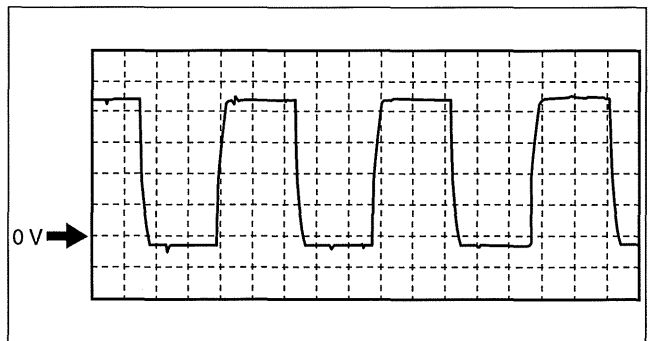
- 1AX (+)—body ground (-)

Oscilloscope setting

- 2 V/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



ampjjw00001529

A/F sensor heater control signal

PCM terminals

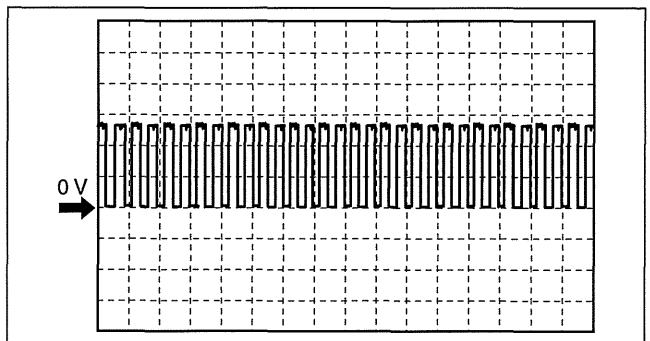
- 2C (+)—body ground (-)

Oscilloscope setting

- 5 V/DIV (Y), 200 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



ampjjw00001866

CONTROL SYSTEM [L3 WITH TC]

CMP sensor signal

PCM terminals

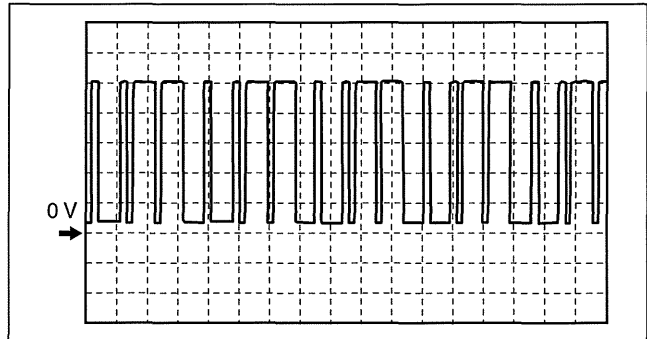
- 2S (+)—body ground (-)

Oscilloscope setting

- 2 V/DIV (Y), 100 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



acxuuw0000127

PCM terminals

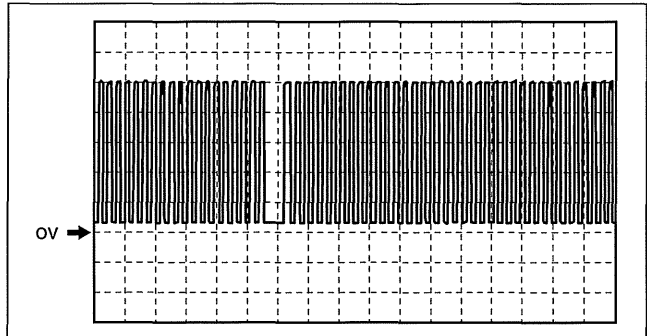
- 2W (+)—body ground (-)

Oscilloscope setting

- 2 V/DIV (Y), 5 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



acxuuw0000128

Wastegate control solenoid valve signal

PCM terminals

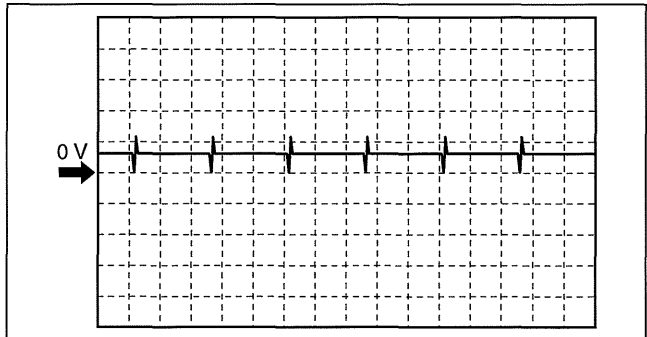
- 2AA (+)—body ground (-)

Oscilloscope setting

- 20 V/DIV (Y), 20 ms/DIV (X), DC range

Vehicle condition

- Switch the ignition to ON



acxuuw00002325

Purge control signal

PCM terminals

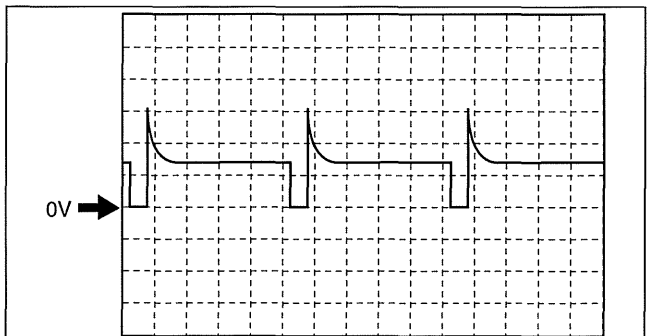
- 2AB (+)—body ground (-)

Oscilloscope setting

- 10 V/DIV (Y), 20 ms/DIV (X), DC range

Vehicle condition

- Racing



am2zzw0000358

OCV signal

PCM terminals

- 2AF (+)—body ground (-)

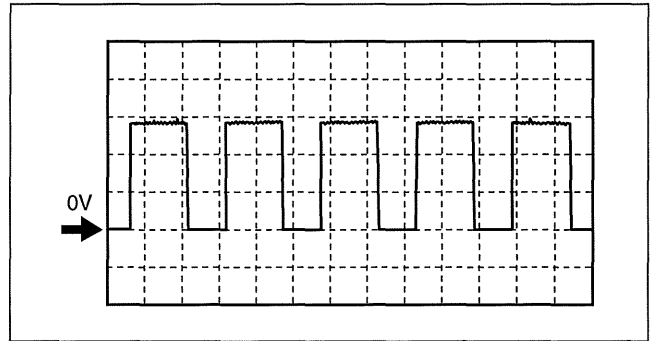
Oscilloscope setting

- 5 V/DIV (Y), 1 ms/DIV (X), DC range

Vehicle condition

- Racing

IGT1, IGT2, IGT3, IGT4 control signals



am2zzw0000359

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PCM terminals

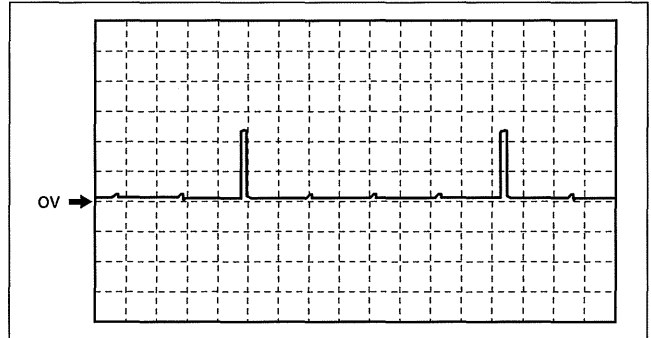
- IGT1 (No.1): 2BA (+)—body ground (-)
- IGT2 (No.2): 2AW (+)—body ground (-)
- IGT3 (No.3): 2AX (+)—body ground (-)
- IGT4 (No.4): 2AT (+)—body ground (-)

Oscilloscope setting

- 2 V/DIV (Y), 20 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



ampjiw00000781

Fuel injection control (-)

PCM terminals

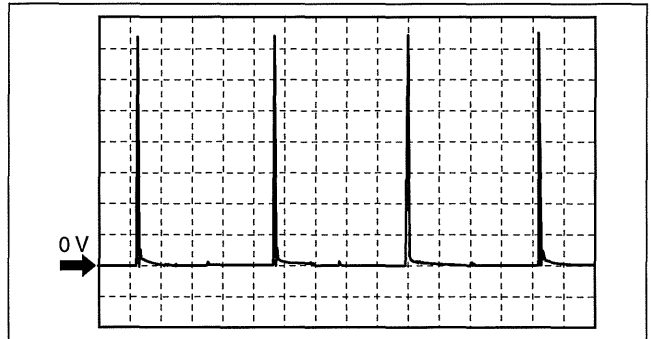
- Fuel injection No.1: 2BB (+)—body ground (-)
- Fuel injection No.2: 2BC (+)—body ground (-)
- Fuel injection No.3: 2BD (+)—body ground (-)
- Fuel injection No.4: 2AZ (+)—body ground (-)

Oscilloscope setting

- 10 V/DIV (Y), 20 ms/DIV (X), DC range

Vehicle condition

- Idle after warm up



acxuuw00002326

Fuel injection control (+)

PCM terminals

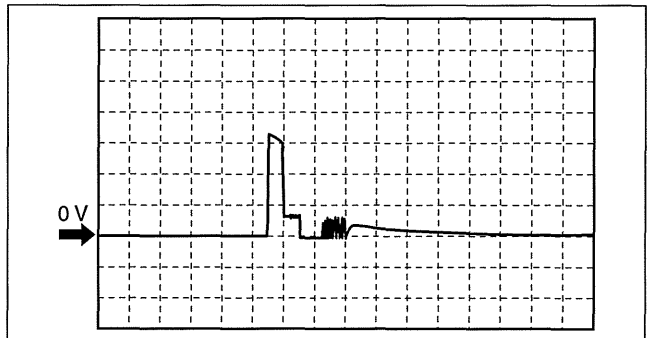
- Fuel injection No.1, No.4: 2BG (+)—body ground (-)
- Fuel injection No.2, No.3: 2BH (+)—body ground (-)

Oscilloscope setting

- 20 V/DIV (Y), 400 μ s/DIV (X), DC range

Vehicle condition

- Idle after warm up



acxuuw00000277

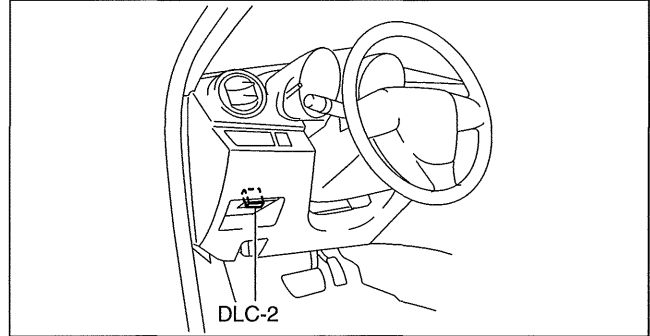
CONTROL SYSTEM [L3 WITH TC]

Using the M-MDS

Note

- PIDs for the following parts are not available on this model. Perform the specific inspections for the following parts:
 - CMP sensor (See01-40B-34 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC].)
 - Main relay

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Measure the PID value.
 - If PID value is not within the specification, follow the instructions in the "Inspection item" column.



am3uuw0000239

Note

- The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the PCM. Therefore, an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device. If a monitored value of an output device is out of specification, inspect the monitored value of the input device related to the output control.
- For input/output signals except those of the monitoring items, use a voltmeter to measure the PCM terminal voltage.
- The simulation items that are used in the ENGINE CONTROL SYSTEM OPERATION INSPECTION are as follows.
 - ACCS, ALTF, ARPMDES, EVAPCP, EVAPCV, FAN_DUTY, FP, IMRC, INJ_1, INJ_2, INJ_3, INJ_4, SEGRP, TEST, VT DUTY1 wt, WGC

PID/DATA monitor table (reference)

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Inspection item	PCM terminal
	°C	°F			
AAT (Ambient air temperature)	°C	°F	Switch the ignition to ON: Indicates the ambient air temperature	• IAT sensor	1M
AC_REQ (A/C request signal)	OFF/ON		A/C switch OFF: OFF A/C switch ON: ON	Perform applicable DTC troubleshooting	—
ACCS (A/C relay)	OFF/ON		A/C relay OFF: OFF A/C relay ON: ON	• The following PIDs: — RPM, TP REL, ECT • A/C relay	1I
AFR (Air/fuel ratio)	—		Target air-fuel ratio is displayed	• A/F sensor	2Z 2AC 2AD
AFR_ACT (Actual air/fuel ratio)	—		Actual air-fuel ratio is displayed	• A/F sensor	2Z 2AC 2AD
ALTF (Generator field coil control duty value)	%		Switch the ignition to ON: 0% Idle: 0—100% Just after A/C switch ON and fan switch ON at idle: Duty value rises	• The following PIDs: — IAT, ECT, RPM, VPWR, ALTT V • Generator	1AW
ALTT V (Generator output voltage)	V		Idle (no E/L): Approx. 14 V (This is an internal calculation value and differs from the terminal voltage.)	• Generator	1AX
APP1 (APP sensor No.1)	%		Accelerator pedal is released: Approx. 8% Accelerator pedal is depressed: Approx. 68%	• APP sensor	1Y
	V		Accelerator pedal is released: Approx. 0.4 V Accelerator pedal is depressed: Approx. 3.4 V		

CONTROL SYSTEM [L3 WITH TC]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Inspection item	PCM terminal
APP2 (APP sensor No.2)	%	Accelerator pedal is released: Approx. 8% Accelerator pedal is depressed: Approx. 68%	• APP sensor	1AC
	V	Accelerator pedal is released: Approx. 0.4 V Accelerator pedal is depressed: Approx. 3.4 V		
ARPMDES (Target engine speed)	RPM	Indicate the target engine speed	• The following PIDs: — IAT, RPM, MAP, ECT, MAF, TP REL, INGEAR, ALTT V	—
BARO (Barometric pressure)	Pa	Indicate the BARO	• BARO sensor	—
	V	Switch the ignition to ON at sea level: Approx. 4.0 V		
BAT (Boost air temperature)	°C °F	Indicate the boost air temperature	• MAP/boost air temperature sensor	2N
	V	Boost air temperature 20 °C {68 °F}: 2.4—2.6 V Boost air temperature 30 °C {86 °F}: 1.7—1.9 V		
BOO (Brake switch)	OFF/ON	Brake pedal depressed: ON Brake pedal released: OFF	• Brake switch No.1	1AB
BPA (Brake pressure applied switch)	OFF/ON	Brake pedal depressed: ON Brake pedal released: OFF	• Brake switch No.2	—
CATT11_DSD (Estimated catalytic converter temperature)	°C °F	Indicates the estimated catalytic converter temperature	• Perform applicable DTC troubleshooting.	—
CHRGLP (Generator warning light)	OFF/ON	Switch the ignition to ON: ON Idle: OFF	• Perform applicable DTC troubleshooting.	—
COLP (Refrigerant pressure sensor)	OFF/ON	Refrigerant pressure is more than the specification: ON Refrigerant pressure is less than the specification: OFF	• Refrigerant pressure sensor	—
CPP (Clutch pedal position)	OFF/ON	Clutch pedal depressed: ON Clutch pedal released: OFF	• Clutch switch	1D
CPP/PNP (Shift lever position)	OFF/ON	Neutral position: ON Others: OFF	• Neutral switch	1S
ECT (Engine coolant temperature)	°C °F	Indicate the ECT	• ECT sensor	2AH
	V	ECT 20 °C {68 °F}: 3.04—3.14 V ECT 60 °C {140 °F}: 1.29—1.39 V		
EQ_RAT11 (Equivalence ratio (lambda))	—	Idling after warm-up: Approx. 1	• Perform applicable DTC troubleshooting.	—
EQ_RAT11_DSD (Desired equivalence ratio (lambda))	—	Idling after warm-up: Approx. 1	• Perform applicable DTC troubleshooting.	—
ETC_ACT (Electronic throttle control actual)	°	Indicates the desired TP by angle	• Perform applicable DTC troubleshooting.	2A 2B
ETC_DSD (Electronic throttle control desired)	%	Indicates the desired TP by percent	• The following PIDs: — APP1, APP2, ETC_ACT • TP sensor	—
	°	Indicates the desired TP by angle		
EVAPCP (Purge solenoid valve duty value)	%	Switch the ignition to ON: 0% Idle: 0%	• The following PIDs: — IAT, RPM, ECT, MAF, O2S11, BARO, INGEAR, VPWR • Purge solenoid valve	2AB
EVAPCV (Evaporative emission canister vent valve)	OFF/ON	Simulation item (EVAPCV) is ON: ON	• CV solenoid valve	1AS

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CONTROL SYSTEM [L3 WITH TC]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Inspection item	PCM terminal
FAN_DUTY (Fan duty cycle)	%	ECT less than 98 °C {208 °F}: 0% ECT more than 110 °C {230 °F}: 90%	<ul style="list-style-type: none"> Fan control module 	1AE
FCL (Fuel cap warning light)	OFF/ON	<ul style="list-style-type: none"> Fuel cap warning light not illuminated: OFF Fuel cap warning light illuminated: ON 	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
FIA (Fuel injection amount)	—	Indicates the fuel injection amount.	<ul style="list-style-type: none"> Fuel injector Fuel Injector relay 	—
FLI (Fuel level)	%	Fuel gauge level F: Approx. 100% Fuel gauge level E: Approx. 0%	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
FP (Fuel pump relay)	OFF/ON	Idle: ON Cranking: ON	<ul style="list-style-type: none"> The following PIDs: — RPM Fuel pump relay 	1H
FP_Hi_PRES (High pressure fuel pump)	Off/On	Spill valve control solenoid valve work: On Spill valve control solenoid valve don't work: Off	<ul style="list-style-type: none"> High pressure fuel pump 	2F 2G
FTP (Fuel tank pressure sensor)	Pa	Indicate the fuel tank pressure	<ul style="list-style-type: none"> Fuel tank pressure sensor 	1AG
	V	Fuel tank pressure is equal to barometric pressure: approx. 2.6 V		
FUEL_P_DSD (Fuel pressure desired)	Pa	Indicate the target fuel pressure.	<ul style="list-style-type: none"> The following PIDs: — ECT, FUEL_PRES, MAF, RPM, VPWR, 	—
FUEL_PRES (Fuel pressure sensor)	Pa	Idle: Approx. 3 MPa Load 60% or more: Approx. 11.5 MPa	<ul style="list-style-type: none"> Fuel pressure sensor 	2R
	V	Idle: Approx. 1.4 V		
FUEL PW (Fuel injector duration)	sec	Idle: Approx. 2.0 ms	<ul style="list-style-type: none"> The following PIDs: — ECT, IAT, RPM, TP REL, MAF, O2S11, O2S12, MAP, VSS, BOO, AC_REQ, VPWR 	2AZ 2BB 2BC 2BD
FUELSYS (Fuel system status)	OL/CL/ OL-Drive/ OL-Fault/ CL-Fault	Switch the ignition to ON: OL_Drive Idle (after warm up): CL	<ul style="list-style-type: none"> The following PIDs: — IAT, MAF, TP REL, MAP, ECT, RPM, O2S11, O2S12, INGEAR, VPWR, ALTT V Fuel injector 	—
HTR11 (A/F sensor heater)	OFF/ON	Idle (after warm up): ON⇔OFF	<ul style="list-style-type: none"> The following PIDs: — IAT, MAF, TP REL, ECT, RPM A/F sensor heater 	2C
HTR12 (HO2S heater)	OFF/ON	Idle: ON Engine speed is above 4,000 rpm: OFF	<ul style="list-style-type: none"> The following PIDs: — IAT, MAF, ECT, RPM HO2S heater 	2D
IAT (Intake air temperature)	°C °F	Indicate the IAT	<ul style="list-style-type: none"> MAF/IAT sensor 	1M
	V	IAT 20 °C {68 °F}: 2.4—2.6V IAT 30 °C {86 °F}: 1.7—1.9V		
IMRC (Variable swirl solenoid valve)	OFF/ON	Engine speed is below Approx. 3,250 rpm and ECT is below 0 °C {32 °F}: ON Others: OFF	<ul style="list-style-type: none"> The following PIDs: — TP REL, ECT, RPM Variable swirl solenoid valve 	2AS
INGEAR (Load/no load condition)	OFF/ON	Driving range: ON Except above: OFF Others: ON	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
IVS (CTP condition)	Idle/ Off Idle	APP closed: Idle Others: Off Idle	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
KNOCKR (Knocking retard)	°	Switch the ignition to ON: 0 ° Idle: 0 °	<ul style="list-style-type: none"> KS 	2U 2V
LOAD (Engine load)	%	Switch the ignition to ON: 0% Idle (after warm up): 17.1—18.5% Engine speed is 2,500 rpm: 14.2—15.2	<ul style="list-style-type: none"> MAF/IAT sensor 	—

CONTROL SYSTEM [L3 WITH TC]

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Inspection item	PCM terminal
LONGFT1 (long term fuel trim)	%		Idle (after warm up): -14—14%	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
MAF (Mass airflow)	g/sec		Indicate the MAF	<ul style="list-style-type: none"> MAF/IAT sensor 	1AK
	V		Switch the ignition to ON: Approx. 0.7 V Idle (after warm up): Approx. 1.3 V		
MAP (Manifold absolute pressure)	Pa		Indicate the MAP	<ul style="list-style-type: none"> MAP sensor 	2AG
	V		Switch the ignition to ON: Approx. 1.9 V Idle (after warm up): Below 1.0 V		
MIL (Malfunction indicator lamp)	OFF/ON		Switch the ignition to ON: ON Idle: OFF	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
MIL_DIS (Traveled distance since the MIL illuminated)	km	mile	No DTC: 0 km {0 mile} DTC detected: Not 0 km {0 mile}	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
O2S11 (A/F sensor)	A		Idle (after warm up): -1.0—1.0 A Deceleration (after warm up): 0.25 A or more	<ul style="list-style-type: none"> A/F sensor 	2Z 2AC 2AD
O2S12 (HO2S)	V		Idle: 0—1 V	<ul style="list-style-type: none"> HO2S 	2Q
RO2FT1 (HO2S fuel trim)	%		<ul style="list-style-type: none"> Idle after warm-up: Approx. 0.2 	<ul style="list-style-type: none"> The following PID — O2S12 	2Q
RPM (Engine speed)	RPM		Indicates the engine speed	<ul style="list-style-type: none"> CKP sensor 	2W
SCCS (Speed control command switch)	V		OFF switch pressed in: Approx. 0 V CANCEL switch pressed in: Approx. 1.4 V SET/- switch pressed in: Approx. 2.4 V RES/+ switch pressed in: Approx. 3.9 V ON switch pressed in: Approx. 4.3 V Except above: Approx. 4.7 V	<ul style="list-style-type: none"> Cruise control switch 	1AQ
SEGRP (EGR valve (stepping motor) position)	—		Idle: 0 Engine speed is 1,187—4200 rpm: 0—57	<ul style="list-style-type: none"> The following PIDs: — MAF, TP REL, ECT, RPM, VSS EGR valve 	2AM 2AN 2AQ 2AR
SEGRP DSD (Desired EGR valve (stepping motor) position)	%		Indicate the desired EGR valve position	<ul style="list-style-type: none"> The following PIDs: — MAF, TP REL, ECT, RPM, VSS 	—
SHRTFT1 (Short term fuel trim [A/F sensor])	%		Idle (after warm up): Approx. -30—25%	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
SPARKADV (Ignition timing)	°		Indicate the ignition timing	<ul style="list-style-type: none"> The following PIDs: — MAF, TP REL, ECT, RPM, INGEAR, VPWR Ignition coil 	2AT 2AW 2AX 2BA
TEST	OFF/ON		—	—	—
TH_M (Thermostat monitor)	—		Indicates heat radiation ratio (heat radiation when thermostat is malfunctioning/heat radiation when thermostat is normal) when thermostat monitoring is finished	<ul style="list-style-type: none"> Thermostat 	—
	°C	°F	Indicates engine coolant temperature when thermostat monitoring is finished		—

01-40B

CONTROL SYSTEM [L3 WITH TC]

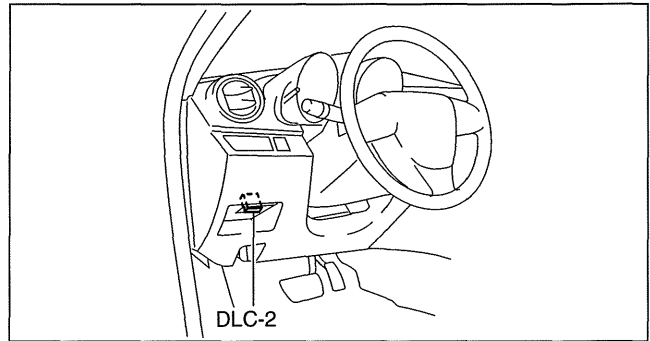
Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Inspection item	PCM terminal
TH_M_MAX (Thermostat monitor max)	—		Indicates upper limit of heat radiation ratio (heat radiation when thermostat is malfunctioning/heat radiation when thermostat is normal) for thermostat monitoring execution	<ul style="list-style-type: none"> Thermostat 	—
	°C	°F	Indicates upper limit of engine coolant temperature for thermostat monitoring execution		—
TH_M_MIN (Thermostat monitor min)	—		Indicates lower limit of heat radiation ratio (heat radiation when thermostat is malfunctioning/heat radiation when thermostat is normal) for thermostat monitoring execution	<ul style="list-style-type: none"> Thermostat 	—
	°C	°F	Indicates lower limit of engine coolant temperature for thermostat monitoring execution		—
TP REL (Relative TP)	%		Switch the ignition to ON (after warm up) APP is released: Approx. 5 % APP is depressed: Approx. 5 %	<p>Note</p> <ul style="list-style-type: none"> When the ignition switch is in the ON position (engine is off), the throttle valve is fully closed regardless of the accelerator pedal opening angle. <ul style="list-style-type: none"> TP sensor 	2AK 2AL
TP1 (TP sensor No.1)	%		Switch the ignition to ON (after warm up) APP is released: Approx. 15 % APP is depressed: Approx. 15 %	<p>Note</p> <ul style="list-style-type: none"> When the ignition switch is in the ON position (engine is off), the throttle valve is fully closed regardless of the accelerator pedal opening angle. <ul style="list-style-type: none"> TP sensor 	2AK
	V		Switch the ignition to ON (after warm up) APP is released: Approx. 0.85 V APP is depressed: Approx. 0.85 V		
TP2 (TP sensor No.2)	%		Switch the ignition to ON (after warm up) APP is released: Approx. 15 % APP is depressed: Approx. 15 %	<p>Note</p> <ul style="list-style-type: none"> When the ignition switch is in the ON position (engine is off), the throttle valve is fully closed regardless of the accelerator pedal opening angle. <ul style="list-style-type: none"> TP sensor 	2AL
	V		Switch the ignition to ON (after warm up) APP is released: Approx. 4.15 V APP is depressed: Approx. 4.15 V		
TPCT (Lowest closed throttle voltage)	V		Switch the ignition to ON: Approx 0.5 V	<ul style="list-style-type: none"> TP sensor 	2AK 2AL
VPWR (Battery positive voltage)	V		Indicates the battery voltage	<ul style="list-style-type: none"> Battery 	1BA
VSS (Vehicle speed)	KPH	MPH	Indicates the vehicle speed	<ul style="list-style-type: none"> Perform applicable DTC troubleshooting. 	—
VT ACT1 (Actual valve timing)	°		Idle: Approx. 0°	<ul style="list-style-type: none"> CMP sensor CKP sensor 	2S 2W
VT DIFF1 (Difference between actual valve timing and target valve timing)	°		Idle: Approx. 0°	<ul style="list-style-type: none"> The following PIDs: — RPM, LOAD, VT ACT1 CMP sensor 	—
VT DUTY1 (Camshaft position commanded duty cycle)	%		Idle: Approx. 11.5%	<ul style="list-style-type: none"> The following PIDs: — TP REL, ECT, RPM OCV 	2AF
WGC (Wastegate control solenoid valve)	%		Racing with the accelerator pedal fully depressed: 10—100 %	<ul style="list-style-type: none"> Wastegate control solenoid valve 	2AA
			Fully closed: 0 %		

CONTROL SYSTEM [L3 WITH TC]

PCM CONFIGURATION [L3 WITH TC]

id014039802600

1. Connect the M-MDS to DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "PCM".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See 01-02B-18 DTC TABLE [L3 WITH TC].)



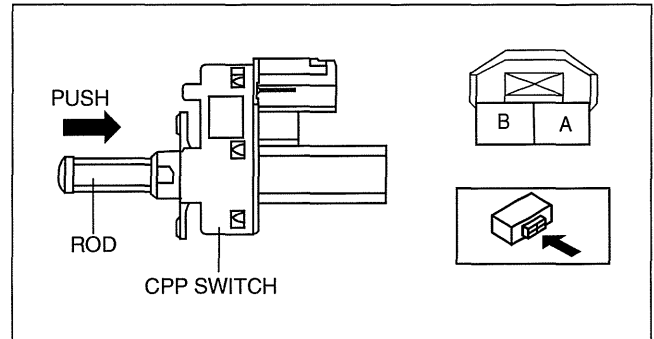
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01-40B

CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [L3 WITH TC]

id014039801600

1. Verify that the CPP switch is installed properly.
2. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Disconnect the negative battery cable.
4. Disconnect the CPP switch connector. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)
5. Inspect for continuity between the CPP switch terminals using an ohmmeter.
 - If not as specified, replace the CPP switch. (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)



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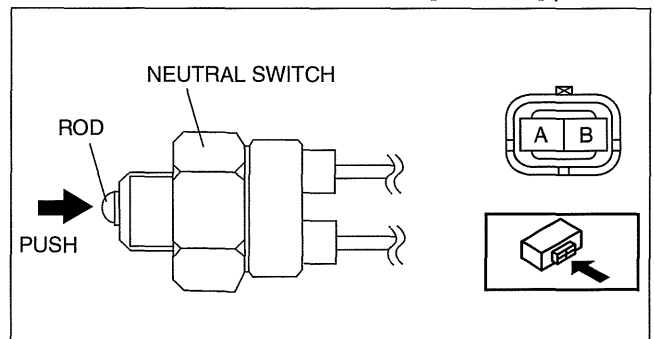
Specification

Measured condition	Clutch pedal position	Continuity
Rod pushed	Clutch pedal released	Continuity detected
Except above	Clutch pedal depressed	No continuity

NEUTRAL SWITCH INSPECTION [L3 WITH TC]

id014039800800

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the neutral switch. (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].)
4. Inspect for continuity between the neutral switch terminals using an ohmmeter.
 - If not as specified, replace the neutral switch. (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].)



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Specification

Measured condition	Continuity
Rod pushed	Continuity detected
Except above	No continuity

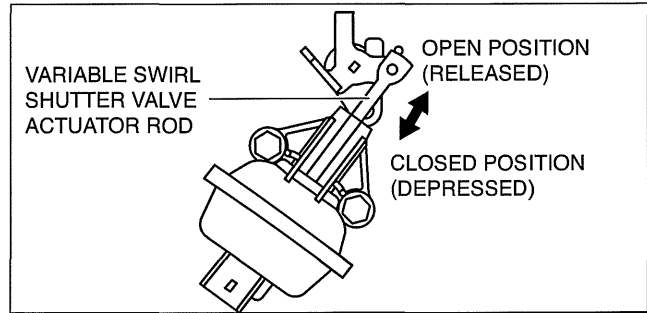
CONTROL SYSTEM [L3 WITH TC]

VARIABLE SWIRL SHUTTER VALVE SWITCH INSPECTION [L3 WITH TC]

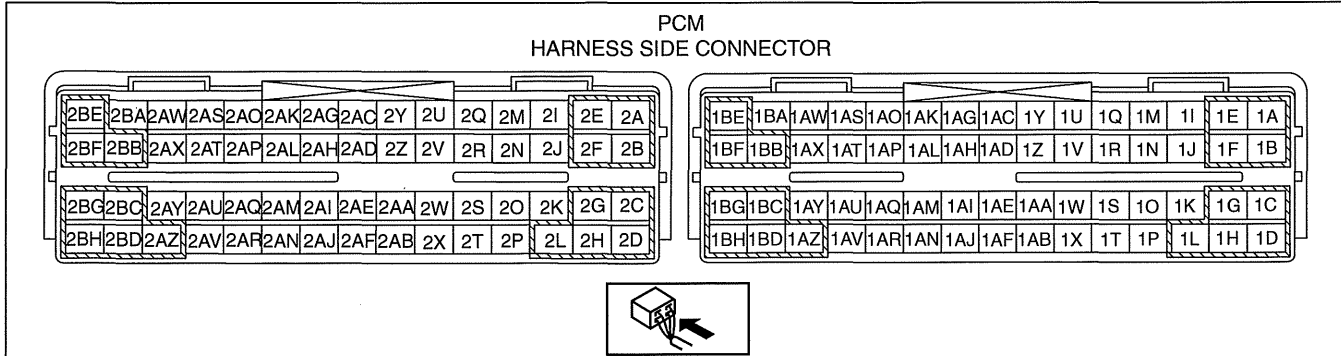
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Voltage Inspection

1. Switch the ignition to ON (Engine off).
2. Verify that the PCM terminal 2AE voltage is as shown in the following table when the variable swirl shutter valve actuator rod is depressed and released by hand.



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- If not as specified, replace the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

Variable swirl shutter valve switch output voltage

Condition	PCM terminal 2AE
Released (Open position)	B+
Depressed (Closed position)	Below 1.0 V

ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC]

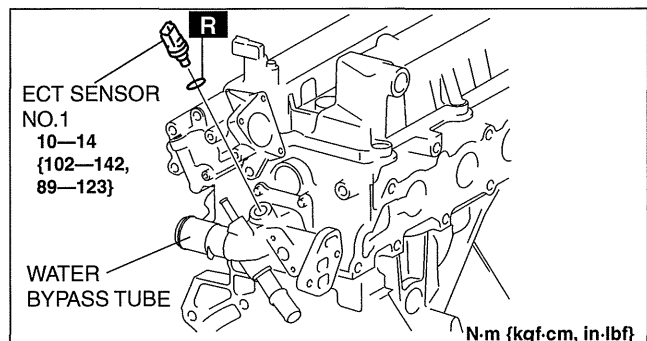
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Warning

- When the engine is hot, it can badly burn. Turn off the engine and wait until it is cool before removing the ECT sensor.

ECT Sensor No.1

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12B-2 COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC].)
4. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the air cleaner. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the air duct. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
7. Disconnect the ECT sensor No.1 connector.
8. Remove the ECT sensor No.1.
9. Install in the reverse order of removal.
10. Refill the engine coolant. (See 01-12B-2 COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC].)



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CONTROL SYSTEM [L3 WITH TC]

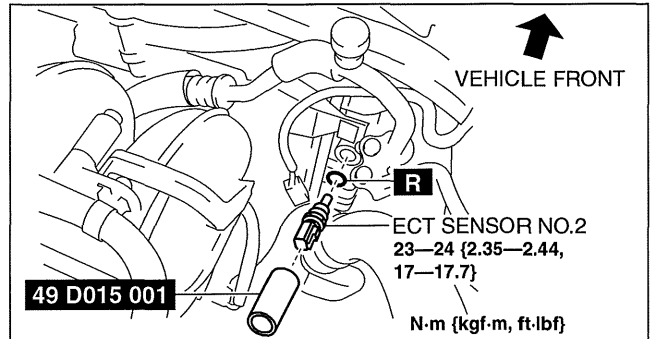
ECT Sensor No.2

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12B-2 COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC].)
4. Disconnect the ECT sensor No.2 connector.
5. Remove the ECT sensor No.2 using the SST.

Note

- Wipe off any oil or engine coolant if it gets on the ECT sensor No.2 installation area.

6. Install in the reverse order of removal.
7. Refill the engine coolant. (See 01-12B-2 COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC].)



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01-40B

ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC]

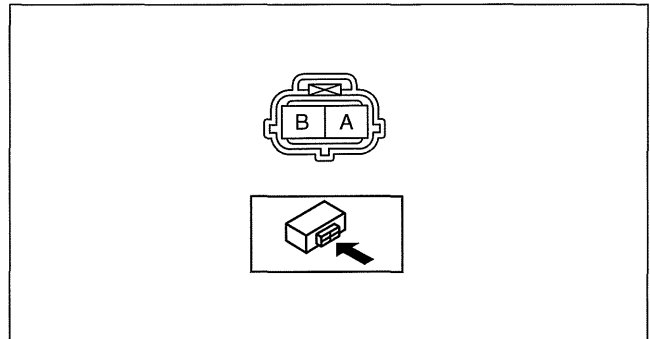
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ECT Sensor No.1 Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12B-2 COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC].)
4. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
5. Disconnect the ECT sensor No.1 connector.
6. Remove the ECT sensor No.1. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
7. Place the ECT sensor No.1 in water with a thermometer, and heat the water gradually.
8. Measure the resistance between the ECT sensor No.1 terminals A and B using an ohmmeter.
 - If not as specified, replace the ECT sensor No.1. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

ECT sensor No.1 Specification

ECT (°C {°F})	Resistance (kilohms)
20{68}	Approx. 37.3
80{176}	Approx. 3.84



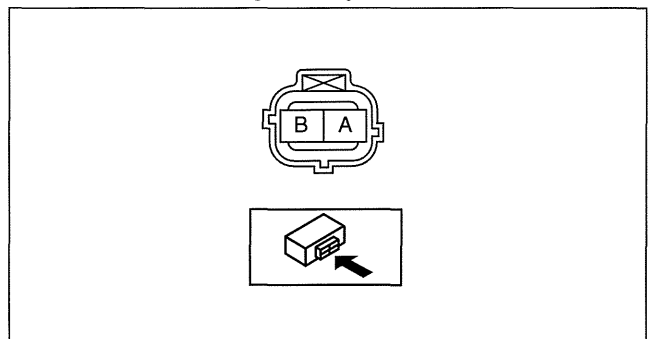
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ECT Sensor No.2 Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Drain the engine coolant. (See 01-12B-2 COOLING SYSTEM SERVICE WARNINGS [L3 WITH TC].)
4. Disconnect the ECT sensor No.2 connector.
5. Remove the ECT sensor No.2. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
6. Place the ECT sensor No.2 in water with a thermometer, and heat the water gradually.
7. Measure the resistance between the ECT sensor No.2 terminals A and B using an ohmmeter.
 - If not as specified, replace the ECT sensor No.2. (See 01-40B-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

ECT sensor No.2 Specification

ECT (°C {°F})	Resistance (kilohms)
20{68}	Approx. 2.45
80{176}	Approx. 0.318



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CONTROL SYSTEM [L3 WITH TC]

MASS AIR FLOW (MAF) SENSOR INSPECTION [L3 WITH TC]

id014039800700

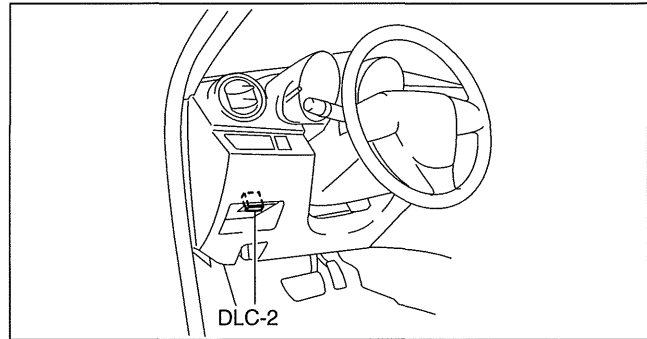
Visual Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the MAF/IAT sensor connector.
4. Remove the MAF/IAT sensor. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Visually inspect the MAF/IAT sensor for the following:
 - Damage, cracks, soiling
 - Rusted sensor terminal
 - Bent sensor terminal

— If there is any malfunction, repair or replace the MAF/IAT sensor.
(See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

Voltage Inspection

1. Remove the MAF/IAT sensor without disconnect the MAF/IAT sensor connector.
2. Connect the M-MDS to the DLC-2.
3. Switch the ignition to ON.
4. As the air gradually approaches the MAF detection part of the MAF/IAT sensor, verify that the voltage (M-MDS PID: MAF) varies.
 - If not as verified, replace the MAF/IAT sensor.
(See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)



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INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [L3 WITH TC]

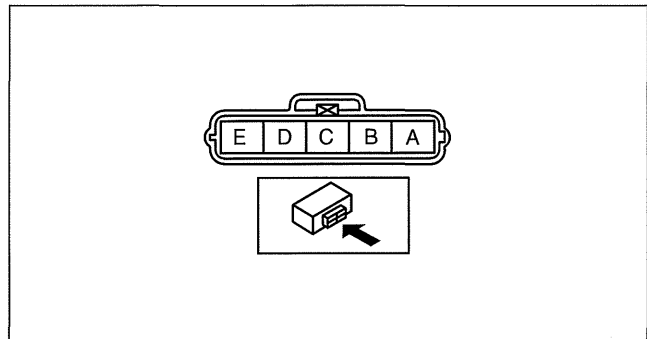
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Resistance Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the MAF/IAT sensor.
4. Measure the resistance between the MAF/IAT sensor terminals D and E using a tester.
 - If not as specified, replace the MAF/IAT sensor. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

Specification

Ambient temperature (°C {°F})	Resistance (kilohm)
20 {68}	2.21—2.69
60 {140}	0.493—0.667



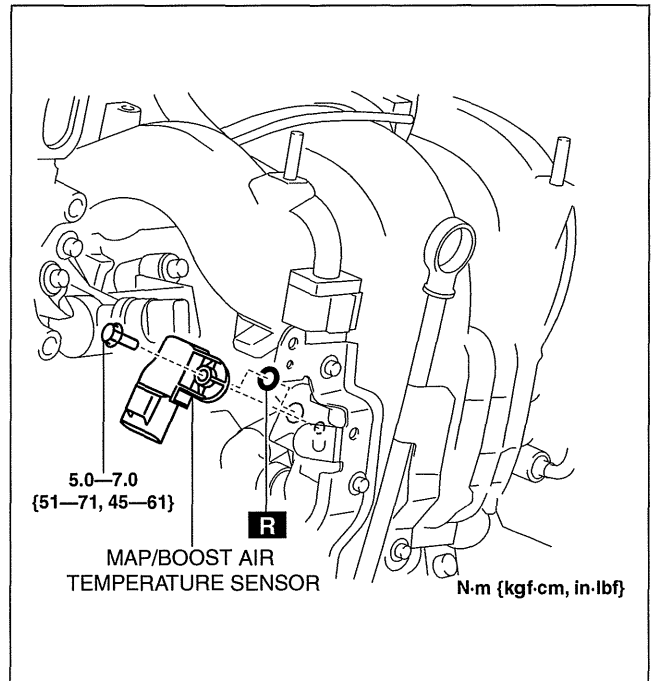
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CONTROL SYSTEM [L3 WITH TC]

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC]

id014039801000

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the oil level gauge pipe. (See 01-11B-6 OIL PAN REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the MAP/boost air temperature sensor connector.
5. Remove the MAP/boost air temperature sensor.
6. Install in the reverse order of removal.



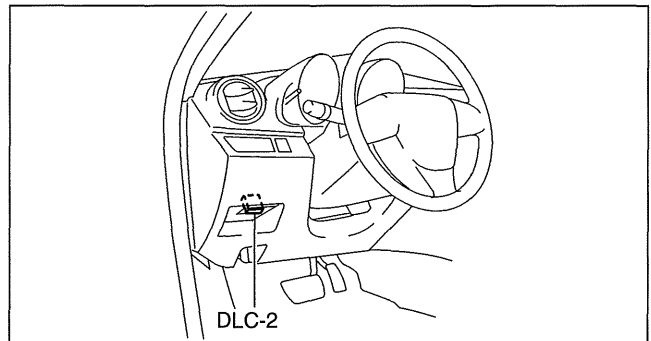
01-40B

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MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION [L3 WITH TC]

id014039800900

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the voltage (M-MDS PID: MAP) within the specification. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If not as specified, replace the MAP sensor. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)



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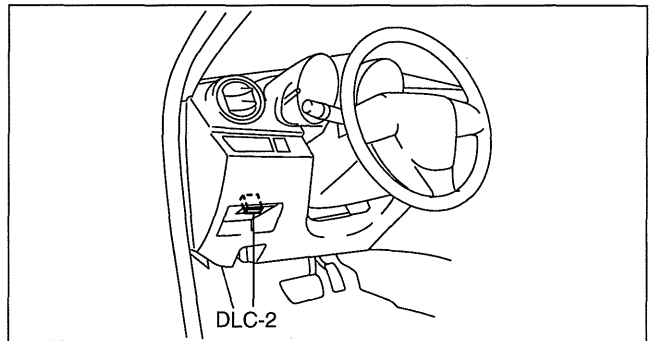
BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [L3 WITH TC]

id014039801100

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the voltage (M-MDS PID: BARO) within the specification. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)

Note

- Because the PCM is integrated in the BARO sensor, replacing the BARO sensor includes replacement of the PCM.
- If not as specified, replace the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)



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CONTROL SYSTEM [L3 WITH TC]

BOOST AIR TEMPERATURE SENSOR INSPECTION [L3 WITH TC]

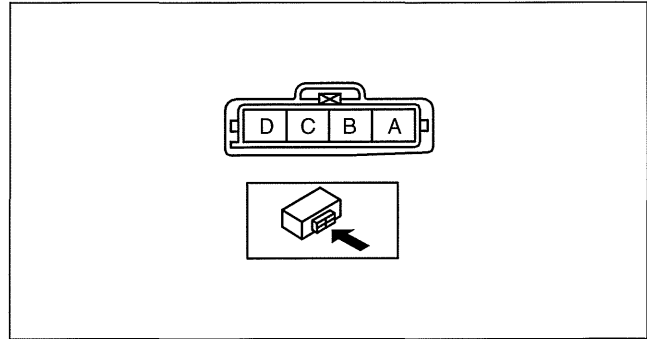
id014039802100

Resistance Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect MAP/boost air temperature sensor.
4. Measure the resistance between the MAP/boost air temperature sensor terminals A and B using a tester.
 - If not as specified, replace the MAP/boost air temperature sensor. (See 01-40B-27 MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR/BOOST AIR TEMPERATURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

Specification

Ambient temperature (°C {°F})	Resistance (kiloohm)
20 {68}	2.4—2.7
60 {140}	0.59—0.64



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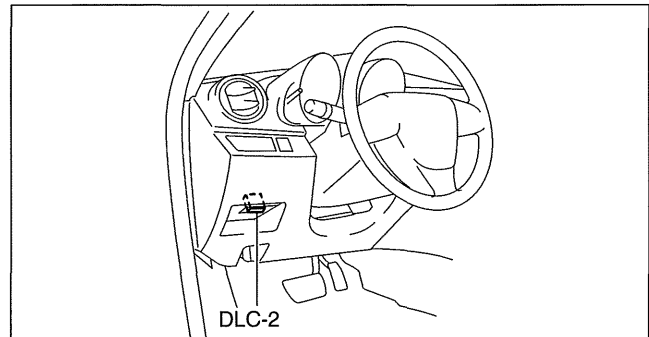
THROTTLE POSITION (TP) SENSOR INSPECTION [L3 WITH TC]

id014039802700

Caution

- The inspection cannot be performed with this method correctly if there is a malfunction of the APP sensor or throttle valve actuator. Verify that no DTCs related to the APP sensor or throttle valve actuator are stored before the inspection.

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the TP sensor output voltage (M-MDS PID: TP1, TP2) is within the specification. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If not as specified, replace the throttle body. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)

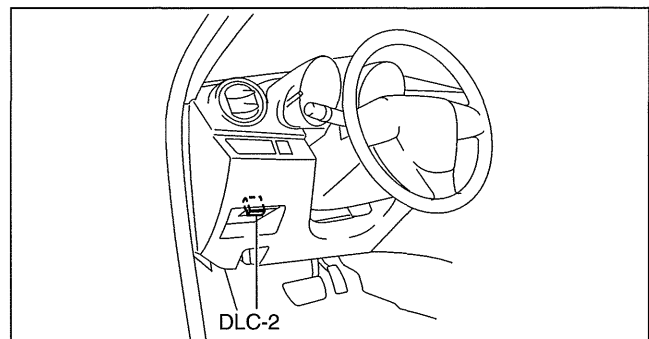


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ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [L3 WITH TC]

id014039803200

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON.
3. Verify that the APP sensor output voltage (PID: APP1, APP2) increases according to the increase in the accelerator opening angle when the accelerator opening angle is gradually increased.
 - If verified, go to the next step.
 - If not as verified, replace the accelerator pedal. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
4. Verify that the APP sensor output voltage (PID: APP1, APP2) is within the specification when the accelerator pedal is depressed and not depressed.
 - If not as specified, replace the accelerator pedal. (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)



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CONTROL SYSTEM [L3 WITH TC]

FUEL PRESSURE SENSOR REMOVAL/INSTALLATION [L3 WITH TC]

id014039801200

Note

- If the fuel pressure sensor is removed, do not reuse the fuel pressure sensor and the fuel delivery pipe. When you replace the fuel pressure sensor, replace a new fuel delivery pipe with a new fuel pressure sensor. (SEE 01-14B-25 FUEL INJECTOR REMOVAL/INSTALLATION [L3 WITH TC].)

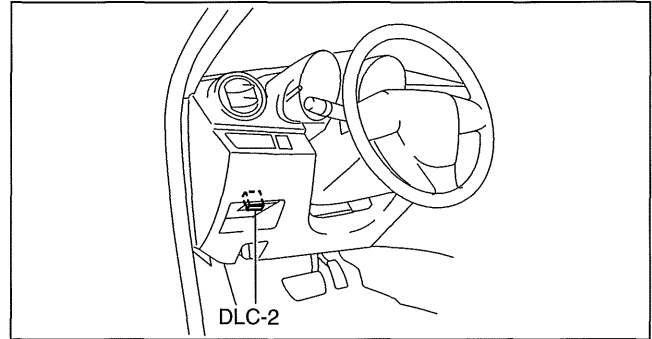
01-40B

FUEL PRESSURE SENSOR INSPECTION [L3 WITH TC]

id014039801300

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (Engine off).
3. Select the FUEL_PRES PID on the M-MDS.
4. After warming up the engine, verify that the FUEL_PRES PID is at the standard value under the following conditions.
 - If not as verified, replace the fuel delivery pipe.

Step	Condition	FUEL_PRES PID
1	<ul style="list-style-type: none">• Idle• 90 s after engine is started	Approx. 3 MPa
2	<ul style="list-style-type: none">• Idle• Spill valve solenoid valve connector is disconnected	Approx. 530 kPa



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5. After connecting the spill valve control solenoid valve connector, clear the DTC.

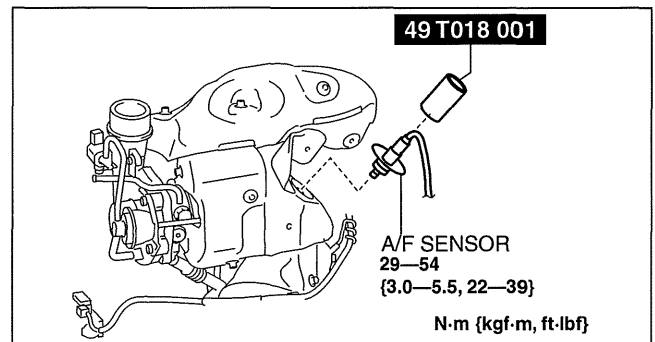
AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC]

id014039899700

Warning

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before removing the exhaust system.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the charge air cooler bracket. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Disconnect the A/F sensor connector.
6. Remove the A/F sensor using the SST.
7. Install in the reverse order of removal.



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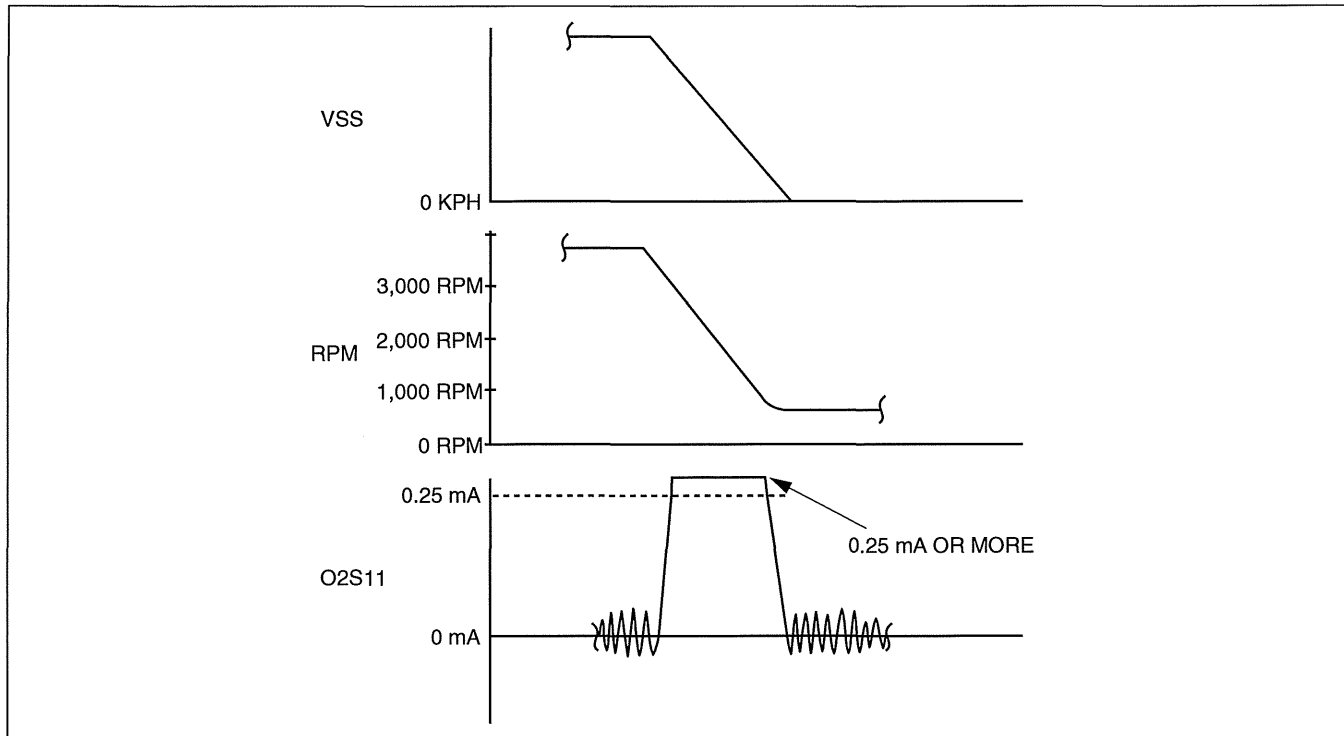
CONTROL SYSTEM [L3 WITH TC]

AIR FUEL RATIO (A/F) SENSOR INSPECTION [L3 WITH TC]

id014039899600

A/F Sensor Inspection

1. Warm up the engine to normal operating temperature.
2. Using the M-MDS, monitor the following:
 - Vehicle speed (PID: VSS)
 - Engine speed (PID: RPM)
 - A/F sensor current (PID: O2S11)
3. Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is 3,000 rpm or more.
4. Verify that the A/F sensor current (PID: O2S11) is 0.25 mA or more while decelerating as shown in the figure.



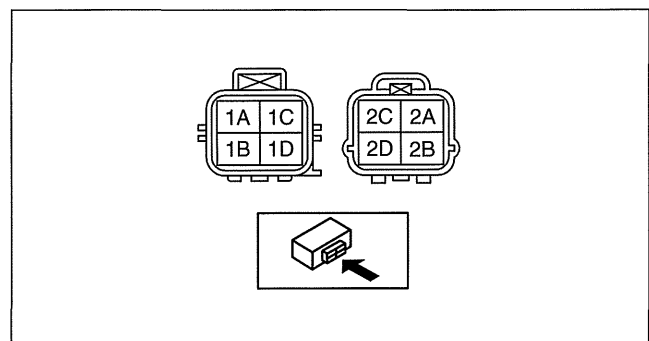
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- If not as specified, replace the A/F sensor. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

A/F Sensor Heater Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the A/F sensor connector.
4. Measure the resistance between A/F sensor terminals 2B and 2D.
 - If not as specified, replace the A/F sensor. (See 01-40B-29 AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

A/F sensor heater resistance
1—10 ohms [normal temperature]



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CONTROL SYSTEM [L3 WITH TC]

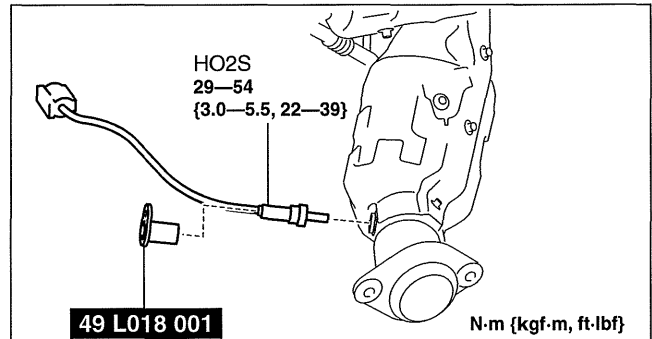
HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC]

id014039804000

Warning

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before removing the exhaust system.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the HO2S connector.
4. Remove the HO2S using the SST.
5. Install in the reverse order of removal.



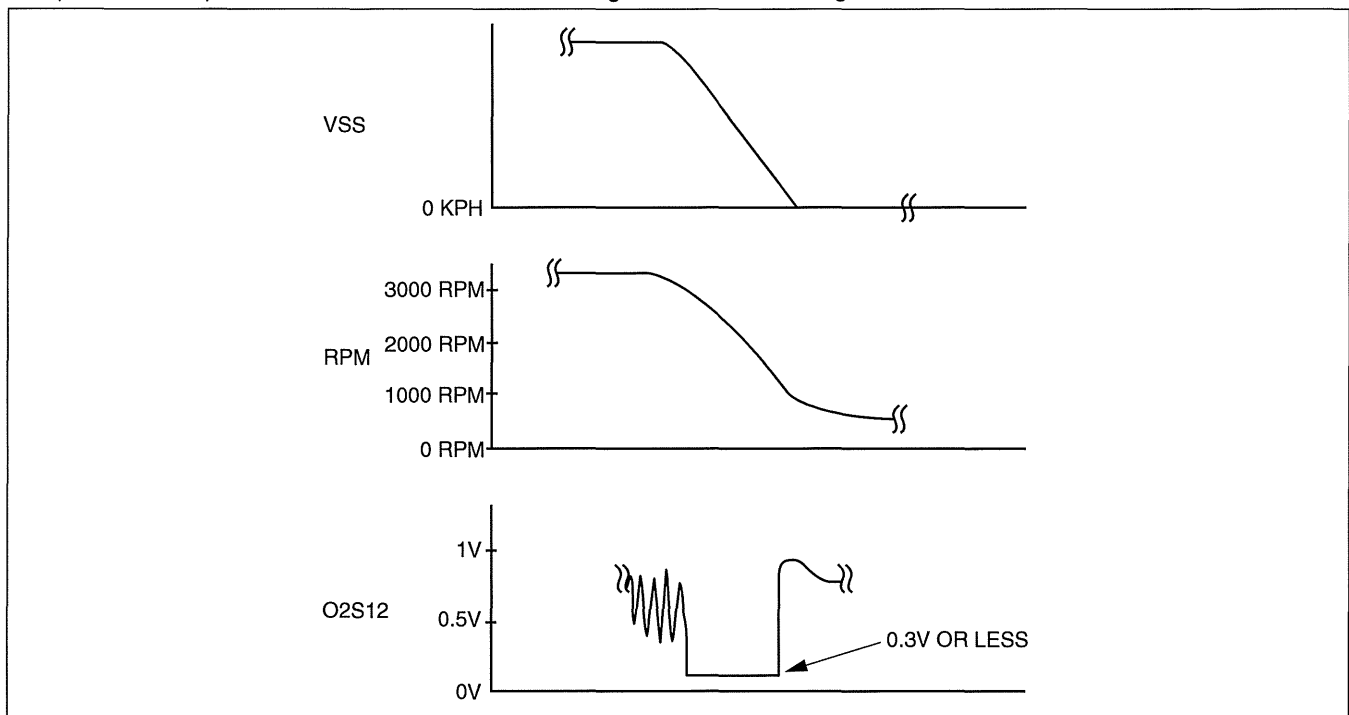
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HEATED OXYGEN SENSOR (HO2S) INSPECTION [L3 WITH TC]

id014039802300

HO2S Inspection

1. Warm up the engine to normal operating temperature.
2. Using the M-MDS, monitor the following:
 - Vehicle speed (PID: VSS)
 - Engine speed (PID: RPM)
 - HO2S voltage (PID: O2S12)
3. Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is **3,000 rpm or more**.
4. Verify that the HO2S outputs a voltage of **0.6 V or more**, one time or more, then verify that the HO2S voltage (PID: O2S12) is **0.3 V or less** while decelerating as shown in the figure.



am6zzw0000016

- If not as specified, replace the HO2S.
(See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)

01-40B

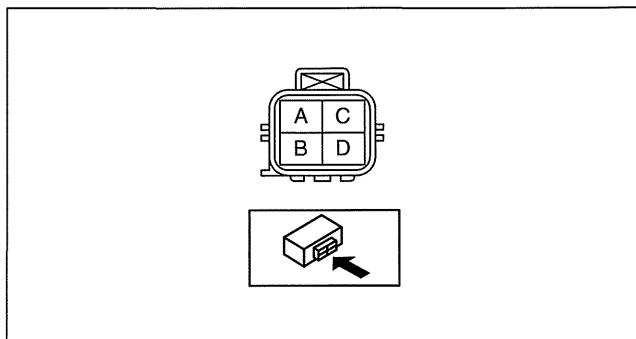
CONTROL SYSTEM [L3 WITH TC]

HO2S Heater Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Disconnect the HO2S connector.
4. Measure the HO2S resistance between terminals C and D.
 - If not as specified, replace the HO2S.
(See 01-40B-31 HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [L3 WITH TC].)

HO2S heater resistance

2—50 ohms [normal temperature]



am3uuw0000623

CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC]

id014039800600

Removal

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the under cover.
4. Remove the splash shield (RH).
5. Disconnect the CKP sensor connector.
6. Remove the installation bolts to remove the CKP sensor.

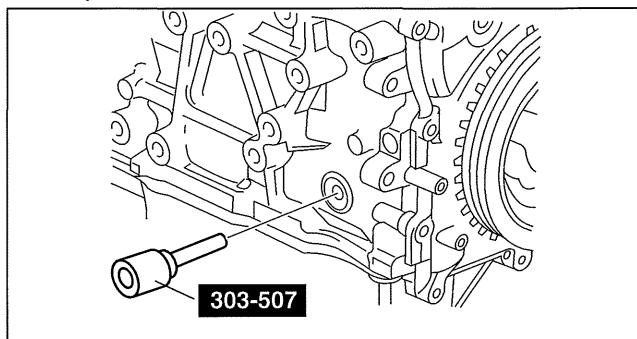
Installation

Caution

- When foreign material, such as an iron chips, gets on the CKP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect engine control. Be sure there is no foreign material on the CKP sensor when replacing.

1. Perform the following procedure so that piston No.1 is at the top dead center.

- (1) Rotate the crankshaft in the direction of the engine rotation and remove the cylinder block lower blind plug when the No. 1 cylinder is at the point prior to top dead center (TDC) of compression, then install the SST.
- (2) Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the crank weight contacts SST and stops.)



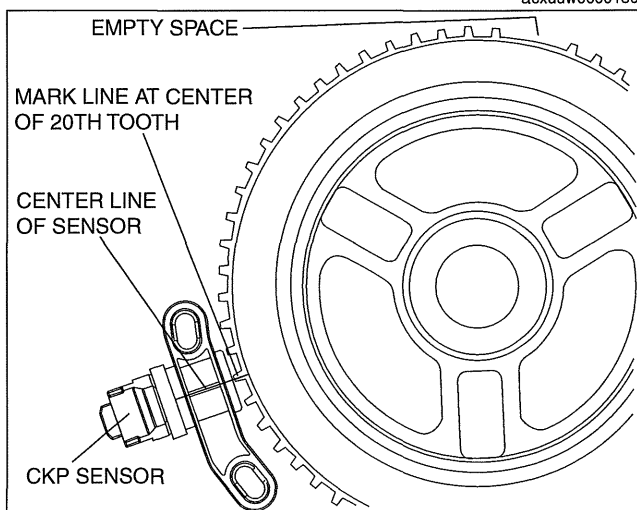
acxuuw00001899

2. Using a straight edge, draw a straight line directly in the center of the twentieth tooth of the crankshaft pulley pulse wheel (counting counterclockwise from the empty space).

Caution

- If the line is not accurately drawn, ignition timing, fuel injection and other engine control systems will be adversely effected. Draw the straight line carefully using a straight edge.

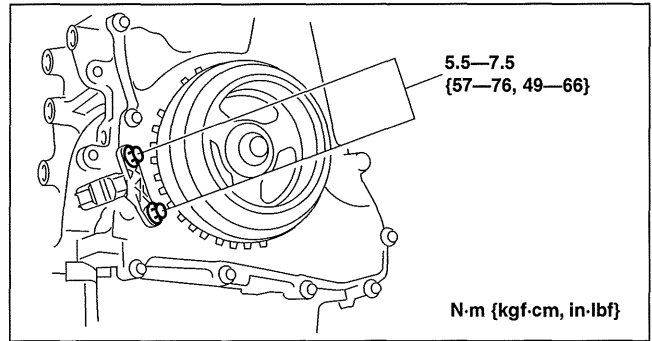
3. Align the center line of the crankshaft position sensor and the line drawn in Step 2, then install the sensor.



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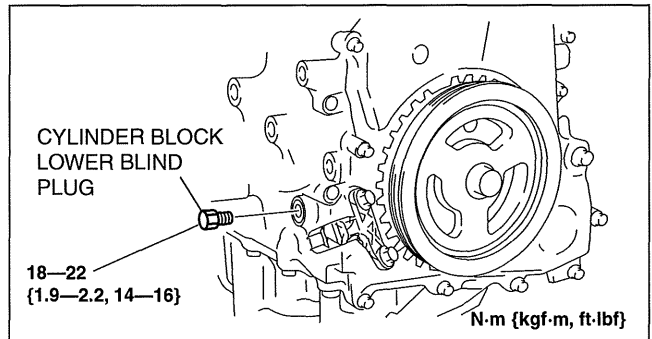
CONTROL SYSTEM [L3 WITH TC]

4. Install the CKP sensor fitting bolts.



am3uuw0000296

5. Remove the **SST** then install the cylinder block lower blind plug.



am3uuw0000596

CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC]

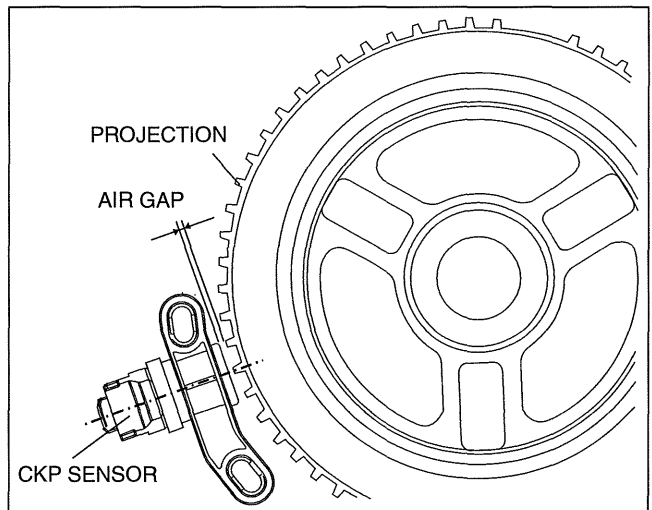
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Air Gap Inspection

1. Verify that the CKP sensor is securely installed.
2. Using a thickness gauge, measure the air gap between the plate projections at the back of crankshaft pulley and the CKP sensor.
 - If not within the specification, inspect the plate projections for cracks or bending.
 - If there is any malfunction, replace the plate.
 - If the monitor item condition/specification (reference) is not within the specification, even though there is no malfunction, carry out the "Circuit Open/Short Inspection".

Air gap

0.5–1.5 mm {0.02–0.05 in}



acxuuw00000070

Visual Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the CKP sensor. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Verify that there are no metal shavings on the sensor.
 - If the monitor item condition/specification (reference) is without the specification even though there is no malfunction, carry out the "Circuit Open/Short Inspection".

Voltage Inspection

1. Idle the engine.
2. Measure the CKP sensor output wave pattern using an oscilloscope. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If not within the specification, replace the CKP sensor. (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

CONTROL SYSTEM [L3 WITH TC]

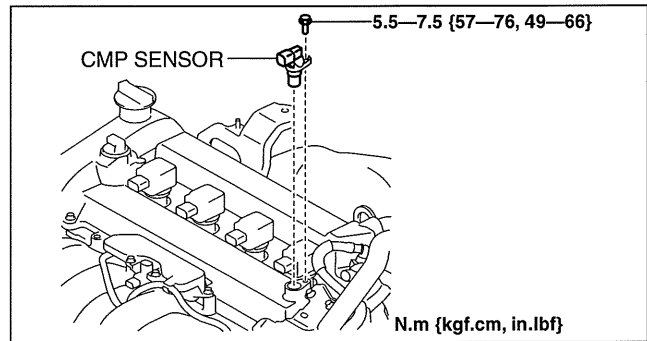
CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC]

id014039801500

Caution

- When replacing the CMP sensor, make sure there is no foreign material on it such as metal shavings. If it is installed with foreign material, the sensor output signal will malfunction resulting from fluctuation in magnetic flux and cause a deterioration in engine control.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the charge air cooler cover. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the CMP sensor connector.
5. Remove the CMP sensor.
6. Install in the reverse order of removal.



am3uuw0000619

CAMSHAFT POSITION (CMP) SENSOR INSPECTION [L3 WITH TC]

id014039801400

Visual Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)
4. Verify that there are no metal shavings on the sensor.
 - If the monitor item condition/specification (reference) is not within the specification even though there is no malfunction, carry out the "Circuit Open/Short Inspection".

Voltage Inspection

1. Idle the engine.
2. Measure the CMP sensor output wave pattern using an oscilloscope. (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)
 - If not within the specification, replace the CMP sensor. (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [L3 WITH TC].)

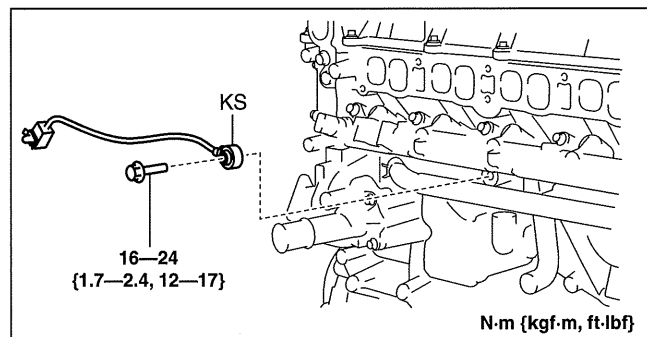
KNOCK SENSOR (KS) REMOVAL/INSTALLATION [L3 WITH TC]

id014039802900

Caution

- Be careful not to impact the sensor.
- Verify that there is no debris between the sensor and the cylinder block before installing.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the intake manifold. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the KS connector.
5. Remove the KS.
6. Install in the reverse order of removal.



am3uuw0000616

CONTROL SYSTEM [L3 WITH TC]

KNOCK SENSOR (KS) INSPECTION [L3 WITH TC]

id014039802800

Resistance Inspection

1. Switch the ignition to ON.
2. Disconnect the KS connector.
3. Measure the resistance between KS terminals A and B using a tester.
 - If not as specified, replace the KS. (See 01-40B-34 KNOCK SENSOR (KS) REMOVAL/INSTALLATION [L3 WITH TC].)

Specification

Approx. 4.87 megohms

01-40B

FUEL TANK PRESSURE SENSOR INSPECTION [L3 WITH TC]

id014039857400

Voltage Inspection

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the evaporative hose component. (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)
4. Switch the ignition to ON.
5. Plug one end of the evaporative hose component and verify that the output voltage from the fuel tank pressure sensor changes when pressure is applied from the other hose end.
 - If it cannot be verified even though the related harnesses have no malfunction, replace the evaporative hose component. (See 01-14B-8 FUEL TANK REMOVAL/INSTALLATION [L3 WITH TC].)

TECHNICAL DATA [LF, L5]

01-50A TECHNICAL DATA [LF, L5]

ENGINE TECHNICAL DATA [LF, L5] . . . 01-50A-1

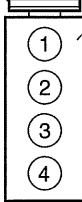
ENGINE TECHNICAL DATA [LF, L5]

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01-50A

Item	Specification
Idle speed (MTX: Neutral position, ATX: P, N position)	600—700 rpm (MTX), 650—750 (ATX)
Ignition timing	LF: Approx. BTDC 8° L5: Approx. BTDC 12°
CO concentration	Within the regulation
HC concentration	Within the regulation
Idle-up speed (MTX: Neutral position, ATX: P, N position)	A/C on: 700—800 rpm (MTX), 650—770 (ATX) Electrical loads on: 650—800 rpm
Valve clearance [Engine cold]	IN: 0.22—0.28 mm {0.009—0.011 in} EX: 0.27—0.33 mm {0.011—0.012 in}
Compression [LF]	Standard: 1,400 kPa {14.28 kgf/cm ² , 203.1 psi}[300 rpm] Minimum: 980 kPa {10.0 kgf/cm ² , 142.2 psi}[300 rpm] Maximum difference between cylinders: 196.1 kPa {2.0 kgf/cm ² , 28.5 psi}
Compression [L5]	Standard: 1,324 kPa {13.50 kgf/cm ² , 192.0 psi}[300 rpm] Minimum: 927 kPa {9.45 kgf/cm ² , 134 psi}[300 rpm] Maximum difference between cylinders: 196.1 kPa {2.0 kgf/cm ² , 28.5 psi}
OCV coil resistance	6.9—7.9 ohms [20°C {68°F}]
Cylinder Head Bolt Length L	145.2—145.8 mm {5.717—5.740 in}
Cylinder Head Bolt Maximum	146.5 mm {5.767 in}
Engine oil capacity [LF] (approx. quantity)	Oil replacement: 3.9 L {4.1 US qt, 3.4 Imp qt} Oil and oil filter replacement: 4.3 L {4.5 US qt, 3.8 Imp qt} Total (dry engine): 4.6 L {4.9 US qt, 4.0 Imp qt}
Engine oil capacity [L5] (approx. quantity)	Oil replacement: 4.6 L {4.9 US qt, 4.0 Imp qt} Oil and oil filter replacement: 5.0 L {5.3 US qt, 4.4 Imp qt} Total (dry engine): 5.5 L {5.8 US qt, 4.8 Imp qt}
Oil pressure (reference value) [oil temperature: 100 °C {212 °F}]	LF: 234—521 kPa {2.39—5.31 kgf/cm ² , 34.0—75.5 psi} [3,000 rpm] L5: 395—649 kPa {4.03—6.61 kgf/cm ² , 57.3—94.1 psi} [3,000 rpm]
Engine coolant capacity (approx. quantity)	7.5 L {7.9 US qt, 6.6 Imp qt}
Cooling system cap valve opening pressure	135—155 kPa {1.38—1.58 kgf/cm ² , 19.6—22.4 psi}
Thermostat initial-opening temperature	80—84 °C {176—183 °F}
Thermostat full-open temperature	97 °C {207 °F}
Thermostat full-open lift	More than 8.0 mm {0.31 in}
Fuel pressure	350—430 kPa {3.57—4.38 kgf/cm ² , 50.8—62.3 psi}
Fuel hold pressure	210 kPa {2.14 kgf/cm ² , 30.5 psi} or more
Fuel injector resistance	11.4—12.6 ohms [20 °C {68 °F}]
Battery electrolyte specific gravity [20 °C {68 °F}]	1.22—1.29
Battery load test current	50D20L (40): 150 A 55D23L (48): 180 A 75D23L (52): 195 A
Battery back-up current (When the ignition is off (key is removed) and all doors are closed.)	40—60 mA
Battery slow charge current	50D20L (40): 4.0—5.0 A 55D23L (48): 4.5—5.5 A 75D23L (52): 5.0—6.0 A
Battery quick charge current [30 min]	50D20L (40): 25 A 55D23L (48): 30 A 75D23L (52): 35 A
Generator standard voltage [IG-ON]	Terminal B: B+ Terminal P: Approx. 1 V or less Terminal D: Approx. 0 V

TECHNICAL DATA [LF, L5]

Item	Specification
Generator standard voltage [Idle, 20 °C {68 °F}]	Terminal B: 13—15 V Terminal P: Approx. 3—8 V Terminal D: Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the voltage reading increases.
Generator generated current minimum value	70% of the nominal output current (nominal output current: 100 A) [Ambient temp. 20 °C {68 °F}, voltage 13.0—15.0 V, both engine and generator are hot]
Generator rotor resistance (between slip rings) [20 °C {68 °F}]	1.9—2.2 ohms
Generator brush length	Standard: 22.5 mm {0.886 in} Minimum: 5.0 mm {0.20 in}
Generator brush spring force	Standard: 4.1—5.3 N {0.42—0.54 kgf, 1.0—1.1 lbf} Minimum: 1.7 N {0.17 kgf, 0.38 lbf}
Firing order	1—3—4—2 (all cylinders independent firing) CYLINDER No. CRANKSHAFT PULLEY  ENGINE
Spark plug type	LFG1 18 110 (ILTR5A-13G), L3Y2 18 110
Spark plug gap	Standard: 1.25—1.45 mm {0.0493—0.0570 in} New spark plug (reference): 1.25—1.35 mm {0.0493—0.0531 in}
Spark plug resistance [25°C {77 °F}]	3.0—7.5 kilohms
Starter no-load test voltage	11 V
Starter no-load test current	LF: 95 A or less L5: 90 A or less
Starter pinion gap	0.5—2.0 mm {0.02—0.07 in}
Starter armature runout	0.1 mm {0.004 in} max.
Starter commutator diameter	Standard: 29.4 mm {1.16 in} Minimum: 28.8 mm {1.13 in}
Segment groove depth of starter commutator	Standard: 0.5 mm {0.02 in} Minimum: 0.2 mm {0.008 in}
Starter brush length	Standard: 12.3 mm {0.484 in} Minimum: 5.5 mm {0.22 in}
Starter brush spring force	Standard: 15.1—20.4 N {1.54—2.08 kgf, 3.40—4.58 lbf} Minimum: 2.75 N {0.280 kgf, 0.618 lbf}

Engine oil specification

Item	U.S.A. and CANADA	Except U.S.A. and CANADA
Engine oil grade	 (ILSAC)	  (ILSAC) API SM or ILSAC
Engine oil viscosity	5W-20	5W-20 (If SAE 5W-20 engine oil is not available in your market, use SAE 5W-30 engine oil.)

TECHNICAL DATA [L3 WITH TC]

01-50B TECHNICAL DATA [L3 WITH TC]

ENGINE TECHNICAL DATA

[L3 WITH TC] 01-50B-1

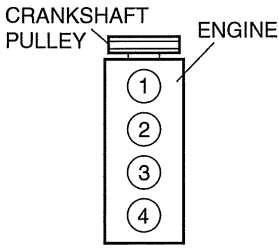
ENGINE TECHNICAL DATA [L3 WITH TC]

id015039800100

01-50B




Item	Specification
Ignition timing	Approx. BTDC 10°
Idle speed	No load: 650—750 rpm Electrical load on*1: 650—750 rpm A/C on: 700—800 rpm
Idle mixture	HC concentration: Within the regulation CO concentration: Within the regulation
Standard valve clearance [Engine cold]	IN: 0.22—0.28 mm {0.009—0.011 in} EX: 0.27—0.33 mm {0.011—0.012 in}
Compression	Standard: 1,280 kPa {13.05 kgf/cm ² , 185.6 psi}[250 rpm] Minimum: 896 kPa {9.14 kgf/cm ² , 130 psi}[250 rpm] Maximum difference between cylinders: 196.1 kPa {2.000 kgf/cm ² , 28.44 psi}
OCV coil resistance	6.9—7.9 ohms [20°C {68°F}]
Cylinder head bolt stem length	Standard: 144.7—145.3 mm {5.697—5.720 in} Maximum: 146 mm {5.74 in}
Front oil seal press-in amount	0—0.5 mm {0—0.019 in}
Engine oil capacity (approx. quantity)	Oil replacement: 5.3 L {5.6 US qt, 4.7 Imp qt} Oil and oil filter replacement: 5.7 L {6.0 US qt, 5.0 Imp qt} Total (dry engine): 6.4 L {6.8 US qt, 5.6 Imp qt}
Oil pressure (reference value) [oil temperature: 100 °C {212 °F}]	297—551 kPa {3.03—5.61 kgf/cm ² , 43.1—79.9 psi} [3,000 rpm]
Engine coolant capacity (approx. quantity)	7.5 L {7.9 US qt, 6.6 Imp qt}
Cooling system cap valve opening pressure	135—155 kPa {1.38—1.58 kgf/cm ² , 19.6—22.4 psi}
Thermostat initial-opening temperature	80—84 °C {176—183 °F}
Thermostat full-open temperature	97 °C {207 °F}
Thermostat full-open lift	More than 8.0 mm {0.31 in}
Fuel pressure	350—430 kPa {3.57—4.38 kgf/cm ² , 50.8—62.3 psi}
Fuel hold pressure	210 kPa {2.14 kgf/cm ² , 30.5 psi} or more
Fuel injector resistance	1.0—1.2 ohms [20 °C {68 °F}]
Battery electrolyte specific gravity [20 °C {68 °F}]	1.22—1.29
Battery load test current	55D23L (48): 180 A 75D23L (52): 195 A
Battery back-up current (When the ignition is off (key is removed) and all doors are closed.)	40—60 mA
Battery slow charge current	55D23L (48): 4.5—5.5 A 75D23L (52): 5.0—6.0 A
Battery quick charge current [30 min]	55D23L (48): 30 A 75D23L (52): 35 A
Generator standard voltage [IG-ON]	Terminal B: B+ Terminal P: Approx. 1 V or less Terminal D: Approx. 0 V
Generator standard voltage [Idle, 20 °C {68 °F}]	Terminal B: 13—15 V Terminal P: Approx. 3—8 V Terminal D: Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the voltage reading increases.
Generator generated current minimum value	70% of the nominal output current (nominal output current: 110 A) [Ambient temp. 20 °C {68 °F}, voltage 13.0—15.0 V, both engine and generator are hot]

TECHNICAL DATA [L3 WITH TC]

Item	Specification
Generator rotor resistance (between slip rings) [20 °C {68 °F}]	1.8—2.2 ohms
Generator brush length	Standard: 22.5 mm {0.886 in} Minimum: 5.0 mm {0.20 in}
Generator brush spring force	Standard: 4.1—5.3 N {0.42—0.54 kgf, 1.0—1.1 lbf} Minimum: 1.7 N {0.17 kgf, 0.38 lbf}
Firing order	1—3—4—2 (all cylinders independent firing) CYLINDER No. 
Spark plug type	L3BD 18 110, L3YD 18 110
Spark plug gap	Standard: 0.60—0.80 mm {0.024—0.031 in} New spark plug (reference): 0.60—0.70 mm {0.024—0.027 in}
Spark plug resistance [25°C {77 °F}]	3.0—7.5 kilohms
Starter no-load test voltage	11 V
Starter no-load test current	90 A or less
Starter pinion gap	0.5—2.0 mm {0.02—0.07 in}
Starter armature runout	0.1 mm {0.004 in} max.
Starter commutator diameter	Standard: 29.4 mm {1.16 in} Minimum: 28.8 mm {1.13 in}
Segment groove depth of starter commutator	Standard: 0.5 mm {0.02 in} Minimum: 0.2 mm {0.008 in}
Starter brush length	Standard: 12.3 mm {0.484 in} Minimum: 5.5 mm {0.22 in}
Starter brush spring force	Standard: 15.1—20.4 N {1.54—2.08 kgf, 3.40—4.58 lbf} Minimum: 2.75 N {0.280 kgf, 0.618 lbf}

*1: When the following electrical loads are on: Headlights, rear defroster, cooling fan No.1, cooling fan No.2, and the blower motor (2-step or more.)

Engine oil specification

Item	U.S.A. and CANADA	Except U.S.A. and CANADA
Engine oil grade	 (ILSAC)	  (ILSAC)
Engine oil viscosity	5W-30 API SM or ILSAC	

01-60A SERVICE TOOLS [LF, L5]

ENGINE SST [LF, L5] 01-60A-1

ENGINE SST [LF, L5]

id0160g2800100

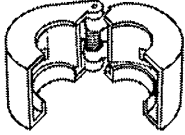
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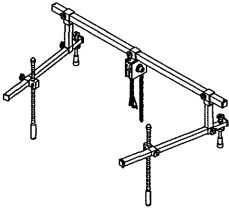
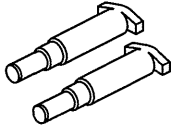
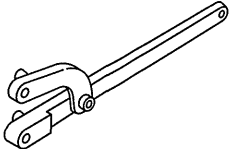
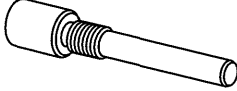
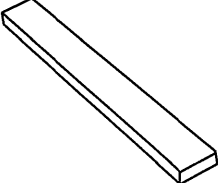
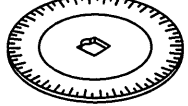
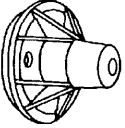
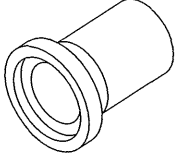

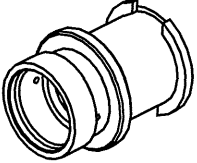
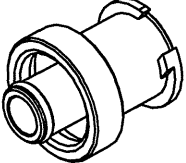
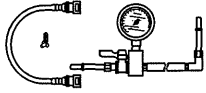
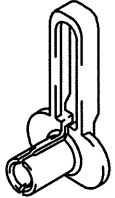
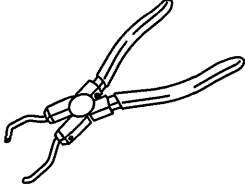
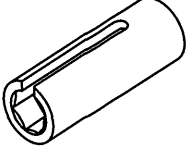

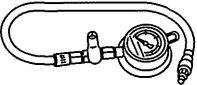
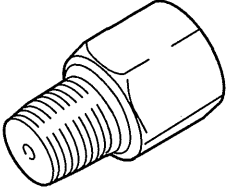
1: Mazda SST number
2: Global SST number

Example

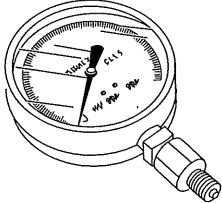
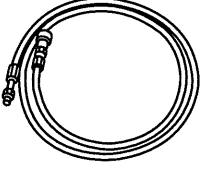
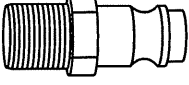
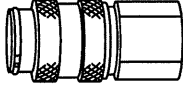
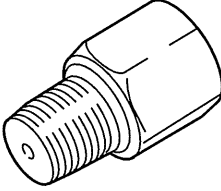
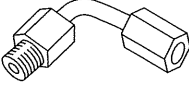
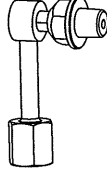
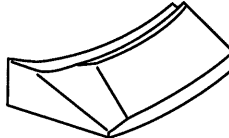
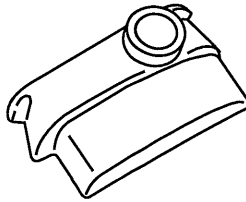
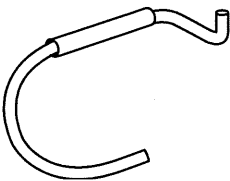
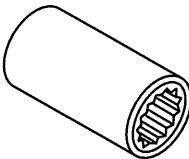
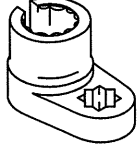
1:49 UN01 052
2:310-D005

Spring lock coupler tool (green)



<p>1: 49 C017 5A0 2: -</p> <p>Engine support set</p> 	<p>1:49 B011 105 2:-</p> <p>Adapter</p> 	<p>1:49 UN20 5072 2:205-072</p> <p>Holder</p> 
<p>1:- 2:303-507</p> <p>Crankshaft TDC timing pin</p> 	<p>1:49 UN30 3465 2:303-465</p> <p>Camshaft alignment timing tool</p> 	<p>1:49 D032 316 2: -</p> <p>Protractor</p> 
<p>1:49 UN30 3328 2:303-328</p> <p>Rear oil seal replacer</p> 	<p>1:49 H010 401 2:-</p> <p>Oil seal installer</p> 	<p>1: - 2: 134-01049A</p> <p>Evaporative emission system tester</p> 
<p>1:49 B015 001 2:-</p> <p>Adapter (Part of 49 B015 0A0)</p> 	<p>1:49 B015 002 2:-</p> <p>Adapter (Part of 49 B015 0A0)</p> 	<p>1:49 N013 1A0D 2:-</p> <p>Fuel pressure gauge set</p> 
<p>1:49 N013 103A 2:-</p> <p>Remover (Part of 49 N013 1A0D)</p> 	<p>1:49 E042 001 2:-</p> <p>Remover</p> 	<p>1:49 T018 001 2:-</p> <p>O₂ sensor wrench</p> 
<p>1: - 2: AKS042808</p> <p>Adapter</p> 	<p>1: 49 0187 280A 2: -</p> <p>Oil pressure gauge</p> 	<p>1:49 E019 001 2:-</p> <p>Adapter</p> 

SERVICE TOOLS [LF, L5]

<p>1:49 D019 908 2:--</p> <p>Gauge (Part of 49 D019 9A2)</p> 	<p>1:49 D019 909 2:--</p> <p>Hose (Part of 49 D019 9A2)</p> 	<p>1:49 D019 910 2:--</p> <p>Adapter (Part of 49 D019 9A2)</p> 
<p>1:49 D019 911 2:--</p> <p>Adapter (Part of 49 D019 9A2)</p> 	<p>1:49 D019 914 2:--</p> <p>Adapter (Part of 49 D019 9A2)</p> 	<p>1:49 H019 002 2:--</p> <p>Adapter</p> 
<p>1:49 D019 913 2:--</p> <p>Adapter (Part of 49 D019 9A2)</p> 	<p>1:49 B015 102 2:--</p> <p>Remover (Part of 49 B015 1A0)</p> 	<p>1:49 B015 103 2:--</p> <p>Installer (Part of 49 B015 1A0)</p> 
<p>1:49 B015 104 2:--</p> <p>Hook (Part of 49 B015 1A0)</p> 	<p>1:49 D015 001 2:--</p> <p>Box wrench</p> 	<p>1:49 L018 001 2:--</p> <p>A/F sensor, HO2S wrench</p> 

01-60B SERVICE TOOLS [L3 WITH TC]

ENGINE SST [L3 WITH TC] 01-60B-1

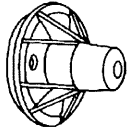
ENGINE SST [L3 WITH TC]

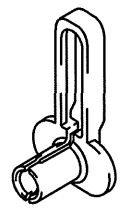
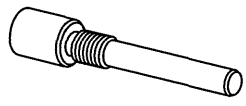
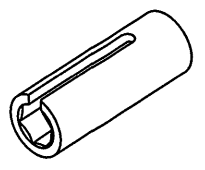
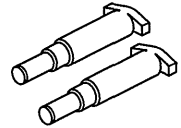
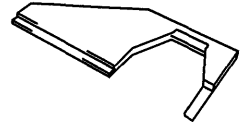
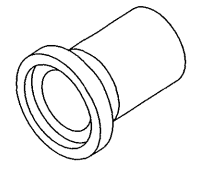

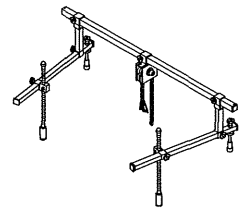
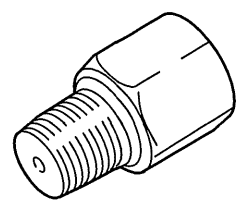
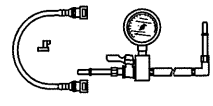
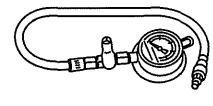
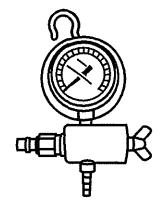
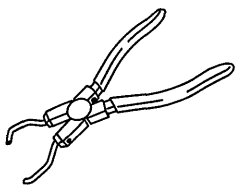

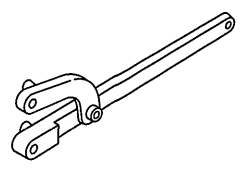
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01-60B

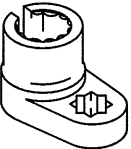
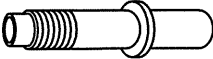
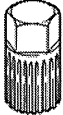
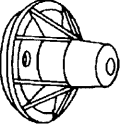
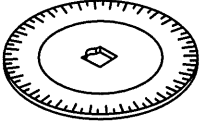
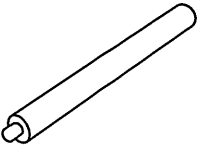
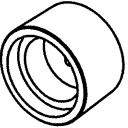
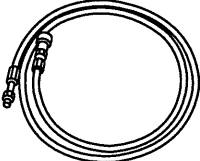
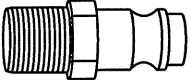
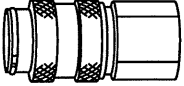
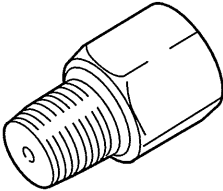
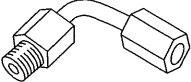
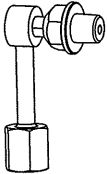
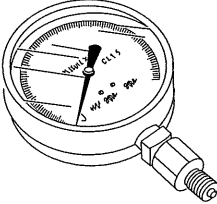
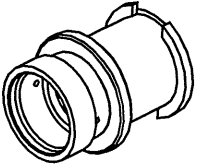
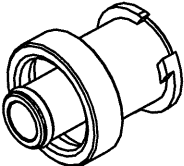
1: Mazda SST number
2: Global SST number

Example

1:49 UN30 3328 2:303-328 Rear oil seal replacer	
---	---

1: 49 N013 103A 2:- Remover (Part of 49 N013 1A0D)		1:- 2:303-507 Crankshaft TDC timing peg		1:49 T018 001 2:- O ₂ sensor wrench	
1:49 UN20 507202 2:205-07202 Crankshaft holding tool pins		1:49 UN30 310610 2:303-1061 Camshaft alignment timing tool		1:49 H010 401 2:- Oil seal installer	
1:49 G013 101 2:- Remover		1:49 C017 5A0 2:- Engine support set		1:49 E019 001 2:- Adapter	
1:49 N013 1A0D 2:- Fuel pressure gauge set		1:49 0187 280A 2:- Oil pressure gauge		1:49 H080 740A 2:- Pressure tester	
1:49 E042 001 2:- Remover		1:- 2:134-01049A Evaporative emission system tester		1:49 UN20 5072 2:205-072 Holder	

SERVICE TOOLS [L3 WITH TC]

<p>1:49 L018 001 2:— O2 sensor wrench</p> 	<p>1:— 2:AKS042808 Adapter</p> 	<p>1:49 L018 002 2:— Serrated bit</p> 
<p>1:49 UN30 3328 2:303-328 Rear oil seal replacer</p> 	<p>1:49 D032 316 2:— Protractor</p> 	<p>1:49 G040 001 2:— Handle</p> 
<p>1:49 G040 002 2:— Installer</p> 	<p>1:49 D019 909 2:— Hose (Part of 49 D019 9A2)</p> 	<p>1:49 D019 910 2:— Adapter (Part of 49 D019 9A2)</p> 
<p>1:49 D019 911 2:— Adapter (Part of 49 D019 9A2)</p> 	<p>1:49 D019 914 2:— Adapter (Part of 49 D019 9A2)</p> 	<p>1:49 H019 002 2:— Adapter</p> 
<p>1:49 D019 913 2:— Adapter (Part of 49 D019 9A2)</p> 	<p>1:49 D019 908 2:— Gauge (Part of 49 D019 9A2)</p> 	<p>1:49 B015 001 2:— Adapter (Part of 49 B015 0A0)</p> 
<p>1:49 B015 002 2:— Adapter (Part of 49 B015 0A0)</p> 	<p style="text-align: center;">—</p>	<p style="text-align: center;">—</p>

SUSPENSION

02
SECTION

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02-02

02-02 ON-BOARD DIAGNOSTIC

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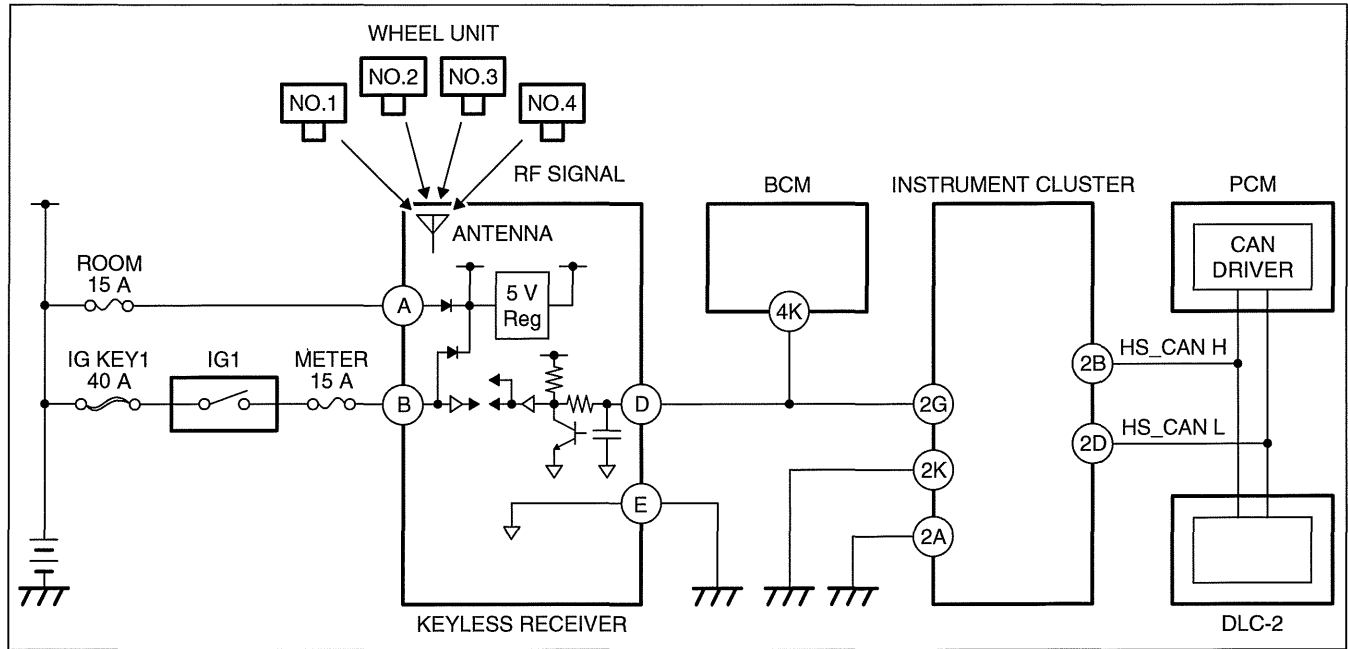
Snapshot data table 02-02-5	
MALFUNCTIONING WHEEL UNIT	
IDENTIFICATION. 02-02-6	
DTC C0077:00 02-02-6	
DTC C2011:49/C2012:49/C2013:49/	
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ON-BOARD DIAGNOSTIC

TIRE PRESSURE MONITORING SYSTEM (TPMS) WIRING DIAGRAM

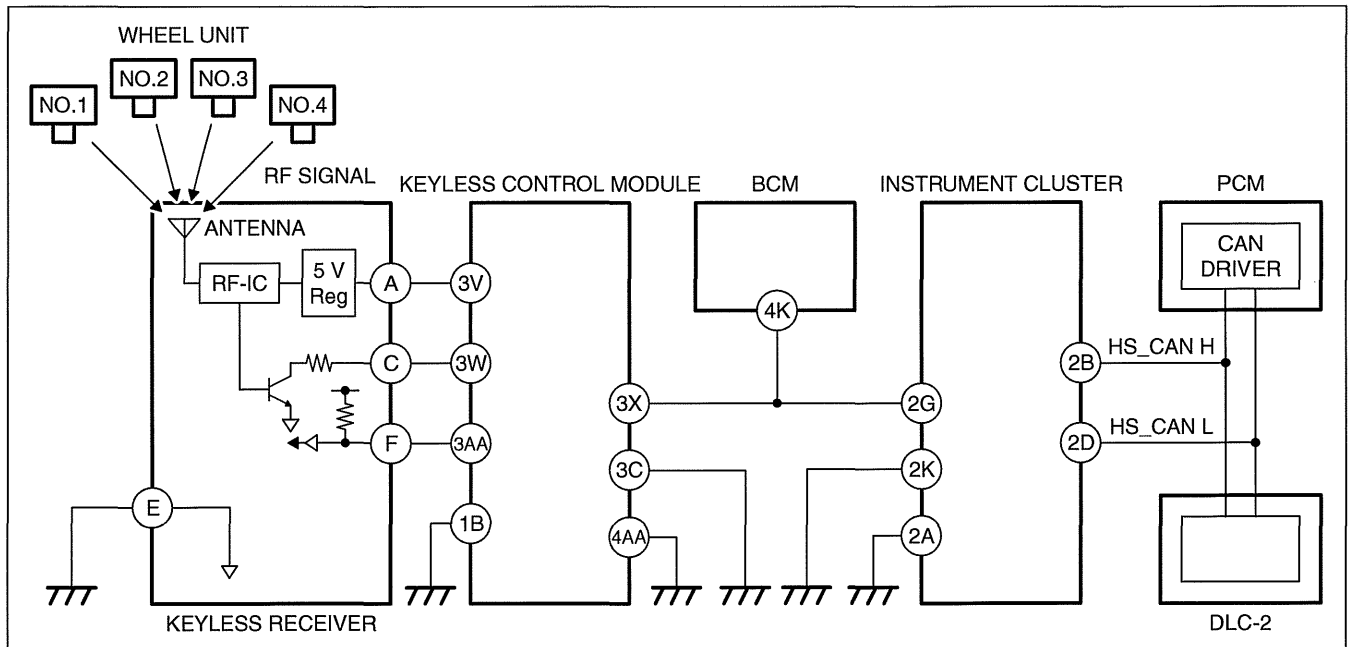
id020200800100

Vehicles Without Advanced Keyless Entry And Push Button Start System



am3uuw0000472

Vehicles With Advanced Keyless Entry And Push Button Start System



am3uuw0000472

ON-BOARD DIAGNOSTIC

TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS

id020200800200

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the TPMS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the TPMS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 2 tests:
 - Read/clear diagnostic results, and PID monitor.

Read/Clear Diagnostic Results

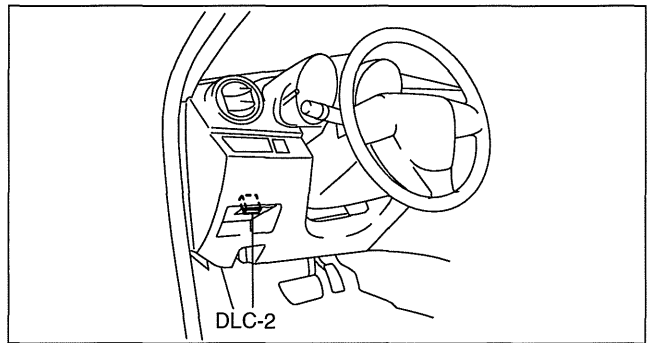
- This function allows you to read or clear DTCs in the instrument cluster memory.

PID/Data Monitor And Record

- This function allows you to access certain data values, input signals, calculated values, and system status information.

Reading DTCs Procedure

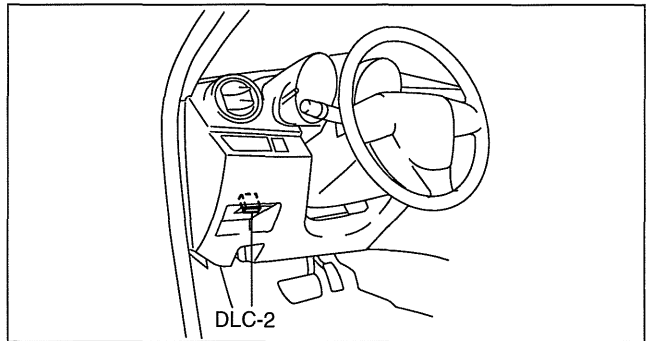
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection after recording the snapshot data. (See 02-02-5 Snapshot data table.)
4. After completion of repairs, clear all DTCs stored in the instrument cluster. (See 02-02-3 Clearing DTCs Procedures.)



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Clearing DTCs Procedures

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 02-02-3 Reading DTCs Procedure.)
8. Verify that no DTCs are displayed.



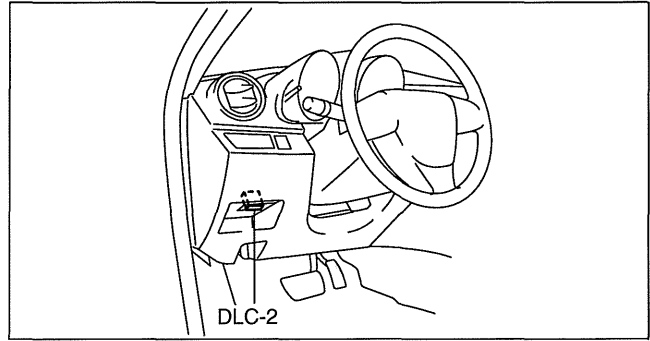
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02-02

ON-BOARD DIAGNOSTIC

PID/Data Monitor And Record Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table. (See 02-02-5 PID/Data Monitor Table.)
4. Verify the PID data according to the directions on the screen.



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Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

DTC Table

DTC No.	Description	Reference
M-MDS		
C0077:00	Low tire pressure	(See 02-02-6 DTC C0077:00.)
C2011:49	Wheel unit No.1 internal malfunction	(See 02-02-7 DTC C2011:49/C2012:49/ C2013:49/C2014:49.)
C2012:49	Wheel unit No.2 internal malfunction	
C2013:49	Wheel unit No.3 internal malfunction	
C2014:49	Wheel unit No.4 internal malfunction	
C2011:87	Wheel unit No.1 (No response)	(See 02-02-8 DTC C2011:87/C2012:87/ C2013:87/C2014:87.)
C2012:87	Wheel unit No.2 (No response)	
C2013:87	Wheel unit No.3 (No response)	
C2014:87	Wheel unit No.4 (No response)	
U0100:00	Communication error with PCM	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0127:00	Communication error with keyless receiver	(See 02-02-9 DTC U0127:00.)
U0300:00	Incomplete configuration	(See 02-02-14 DTC U0300:00.)
U0401:68	Erratic signal from PCM	(See 09-02E-9 DTC U0401:68 [INSTRUMENT CLUSTER].)
U2100:00	Incomplete configuration	(See 09-02E-8 DTC B1A84:51/U2100:00 [INSTRUMENT CLUSTER].)
U3000:42	Instrument cluster general memory failure	(See 02-02-15 DTC U3000:42.)

ON-BOARD DIAGNOSTIC

PID/Data Monitor Table

Note

- When the wheel unit is in sleep mode, the data logger displays a value different from the actual value. (Such as, WU1_P: 0 KPa, WU1_T: -50 °C)

PID Name (Definition)	Unit/ Condition	Condition/Specification	Action
WU1_ID WU2_ID WU3_ID WU4_ID (Wheel unit ID code)	—	Indicates the registered ID that is transmitted from the wheel unit.	<ul style="list-style-type: none"> Replace the wheel unit. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.) Perform the wheel unit ID registration. (See 02-12-5 WHEEL UNIT ID REGISTRATION.)
WU1_P WU2_P WU3_P WU4_P (Tire pressure)	Pa, psi	Indicates the tire pressure. (See 02-12-1 WHEEL AND TIRE SPECIFICATION.)	<ul style="list-style-type: none"> Adjust tire pressure. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).) Replace the wheel unit. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.) Perform the wheel unit ID registration. (See 02-12-5 WHEEL UNIT ID REGISTRATION.)
WU1_T WU2_T WU3_T WU4_T (Tire temperature)	°C, °F	Indicates the internal tire air temperature.	Adjust tire pressure. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).)
WU1_VPWR WU2_VPWR WU3_VPWR WU4_VPWR (Supply voltage)	Normal/ Error	Signal is normal: Normal Signal is abnormal: Error	Replace the wheel unit. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.)
WU1_ERR_T WU2_ERR_T WU3_ERR_T WU4_ERR_T (Tire temperature)	Normal/ Error	Signal is normal: Normal Signal is abnormal: Error	Replace the wheel unit. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.)
WU1_ERR_P WU2_ERR_P WU3_ERR_P WU4_ERR_P (Tire pressure)	Normal/ Error	Signal is normal: Normal Signal is abnormal: Error	Replace the wheel unit. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.)

02-02

Snapshot data table

Note

- Snapshot data items are not displayed, according to detected DTC.
- The tire pressure monitoring system (TPMS) does not identify the location of the malfunctioning wheel unit on the vehicle (RF, LF, LR, RR). The TPMS identifies each wheel unit as No.1, No.2, No.3 and No.4. In order to identify the location of the wheel unit, perform the MALFUNCTIONING WHEEL UNIT IDENTIFICATION procedure. (See 02-02-6 MALFUNCTIONING WHEEL UNIT IDENTIFICATION.)

Snapshot data item	Unit	Definition	Description
TOTAL_DIST	km	Displays distance of odometer when a DTC is detected.	Displays distance of odometer when a DTC is detected. (display four last digits)
VSS	KPH, MPH	Vehicle speed	Vehicle speed signal is input from the speed sensor.
WU1_P WU2_P WU3_P WU4_P	Pa, psi	Tire pressure	Tire pressure signal is input from the wheel unit.

ON-BOARD DIAGNOSTIC

Snapshot data item	Unit	Definition	Description
WU1_T WU2_T WU3_T WU4_T	°C, °F	Tire internal air temperature	Tire internal air temperature signal is input from the wheel unit.

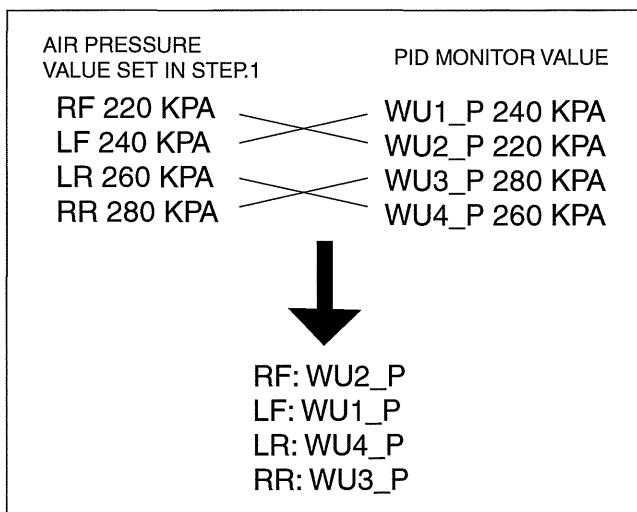
MALFUNCTIONING WHEEL UNIT IDENTIFICATION

id020200800300

Note

- The tire pressure monitoring system (TPMS) does not identify the location of the malfunctioning wheel unit on the vehicle (RF, LF, LR, RR). The TPMS identifies each wheel unit as No.1, No.2, No.3 and No.4. In order to identify the location of the wheel unit, perform the following procedure.

- Adjust the air pressure as follows:
 - RF: 220 kPa {2.2 kgf/cm², 32 psi}
 - LF: 240 kPa {2.4 kgf/cm², 35 psi}
 - LR: 260 kPa {2.6 kgf/cm², 38 psi}
 - RR: 280 kPa {2.8 kgf/cm², 40 psi}
- Switch the ignition to off.
- Connect the M-MDS to the DLC-2.
- Switch the ignition to ON.
- Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **2 min or more**.
- Select the following PIDs using the M-MDS, and monitor them.
 - WU1_P
 - WU2_P
 - WU3_P
 - WU4_P
- Determine which wheel unit identification code matches which wheel and tire by comparing the PID monitor values with the air pressure values set in Step 1.



am6zzw0000241

DTC C0077:00

id020200801200

DESCRIPTION	Low tire pressure
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster detects that the tire pressure is low.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Scratch or foreign object of tires Low tire pressure Wheel unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VISUALLY INSPECT TIRE <ul style="list-style-type: none"> Visually inspect the tires. Is there any scratch or foreign object? 	Yes	Remove any foreign object or replace the tire if necessary, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION
2	INSPECT TIRE PRESSURE <ul style="list-style-type: none"> Measure the tire pressure when the tires are cold. Is the tire pressure correct? 	Yes Go to the next step.
		No Adjust the tire pressure to the specification, then go to the next step. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).)
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Drive the vehicle at speed of 25 km/h {15.5 mph} or more for 10 min or more. Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes Confirm the snapshot data. If the tire pressure displayed on the snapshot is not correct, replace and register the wheel unit, then go to the next step. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.) (See 02-12-5 WHEEL UNIT ID REGISTRATION.)
		No Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No DTC troubleshooting completed.

02-02

DTC C2011:49/C2012:49/C2013:49/C2014:49

id020200801000

DESCRIPTION	C2011:49	Wheel unit No.1 internal malfunction
	C2012:49	Wheel unit No.2 internal malfunction
	C2013:49	Wheel unit No.3 internal malfunction
	C2014:49	Wheel unit No.4 internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless receiver receives the erratic signal from each wheel unit at speed of 25 km/h {15.5 mph} or more. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wheel unit internal malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY MALFUNCTIONING WHEEL UNIT <ul style="list-style-type: none"> Identify the malfunctioning wheel unit. (See 02-02-6 MALFUNCTIONING WHEEL UNIT IDENTIFICATION.) Is there any malfunction? 	Yes Replace and register the malfunctioning wheel unit, then go to the next step. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.) (See 02-12-5 WHEEL UNIT ID REGISTRATION.)
		No Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Drive the vehicle at speed of 25 km/h {15.5 mph} or more for 10 min or more. Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes Repeat the inspection from Step 1.
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC C2011:87/C2012:87/C2013:87/C2014:87

id020200801100

DESCRIPTION	C2011:87	Wheel unit No.1 (No response)
	C2012:87	Wheel unit No.2 (No response)
	C2013:87	Wheel unit No.3 (No response)
	C2014:87	Wheel unit No.4 (No response)
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless receiver has continuously not received a signal from each wheel unit at speed of 25 km/h {15.5 mph} or more. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Mis-installation of wheel unit • Wheel unit malfunction • Keyless receiver malfunction <ul style="list-style-type: none"> — Keyless receiver do not receive the signal from the wheel unit. • Instrument cluster malfunction <ul style="list-style-type: none"> — Wheel unit identification code is not registered in the instrument cluster. 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT INSTALLATION OF WHEEL UNIT <ul style="list-style-type: none"> • Inspect the wheel unit is installed correctly to each wheel. • Are all four wheels equipped with each wheel units? 	Yes	Go to the next step.
		No	Install the wheel unit correctly and register the wheel unit ID, then go to Step 5. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.) (See 02-12-5 WHEEL UNIT ID REGISTRATION.)
2	IDENTIFY MALFUNCTIONING WHEEL UNIT <ul style="list-style-type: none"> • Identify the malfunctioning wheel unit. (See 02-02-6 MALFUNCTIONING WHEEL UNIT IDENTIFICATION.) • Is there any malfunction? 	Yes	Replace and register the malfunctioning wheel unit, then go to Step 5. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.) (See 02-12-5 WHEEL UNIT ID REGISTRATION.)
		No	Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to Step 4. Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> • Go to the next step.
3	CONFIRM ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM DTC <ul style="list-style-type: none"> • Retrieve the advanced keyless entry and push button start system DTC using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
4	INSPECT KEYLESS RECEIVER <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the keyless receiver. (See 09-14-81 KEYLESS RECEIVER INSPECTION [KEYLESS ENTRY SYSTEM].) (See 09-14-82 KEYLESS RECEIVER INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the keyless receiver, then go to the next step. (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) • Drive the vehicle at speed of 25 km/h {15.5 mph} or more for 10 min or more. • Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

STEP	INSPECTION		ACTION
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

Note

- If the wheel unit has been newly replaced, the TPMS warning light may flashes before the ID registration is complete, and DTC C2011:87, C2012:87, C2013:87 and C2014:87 may be stored in the memory. In this case, reimplement the wheel unit ID registration, and after confirming that the TPMS warning light is no longer flashing, erase the DTC. If the TPMS warning light does not go out, a malfunction on any one of the wheel units may have occurred and the ID registration will not have been correctly performed. Repeat the diagnostic procedure from Step 1 and perform an inspection.

02-02

DTC U0127:00

id020200801300

Vehicles Without Advanced Keyless Entry And Push Button Start System

DESCRIPTION	Communication error with keyless receiver
DETECTION CONDITION	<ul style="list-style-type: none"> Communication error between instrument cluster and keyless receiver.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless receiver connector or terminals malfunction BCM connector or terminals malfunction Instrument cluster connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K—Instrument cluster terminal 2G Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K—Instrument cluster terminal 2G Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K—Instrument cluster terminal 2G Keyless receiver malfunction BCM malfunction Instrument cluster malfunction

KEYLESS RECEIVER

KEYLESS RECEIVER
WIRING HARNESS-SIDE CONNECTOR

BCM

BCM
WIRING HARNESS-SIDE CONNECTOR

INSTRUMENT CLUSTER

INSTRUMENT CLUSTER
WIRING HARNESS-SIDE CONNECTOR

ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT KEYLESS RECEIVER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless receiver connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
2	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
3	INSPECT INSTRUMENT CLUSTER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT WHEEL UNIT SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless receiver, BCM and instrument cluster connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless receiver terminal D • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No	Go to the next step.
5	INSPECT WHEEL UNIT SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Keyless receiver, BCM and instrument cluster connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless receiver terminal D • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT WHEEL UNIT SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless receiver, BCM and instrument cluster connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K — Keyless receiver terminal D—Instrument cluster terminal 2G • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
7	INSPECT KEYLESS RECEIVER <ul style="list-style-type: none"> • Reconnect the keyless receiver, BCM and instrument cluster connectors. • Reconnect the negative battery cable. • Inspect the keyless receiver. (See 09-14-81 KEYLESS RECEIVER INSPECTION [KEYLESS ENTRY SYSTEM].) • Is there any malfunction? 	Yes	Replace the keyless receiver, then go to Step 9. (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	CONFIRM BCM DTC <ul style="list-style-type: none"> • Retrieve the BCM DTC using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Are any DTCs display? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

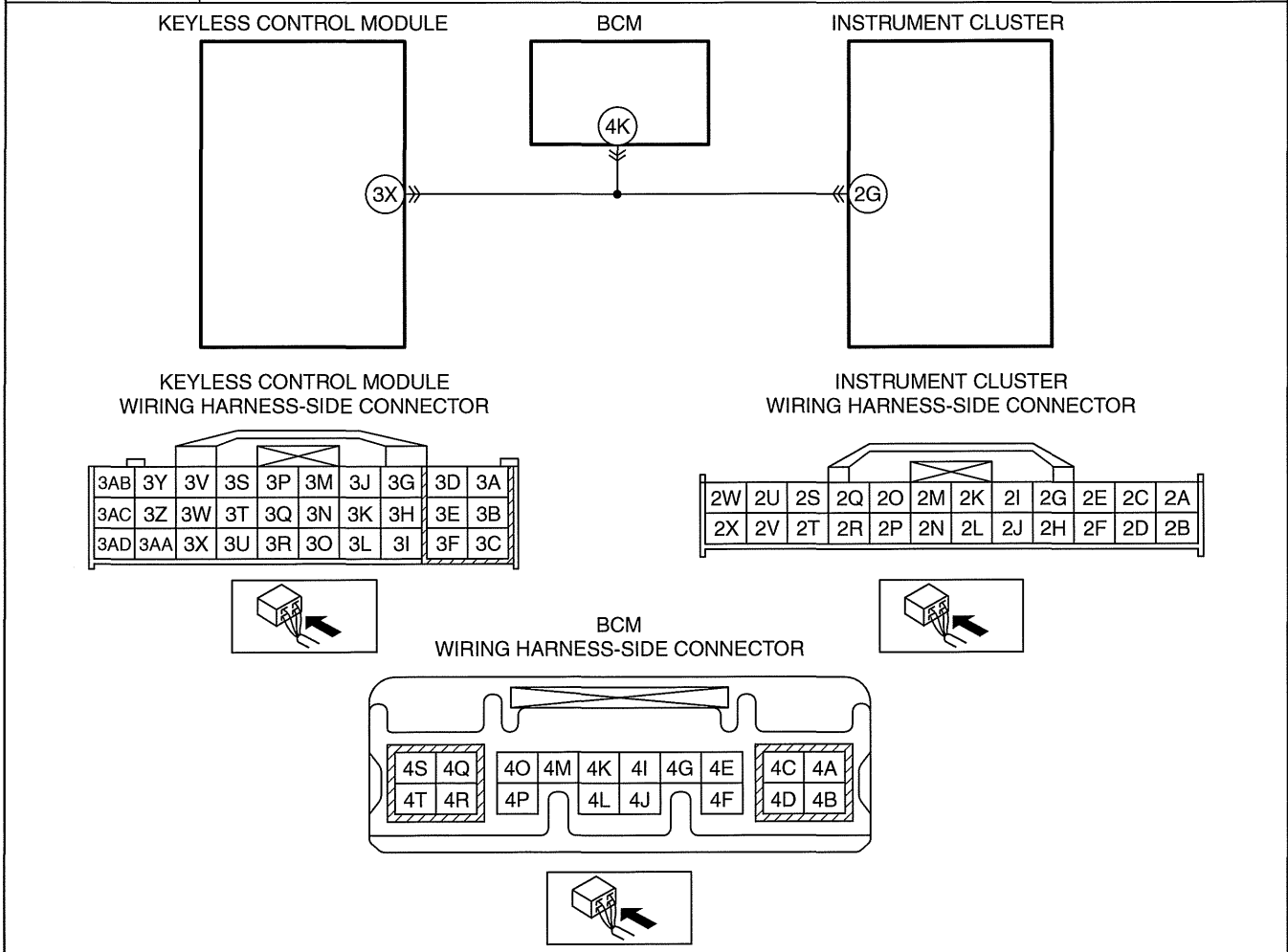
STEP	INSPECTION	ACTION	
9	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) • Switch the ignition to ON and wait for 30 s or more. • Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

02-02

ON-BOARD DIAGNOSTIC

Vehicles With Advanced Keyless Entry And Push Button Start System

DESCRIPTION	Communication error with keyless receiver
DETECTION CONDITION	<ul style="list-style-type: none"> Communication error between instrument cluster and keyless receiver.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module connector or terminals malfunction BCM connector or terminals malfunction Instrument cluster connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3X—BCM terminal 4K—Instrument cluster terminal 2G Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3X—BCM terminal 4K—Instrument cluster terminal 2G Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3X—BCM terminal 4K—Instrument cluster terminal 2G BCM malfunction Keyless control module malfunction Instrument cluster malfunction



ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
2	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
3	INSPECT INSTRUMENT CLUSTER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT WHEEL UNIT SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless control module, BCM and instrument cluster connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless control module terminal 3X • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No	Go to the next step.
5	INSPECT WHEEL UNIT SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Keyless control module, BCM and instrument cluster connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 3X • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT WHEEL UNIT SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless control module, BCM and instrument cluster connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 3X— BCM terminal 4K — Keyless control module terminal 3X— Instrument cluster terminal 2G • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
7	INSPECT BCM <ul style="list-style-type: none"> • Reconnect the keyless control module, BCM and instrument cluster connectors. • Reconnect the negative battery cable. • Retrieve the BCM DTC using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Are any DTCs display? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.
8	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 3X • Is the voltage normal? (See 09-14-68 KEYLESS CONTROL MODULE INSPECTION.) 	Yes	Go to the next step.
		No	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)

02-02

ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION	
9	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Switch the ignition to ON and wait for 30 s or more. Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

DTC U0300:00

id020200801600

DESCRIPTION	Incomplete configuration
DETECTION CONDITION	<ul style="list-style-type: none"> TPMS tire identifier is a repetition error.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wheel unit malfunction <ul style="list-style-type: none"> — ID registration procedure has not been performed properly. Instrument cluster malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY PROGRAMMED ID OF WHEEL UNIT <ul style="list-style-type: none"> Switch the ignition to off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) <ul style="list-style-type: none"> — WU1_ID — WU2_ID — WU3_ID — WU4_ID Switch the ignition to ON. Is the same code in the output ID? 	Yes	Configure the instrument cluster, then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)
		No	Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Drive the vehicle at speed of 25 km/h {15.5 mph} or more for 10 min or more. Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC U3000:42

id020200801500

DESCRIPTION	Instrument cluster general memory failure
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster detects internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster internal malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CONFIRM TPMS DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster memory using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Switch the ignition to ON. Retrieve the TPMS DTC using the M-MDS. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

02-02

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02-03 SYMPTOM TROUBLESHOOTING

SYSTEM WIRING DIAGRAM 02-03-1
 Vehicles Without Advanced Keyless Entry And Push Button Start System 02-03-1
 Vehicles With Advanced Keyless Entry And Push Button Start System 02-03-1
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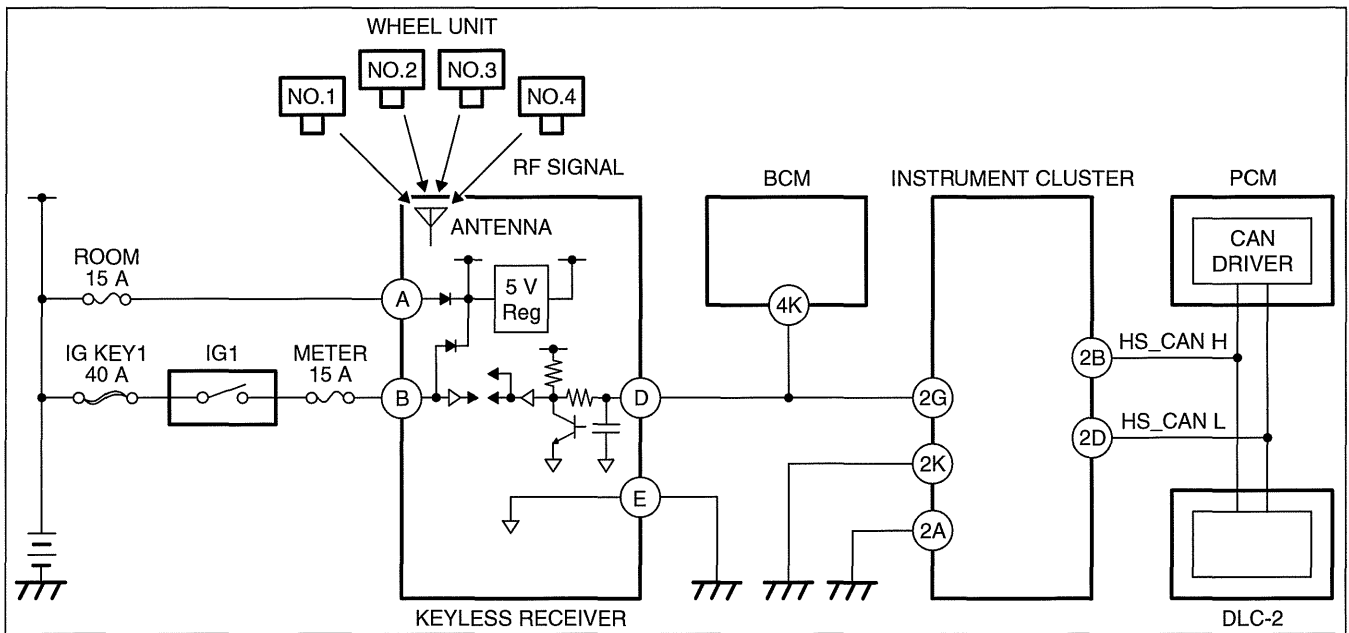
NO.1 TPMS WARNING LIGHT ILLUMINATES CONTINUOUSLY 02-03-3
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02-03

SYSTEM WIRING DIAGRAM

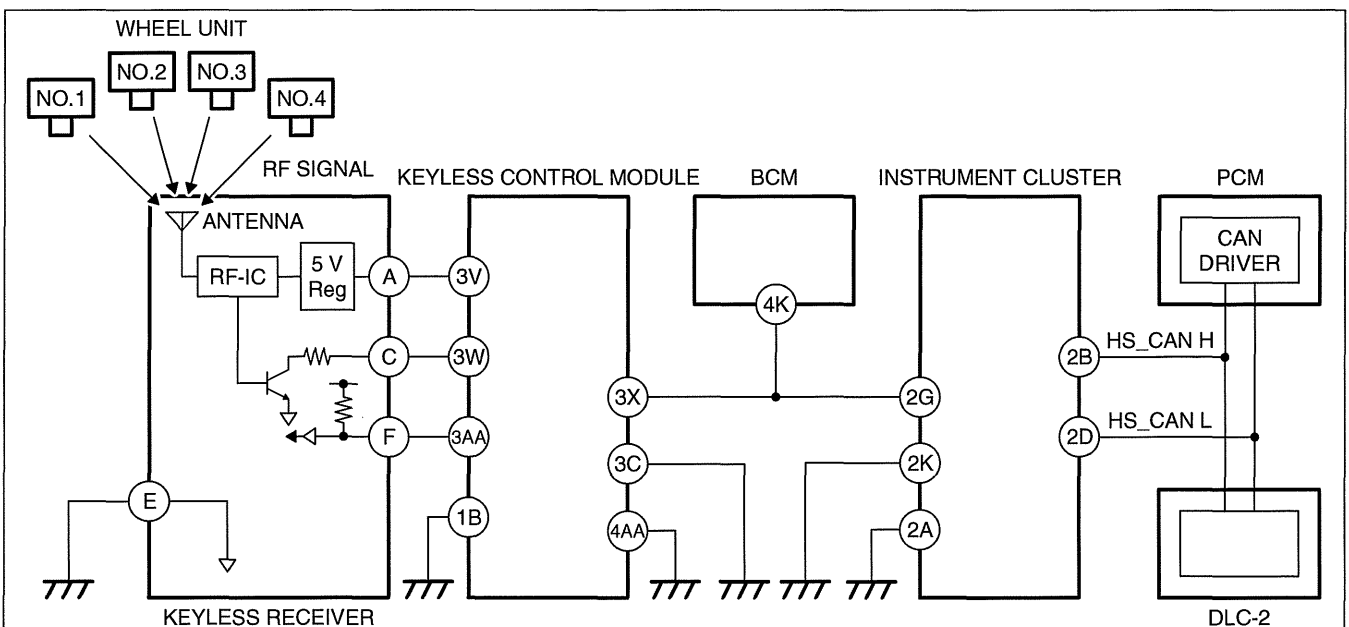
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Vehicles Without Advanced Keyless Entry And Push Button Start System



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Vehicles With Advanced Keyless Entry And Push Button Start System



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SYMPTOM TROUBLESHOOTING

FOREWORD

id020300800200

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To check the DTC, follow the DTC Inspection steps. (See 02-02-3 TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)

PRECAUTION

id020300800300

Intermittent Concern Troubleshooting

Vibration method

- If malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the steps below.

Note

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to check for are:
 - Connectors not fully seated
 - Wire harnesses not having full play
 - Wires laying across brackets or moving parts
 - Wires routed too close to hot parts
- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wire harnesses pass through the firewall, body panels and other panels are the major areas to be checked.

Inspection method for switch and/or sensor connectors or wires

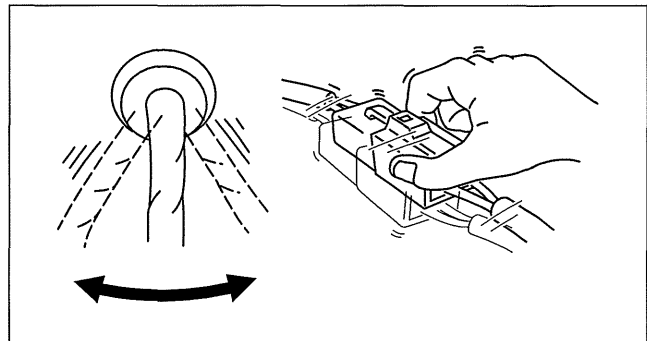
1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

3. Access the PIDs for the switch you are inspecting.
4. Turn switch on manually.
5. Shake each connector or wire harness a bit vertically and horizontally while monitoring the PID.

- If the PID value is unstable, check for poor connection.



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Inspection method for sensors

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

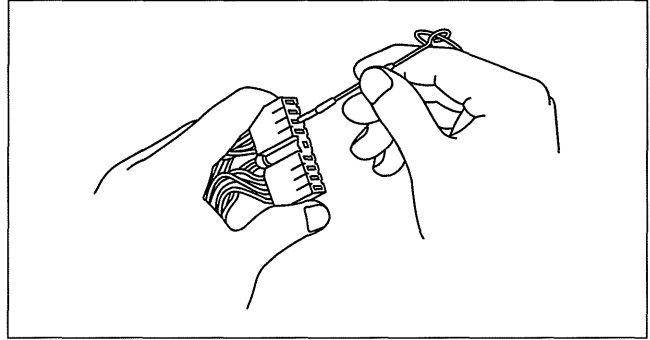
3. Access the PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.

- If the PID value is unstable or malfunction occurs, check for poor connection and/or poorly mounted sensor.

SYMPTOM TROUBLESHOOTING

Connector terminal check method

1. Check the connection condition of each female terminal.
2. Insert male terminal; fit the female terminal side to female terminal and check to see whether the malfunction is in the female terminal or not.



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02-03

SYMPTOM TROUBLESHOOTING

id020300800400

No.	Symptom
1	TPMS warning light illuminates continuously
2	TPMS warning light (low pressure warning) illuminates after engine start and turns off after driving for period of time
3	Wheel unit ID registration cannot be performed (TPMS warning light flashes)

NO.1 TPMS WARNING LIGHT ILLUMINATES CONTINUOUSLY

id020300800500

Caution

- The tire pressure cannot be measured accurately after driving for a long period due to the internal temperature and pressure. Stop the vehicle for approx. 1 hour and then perform the tire pressure measurement and adjustment.
- Use a high accuracy digital gauge for measurement of the tire pressure.

Note

- If the DTC clearing procedure is implement, the TPMS warning light turns off.

1	TPMS warning light illuminates continuously
[TROUBLESHOOTING HINTS]	
• Tire pressure is lower than the specification. (Such as loss of air pressure due to puncture.)	

STEP	INSPECTION		ACTION
1	INSPECT TIRE <ul style="list-style-type: none"> • Inspect the tires. • Is there any foreign object adhering to the tire? 	Yes	Remove the any foreign object. Replace the tire if necessary, then go to the next step.
		No	Go to the next step.
2	MEASURE TIRE PRESSURE <ul style="list-style-type: none"> • Measure the tire pressure when the tires are cold. • Is the tire pressure lower than the specification? 	Yes	Adjust the tire pressure to the specification when the tires are cold, then go to the next step. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).)
		No	Go to the next step.
3	VERIFY TPMS WARNING LIGHT <ul style="list-style-type: none"> • Does the TPMS warning light turn off? 	Yes	Symptom troubleshooting completed. Explain to the customer what has been repaired.
		No	Go to the next step.
4	VERIFY TPMS WARNING LIGHT AFTER DRIVE VEHICLE <ul style="list-style-type: none"> • Drive the vehicle at speed of 25 km/h {15.5 mph} or more for 10 min or more. • Does the TPMS warning light turn off? 	Yes	Symptom troubleshooting completed. Explain to the customer what has been repaired.
		No	Adjust the tire pressure to the specification when the tires are cold, then return to Step 1. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).) Note <ul style="list-style-type: none"> • If the TPMS warning light does not turn off after repeating this step, the tire may be flat.

SYMPTOM TROUBLESHOOTING

NO.2 TPMS WARNING LIGHT (LOW PRESSURE WARNING) ILLUMINATES AFTER ENGINE START AND TURNS OFF AFTER DRIVING FOR PERIOD OF TIME

id020300800600

Caution

- The tire pressure cannot be measured accurately after driving for a long period due to increased internal temperature and pressure. Stop the vehicle for approx. 1 hour and then perform the tire pressure measurement and adjustment.
- Use a high accuracy digital gauge for measurement of the tire pressure.

Note

- The tire pressure normally decreases by **approx. 7 kPa {0.07 kgf/cm², 1.02 psi}** per month even if the tire is normal.
- The Snapshot (temperature and pressure) stored when the TPMS warning light is turned on and off can be verified by operating the M-MDS.

2	TPMS warning light (low pressure warning) illuminates after engine start and turns off after driving for period of time
[TROUBLESHOOTING HINTS]	
<ul style="list-style-type: none"> • The tire pressure decreases (approaches value to illuminate TPMS warning light) when the internal temperature of the tire is low. 	

STEP	INSPECTION		ACTION
1	INSPECT TIRE <ul style="list-style-type: none"> • Inspect the tires. • Is there any foreign object adhering to the tire? 	Yes	Remove any foreign object. Replace the tire if necessary, then go to the next step.
		No	Go to the next step.
2	MEASURE TIRE PRESSURE <ul style="list-style-type: none"> • Measure the tire pressure when the tires are cold. • Has the tire pressure decreased (approaches value to illuminate TPMS warning light)? 	Yes	Adjust the tire pressure to the specification when the tires are cold, then go to the next step. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).)
		No	Go to the next step.
3	VERIFY TPMS WARNING LIGHT <ul style="list-style-type: none"> • Does the TPMS warning light turn off? 	Yes	Symptom troubleshooting completed.
		No	Verify the symptom troubleshooting again and return to Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING

NO.3 WHEEL UNIT ID REGISTRATION CANNOT BE PERFORMED (TPMS WARNING LIGHT FLASHES)

id020300800900

Caution

- Activate the wheel unit ID registration mode using the M-MDS, and perform the following steps if the TPMS warning light does not turn off after driving at 25 km/h {15.5 mph} or more for 10 min or more.

3	Wheel unit ID registration cannot be performed (TPMS warning light flashes)
[TROUBLESHOOTING HINTS]	
<ul style="list-style-type: none"> • New wheel unit malfunction (caused when install to the wheel). • Any malfunction on an old wheel unit which has not been replaced. 	

02-03

STEP	INSPECTION		ACTION
1	VERIFY REGISTRATION OF WHEEL UNIT <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Display the wheel unit ID registration condition (ID and tire pressure table) using the M-MDS. (See 02-12-5 WHEEL UNIT ID REGISTRATION.) • Temporarily remove the battery and reinstall it immediately. <p>Note</p> <ul style="list-style-type: none"> • If the battery is removed, the tire pressure data for WU1_P to WU4_P stored in the instrument cluster is reset. • Tire pressure is 0 kPa {0 kgf/cm², 0 psi} when it is displayed again using the M-MDS. <ul style="list-style-type: none"> • Set the tire pressure for the four wheels separately. • Perform the "WHEEL UNIT ID REGISTRATION" using the M-MDS again. (See 02-12-5 WHEEL UNIT ID REGISTRATION.) • Can the ID be registered? 	Yes	Symptom troubleshooting completed. Adjust the tire pressure on four wheels, then return the vehicle to the customer. (See 02-12-5 TIRE PRESSURE ADJUSTMENT (WITH TPMS).)
		No	Go to the next step.
2	IDENTIFY UNREGISTERED WHEEL UNIT <ul style="list-style-type: none"> • Identify the malfunctioning wheel unit. (See 02-02-6 MALFUNCTIONING WHEEL UNIT IDENTIFICATION.) • Is the wheel unit for which the ID could not be registered a new wheel unit? 	Yes	Replace with a new wheel unit, then go to Step 4. (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	Replace the old wheel unit, then go to the next step (any malfunction on an old wheel unit which has not been replaced). (See 02-12-6 WHEEL UNIT REMOVAL/INSTALLATION.)		
4	VERIFY REGISTRATION OF WHEEL UNIT <ul style="list-style-type: none"> • Perform the "WHEEL UNIT ID REGISTRATION" using the M-MDS. (See 02-12-5 WHEEL UNIT ID REGISTRATION.) • Can the wheel unit ID be registered? 	Yes	Symptom troubleshooting completed.
		No	Verify the symptom troubleshooting again and return to Step 1 if the malfunction recurs.

02-10 GENERAL PROCEDURES

GENERAL PROCEDURES

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 Suspension Links
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 Installation.....02-10-1
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 Auto Leveling System Initialization
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02-10

GENERAL PROCEDURES (SUSPENSION)

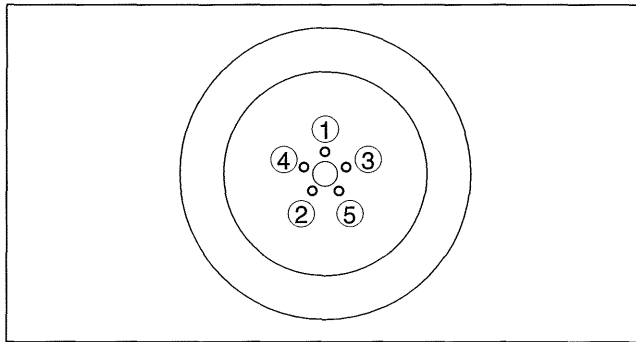
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Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.

Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}



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Suspension Links Removal/Installation

1. For the joint sections with rubber bushings, raise the vehicle using a lift, and then temporarily tighten the installation bolts and nuts. Lower the vehicle to the ground and tighten them completely with the specified torque.

Connector Disconnection

1. Disconnect the negative battery cable before performing any work that requires handling of connectors. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC])

Power Steering Related Parts Installation

1. If any power steering fluid line has been disconnected, perform the following after installation of the power steering components. (See 06-14-6 POWER STEERING FLUID INSPECTION.)
 - Power steering fluid amount inspection
 - Power steering fluid leakage inspection
 - Air bleeding

Electro Hydraulic Power Assist Steering (EHPAS) Related Parts

Caution

- If the configuration procedure is not completed, the EHPAS will not operate properly and it might cause an unexpected accident. Therefore, when replacing or removing the electric power steering oil pump, make sure to perform the configuration procedure to ensure the proper EHPAS operation.

1. Make sure that there are no DTCs in the EHPAS memory after working on EHPAS related parts. If there are any codes in the memory, clear them.
2. When replacing or removing the electric power steering oil pump, perform the configuration procedures. (See 06-14-32 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION.)

Auto Leveling System Initialization (Vehicle with Adaptive Front Lighting System (AFS))

1. Initialize the auto leveling sensor, when performing the following services. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
 - Removing the auto leveling sensor
 - Disconnecting the auto leveling sensor link
 - Removing the suspension parts related the vehicle height

WHEEL ALIGNMENT

02-11 WHEEL ALIGNMENT

WHEEL ALIGNMENT

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 FRONT WHEEL ALIGNMENT 02-11-1
 Steering Angle Adjustment 02-11-2

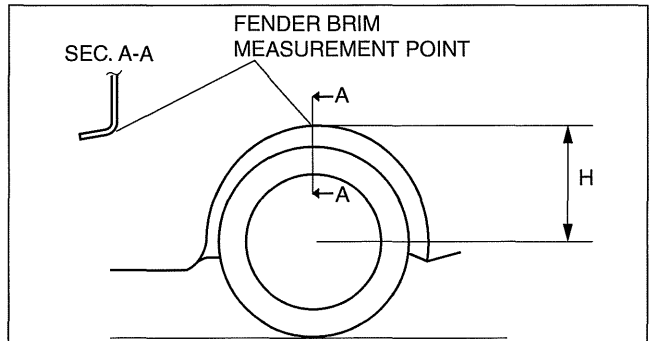
Total Toe-in Adjustment.....02-11-2
 REAR WHEEL ALIGNMENT02-11-3
 Total Toe-in Adjustment.....02-11-3

WHEEL ALIGNMENT PRE-INSPECTION

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02-11

1. Park the vehicle on a level ground, in an unloaded condition*, and with the wheels straight forward.
 *: Unloaded condition.....Fuel tank is full. Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.
2. Inspect the tire pressure.
 - Adjust to the recommended pressure if necessary. (See 02-50-1 SUSPENSION TECHNICAL DATA.)
3. Inspect the wheel bearing play.
 - Correct if necessary. (See 03-11-2 WHEEL HUB, STEERING KNUCKLE INSPECTION.) (See 03-12-1 WHEEL HUB COMPONENT INSPECTION.)
4. Inspect the wheel runout.
 - Correct if necessary. (See 02-50-1 SUSPENSION TECHNICAL DATA.)
5. Rock the vehicle, and verify that there is no looseness in the steering wheel joint and suspension ball joint.
6. Rock the vehicle, and verify that the shock absorber operates properly.
7. Measure height H from the center of the wheel to the fender brim.
8. Verify that the difference between the left and right dimension H is within the specification.
 - If it exceeds the specification, repeat the Step 2—7.



c3u0211w001

Standard
 10 mm {0.39 in} or less

FRONT WHEEL ALIGNMENT

id021100800200

Front wheel alignment (Unloaded)*¹ [LF, L5]

Item		Fuel gauge indication				
		Empty	1/4	1/2	3/4	Full
Maximum steering angle [Tolerance ±3°]	Inner	41°00'				
	Outer	34°00'				
Total toe-in	Tire [Tolerance ±4 {±0.2}]	2 {0.08}				
	Rim inner [Tolerance ±3 {±0.1}]	Vehicle equipped with 16 inch wheel: 1.3 {0.051} Vehicle equipped with 17 inch wheel: 1.4 {0.055}				
	(degree)	0°11'±0°22'				
Caster angle* ² (Reference value) [Tolerance ±1°]		2°59'	3°01'	3°03'	3°05'	3°07'
Camber angle* ² (Reference value) [Tolerance ±1°]		-0°37'			-0°38'	
Steering axis inclination (Reference value)		13°54'		13°55'	13°56'	

*¹ : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*² : Difference between left and right must not exceed 1°30'.

WHEEL ALIGNMENT

Front wheel alignment (Unloaded)*1 [L3 WITH TC]

Item		Fuel gauge indication				
		Empty	1/4	1/2	3/4	Full
Maximum steering angle [Tolerance $\pm 3^\circ$]	Inner	36°00'				
	Outer	30°00'				
Total toe-in	Tire [Tolerance ± 4 { ± 0.2 }]	2 {0.08}				
	Rim inner [Tolerance ± 3 { ± 0.1 }]	1.5 {0.059}				
	(degree)	0°11'±0°22'				
Caster angle*2 (Reference value) [Tolerance $\pm 1^\circ$]		3°06'	3°08'	3°09'	3°11'	3°12'
Camber angle*2 (Reference value) [Tolerance $\pm 1^\circ$]		-0°53'			-0°54'	
Steering axis inclination (Reference value)		14°18'		14°19'		14°20'

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

Steering Angle Adjustment

1. Loosen the tie-rod end locknuts.
2. Remove the steering gear boot clamp.
3. Turn the tie rods.

Standard length L

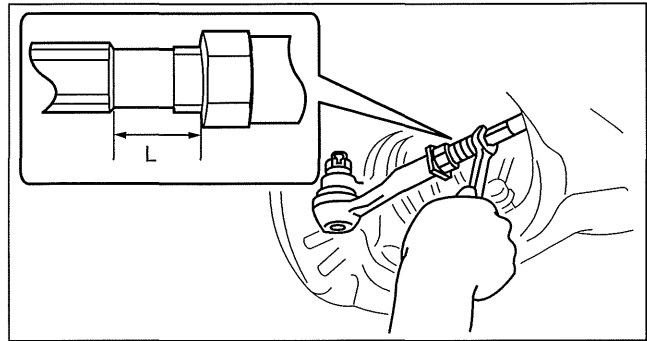
13—31 mm {0.6—1.2 in}

4. Turn the tie rods equally to provide the correct maximum steering angle.
5. Tighten the tie-rod end locknuts.

Tightening torque

79—108 N·m {8.1—11 kgf·m, 59—79 ft·lbf}

6. Verify that the boot is not twisted, and install the boot clamp.
7. Adjust the toe-in after adjusting the steering angle.



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Total Toe-in Adjustment

1. Loosen the locknut of the tie-rod end.
2. Remove the rack boot clamp.
3. Adjust the total toe-in by rotating each tie rod (left and right) in the opposite directions by the same amount respectively.

Note

- Toe angle changes by **approx. 6 mm {0.2 in}** per one rotation of the tie rod for one wheel.
- Each tie rod has a right-hand thread. When increasing the toe-in angle, rotate the right tie rod toward the front of the vehicle and rotate the left tie rod toward the rear of the vehicle by the same amount.

4. Tighten the locknut of the tie-rod end.

Tightening torque

79—108 N·m {8.1—11 kgf·m, 59—79 ft·lbf}

5. Verify that the rack boot does not have any twisting and install the rack boot clamp.

WHEEL ALIGNMENT

REAR WHEEL ALIGNMENT

id021100800300

Rear wheel alignment (Unloaded)*1 [LF, L5]

Item			Fuel gauge indication				
			Empty	1/4	1/2	3/4	Full
Total toe-in	Tire [Tolerance ± 4 { ± 0.2 }]	(mm {in})	3 {0.1}				
	Rim inner [Tolerance ± 3 { ± 0.1 }]		Vehicle equipped with 16 inch wheel: 1.9 {0.075} Vehicle equipped with 17 inch wheel: 2.0 {0.079}				
	(degree)		0°16'±0°21'				
Camber angle*2 (Reference value) [Tolerance $\pm 1^\circ$]			-1°23'	-1°25'	-1°27'	-1°28'	-1°30'
Thrust angle [Tolerance $\pm 0^\circ 48'$]			0°				

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

Rear wheel alignment (Unloaded)*1 [L3 WITH TC]

Item			Fuel gauge indication				
			Empty	1/4	1/2	3/4	Full
Total toe-in	Tire [Tolerance ± 4 { ± 0.2 }]	(mm {in})	3 {0.1}				
	Rim inner [Tolerance ± 3 { ± 0.1 }]		2.2 {0.087}				
	(degree)		0°16'±0°21'				
Camber angle*2 (Reference value) [Tolerance $\pm 1^\circ$]			-1°35'	-1°36'	-1°38'	-1°39'	-1°41'
Thrust angle [Tolerance $\pm 0^\circ 48'$]			0°				

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

Total Toe-in Adjustment

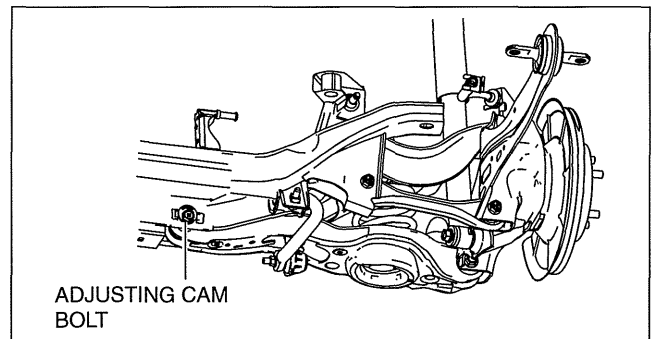
- Loosen the installation nut of the adjusting cam bolt.
- Rotate the adjusting cam bolt in either direction to adjust the camber.

	Left wheel	Right wheel
Toe-out direction	Clockwise	Counterclockwise
Toe-in direction	Counterclockwise	Clockwise

- Tighten the nut.

Tightening torque

80—100 N·m {8.2—10 kgf·m, 60—73 ft·lbf}



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02-11

WHEEL AND TIRES

02-12 WHEEL AND TIRES

WHEEL AND TIRE SPECIFICATION . . . 02-12-1
PARAMETER SETTING PROCEDURE
WHEN TIRE SIZE IS CHANGED 02-12-3
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 Wheel Unit Component
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02-12

WHEEL AND TIRE SPECIFICATION

id021200800100

Standard tire and wheel [LF, L5]

Item		Specification	
Wheel	Size	16 × 6 1/2J	17 × 7J
	Offset (mm {in})	50 {2.0}	52.5 {2.07}
	Pitch circle diameter (mm {in})	114.3 {4.50}	
	Material	Steel or Aluminum alloy	Aluminum alloy
Tire	Size	P205/55R16 89H	P205/50R17 88V
	Air pressure (kPa {psi})	Front	240 {35}
		Rear	240 {35}
	Remaining tread (mm {in})	1.6 {0.063} min.	
Wheel and tire	Lug nut tightening torque (N·m {kgf·m, ft·lbf})	88—118 {9.0—12, 65—87}	
	Wheel and tire runout (mm {in})	Radial direction	1.5 {0.059} max.
		Lateral direction	Steel: 2.5 {0.10} max. Aluminum alloy: 2.0 {0.078} max.
Wheel imbalance (g {oz})	Adhesive-type ^{*1} : 14 {0.49} max. Knock-type ^{*2} : 9 {0.3} max.	Adhesive-type ^{*1} : 13 {0.46} max. Knock-type ^{*2} : 8 {0.28} max.	

^{*1} : Total weight exceeds 160 g {5.64 oz}.

^{*2} : One balance weight: 60 g {2.1 oz} max. If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights.

WHEEL AND TIRES

Standard tire and wheel [L3 WITH TC]

Item			Specification
Wheel	Size		18 ×7 1/2J
	Offset	(mm {in})	52.5 {2.07}
	Pitch circle diameter	(mm {in})	114.3 {4.50}
	Material		Aluminum alloy
Tire	Size		P225/40R18 88Y
	Air pressure (kPa {psi})	Front	240 {35}
		Rear	230 {34}
Remaining tread		(mm {in})	1.6 {0.063} min.
Wheel and tire	Lug nut tightening torque	(N·m {kgf·m, ft·lbf})	88—118 {9.0—12, 65—87}
	Wheel and tire runout (mm {in})	Radial direction	1.5 {0.059} max.
		Lateral direction	2.0 {0.078} max.
	Wheel imbalance		(g {oz})

*1 : Total weight exceeds 160 g {5.64 oz}.

*2 : One balance weight: 60 g {2.1 oz} max. If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights.

Temporary spare tire and wheel

Item			Specification		
Wheel	Size		15×4T	16×4T	17×4T
	Offset	(mm {in})	45 {1.8}		40 {1.6}
	Pitch circle diameter	(mm {in})	114.3 {4.50}		
	Material		Steel		
Tire	Size		T115/70D15 90M	T125/70D16 96M	T125/70D17 98M
	Air pressure	(kPa {psi})	420 {60}		
	Remaining tread		(mm {in})	1.6 {0.063} min.	
Wheel and tire	Lug nut tightening torque	(N·m {kgf·m, ft·lbf})	88—118 {9.0—12, 65—87}		

WHEEL AND TIRES

PARAMETER SETTING PROCEDURE WHEN TIRE SIZE IS CHANGED

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Caution

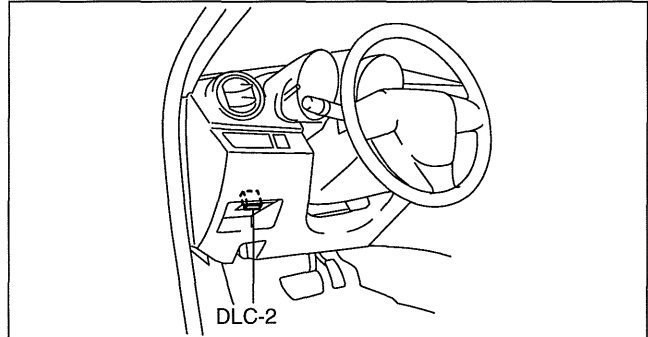
- If the wheel and tire sizes are changed, a discrepancy with the speedometer needle whereby it exceeds the allowable range could result in a malfunction. If the wheel and tire sizes are changed, perform the following procedure to change the tire size parameter setting.
- The same parameters should be set in “Tire dimension”, “Tire Circumference”, and “Tire Size”.

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support these functions.

02-12

1. Connect the M-MDS to DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select “Module Programming”.
3. Select the items from the screen menu.
 1. Select “Programmable Parameters”.
 2. Select “Tire Size”.
4. Select an item name, and then select the option.
 1. Select “Tire Size”.
 - Tire dimension (195/70R15, 205/50R17, 195/65R15, 205/55R16, 225/40R18)
 - Tire Circumference (195/70R15, 205/50R17, 195/65R15, 205/55R16, 225/40R18)
5. Select the items from the screen menu.
 1. Select “Programmable Parameters”.
 2. Select “Tire Size/Axle Ratio”.
6. Select an item name, and then select the option.
 1. Select “Tire Size/Axle Ratio”.
 - Tire Size (195/70R15, 225/40R18, 195/65R15, 205/50R17, 205/55R16)



am3uuw0000340

WHEEL BALANCE ADJUSTMENT

id021200800200

Caution

- Adjust the outer wheel balance first, then the inner wheel balance.
- Be careful not to scratch the wheels.

Adhesive-type Balance Weight (Outer)

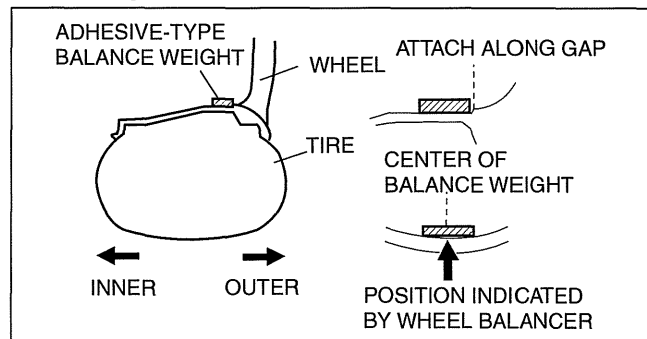
1. Remove the old balance weight from the wheel.
2. Remove the double-sided adhesive tape remaining on the wheel, then clean and degrease the bonding area.
3. Set the wheel on a wheel balancer, measure the amount of unbalance and the position with the mode set for knock-type balance weight.
4. Multiply the amount of unbalance by 1.6 to obtain the balance weight value.
5. Select a balance weight closest to the weight value and attach the balance weight on the position (outer) indicated by the wheel balancer.

Example calculation of balance weight value

Indicated amount of unbalance: 23 g {0.81 oz}

$$23 \text{ g } \{0.81 \text{ oz}\} \times 1.6 = 36.8 \text{ g } \{1.30 \text{ oz}\}$$

Selected balance weight value: 35 g {1.24 oz}



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Note

- When selecting a balance weight, select one closest to the calculated value.
Example: 32.4 g {1.14 oz} = 30 g {1.06 oz}

Caution

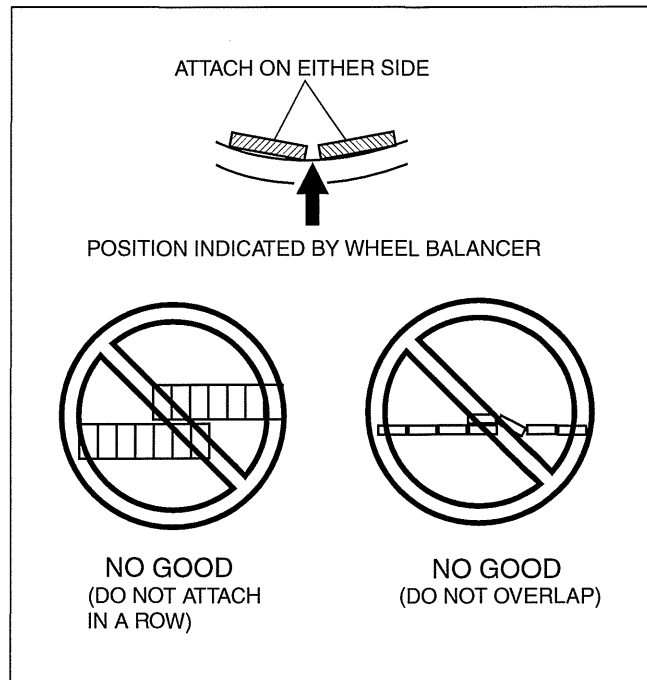
- Use a genuine balance weight or equivalent (steel).
- When attaching the weight, press the weight with a force of 25 N {2.5 kgf, 5.5 lbf} per 5 g for 2 s or more.

WHEEL AND TIRES

6. If attaching two balance weights, position them so that each is on either side of the position indicated by the wheel balancer.

Caution

- Do not attach weight balances in a row.
- Do not overlap the balance weights.
- Total weight must not exceed 160g {5.65 oz}.



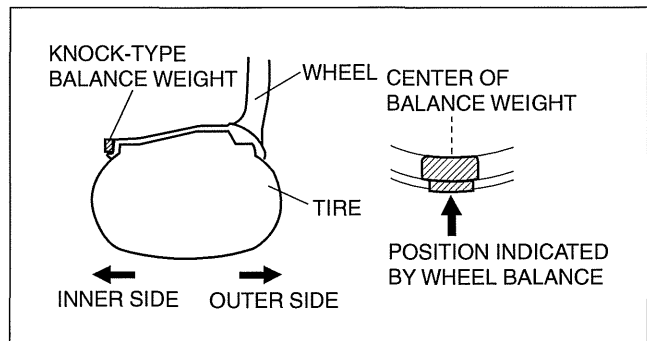
am6uuw0000146

Knock-type Balance Weight (Inner)

1. Measure the amount of unbalance with a wheel balancer.
2. Attach a weight corresponding to the measured weight value on the position (inner) indicated by the wheel balancer.

Caution

- Do not attach three or more balance weights.
- One balance weight must not exceed 60g {2.12 oz}, and a total of tow balance weights must not exceed 100g {3.53 oz}.



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Remaining Amount of Unbalance Confirmation

1. After installing the outer and inner balance weights, operate the wheel balancer again.
2. Confirm that the remaining unbalance does not exceed the following on either side.
 - If the remaining unbalance exceeds the specifications, adjust the wheel balance again.

Specifications

	Outer (Adhesive-type)	Inner (Knock-type)
16 inch wheel	14 g {0.49 oz}	9 g {0.3 oz}
17 inch wheel	13 g {0.46 oz}	8 g {0.28 oz}
18 inch wheel	12 g {0.42 oz}	8 g {0.28 oz}

WHEEL AND TIRES

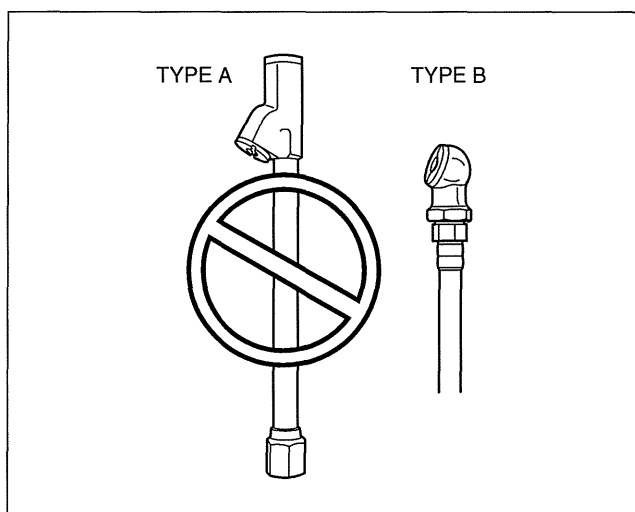
TIRE PRESSURE ADJUSTMENT (WITH TPMS)

id021200800300

1. Use of a digital gauge is recommended for accurate measurement of the air pressure.
2. Tire pressure lowers gradually as time passes. Due to this, monthly air pressure inspection is recommended.
3. Perform tire pressure adjustment before driving. (When tires are cold.)
 - Tire pressure will increase after driving because the internal temperature of the tire is high. If tire pressure is adjusted to specifications when the internal temperature of the tire is high, tire pressure will decrease when the internal temperature of the tire decreases to the same level as ambient temperature. If the tire pressure is lower than the lower-limit pressure, the TPMS warning light may illuminate.
 - Even though the air pressure is adjusted to specifications, the indicated air pressure may be higher than the specified value when the internal temperature of the tire is higher than ambient temperature. (Example: Air pressure changes approx. **10 kPa {0.1 kgf/cm², 1.5 psi}** when the temperature changes **10 degrees**)

Caution

- In an area or a season with varying temperatures, tire pressure will change due to ambient temperature change. If the tire pressure is lower than the lower-limit pressure due to low ambient temperature, the TPMS warning light may illuminate. Adjust the pressure when the TPMS warning light illuminates.
- Do not tilt or use excessive side force when checking air pressure or inflating the tire with air. Which can provide enough leverage to easily bend or break the wheel unit.
- To prevent damage to the valve area of the wheel unit or pressure loss during air pressure adjustment, use a type B tool with a round end as shown in the figure, not a type A tool.



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WHEEL UNIT ID REGISTRATION

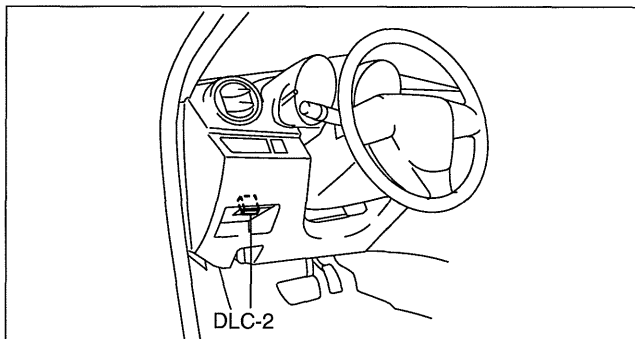
id021200800400

Note

- After the wheel unit replacement, registration of the wheel unit identification codes must be performed.
- ID registration can be done using the M-MDS, or not using the M-MDS.
- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the wheel unit ID registration and monitoring wheel unit ID.

Using M-MDS

1. Connect the M-MDS to DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - This function is available for only the IDS (laptop PC).
 1. Select the "Body".
 2. Select the "TPMS Functions".
 3. Select the "Wheel Unit ID Registration".
3. Select an item from the screen menu.
 - Wheel unit ID registration: WU ID Registration
 - Monitoring wheel unit ID: Monitor WU ID Registration
4. Leave the vehicle with the ignition to off for **15 min or more**.
5. Switch the ignition to ON (engine ON).
6. Verify that the TPMS warning light turns on and off in **0.5 s** cycles repeatedly.



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WHEEL AND TIRES

7. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **10 min** to implement the wheel unit ID registration.

Note

- If the ID registration is not completed even after driving the vehicle for **10 min** or more at a speed of **25 km/h {15.5 mph} or more**, the TPMS warning light flashes.

8. Verify that the TPMS warning light turns off.

Note

- If the wheel unit ID registration cannot be performed after driving **10 min** or more, refer to the symptom troubleshooting procedure.

Without Using M-MDS

1. Switch the ignition to the ON, then switch it off.
2. Leave the vehicle with the engine off for **15 min or more**.
3. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **10 min or more**.
4. After driving for **10 min**, verify that the TPMS warning light does not flash and is not illuminated.

WHEEL UNIT REMOVAL/INSTALLATION

id021200800600

1. Remove the valve core and valve core, and bleed the air out of the tire.
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Install the valve core and valve cap, put air into the tire.

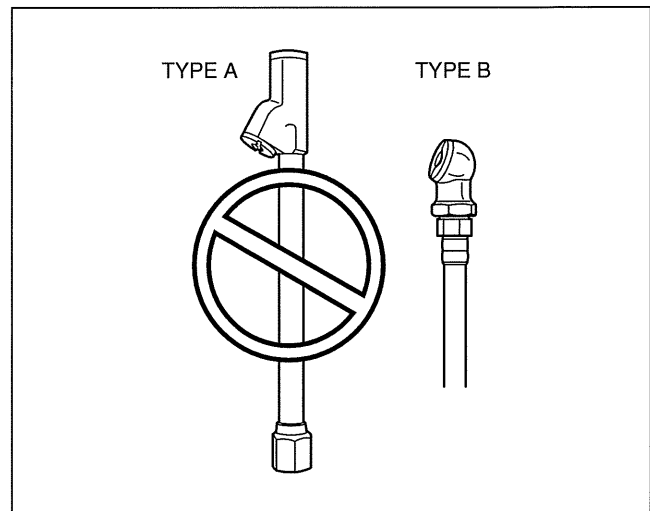
Caution

- **A TPMS wheel unit has an exclusive valve core. If a valve core other than the exclusive one is installed, the wheel unit could be damaged due to the generation of rust. Always install the exclusive valve core for TPMS.**
- **To prevent damage to the valve area of the wheel unit or charging loss during air pressure adjustment, use a type B tool with a round end as shown in the figure, not a type A tool.**

5. When replacing wheel unit (s), register the new wheel unit ID (s). (See 02-12-5 WHEEL UNIT ID REGISTRATION.)

Note

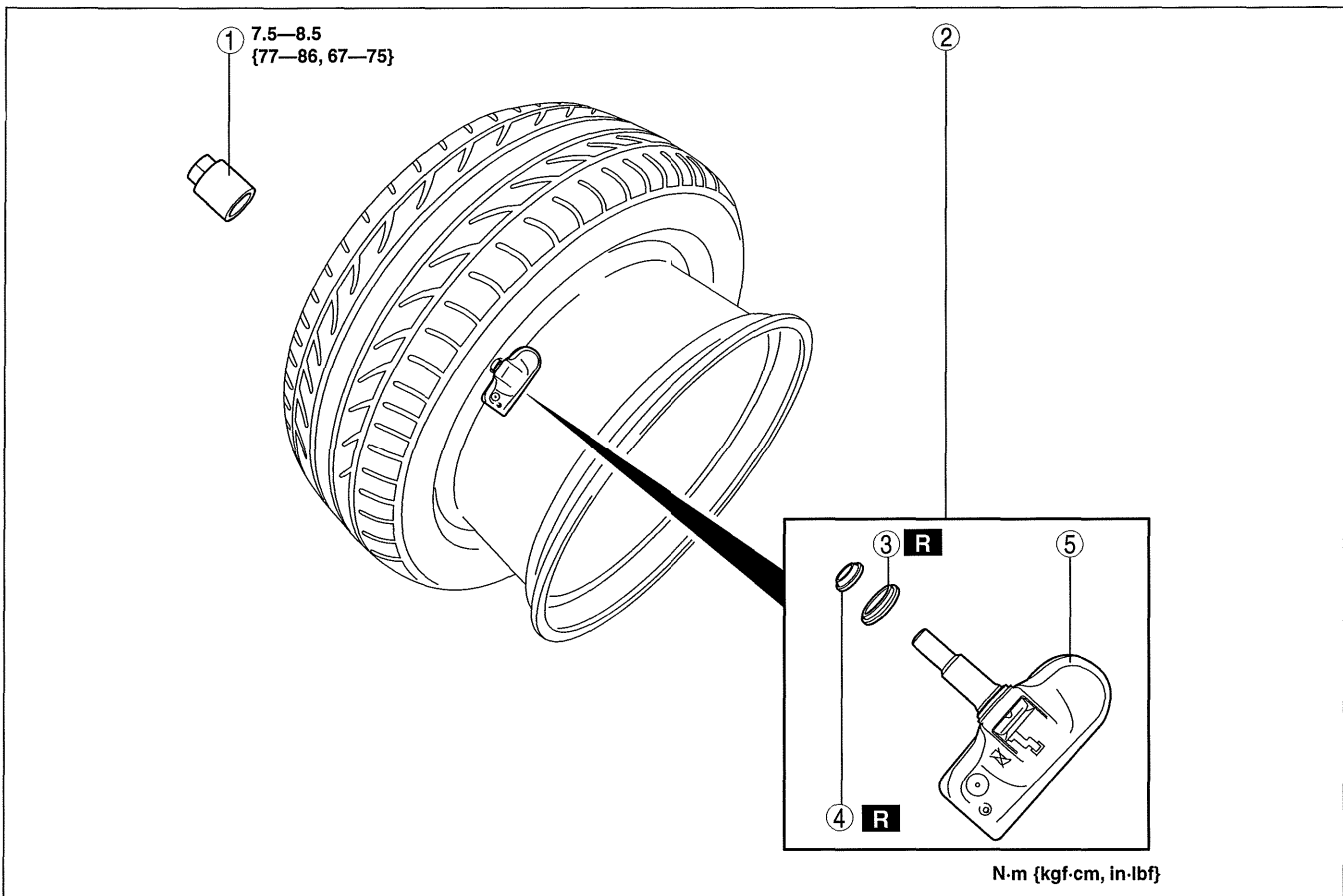
- If the wheel unit is replaced with a new one, the ID registration must be performed. When the ID registration is finished, the data for the new wheel unit is displayed on the M-MDS.



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WHEEL AND TIRES

02-12



am6xuw0000123

1	Valve nut
2	Wheel unit component (See 02-12-8 Wheel Unit Component Removal Note.) (See 02-12-9 Wheel Unit Component Installation Note.)
3	Seal washer

4	Seal
5	Wheel unit

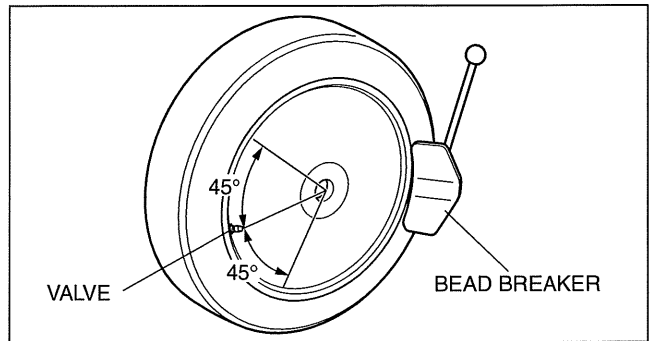
WHEEL AND TIRES

Wheel Unit Component Removal Note

1. Set the bead breaker at the position laterally opposed to the valve.
2. Break the bead loose.

Caution

- Do not break the bead loose within the range of 45° on each side of the valve. Otherwise, the wheel unit could be damaged.

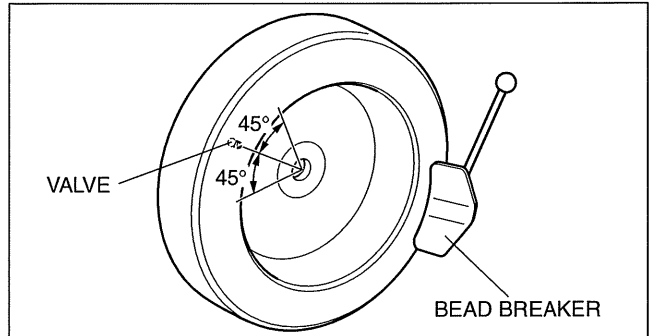


am6xuw0000238

3. Break the bead loose on the other side of the wheel.

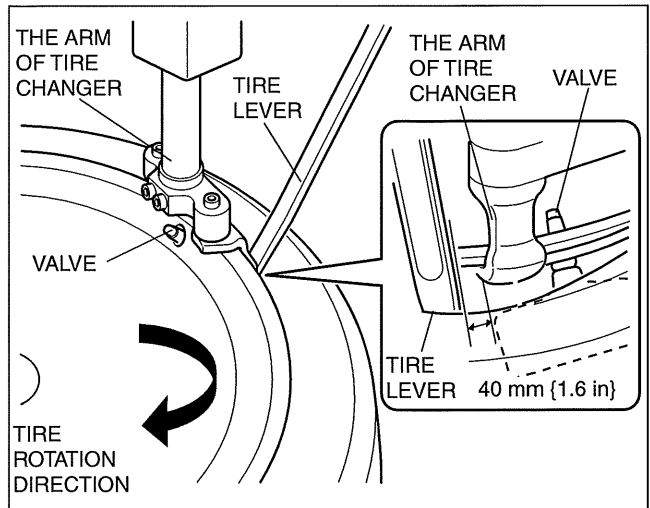
Caution

- Set the bead breaker at the position laterally opposed to the valve.
- Do not break the bead loose within the range of 45° on each side of the valve. Otherwise, the wheel unit could be damaged.



am6xuw0000238

4. Insert the tire lever at the point **40 mm {1.6 in}** from the wheel unit in the direction that the tire changer turntable rotates.



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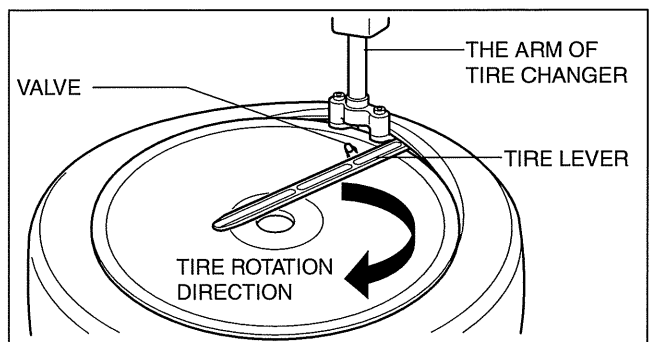
5. Remove the bead from the wheel.

Note

- Using the tire lever as a support will aid in preventing the tire changer arm from deviating from the point at which the bead is first broken.

6. For the other side, insert the tire lever at the point of **40 mm {1.6 in}** from the wheel unit in the direction that the tire changer turntable rotates, and remove the bead from the wheel.

7. Remove the wheel unit.



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WHEEL AND TIRES

Wheel Unit Component Installation Note

1. Insert the wheel unit valve into the valve hole so that the polyurethane foam side faces the rim.

Note

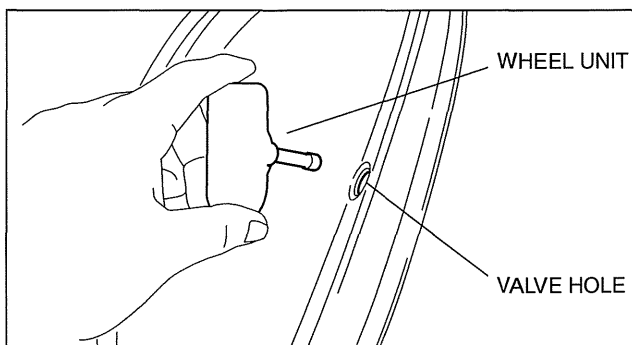
- Maintain the wheel unit in contact with the rim, then start manually to screw the valve nut, then start to screw the valve nut for a few turns.

2. Install the nut from the outer side of the wheel.
3. Tighten the valve nut slowly (**15 rpm max.**) to **8.0 N·m {82 kgf·cm, 71 in·lbf}** in one rotation.

Caution

- **Do not retighten the valve nut after the initial operation.**

4. Set the tire at the point A (**45°** away from the valve hole), and install the tire.



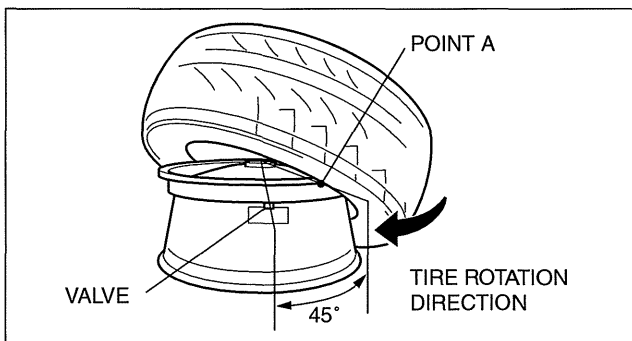
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02-12

Caution

- **Do not retighten the valve nut after the initial operation.**

4. Set the tire at the point A (**45°** away from the valve hole), and install the tire.



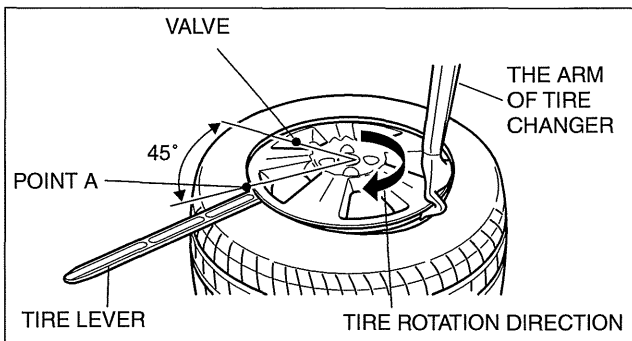
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5. Set the tire at the point A (**45°** away from the valve hole).

Note

- Using the tire lever as a support will aid in preventing the tire from deviating from the point A.

6. Install the tire.



am6xuw0000248

02-13 FRONT SUSPENSION

FRONT SUSPENSION

LOCATION INDEX 02-13-2

FRONT SHOCK ABSORBER AND COIL SPRING

REMOVAL/INSTALLATION 02-13-3

Shock Absorber and Coil Spring

Removal Note 02-13-4

Shock Absorber and Coil Spring

Installation Note 02-13-4

FRONT SHOCK ABSORBER AND COIL SPRING

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Dust Boot Installation Note 02-13-6

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FRONT SHOCK ABSORBER

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FRONT SHOCK ABSORBER

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FRONT LOWER ARM

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Front Lower Arm Removal Note

[LF (RH)] 02-13-9

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[LF (RH)] 02-13-9

Front Lower Arm Ball Joint

Installation Note 02-13-9

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FRONT STABILIZER

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Stabilizer Bracket Removal Note 02-13-11

Front Stabilizer, Stabilizer Bushing and

Stabilizer Bracket Installation Note ... 02-13-11

FRONT STABILIZER

REMOVAL/INSTALLATION

[L3 WITH TC] 02-13-12

Front Stabilizer, Stabilizer Bushing and

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FRONT CROSSMEMBER

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Tie-rod End Ball Joint

Removal Note 02-13-15

Front Crossmember Component

Removal Note 02-13-15

No. 1 Engine Mount Rubber and

Front Crossmember Component

Installation Note 02-13-16

Front Lower Arm Ball Joint

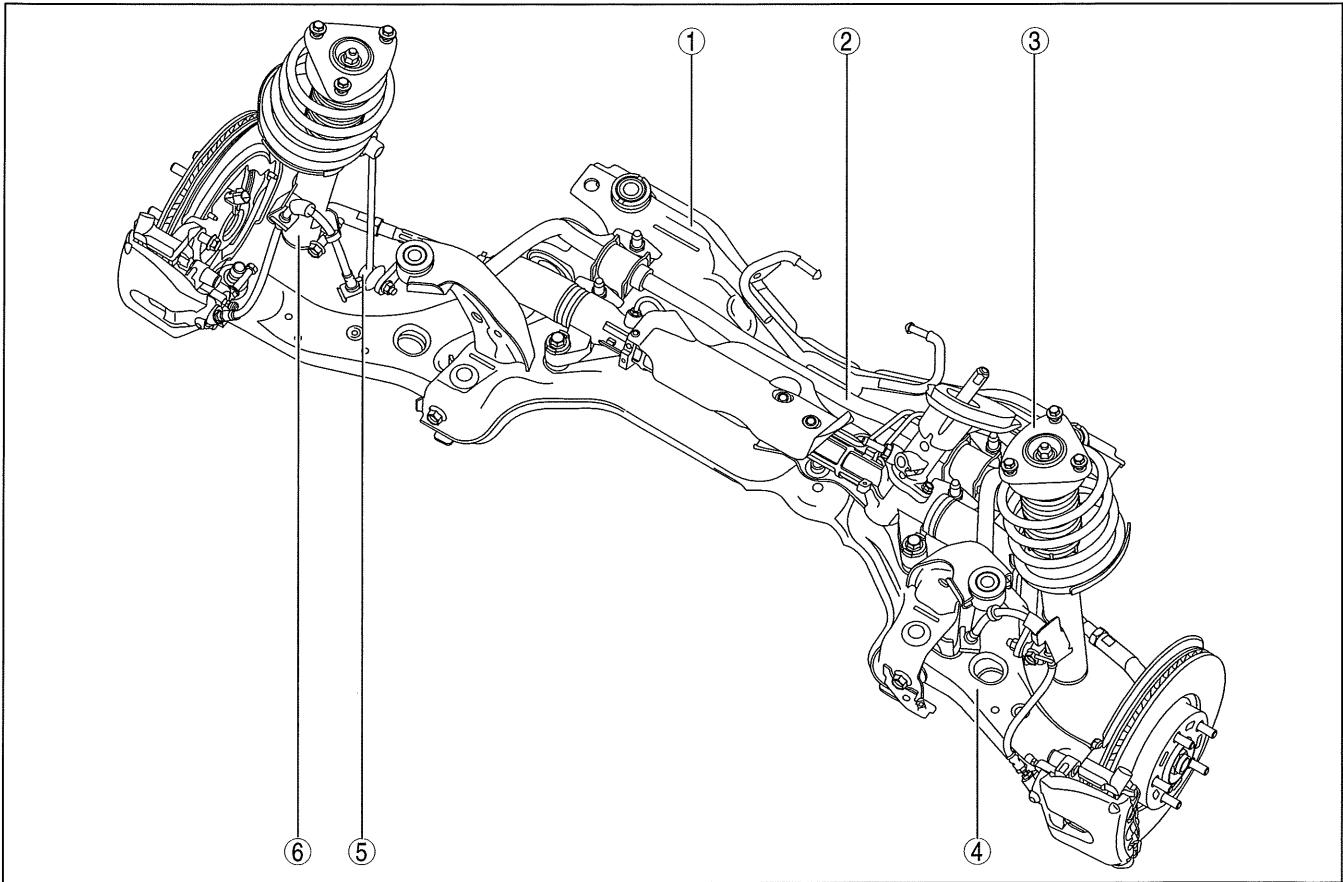
Installation Note 02-13-16

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FRONT SUSPENSION

FRONT SUSPENSION LOCATION INDEX

id021300800100



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1	Front crossmember (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
2	Front stabilizer (See 02-13-10 FRONT STABILIZER REMOVAL/INSTALLATION [LF, L5].) (See 02-13-12 FRONT STABILIZER REMOVAL/INSTALLATION [L3 WITH TC].)
3	Front shock absorber and coil spring (See 02-13-3 FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.) (See 02-13-5 FRONT SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY.)

4	Front lower arm (See 02-13-8 FRONT LOWER ARM REMOVAL/INSTALLATION.)
5	Stabilizer control link (See 02-13-10 FRONT STABILIZER REMOVAL/INSTALLATION [LF, L5].) (See 02-13-12 FRONT STABILIZER REMOVAL/INSTALLATION [L3 WITH TC].) (See 02-13-13 FRONT STABILIZER CONTROL LINK INSPECTION.)
6	Front shock absorber (See 02-13-7 FRONT SHOCK ABSORBER INSPECTION.) (See 02-13-7 FRONT SHOCK ABSORBER DISPOSAL.)

FRONT SUSPENSION

FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION

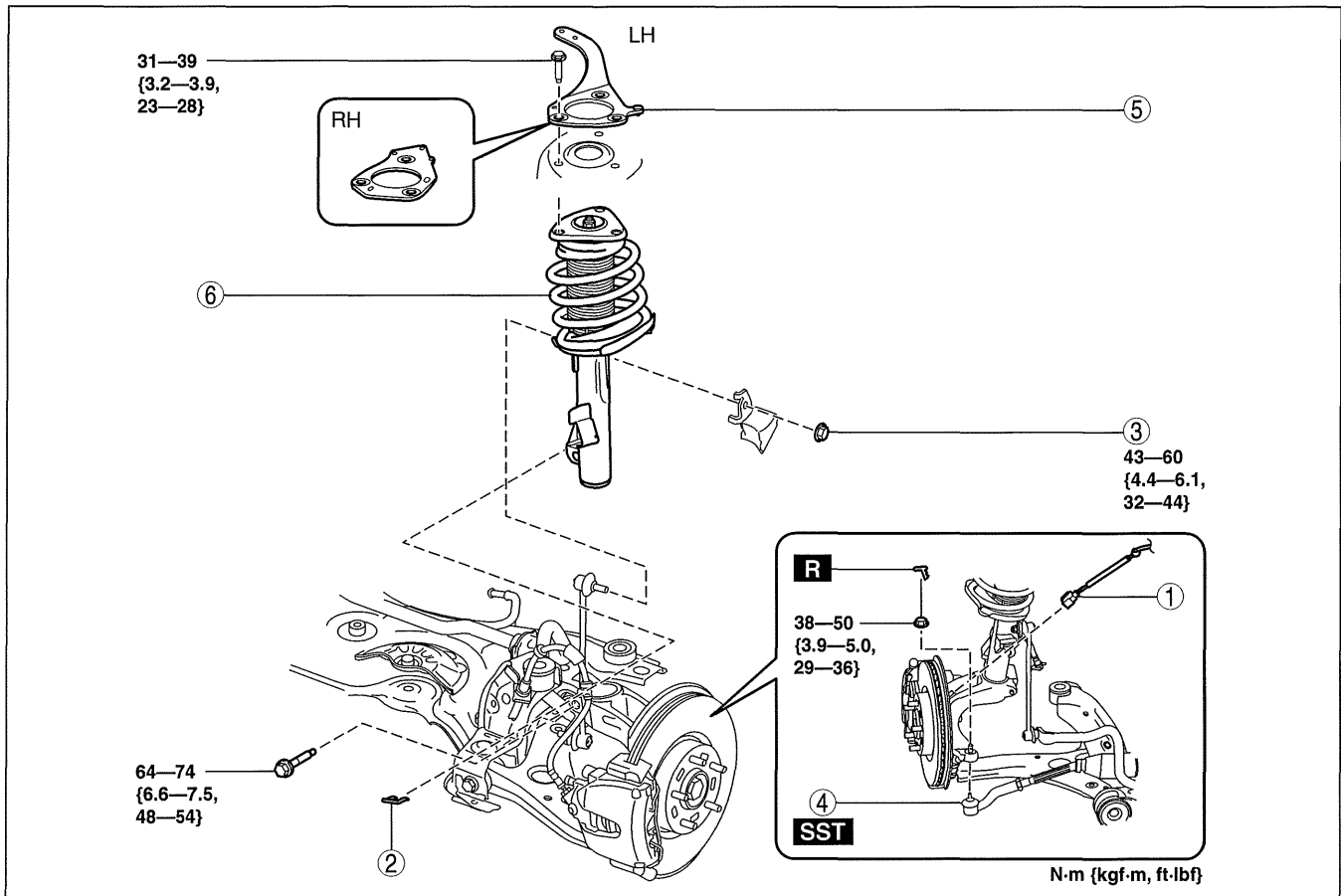
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Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor wiring harness connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

- Remove the windshield wiper arm and blade. (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
- Remove the cowl grille. (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- Remove in the order indicated in the table.
- Install in the reverse order of removal.
- Inspect the wheel alignment. (See 02-11-1 FRONT WHEEL ALIGNMENT.)

02-13



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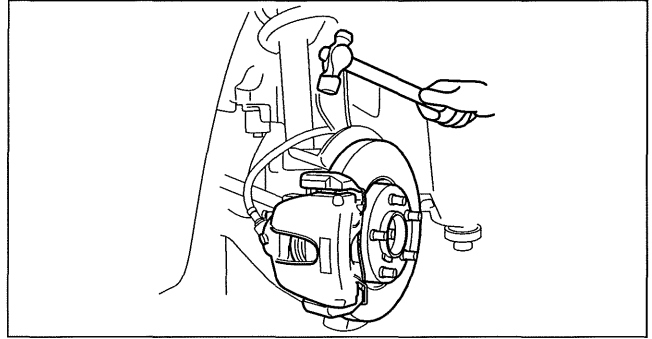
1	ABS wheel-speed sensor wiring harness connector
2	Brake hose clip
3	Stabilizer control link upper nut
4	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
5	Stiffener

6	Shock absorber and coil spring (See 02-13-4 Shock Absorber and Coil Spring Removal Note.) (See 02-13-4 Shock Absorber and Coil Spring Installation Note.)
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FRONT SUSPENSION

Shock Absorber and Coil Spring Removal Note

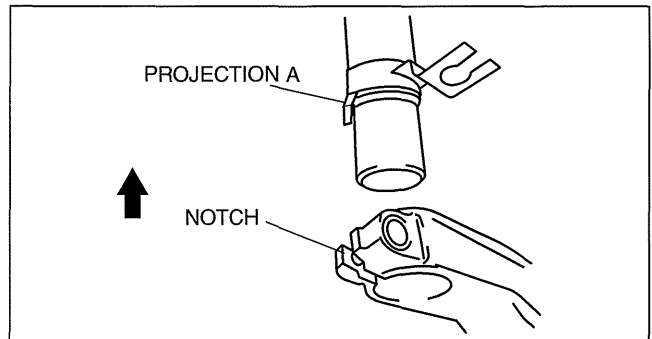
1. Loosen the front lower arm inner bolt.
2. Separate the front lower arm ball joint.
3. Separate the shock absorber from the wheel hub, steering knuckle component by tapping the upper part of the steering knuckle with a hammer.



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Shock Absorber and Coil Spring Installation Note

1. Raise the front lower arm using a jack and install the shock absorber and coil spring.



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FRONT SUSPENSION

FRONT SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY

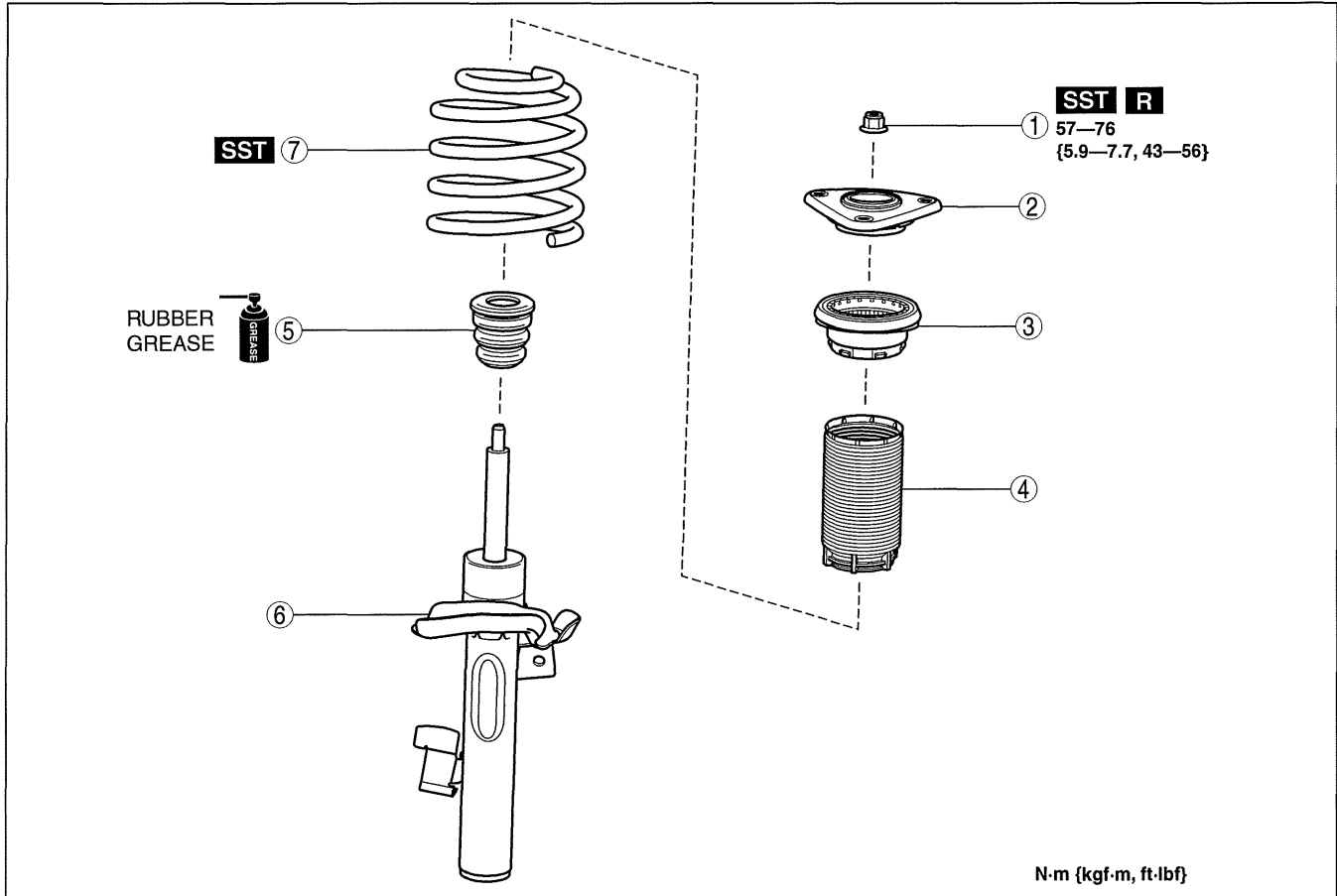
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Warning

- Removing/installing the shock absorber and coil spring is dangerous. The shock absorber and coil spring could fly off and cause serious injury or death, and damage the vehicle.

1. Remove the front shock absorber and coil spring. (See 02-13-3 FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.

02-13



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1	Piston rod nut (See 02-13-6 Piston Rod Nut Removal Note.)
2	Mounting rubber
3	Bearing (See 02-13-7 Bearing Installation Note.)

4	Dust boot (See 02-13-6 Dust Boot Installation Note.)
5	Bound stopper
6	Front shock absorber
7	Coil spring (See 02-13-6 Coil Spring Installation Note.)

FRONT SUSPENSION

Piston Rod Nut Removal Note

Warning

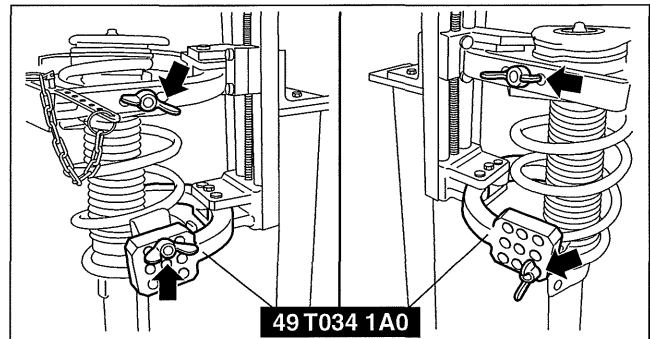
- Before removing the piston rod nut, secure the shock absorber and coil spring in the SST. Otherwise, the coil spring could fly off under tremendous pressure and cause serious injury or death, or damage to vehicle parts.

1. Install the shock absorber and coil spring to the **SST** according to the following procedures.

Note

- Install the **SST** using a piece of clean rag to prevent the coil spring from being scratched.

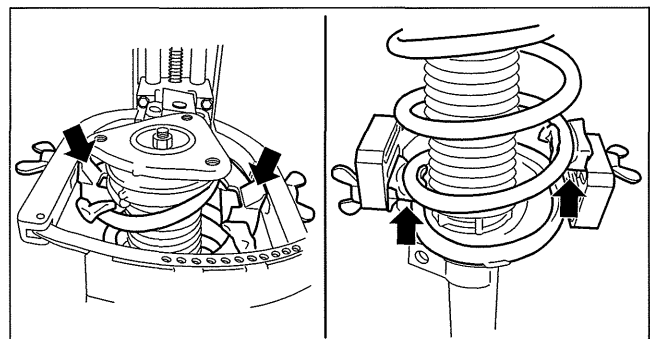
- (1) Set the **SST** attachments (tabs) to the positions shown in the figure.



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- (2) Install the front shock absorber and coil spring to the **SST** so that the coil spring is set to the position shown in the figure.

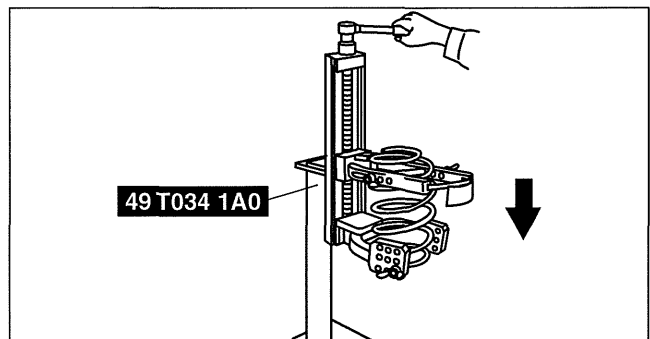
2. Compress the coil spring using the **SST**.
3. Remove the piston rod nut.



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Coil Spring Installation Note

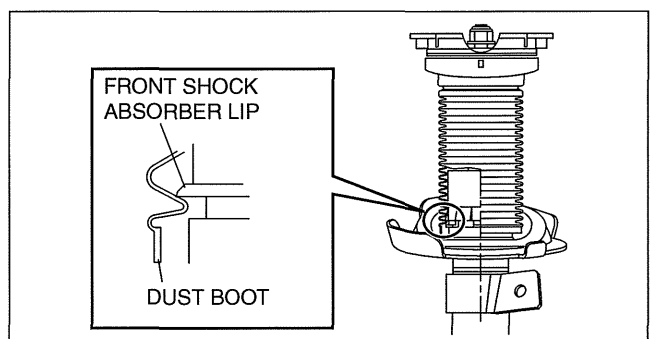
1. Compress the coil spring using the **SSTs**.
2. Install the shock absorber so that the lower end of the coil spring is seated on the step of the lower spring seat.



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Dust Boot Installation Note

1. Install the dust boot by hooking the bottom edge over the shock absorber lip.

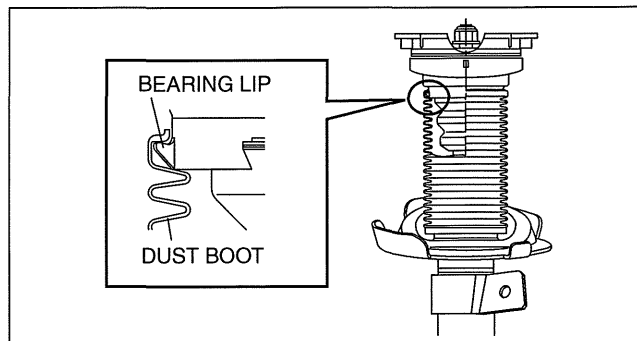


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FRONT SUSPENSION

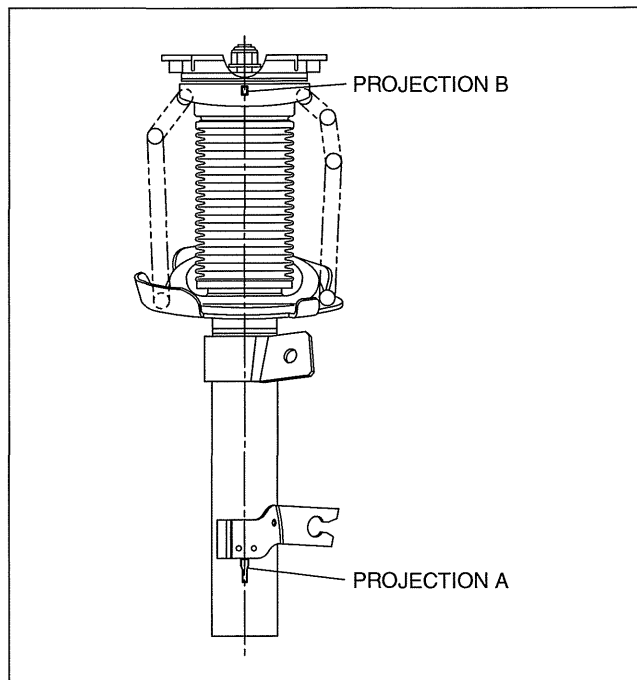
Bearing Installation Note

1. Install the bearing by hooking the upper end of the dust boot to the bearing lip.
2. Align the projection A on the lower part of the shock absorber with the bearing projection B.



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02-13



am3uuw000088

id021300800800

FRONT SHOCK ABSORBER INSPECTION

1. Remove the front shock absorber.
2. Inspect for damage and oil leakage.
3. Compress and extend the shock absorber piston rod **at least three times** at a steady rate. **From the fourth** compression stroke, verify that the operational force does not change and that there is no unusual noise.
 - If there is any malfunction, replace the shock absorber.

FRONT SHOCK ABSORBER DISPOSAL

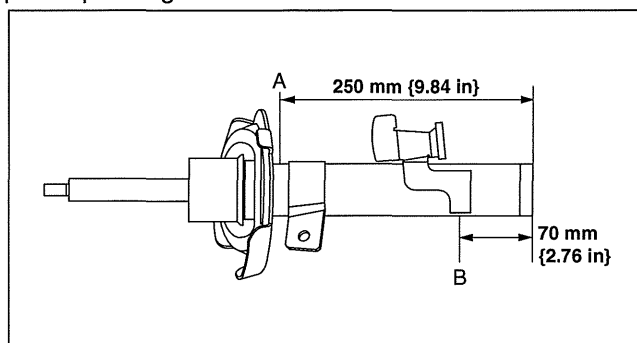
id021300800900

1. Place the shock absorber on a level surface or with the piston pointing downwards.
2. Drill a **2—3 mm {0.08—0.11 in}** hole at the point A shown in the figure so that the gas can escape.

Warning

- **Whenever drilling into a shock absorber, wear protective eye wear. The gas in the shock absorber is pressurized and could spray metal chips into the eyes and face.**

3. Drill a **2—3 mm {0.08—0.11 in}** hole at the point B shown in the figure to drain the oil.
4. Turn the hole made in Step 3 downwards and drain the oil by pumping the piston rod up and down several times.
5. Cut off the end of the shock absorber.
6. Dispose of waste oil according to local waste disposal laws.



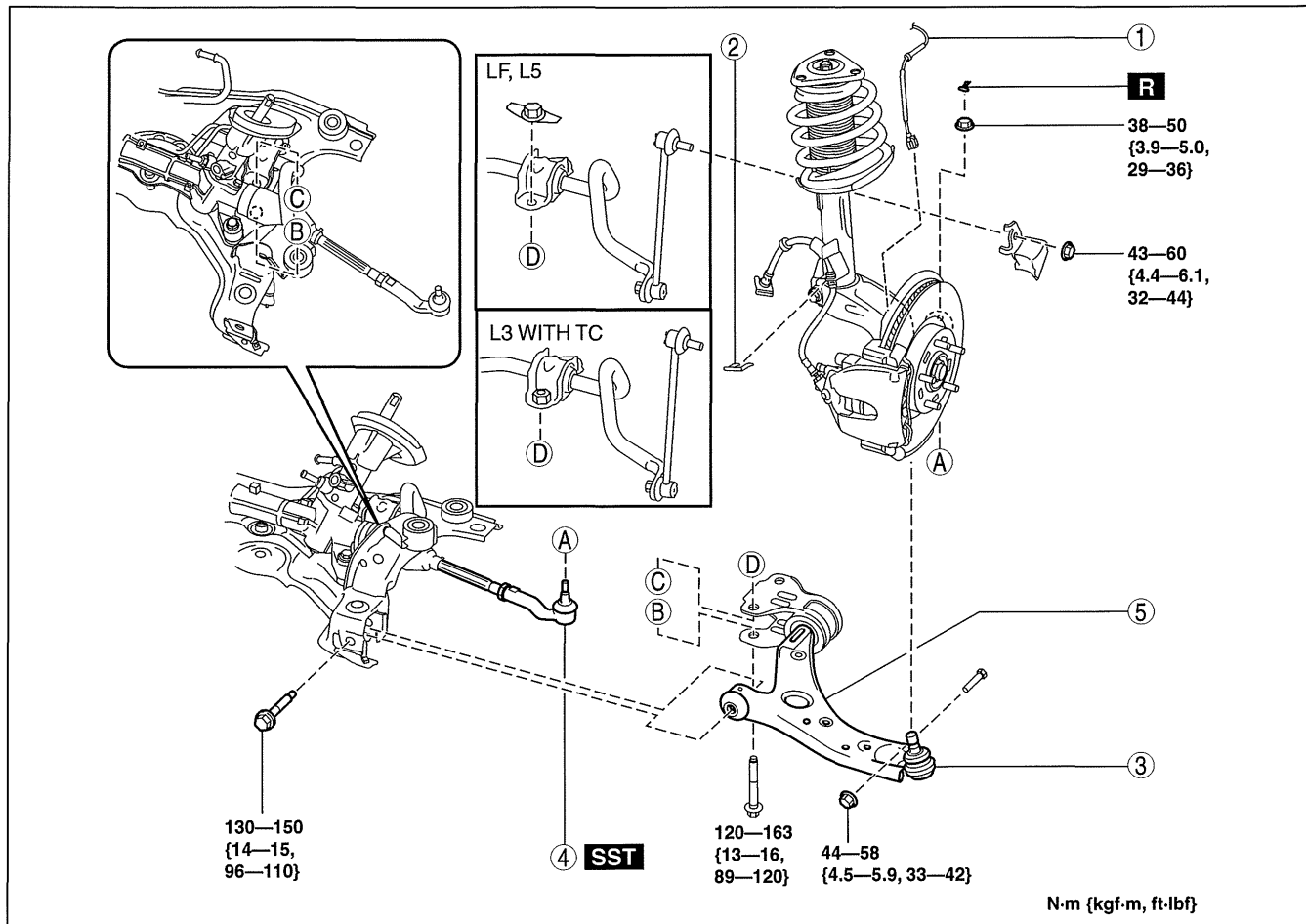
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FRONT SUSPENSION

FRONT LOWER ARM REMOVAL/INSTALLATION

id021300800600

1. Disconnect the front auto leveling sensor link lower side. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Inspect the wheel alignment and adjust it if necessary. (See 02-11-1 FRONT WHEEL ALIGNMENT.)



am3uuw0000573

1	Front ABS wheel-speed sensor wiring harness connector
2	Brake hose clip
3	Front lower arm ball joint (See 02-13-9 Front Lower Arm Ball Joint Installation Note.)

4	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
5	Front lower arm (See 02-13-9 Front Lower Arm Removal Note [LF (RH)].) (See 02-13-9 Front Lower Arm Installation Note [LF (RH)].)

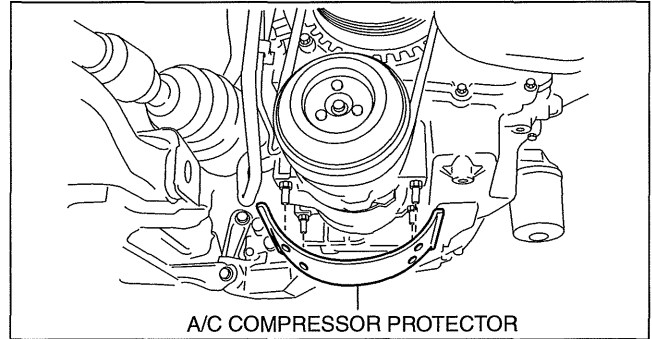
FRONT SUSPENSION

Front Lower Arm Removal Note [LF (RH)]

Note

- When working on the right side of vehicles with LF, move the A/C compressor protector so that the A/C compressor protector does not interfere with the removal of the front lower arm front side bolt.

- Remove the A/C compressor protector.
- Remove the front lower arm.

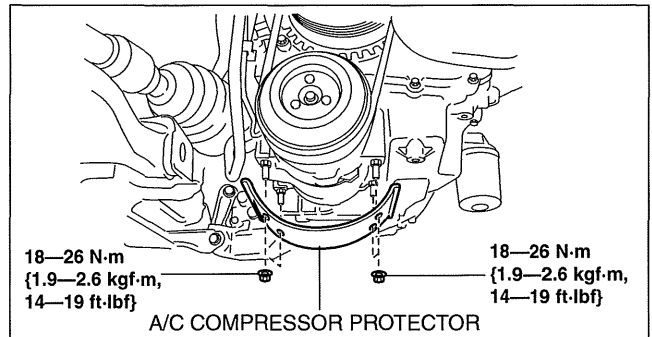


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02-13

Front Lower Arm Installation Note [LF (RH)]

- Install the front lower arm.
- Install the A/C compressor protector.



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Front Lower Arm Ball Joint Installation Note

Note

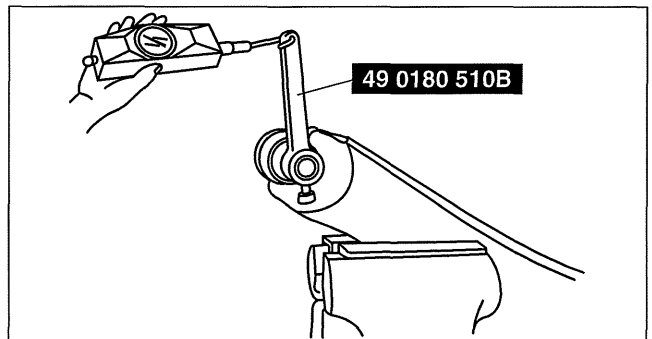
- The bolt insertion direction can be either front or rear of the vehicle, however, keep the insertion direction the same on both the left and right sides of the vehicle.

FRONT LOWER ARM INSPECTION

id021300800700

- Remove the lower arm from the vehicle.
- Inspect the arm for bending or damage, and the ball joint for excessive looseness.
 - If there is any malfunction, replace the lower arm.
- Rotate the ball joint stud **5 times**. Install the **SST** to the ball joint stud, measure the rotational torque using a pull scale.
 - If not within the specification, replace the lower arm.

Front lower arm ball joint rotational torque
1.0–4.9 N·m {11–49 kgf·cm, 9–43 in·lbf}
Pull scale reading [10–49 N {1.1–4.9 kgf,
3–10 lbf}]



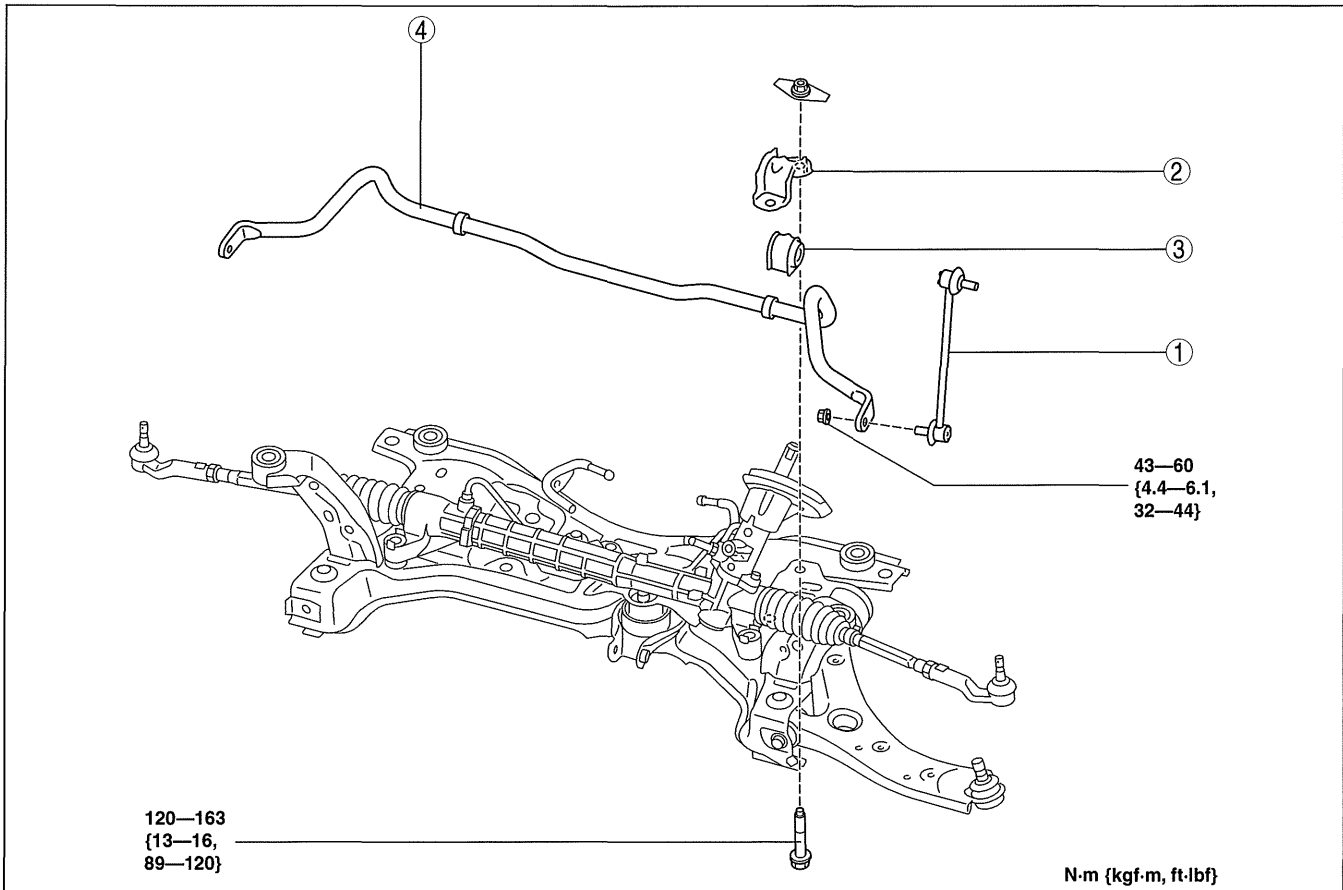
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FRONT SUSPENSION

FRONT STABILIZER REMOVAL/INSTALLATION [LF, L5]

id0213008004c3

1. Remove the joint cover. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2. Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
3. Remove the front auto leveling sensor. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
4. Remove the front crossmember component. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Inspect the wheel alignment and adjust it if necessary. (See 02-11-1 FRONT WHEEL ALIGNMENT.)



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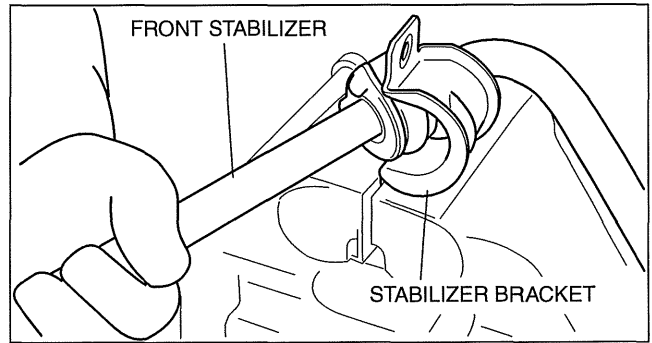
1	Stabilizer control link
2	Stabilizer bracket (See 02-13-11 Stabilizer Bracket Removal Note.) (See 02-13-11 Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)

3	Stabilizer bushing (See 02-13-11 Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)
4	Front stabilizer (See 02-13-11 Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)

FRONT SUSPENSION

Stabilizer Bracket Removal Note

1. Secure the stabilizer bracket flange using a vise.
2. Remove the front stabilizer.

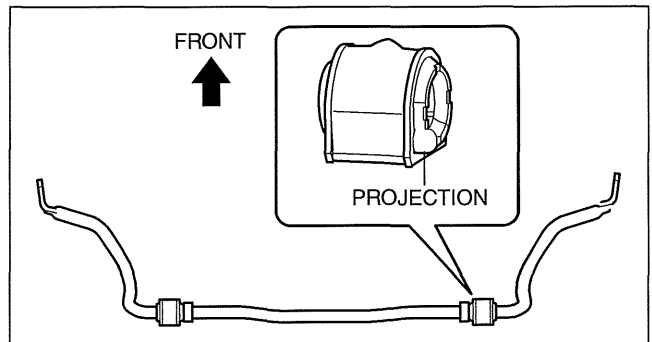


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02-13

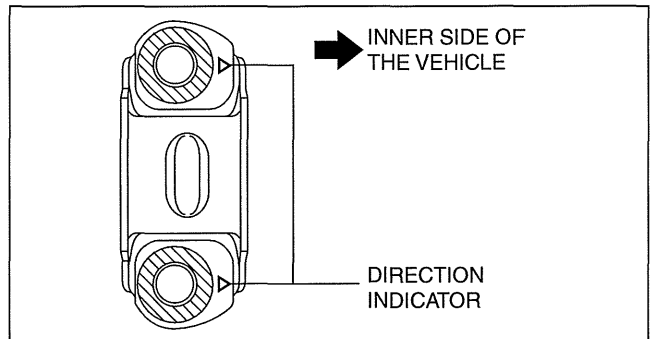
Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note

1. Install the stabilizer bushing so that the projection points to the right side of the vehicle.
2. Apply grease to the stabilizer bushing.



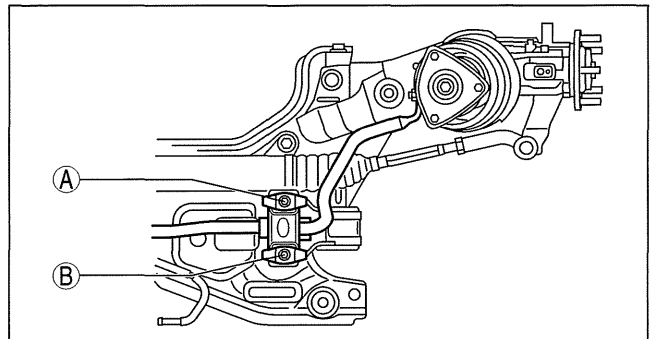
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3. Point the direction indicator on the stabilizer bracket inward and install stabilizer bracket using a vise.
4. Temporarily install the front stabilizer component.



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5. Tighten the bolts following order.
— A→B→A



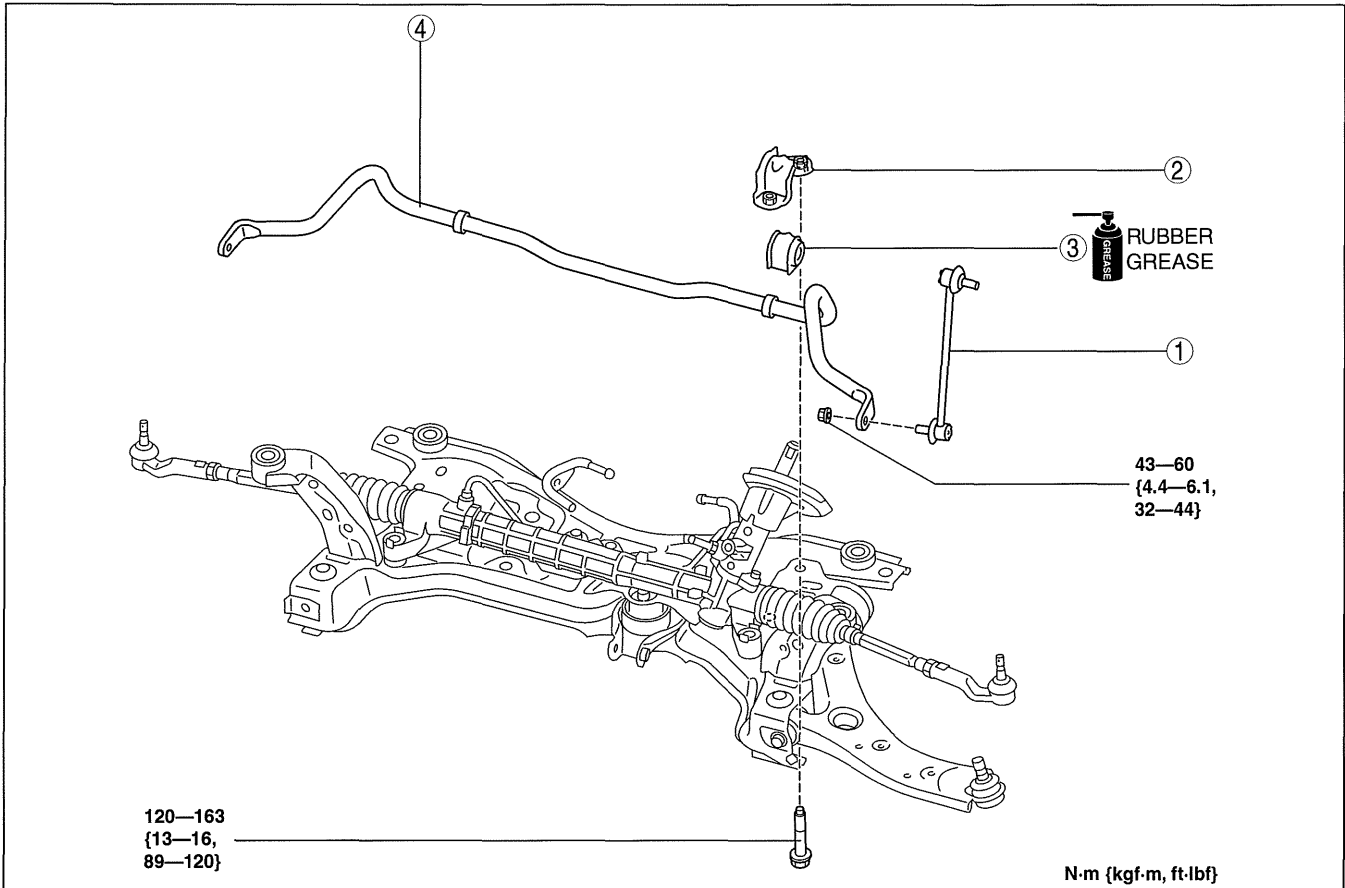
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FRONT SUSPENSION

FRONT STABILIZER REMOVAL/INSTALLATION [L3 WITH TC]

id0213008004b6

1. Remove the joint cover. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2. Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
3. Remove the front auto leveling sensor. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
4. Remove the front crossmember component. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Inspect the wheel alignment and adjust it if necessary. (See 02-11-1 FRONT WHEEL ALIGNMENT.)



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1	Stabilizer control link
2	Stabilizer bracket (See 02-13-13 Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)

3	Stabilizer bushing (See 02-13-13 Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)
4	Front stabilizer (See 02-13-13 Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)

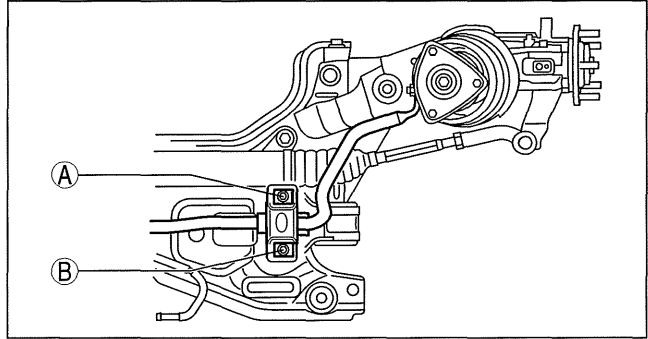
FRONT SUSPENSION

Front Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note

Caution

- Verify that the stabilizer bushings are not caught between the stabilizer bracket and the front crossmember, and install the stabilizer bracket using the following procedure.

1. Temporarily tighten bolts A and B shown in the figure.
2. Tighten bolt A.
3. Tighten bolt B.
4. Tighten bolt A.



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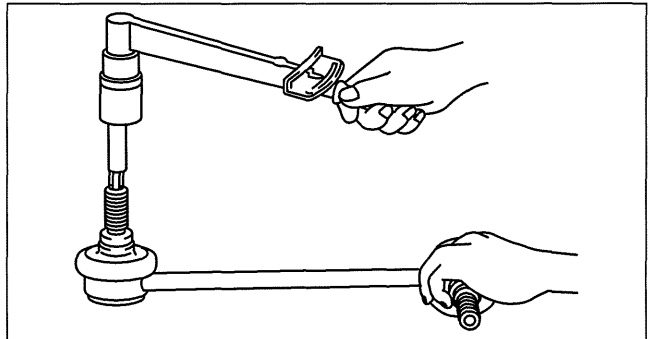
FRONT STABILIZER CONTROL LINK INSPECTION

id021300800500

1. Remove the stabilizer control link from the vehicle.
2. Inspect for bending or damage. If there is any malfunction, replace the stabilizer control link.
3. Rotate the ball joint stud **10 times** and shake it side to side **10 times**.
4. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.

Front stabilizer control link ball joint rotational torque
0.2—0.9 N·m {3—9 kgf·cm, 2—7 in·lbf}

- If not within the specification, replace the stabilizer control link.



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FRONT CROSSMEMBER REMOVAL/INSTALLATION

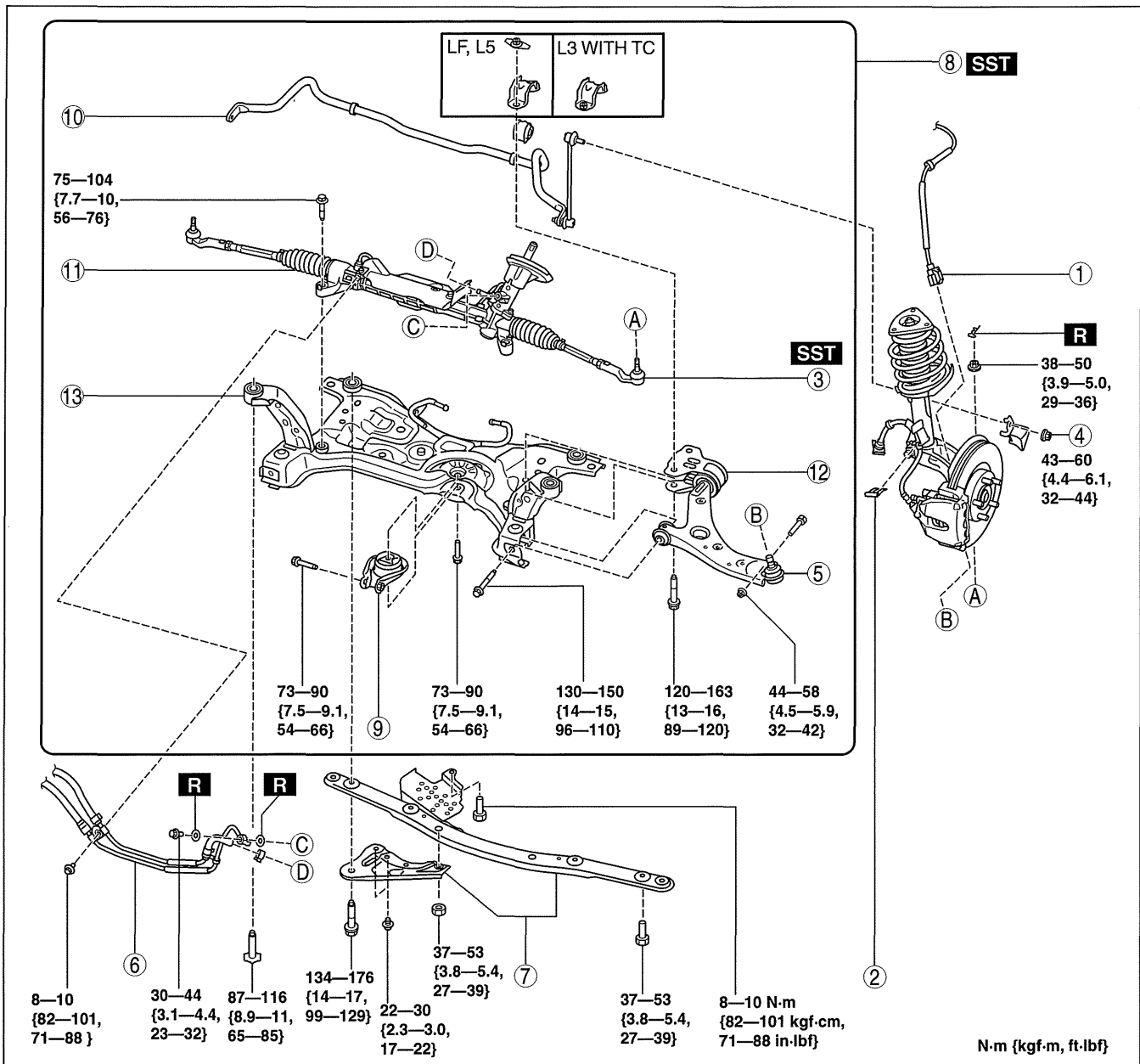
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Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor wiring harness connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.
- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

1. Remove the joint cover. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2. Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
3. Remove the front auto leveling sensor. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.
6. Inspect the wheel alignment and adjust it if necessary. (See 02-11-1 FRONT WHEEL ALIGNMENT.)

FRONT SUSPENSION



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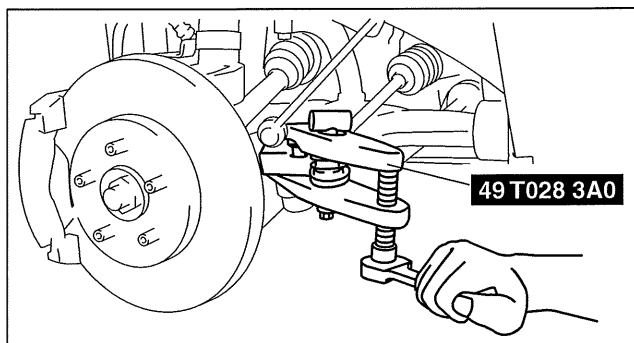
1	Front ABS wheel-speed sensor wiring harness connector (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
2	Brake hose clip
3	Tie-rod end ball joint (See 02-13-15 Tie-rod End Ball Joint Removal Note.)
4	Stabilizer control link upper nut
5	Front lower arm ball joint (See 02-13-16 Front Lower Arm Ball Joint Installation Note.)
6	Power steering pipe component
7	Crossmember bracket
8	Front crossmember component (See 02-13-15 Front Crossmember Component Removal Note.) (See 02-13-16 No. 1 Engine Mount Rubber and Front Crossmember Component Installation Note.)

9	No.1 engine mount rubber (See 02-13-16 No. 1 Engine Mount Rubber and Front Crossmember Component Installation Note.)
10	Front stabilizer (See 02-13-10 FRONT STABILIZER REMOVAL/INSTALLATION [LF, L5].) (See 02-13-12 FRONT STABILIZER REMOVAL/INSTALLATION [L3 WITH TC].)
11	Steering gear and linkage (See 06-14-16 STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
12	Front lower arm (See 02-13-8 FRONT LOWER ARM REMOVAL/INSTALLATION.)
13	Front crossmember

FRONT SUSPENSION

Tie-rod End Ball Joint Removal Note

1. Detach the tie-rod end from the steering knuckle using the **SST**.



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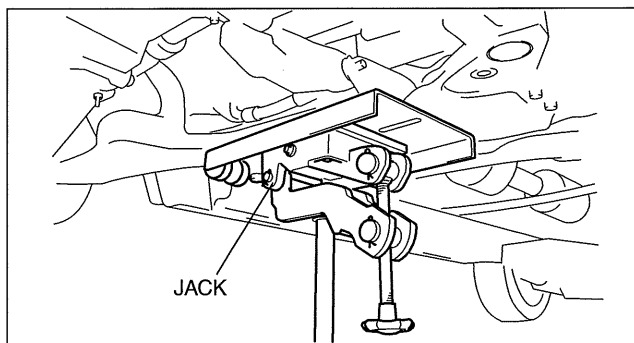
02-13

Front Crossmember Component Removal Note

Warning

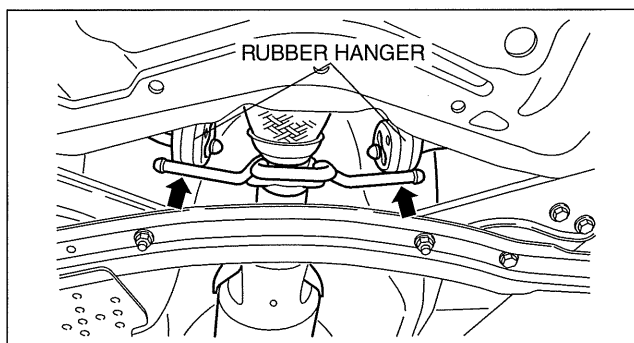
- Removing the crossmember is dangerous. The crossmember component could fall and cause serious injury or death. Verify that the jack securely supports the crossmember component.

1. Support the front crossmember component using a jack.



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2. Detach the rubber hangers from the front crossmember.
3. Remove the front crossmember, front stabilizer, front lower arm, and steering gear and linkage as a single unit.



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FRONT SUSPENSION

No. 1 Engine Mount Rubber and Front Crossmember Component Installation Note

1. Verify the left and right identification marks and install the positioning **SST** to the front crossmember.

Note

- Verify the identification marks before installation because the left and right parts of the **SST** have different shapes.

2. Temporarily tighten the No.1 engine mount rubber to the front crossmember.

3. Raise the transmission jack gradually and install the front crossmember to the vehicle. At this point verify that the **SST** is securely inserted in the positioning holes on the body.

Warning

- **The crossmember component could fall and cause serious injury or death. Verify that the jack securely supports the crossmember component.**

4. Tighten the front crossmember installation bolts and nuts.

5. Tighten the bolts in the order shown in the figure.

Caution

- **Tighten the bolts in the order shown in the figure to prevent abnormal noise and vibration after assembly.**
- **Tighten the bolts while being careful of their length to prevent interference between the steering gear housing and bolt.**

Tightening torque

73—90 N·m {7.5—9.2 kgf·m, 54—67 ft·lbf}

Bolt stem length

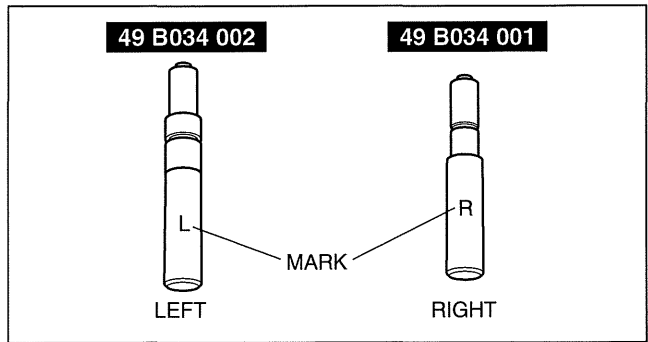
Front crossmember side: 62 mm {2.4 in}

No.1 engine mount bracket side: 65 mm {2.6 in}

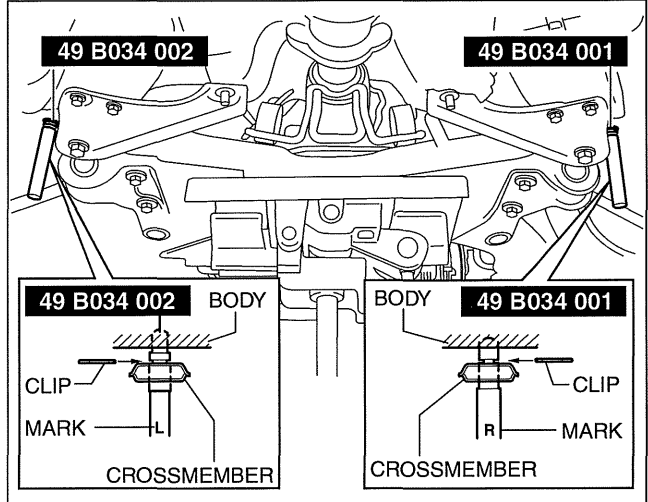
Front Lower Arm Ball Joint Installation Note

Note

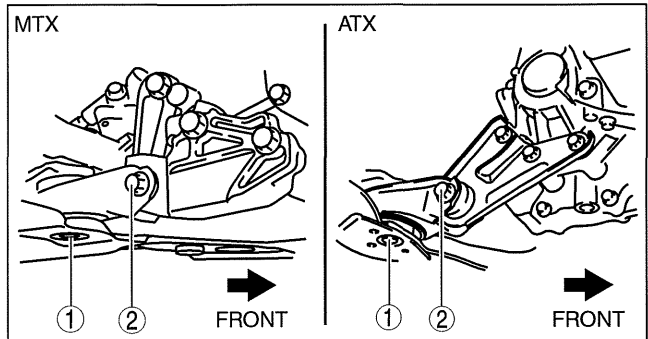
- The bolt insertion direction can be either front or rear of the vehicle, however, keep the insertion direction the same on both the left and right sides of the vehicle.



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REAR SUSPENSION

02-14 REAR SUSPENSION

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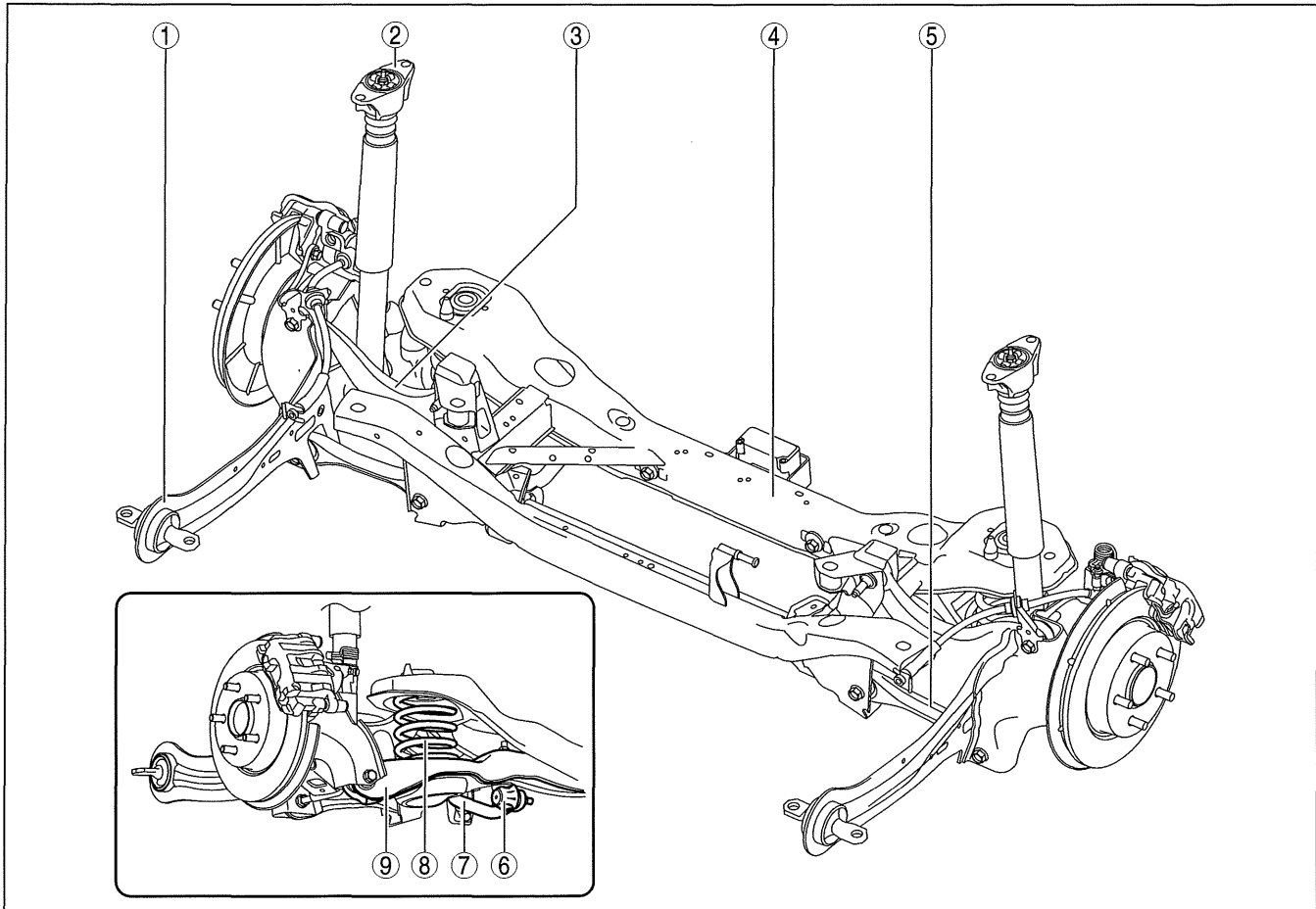
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Wiring Harness Installation Note	02-14-16

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REAR SUSPENSION

REAR SUSPENSION LOCATION INDEX

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1	Rear trailing link (See 02-14-8 REAR TRAILING LINK REMOVAL/ INSTALLATION.)
2	Rear shock absorber (See 02-14-3 REAR SHOCK ABSORBER REMOVAL/INSTALLATION.) (See 02-14-3 REAR SHOCK ABSORBER INSPECTION.) (See 02-14-4 REAR SHOCK ABSORBER DISPOSAL.)
3	Rear upper arm (See 02-14-7 REAR UPPER ARM REMOVAL/ INSTALLATION.)
4	Rear crossmember (See 02-14-14 REAR CROSSMEMBER REMOVAL/ INSTALLATION.)

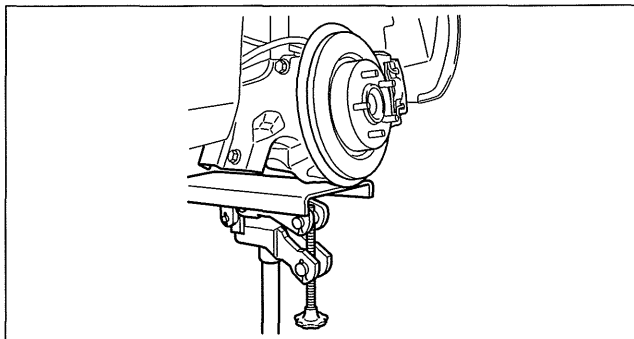
5	Rear lateral link (See 02-14-11 REAR LATERAL LINK REMOVAL/ INSTALLATION.)
6	Stabilizer control link (See 02-14-14 REAR STABILIZER CONTROL LINK INSPECTION.)
7	Rear stabilizer (See 02-14-13 REAR STABILIZER REMOVAL/ INSTALLATION.)
8	Rear coil spring (See 02-14-4 REAR COIL SPRING REMOVAL/ INSTALLATION.)
9	Rear lower arm (See 02-14-6 REAR LOWER ARM REMOVAL/ INSTALLATION.)

REAR SUSPENSION

REAR SHOCK ABSORBER REMOVAL/INSTALLATION

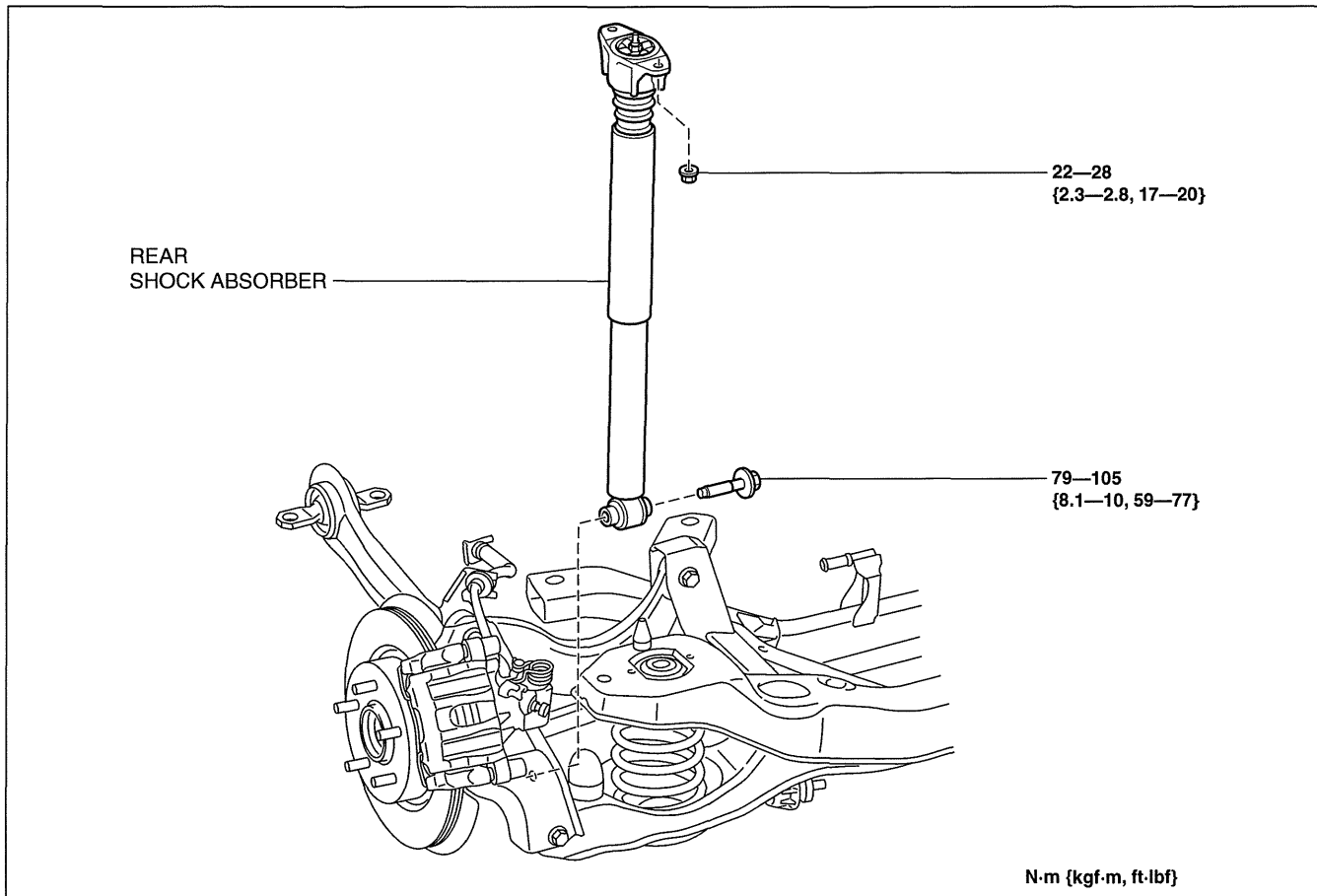
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1. Support the rear axle using a jack.
2. Remove the rear shock absorber



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3. Install the rear shock absorber.

REAR SHOCK ABSORBER INSPECTION

id021400801400

1. Remove the rear shock absorber. (See 02-14-3 REAR SHOCK ABSORBER REMOVAL/INSTALLATION.)
2. Inspect for damage and oil leakage.
3. Compress and extend the shock piston at least three times. Verify that the operational force does not change and that there is no unusual noise.
 - If not as specified, replace the rear shock absorber.

REAR SUSPENSION

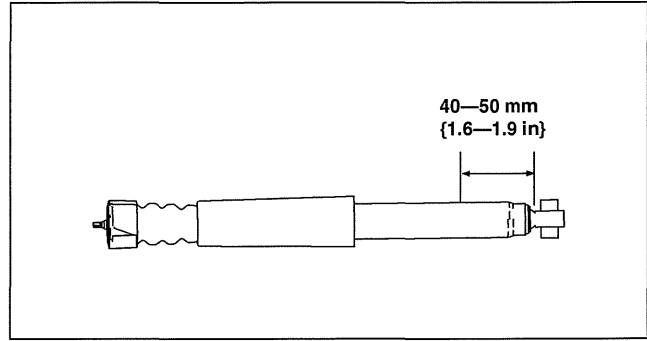
REAR SHOCK ABSORBER DISPOSAL

id021400801500

1. Clamp a shock absorber on a flat surface or with the piston pointing downwards.
2. Drill a 2—3 mm {0.08—0.11 in} hole at a point 50—60 mm {1.6—1.9 in} from the bottom of the tube, so that the gas can escape.

Warning

- Whenever drilling into a shock absorber, wear protective eye wear. The gas in the shock absorber is pressurized, and could spray metal chips into the eyes and face when drilling.



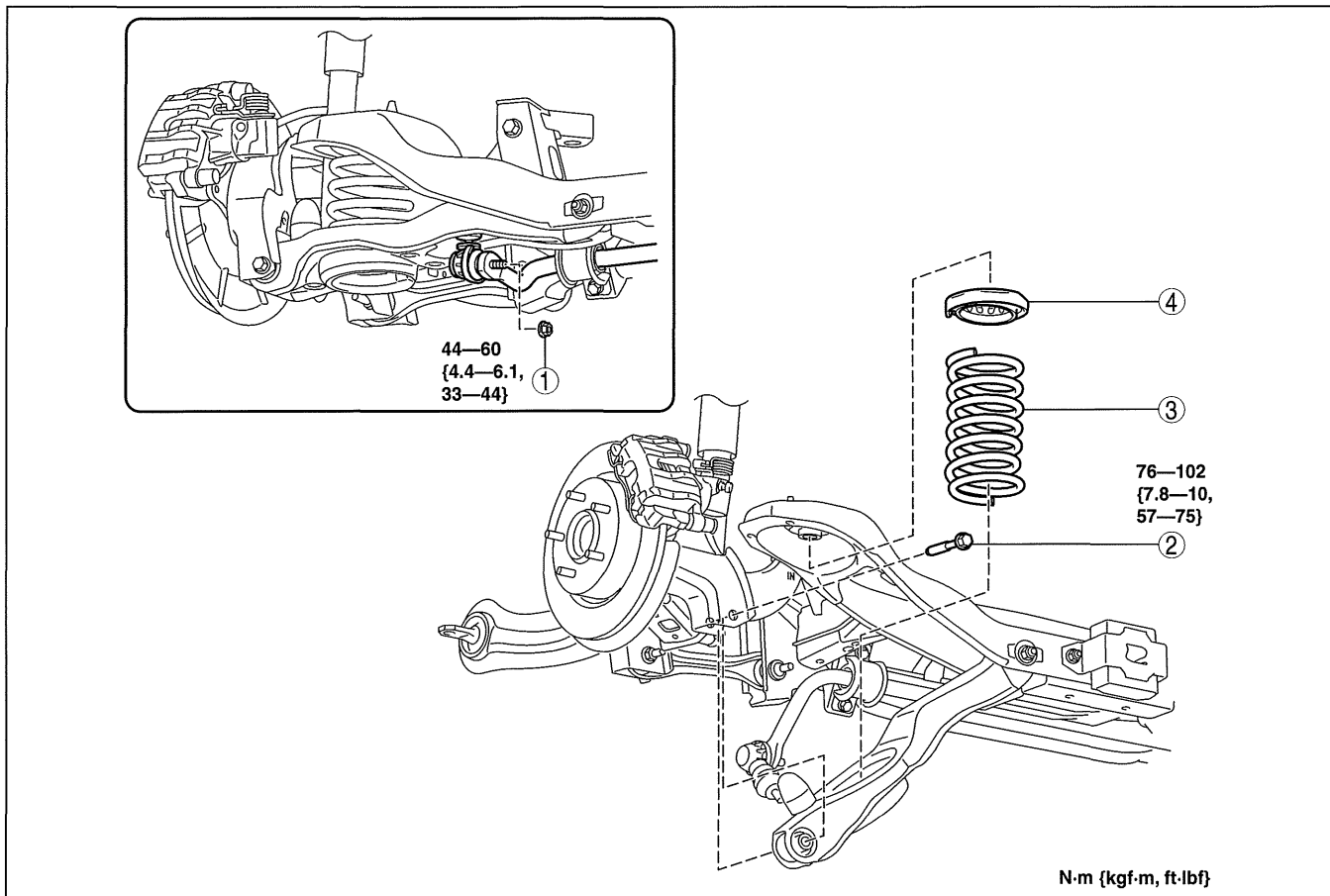
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3. Turn the hole downwards.
4. The oil can be collected by moving the piston rod several times up and down and cutting the tube at the end.
5. Dispose of waste oil according to the waste disposal law.

REAR COIL SPRING REMOVAL/INSTALLATION

id021400800700

1. Disconnect the rear auto leveling sensor lower side. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Inspect the wheel alignment and adjust it if necessary. (See 02-11-3 REAR WHEEL ALIGNMENT.)



N·m {kgf·m, ft·lbf}

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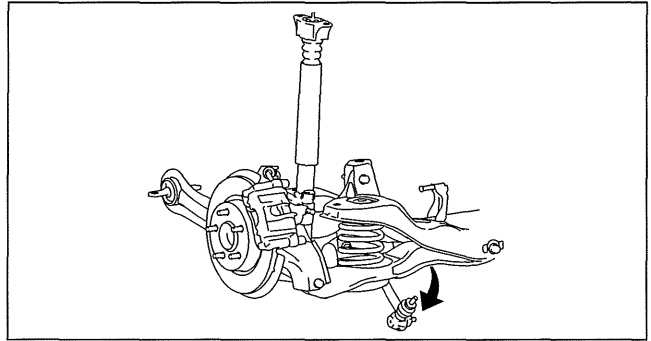
1	Rear stabilizer control link upper nut
2	Rear lower arm outer bolt (See 02-14-5 Rear Lower Arm Outer Bolt Removal Note.)

3	Rear coil spring (See 02-14-5 Rear Coil Spring Installation Note.)
4	Upper spring seat rubber

REAR SUSPENSION

Rear Lower Arm Outer Bolt Removal Note

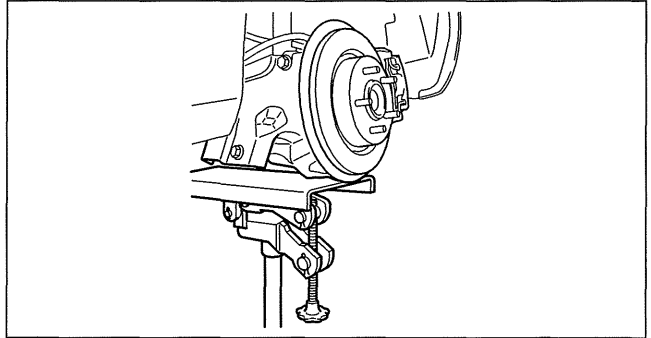
1. Rotate the rear stabilizer component downwards as shown in the figure.



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2. Support the rear lower arm using a jack.
3. Loosen the rear lower arm inner bolt.
4. Remove the rear lower arm outer bolt.



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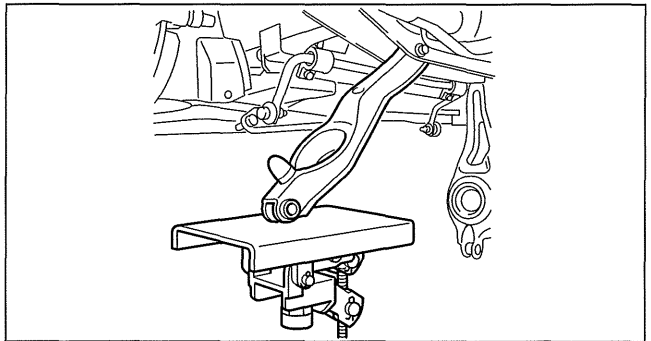
Rear Coil Spring Installation Note

1. Position the jack under the rear lower arm and jack up slowly.

Warning

- **Installing the coil spring is dangerous. The coil spring could fly off and cause serious injury or death, and damage the vehicle.**

2. Align the upper end of the rear coil spring with the step of the upper spring seat rubber.
3. Align the lower end of the rear coil spring with the step of the lower spring seat rubber.
4. Install the lower arm outer bolt.



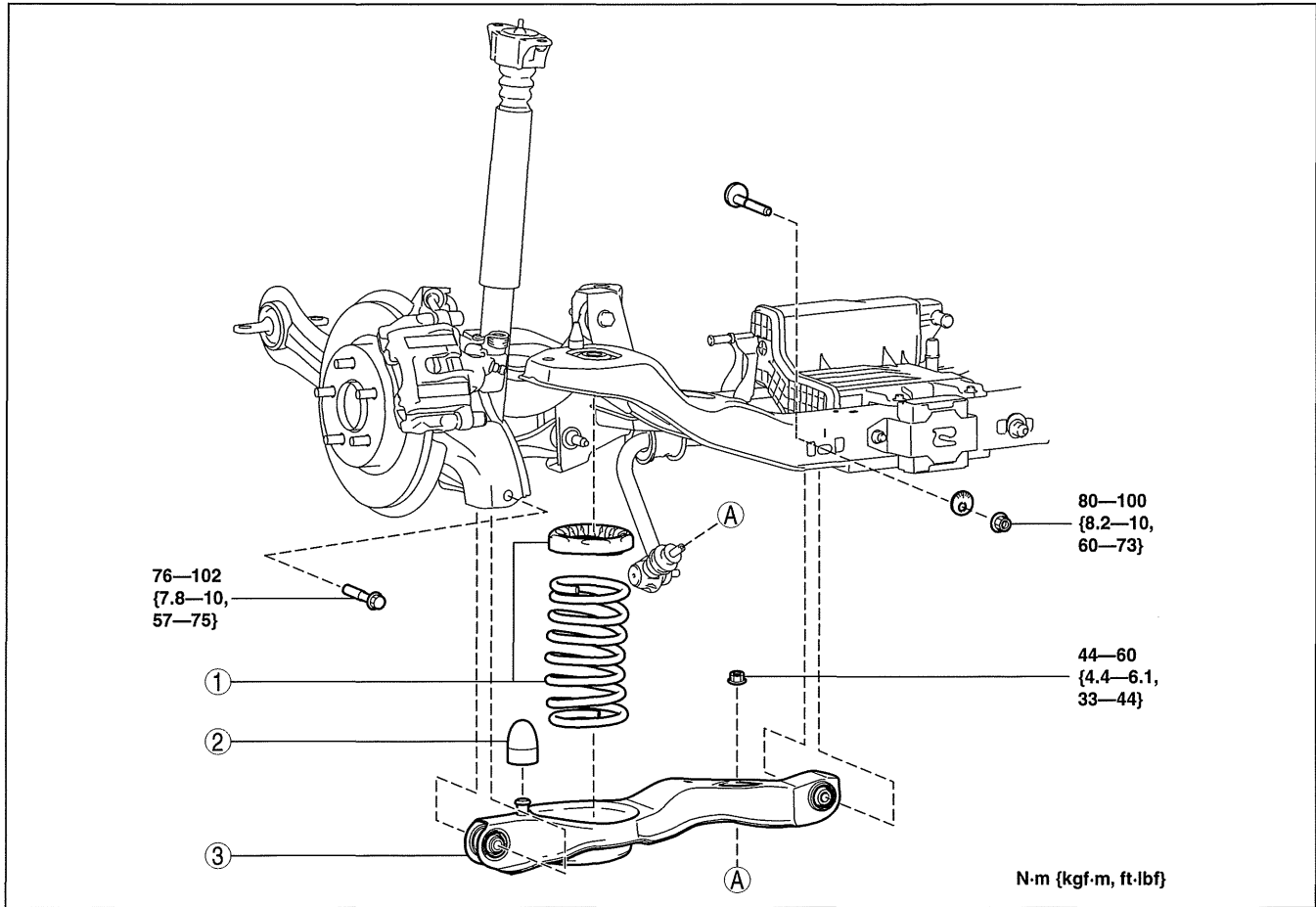
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REAR SUSPENSION

REAR LOWER ARM REMOVAL/INSTALLATION

id021400800900

1. Disconnect the rear auto leveling sensor link lower side. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Inspect the wheel alignment and adjust it if necessary. (See 02-11-3 REAR WHEEL ALIGNMENT.)



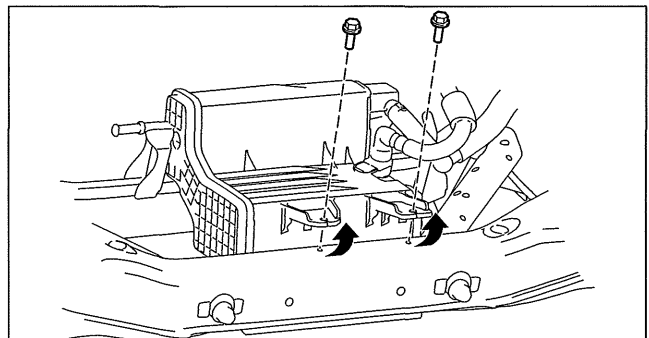
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1	Rear coil spring component (See 02-14-4 REAR COIL SPRING REMOVAL/ INSTALLATION.)
2	Bound stopper

3	Rear lower arm (See 02-14-6 Rear Lower Arm Removal Note [RH].) (See 02-14-7 Rear Lower Arm Installation Note [RH].)
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Rear Lower Arm Removal Note [RH]

1. Remove the charcoal canister installation bolts (rear side), and push the charcoal canister up slightly.
2. Remove the rear lower arm inner bolt.
3. Remove the rear lower arm.

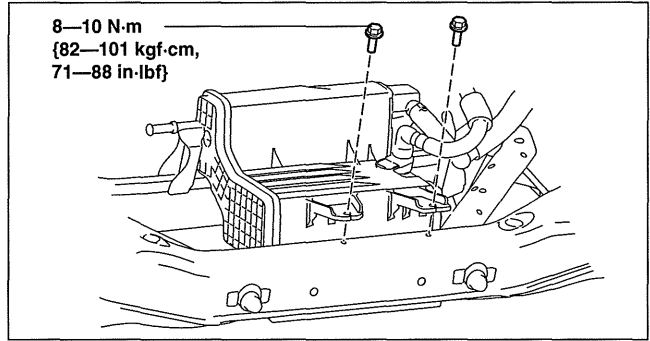


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REAR SUSPENSION

Rear Lower Arm Installation Note [RH]

1. Push the charcoal canister up slightly.
2. Install the rear lower arm inner bolt.
3. Tighten the charcoal canister installation bolts (rear side).



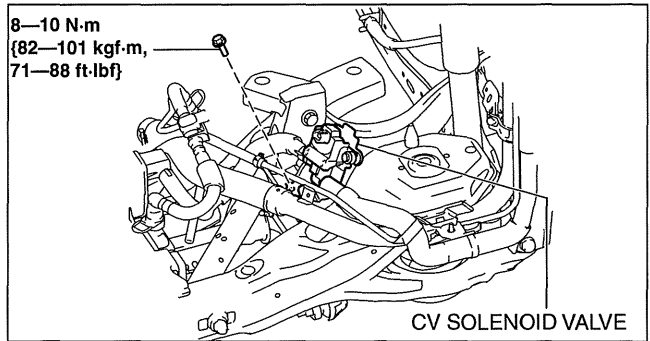
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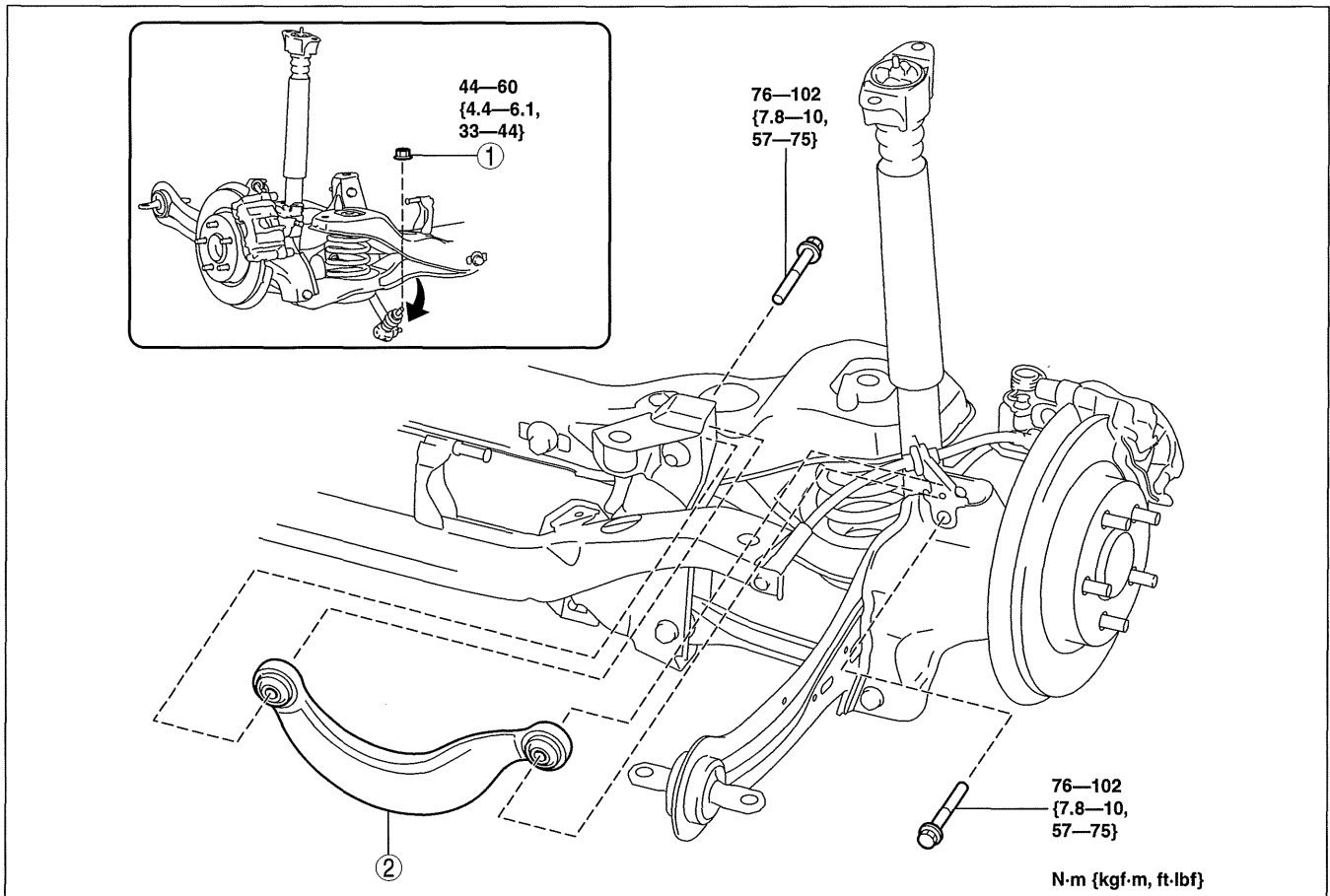
02-14

REAR UPPER ARM REMOVAL/INSTALLATION

1. When working on the right side of the vehicle, disconnect the canister vent (CV) solenoid valve from the rear crossmember.
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Inspect the wheel alignment and adjust it if necessary. (See 02-11-3 REAR WHEEL ALIGNMENT.)



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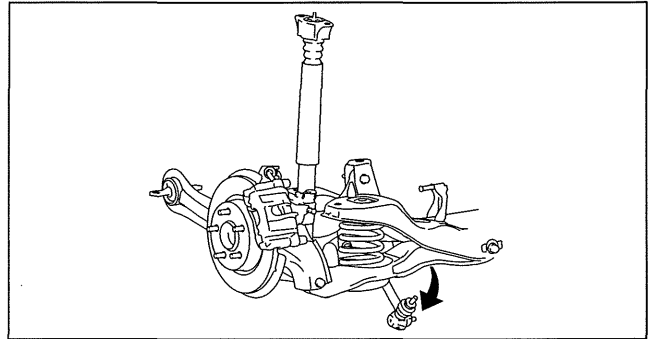
1	Rear stabilizer control link upper side nut
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2	Rear upper arm (See 02-14-8 Rear Upper Arm Removal Note.) (See 02-14-8 Rear Upper Arm Installation Note.)
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REAR SUSPENSION

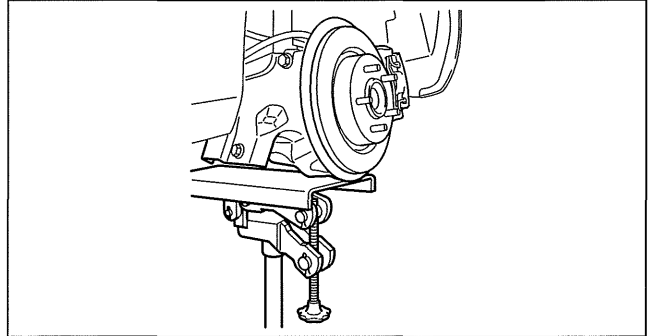
Rear Upper Arm Removal Note

1. Rotate the rear stabilizer component downwards as shown in the figure.



am3uuw0000308

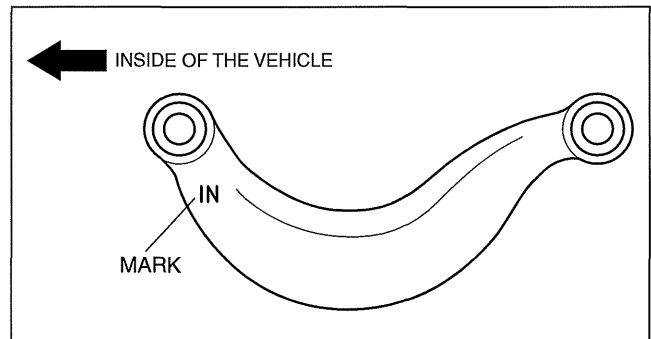
2. Jack up the vehicle to the unloaded condition, and support the trailing link using a jack.
3. Remove the rear upper arm.



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Rear Upper Arm Installation Note

1. Install the rear upper arm so that IN mark is facing toward the inside of the vehicle.



am3uuw0000089

REAR TRAILING LINK REMOVAL/INSTALLATION

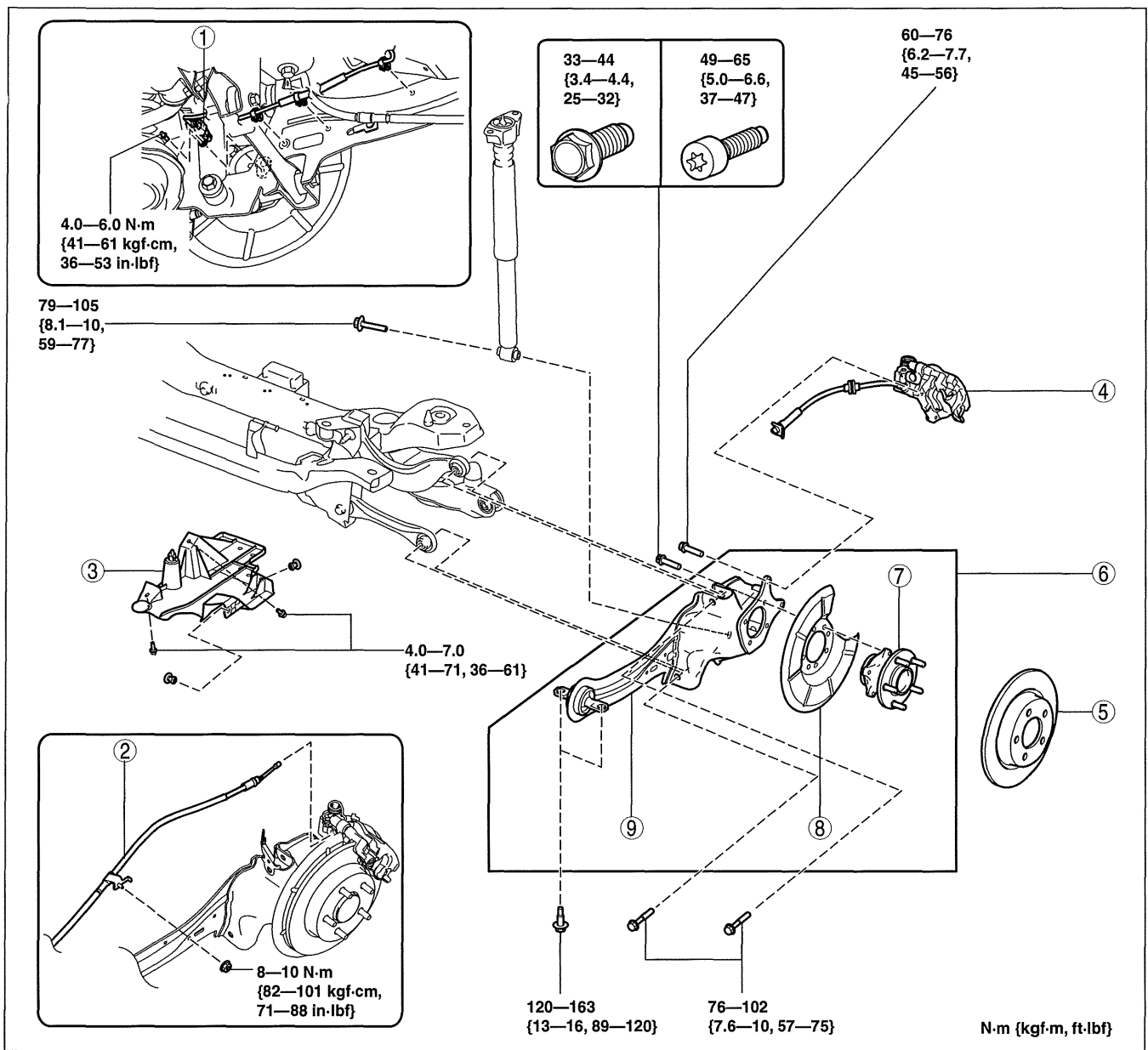
id021400802000

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor wiring harness connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

1. Disconnect the rear auto leveling sensor link lower side. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
2. Remove the rear coil spring. (See 02-14-4 REAR COIL SPRING REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Inspect the wheel alignment and adjust it if necessary. (See 02-11-3 REAR WHEEL ALIGNMENT.)

REAR SUSPENSION



02-14

1	Rear ABS wheel-speed sensor wiring harness (See 02-14-10 Rear ABS Wheel-speed Sensor Wiring Harness Installation Note.)
2	Rear parking brake cable
3	Under cover
4	Brake caliper component (See 02-14-9 Brake Caliper Component Removal Note.)
5	Disc plate

6	Rear trailing link component (See 02-14-10 Rear Trailing Link Component Removal Note.) (See 02-14-10 Rear Trailing Link Component Installation Note.)
7	Rear wheel hub component
8	Dust cover
9	Rear trailing link

Brake Caliper Component Removal Note

1. Remove the brake caliper component and suspend it out of the way using a cable.

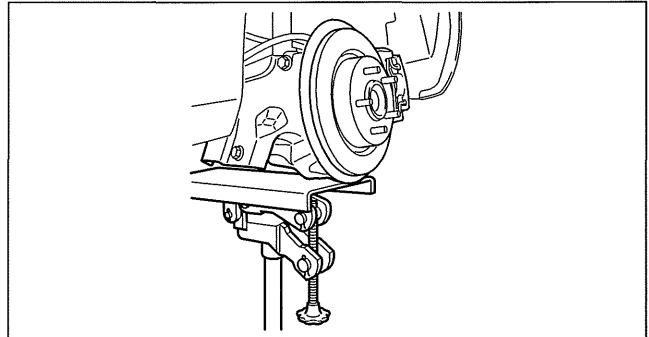
REAR SUSPENSION

Rear Trailing Link Component Removal Note

Warning

- Removing the rear trailing link component is dangerous. The rear trailing link component could fall and cause serious injury or death. Verify that the jack securely supports the rear trailing link component.

1. Support the rear trailing link component using a jack.
2. Remove the rear trailing link front side bolts.
3. Remove the rear shock absorber lower side bolt.
4. Remove the rear lateral link outer side bolt.
5. Remove the rear upper arm outer side bolt.
6. Remove the rear trailing link component.



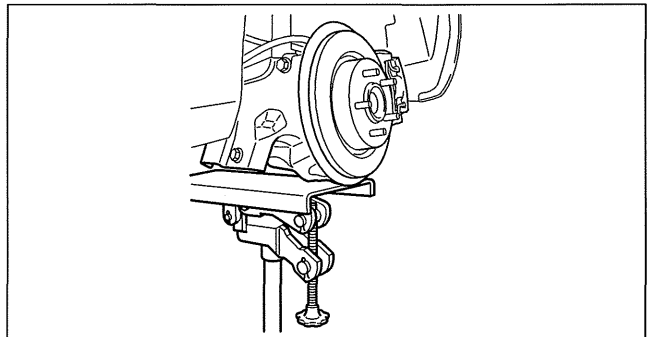
am3uuw000288

Rear Trailing Link Component Installation Note

Warning

- Installing the rear trailing link component is dangerous. The rear trailing link component could fall and cause serious injury or death. Verify that the jack securely supports the rear trailing link component.

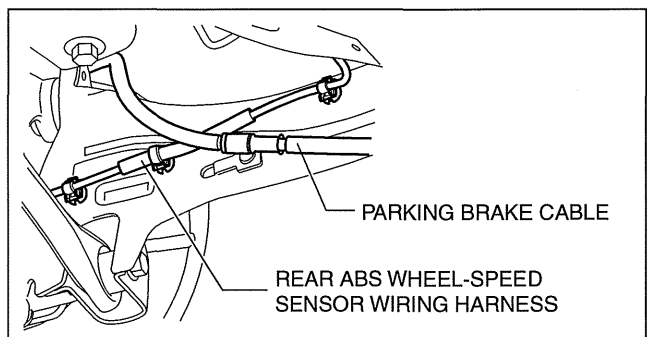
1. Support the trailing link component using a jack.
2. Install the rear upper arm outer side bolt.
3. Install the rear lateral link outer side bolt.
4. Install the rear shock absorber lower side bolt.
5. Tighten the trailing link front side bolts.



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Rear ABS Wheel-speed Sensor Wiring Harness Installation Note

1. Pass the rear ABS wheel-speed sensor wiring harness outside the rear parking brake cable as shown in the figure.
2. Install the rear ABS wheel-speed sensor wiring harness.



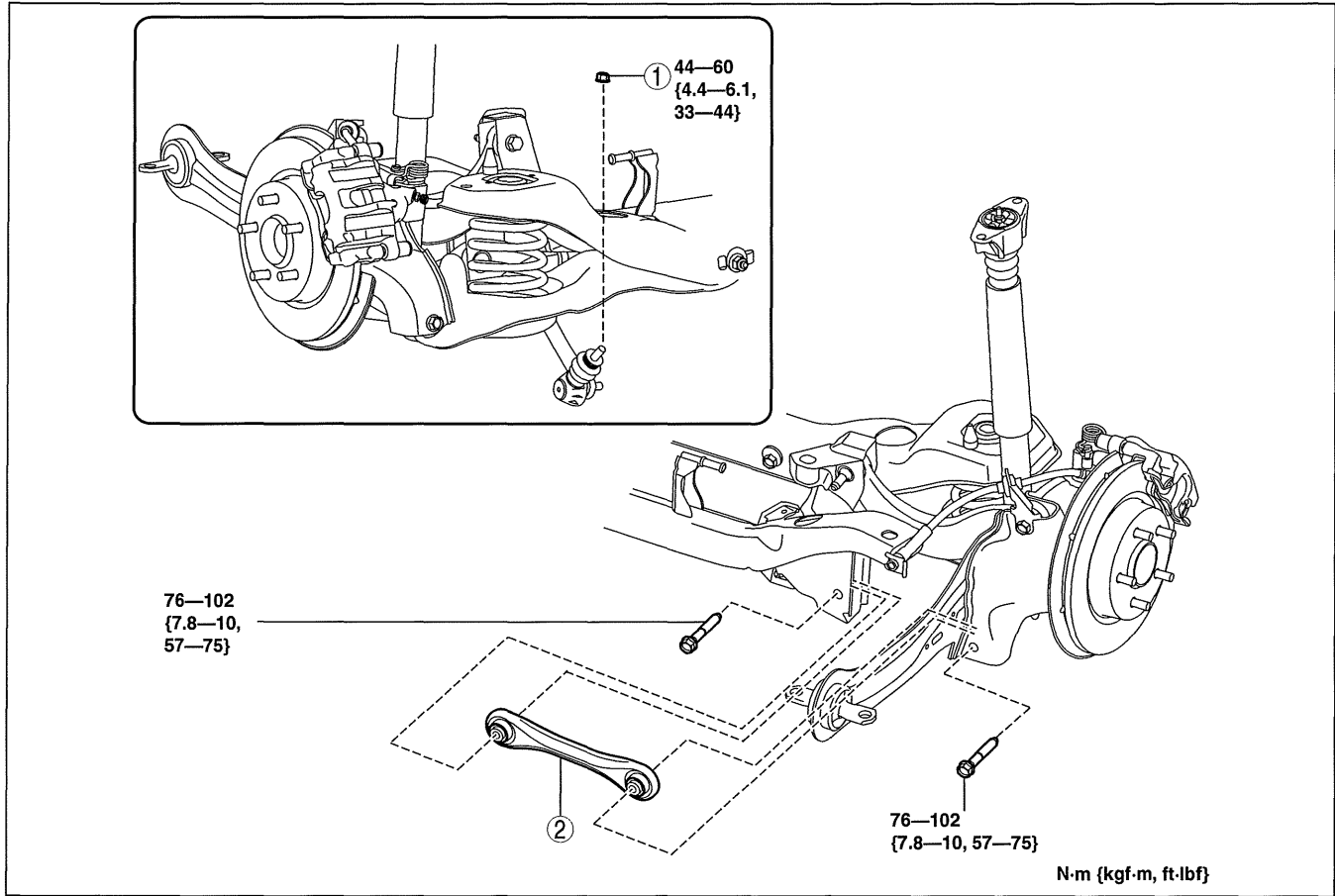
am3uuw000314

REAR SUSPENSION

REAR LATERAL LINK REMOVAL/INSTALLATION

id021400801200

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Inspect the wheel alignment and adjust it if necessary. (See 02-11-3 REAR WHEEL ALIGNMENT.)



am3uuw0000302

1	Rear stabilizer control link upper nut
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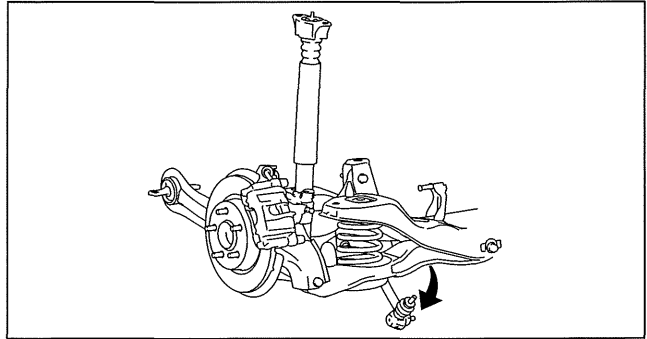
2	Rear lateral link (See 02-14-12 Rear Lateral Link Removal Note.) (See 02-14-12 Rear Lateral Link Installation Note.)
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02-14

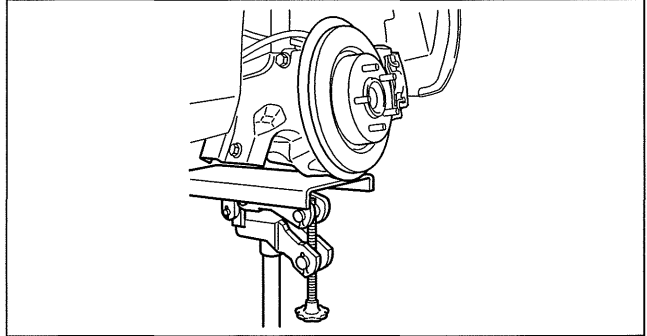
REAR SUSPENSION

Rear Lateral Link Removal Note

1. Rotate the rear stabilizer component downwards as shown in the figure.
2. Jack up the vehicle to the unloaded condition, and support the trailing link using a jack.
3. Remove the rear lateral link.



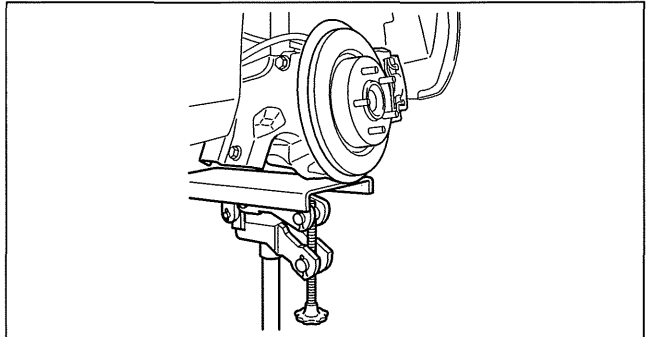
am3uuw0000308



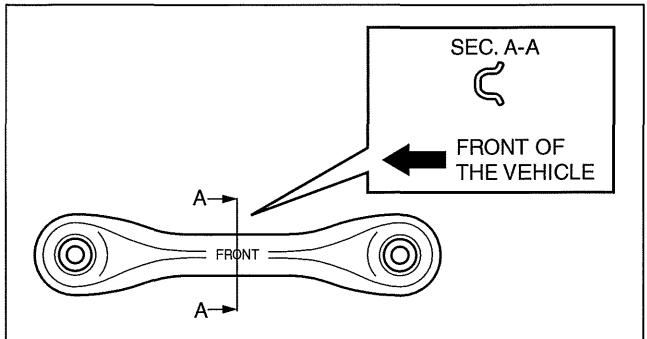
am3uuw0000288

Rear Lateral Link Installation Note

1. Jack up the vehicle to the unloaded condition, and support the trailing link using a jack.
2. Install the rear lateral link so that the rib is facing toward the front of the vehicle.



am3uuw0000288



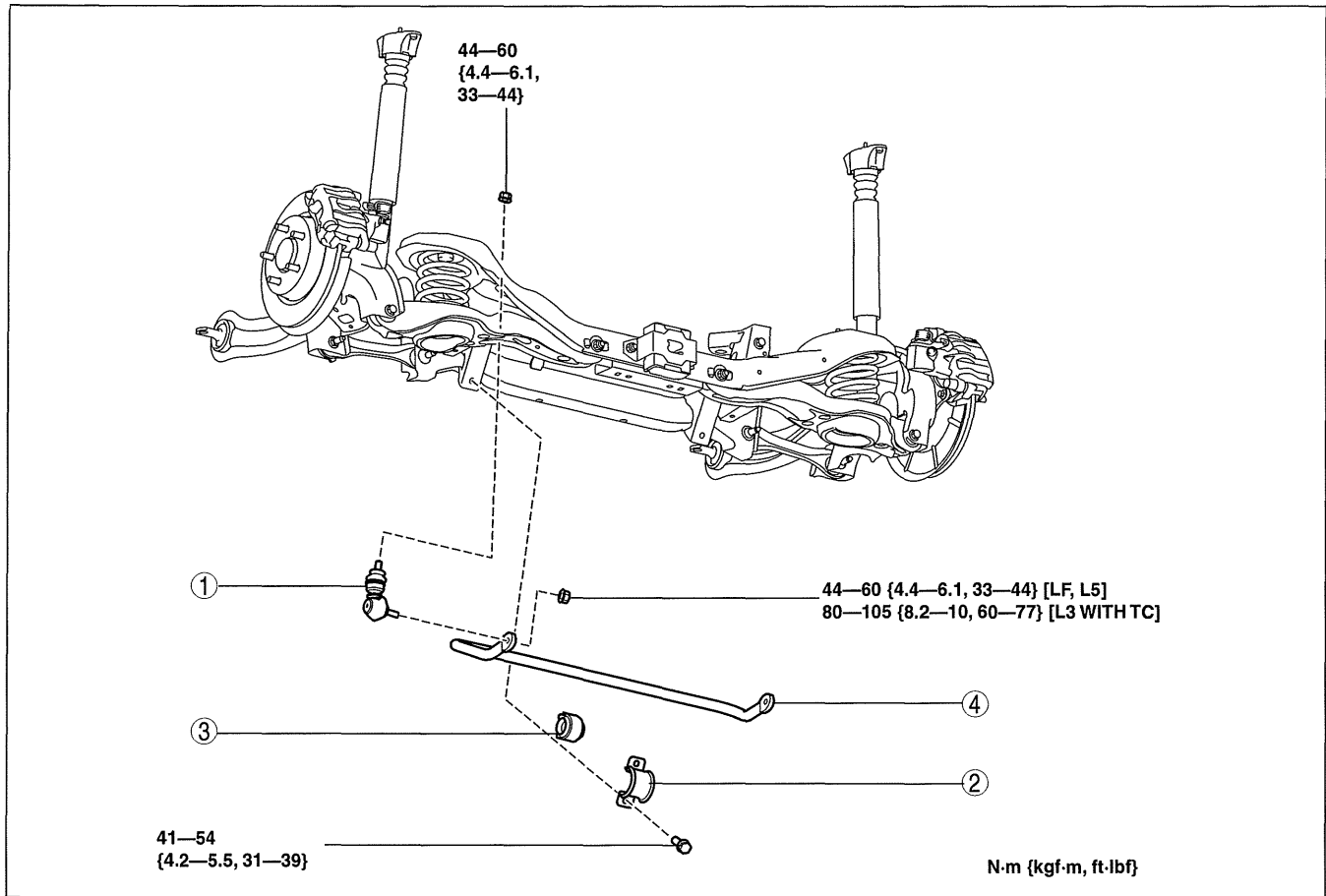
am3uuw0000253

REAR SUSPENSION

REAR STABILIZER REMOVAL/INSTALLATION

id021400800500

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.



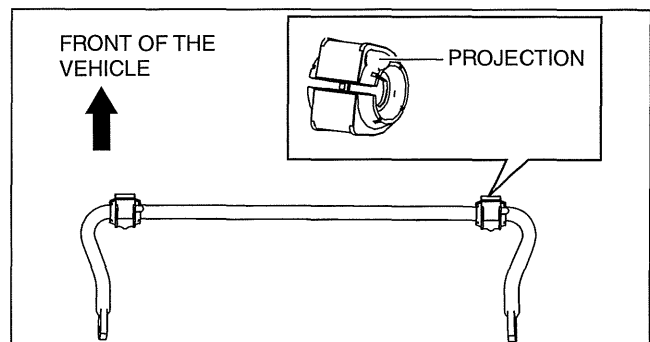
am3uuw0000617

1	Stabilizer control link
2	Stabilizer bracket (See 02-14-13 Rear Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)

3	Stabilizer bushing (See 02-14-13 Rear Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)
4	Rear stabilizer (See 02-14-13 Rear Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note.)

Rear Stabilizer, Stabilizer Bushing and Stabilizer Bracket Installation Note

1. Install the stabilizer bushing so that the projection points to the left side of the vehicle.
2. Install the stabilizer bracket.
3. Install the rear stabilizer component to the vehicle.



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02-14

REAR SUSPENSION

REAR STABILIZER CONTROL LINK INSPECTION

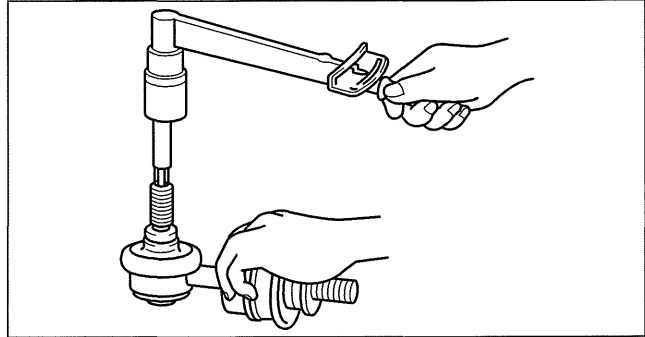
id021400800300

1. Remove the stabilizer control link from the vehicle.
2. Inspect for bending or damage. If there is any malfunction, replace the stabilizer control link.
3. Rotate the ball joint stud **10 times** and shake it side to side **10 times**.
4. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.

Rear stabilizer control link ball joint rotational torque

0.5—2.0 N·m {6—20 kgf·cm, 5—17 in·lbf}

- If not within the specification, replace the stabilizer control link.



am3uuw0000451

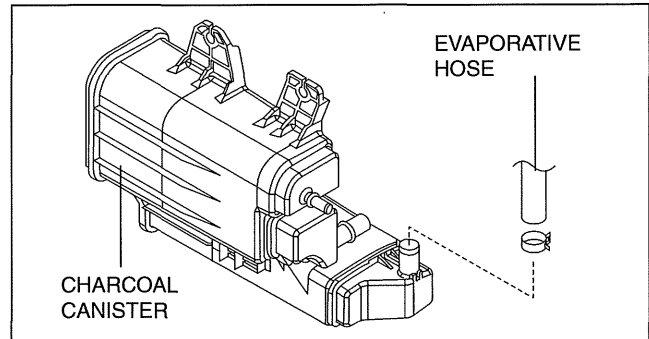
REAR CROSSMEMBER REMOVAL/INSTALLATION

id021400801000

Caution

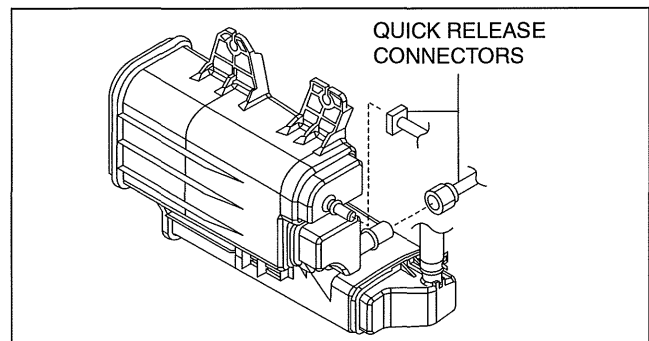
- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor wiring harness connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

1. Disconnect the evaporative hose.



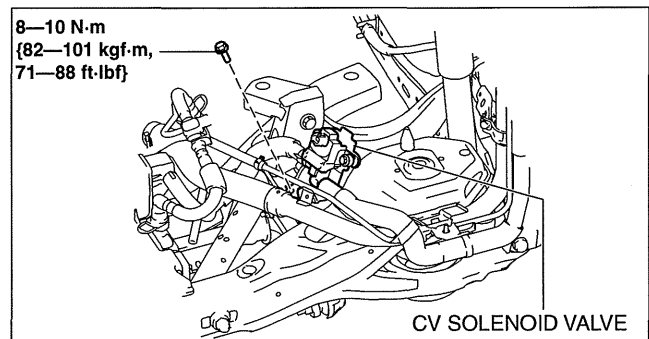
am3uuw0000280

2. Disconnect the quick release connectors. (See 01-16A-11 QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF, L5].) (See 01-16B-5 CHARCOAL CANISTER REMOVAL/INSTALLATION [L3 WITH TC].)



am3uuw0000284

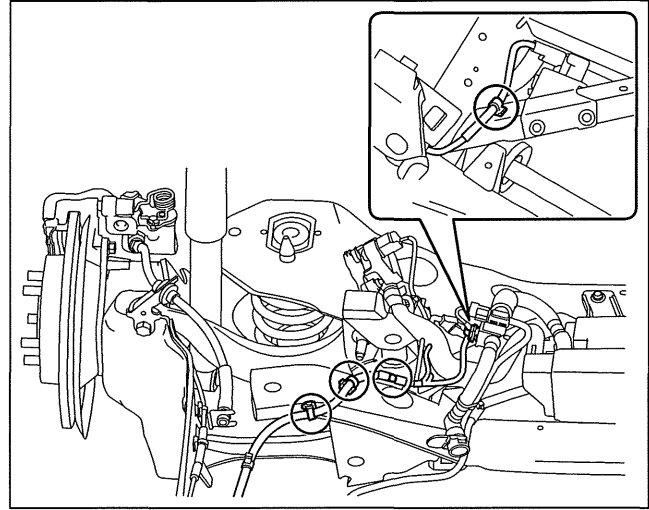
3. Remove the CV solenoid valve from the rear crossmember.



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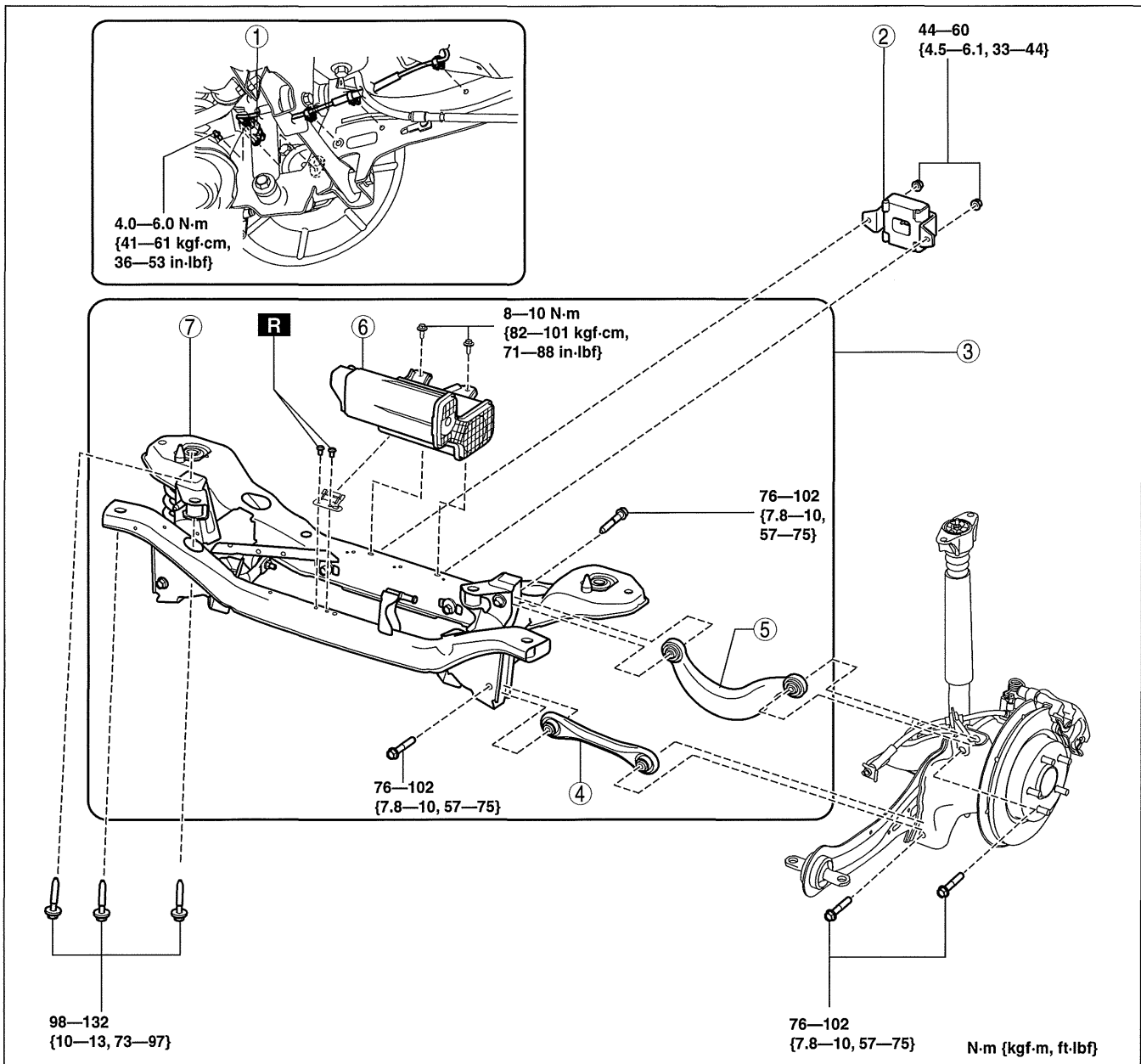
REAR SUSPENSION

4. Disconnect the wiring harness connecting to the rear crossmember.
5. Remove the rear auto leveling sensor. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Remove the rear stabilizer. (See 02-14-13 REAR STABILIZER REMOVAL/INSTALLATION.)
7. Remove the rear coil spring. (See 02-14-4 REAR COIL SPRING REMOVAL/INSTALLATION.)
8. Remove the rear lower arm. (See 02-14-6 REAR LOWER ARM REMOVAL/INSTALLATION.)
9. Remove in the order indicated in the table.
10. Install in the reverse order of removal.
11. Inspect the wheel alignment and adjust it if necessary. (See 02-11-3 REAR WHEEL ALIGNMENT.)



02-14

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am3uuw000544

REAR SUSPENSION

1	Rear ABS wheel-speed sensor wiring harness (See 02-14-16 Rear ABS Wheel-speed Sensor Wiring Harness Installation Note.)
2	Dynamic damper
3	Rear crossmember component (See 02-14-16 Rear Crossmember Component Removal Note.) (See 02-14-16 Rear Crossmember Component Installation Note.)
4	Rear lateral link (See 02-14-11 REAR LATERAL LINK REMOVAL/INSTALLATION.)

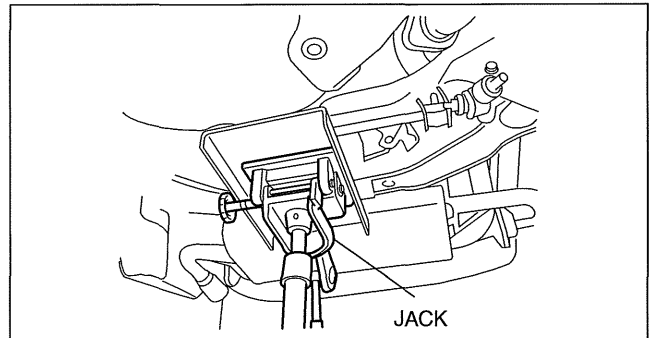
5	Rear upper arm (See 02-14-7 REAR UPPER ARM REMOVAL/INSTALLATION.)
6	Charcoal canister (See 01-16A-6 CHARCOAL CANISTER REMOVAL/INSTALLATION [LF, L5].) (See 01-16B-5 CHARCOAL CANISTER REMOVAL/INSTALLATION [L3 WITH TC].)
7	Rear crossmember (See 02-14-16 Rear Crossmember Component Removal Note.)

Rear Crossmember Component Removal Note

Warning

- Verify that the crossmember is securely supported by a jack. If the rear crossmember falls off, it can cause serious injury or death, and damage to the vehicle.

1. Support the rear crossmember with the jack and remove the bolt.
2. Remove the rear crossmember component.



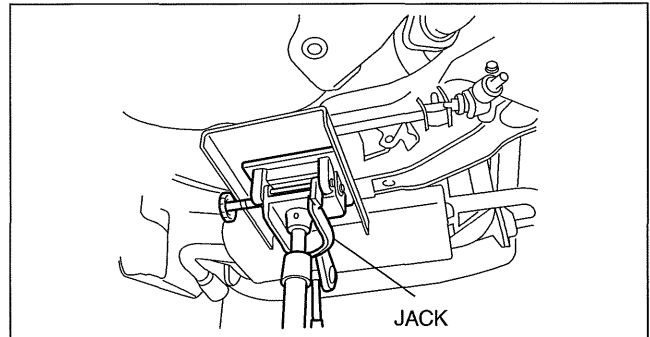
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Rear Crossmember Component Installation Note

Warning

- Verify that the crossmember is securely supported by a jack. If the rear crossmember falls off, it can cause serious injury or death, and damage to the vehicle.

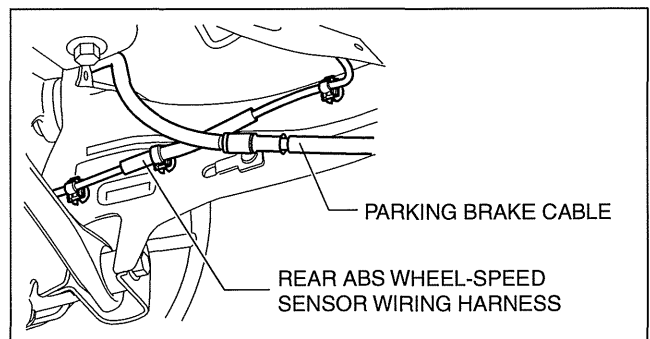
1. Support the rear crossmember component and install the rear crossmember.



am3uuw0000308

Rear ABS Wheel-speed Sensor Wiring Harness Installation Note

1. Pass the rear ABS wheel-speed sensor wiring harness outside the rear parking brake cable as shown in the figure.
2. Install the rear ABS wheel-speed sensor wiring harness.



am3uuw0000314

TECHNICAL DATA

02-50 TECHNICAL DATA

SUSPENSION TECHNICAL DATA 02-50-1
 WHEEL AND
 TIRE SPECIFICATION..... 02-50-2

SUSPENSION.....02-50-3

SUSPENSION TECHNICAL DATA

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Front wheel alignment (Unloaded)*1 [LF, L5]

Item		Fuel gauge indication				
		Empty	1/4	1/2	3/4	Full
Maximum steering angle [Tolerance ±3°]	Inner	41°00'				
	Outer	34°00'				
Total toe-in	Tire [Tolerance ±4 {±0.2}]	2 {0.08}				
	Rim inner [Tolerance ±3 {±0.1}]	Vehicle equipped with 16 inch wheel: 1.3 {0.051} Vehicle equipped with 17 inch wheel: 1.4 {0.055}				
	(degree)	0°11'±0°22'				
Caster angle*2 (Reference value) [Tolerance ±1°]		2°59'	3°01'	3°03'	3°05'	3°07'
Camber angle*2 (Reference value) [Tolerance ±1°]		-0°37'			-0°38'	
Steering axis inclination (Reference value)		13°54'		13°55'	13°56'	

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

Front wheel alignment (Unloaded)*1 [L3 WITH TC]

Item		Fuel gauge indication				
		Empty	1/4	1/2	3/4	Full
Maximum steering angle [Tolerance ±3°]	Inner	36°00'				
	Outer	30°00'				
Total toe-in	Tire [Tolerance ±4 {±0.2}]	2 {0.08}				
	Rim inner [Tolerance ±3 {±0.1}]	1.5 {0.059}				
	(degree)	0°11'±0°22'				
Caster angle*2 (Reference value) [Tolerance ±1°]		3°06'	3°08'	3°09'	3°11'	3°12'
Camber angle*2 (Reference value) [Tolerance ±1°]		-0°53'			-0°54'	
Steering axis inclination (Reference value)		14°18'		14°19'	14°20'	

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

TECHNICAL DATA

Rear wheel alignment (Unloaded)*1 [LF, L5]

Item			Fuel gauge indication				
			Empty	1/4	1/2	3/4	Full
Total toe-in	Tire [Tolerance ± 4 { ± 0.2 }]	(mm {in})	3 {0.1}				
	Rim inner [Tolerance ± 3 { ± 0.1 }]		Vehicle equipped with 16 inch wheel: 1.9 {0.075} Vehicle equipped with 17 inch wheel: 2.0 {0.079}				
	(degree)		0°16'±0°21'				
Camber angle*2 (Reference value) [Tolerance $\pm 1^\circ$]			-1°23'	-1°25'	-1°27'	-1°28'	-1°30'
Thrust angle [Tolerance $\pm 0^\circ 48'$]			0°				

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

Rear wheel alignment (Unloaded)*1 [L3 WITH TC]

Item			Fuel gauge indication				
			Empty	1/4	1/2	3/4	Full
Total toe-in	Tire [Tolerance ± 4 { ± 0.2 }]	(mm {in})	3 {0.1}				
	Rim inner [Tolerance ± 3 { ± 0.1 }]		2.2 {0.087}				
	(degree)		0°16'±0°21'				
Camber angle*2 (Reference value) [Tolerance $\pm 1^\circ$]			-1°35'	-1°36'	-1°38'	-1°39'	-1°41'
Thrust angle [Tolerance $\pm 0^\circ 48'$]			0°				

*1 : Engine coolant and engine oil are at specified level. Spare tire, jack and tools are in designated position.

*2 : Difference between left and right must not exceed 1°30'.

WHEEL AND TIRE SPECIFICATION

Standard tire and wheel [LF, L5]

Item			Specification	
Wheel	Size		16 × 6 1/2J	17 × 7J
	Offset (mm {in})		50 {2.0}	52.5 {2.07}
	Pitch circle diameter (mm {in})		114.3 {4.50}	
	Material		Steel or Aluminum alloy	Aluminum alloy
Tire	Size		P205/55R16 89H	P205/50R17 88V
	Air pressure (kPa {psi})	Front	240 {35}	220 {32}
		Rear	240 {35}	220 {32}
Remaining tread (mm {in})		1.6 {0.063} min.		
Wheel and tire	Lug nut tightening torque (N·m {kgf·m, ft·lbf})		88—118 {9.0—12, 65—87}	
	Wheel and tire runout (mm {in})	Radial direction	1.5 {0.059} max.	
		Lateral direction	Steel: 2.5 {0.10} max. Aluminum alloy: 2.0 {0.078} max.	2.0 {0.078} max.
	Wheel imbalance (g {oz})		Adhesive-type*1: 14 {0.49} max. Knock-type*2: 9 {0.3} max.	Adhesive-type*1: 13 {0.46} max. Knock-type*2: 8 {0.28} max.

*1 : Total weight exceeds 160 g {5.64 oz}.

*2 : One balance weight: 60 g {2.1 oz} max. If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights.

TECHNICAL DATA

Standard tire and wheel [L3 WITH TC]

Item		Specification	
Wheel	Size	18 x7 1/2J	
	Offset (mm {in})	52.5 {2.07}	
	Pitch circle diameter (mm {in})	114.3 {4.50}	
	Material	Aluminum alloy	
Tire	Size	P225/40R18 88Y	
	Air pressure (kPa {psi})	Front	240 {35}
		Rear	230 {34}
Remaining tread (mm {in})	1.6 {0.063} min.		
Wheel and tire	Lug nut tightening torque (N·m {kgf·m, ft·lbf})	88—118 {9.0—12, 65—87}	
		Wheel and tire runout (mm {in})	Radial direction
	Lateral direction		2.0 {0.078} max.
Wheel imbalance (g {oz})	Adhesive-type ^{*1} : 12 {0.42} max. Knock-type ^{*2} : 8 {0.28} max.		

02-50

^{*1} : Total weight exceeds 160 g {5.64 oz}.

^{*2} : One balance weight: 60 g {2.1 oz} max. If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights.

Temporary spare tire and wheel

Item		Specification		
Wheel	Size	15x4T	16x4T	17x4T
	Offset (mm {in})	45 {1.8}		40 {1.6}
	Pitch circle diameter (mm {in})	114.3 {4.50}		
	Material	Steel		
Tire	Size	T115/70D15 90M	T125/70D16 96M	T125/70D17 98M
	Air pressure (kPa {psi})	420 {60}		
	Remaining tread (mm {in})	1.6 {0.063} min.		
Wheel and tire	Lug nut tightening torque (N·m {kgf·m, ft·lbf})	88—118 {9.0—12, 65—87}		

SUSPENSION

Item	Specification
Front lower arm ball joint rotational torque	1.0—4.9 N·m {11—49 kgf·cm, 9—43 in·lbf} Pull scale reading [10—49 N {1.1—4.9 kgf, 3—10 lbf}]
Front stabilizer control link ball joint rotational torque	0.2—0.9 N·m {3—9 kgf·cm, 2—7 in·lbf}
Rear stabilizer control link ball joint rotational torque	0.5—2.0 N·m {6—20 kgf·cm, 5—17 in·lbf}

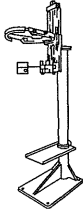
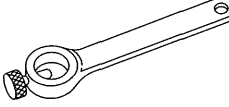
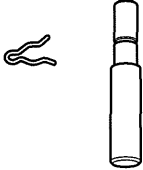
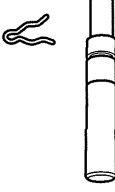
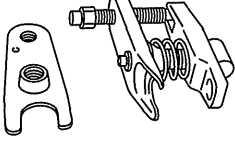
SERVICE TOOLS

02-60 SERVICE TOOLS

SUSPENSION SST 02-60-1

SUSPENSION SST

id026000800100

<p>49 T034 1A0</p> <p>Coil spring compressor set</p> 	<p>49 0180 510B</p> <p>Preload measuring attachment</p> 	<p>49 B034 001</p> <p>Guide</p> 
<p>49 B034 002</p> <p>Guide</p> 	<p>49 T028 3A0</p> <p>Ball joint puller set</p> 	<p>—</p>

02-60

GENERAL PROCEDURES	03-10	DRIVE SHAFT	03-13
FRONT AXLE	03-11	TECHNICAL DATA	03-50
REAR AXLE	03-12	SERVICE TOOLS	03-60

03-10

03-10 GENERAL PROCEDURES

GENERAL PROCEDURES (FRONT AND REAR AXLES)	03-10-1	Suspension Links Removal/Installation	03-10-1
Wheel and Tire Installation	03-10-1	Auto Leveling System Initialization (Vehicle with Adaptive Front Lighting System (AFS))	03-10-1
Connector Disconnection	03-10-1		

GENERAL PROCEDURES (FRONT AND REAR AXLES)

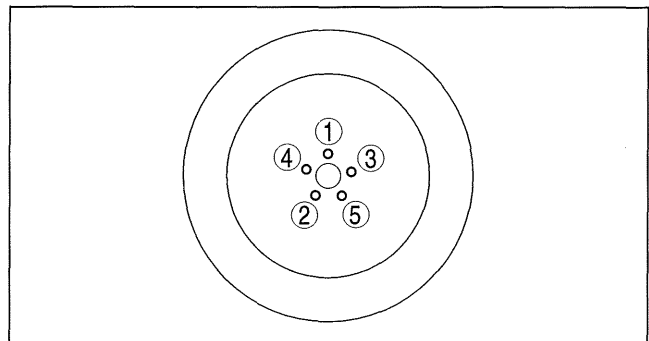
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Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.

Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}



e3u310zw6001

Connector Disconnection

1. Disconnect the negative battery cable before performing any work that requires handling of connectors. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

Suspension Links Removal/Installation

1. For the joint sections with rubber bushings, raise the vehicle using a lift, and then temporarily tighten the installation bolts and nuts. Lower the vehicle to the ground and tighten them completely with the specified torque.

Auto Leveling System Initialization (Vehicle with Adaptive Front Lighting System (AFS))

1. Initialize the auto leveling sensor, when performing the following services. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
 - Removing the auto leveling sensor
 - Disconnecting the auto leveling sensor link
 - Removing the suspension parts related the vehicle height

03-11 FRONT AXLE

FRONT AXLE LOCATION INDEX 03-11-1

WHEEL HUB, STEERING KNUCKLE INSPECTION 03-11-2

 Wheel Bearing Excessive Play Inspection 03-11-2

WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION 03-11-2

 Brake Caliper Component Removal Note 03-11-3

 Wheel Hub, Steering Knuckle Component Removal Note 03-11-3

 Wheel Hub, Steering Knuckle Component Installation Note 03-11-3

 Front Lower Arm Ball Joint Installation Note 03-11-4

WHEEL HUB, STEERING KNUCKLE DISASSEMBLY/ASSEMBLY 03-11-4

 Wheel Hub Component Removal Note 03-11-4

 Wheel Bearing Removal Note 03-11-6

 Wheel Hub Bolt Removal Note 03-11-6

 Wheel Hub Bolt Installation Note 03-11-6

 Wheel Bearing Installation Note 03-11-7

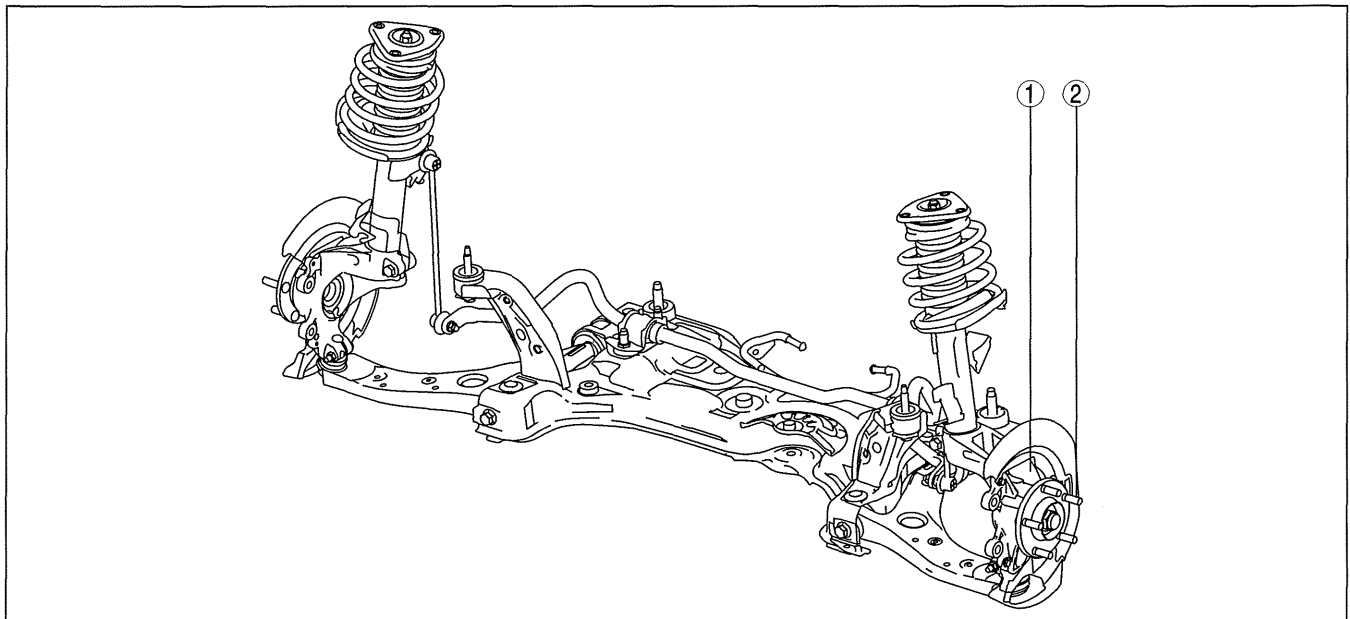
 Wheel Hub Component Installation Note 03-11-7

FRONT WHEEL HUB BOLT REPLACEMENT 03-11-8

03-11

FRONT AXLE LOCATION INDEX

id031100800100



am3uuw0000537

1	Wheel hub, steering knuckle (See 03-11-2 WHEEL HUB, STEERING KNUCKLE INSPECTION.) (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See 03-11-4 WHEEL HUB, STEERING KNUCKLE DISASSEMBLY/ASSEMBLY.)
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2	Wheel hub bolt (See 03-11-8 FRONT WHEEL HUB BOLT REPLACEMENT.)
---	---

FRONT AXLE

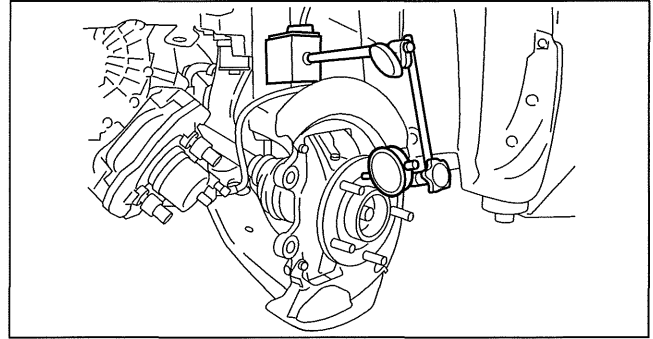
WHEEL HUB, STEERING KNUCKLE INSPECTION

id031100800300

Wheel Bearing Excessive Play Inspection

1. Install the magnetic base and dial gauge as shown in the figure and measure the wheel bearing axial excessive play.
 - If it exceeds the maximum specification, replace the wheel hub bearing.

Maximum front wheel bearing play
0.05 mm {0.002 in}



am3uuw0000458

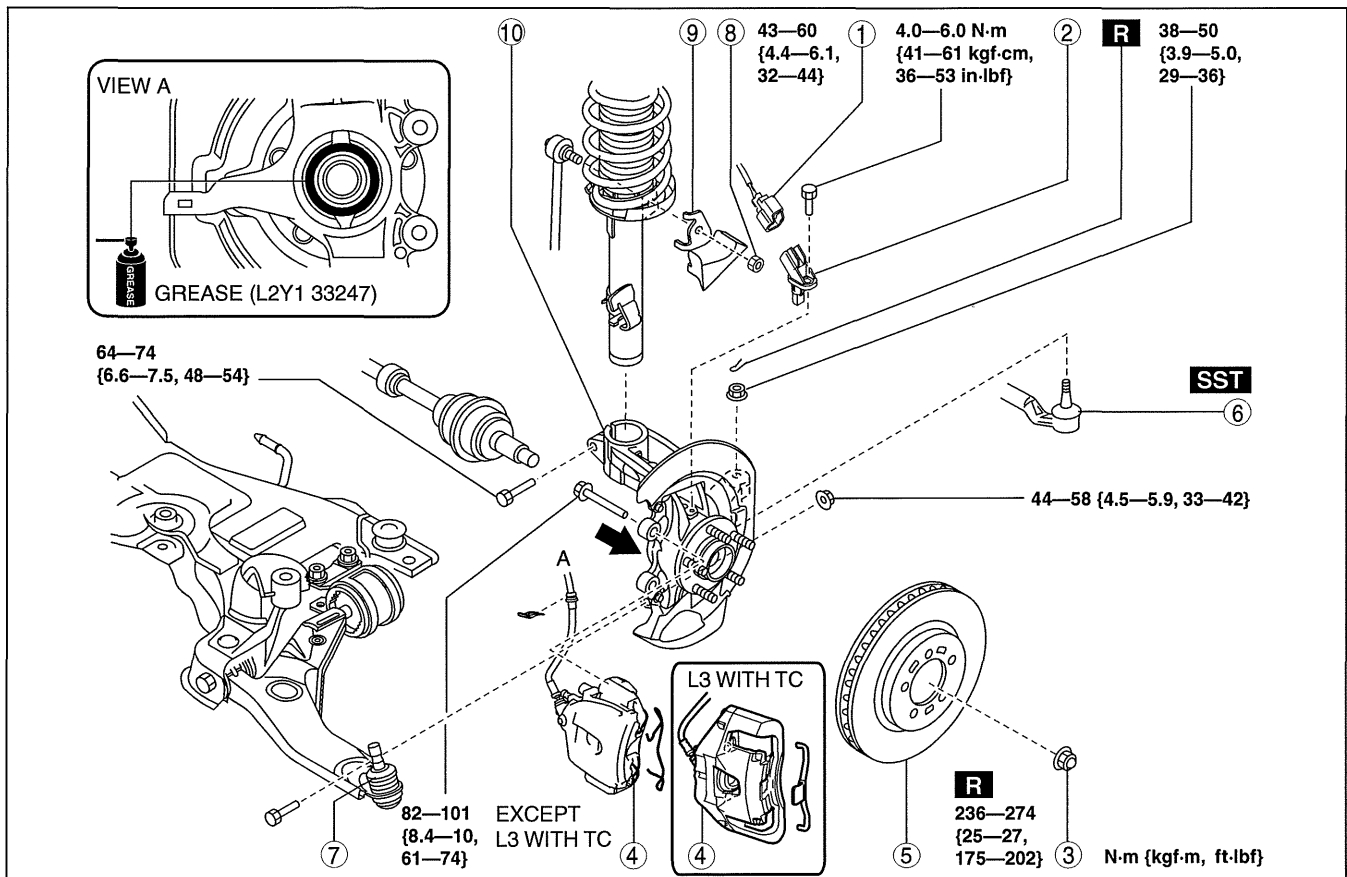
WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION

id031100800400

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

1. When working on the left side of the vehicle, disconnect the front auto leveling sensor link. (Vehicle with Adaptive Front Lighting System (AFS)) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. After installation, inspect the front wheel alignment and adjust it if necessary. (See 02-11-1 FRONT WHEEL ALIGNMENT.)



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FRONT AXLE

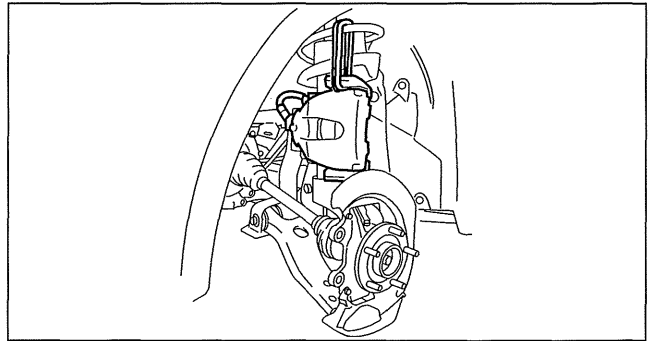
1	ABS wheel-speed sensor connector
2	ABS wheel-speed sensor
3	Locknut
4	Brake caliper component (See 03-11-3 Brake Caliper Component Removal Note.) (See 04-11-22 FRONT BRAKE (DISC) REMOVAL/INSTALLATION [LF, L5].) (See 04-11-24 FRONT BRAKE (DISC) REMOVAL/INSTALLATION [L3 WITH TC].)
5	Disc plate

6	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
7	Front lower arm ball joint (See 03-11-4 Front Lower Arm Ball Joint Installation Note.)
8	Stabilizer control link upper nut
9	Dynamic damper
10	Wheel hub, steering knuckle component (See 03-11-3 Wheel Hub, Steering Knuckle Component Removal Note.) (See 03-11-3 Wheel Hub, Steering Knuckle Component Installation Note.)

03-11

Brake Caliper Component Removal Note

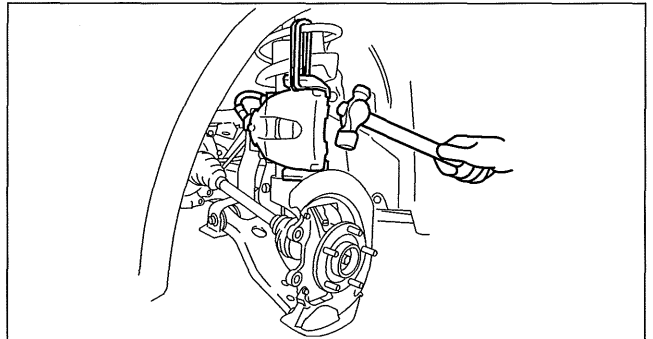
1. Remove the retaining clip, mounting support installing bolt and suspend it out of the way using a cable.



am3uuw0000469

Wheel Hub, Steering Knuckle Component Removal Note

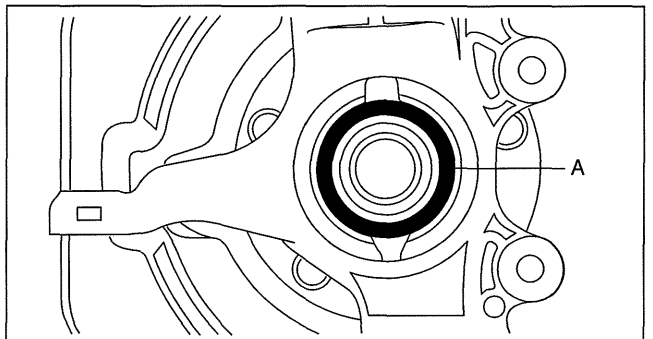
1. Separate the shock absorber from the wheel hub, steering knuckle component by tapping the upper part of the steering knuckle with a hammer.



am3uuw0000469

Wheel Hub, Steering Knuckle Component Installation Note

1. Apply grease (L2Y1 33247) to the wheel bearing inner race and drive shaft contact surface (Area A in figure).
2. Install the wheel hub, steering knuckle component.



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FRONT AXLE

Front Lower Arm Ball Joint Installation Note

Note

- The bolt insertion direction can be either front or rear of the vehicle, however, keep the insertion direction the same on both the left and right sides of the vehicle.

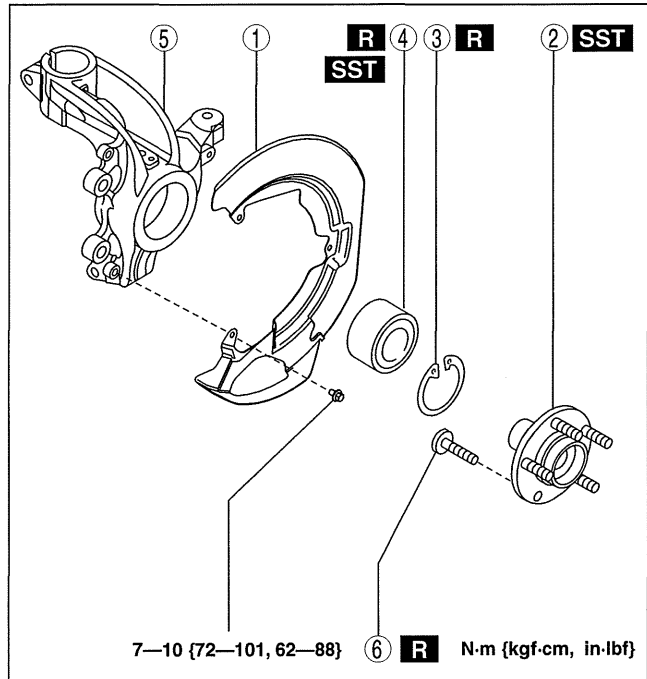
WHEEL HUB, STEERING KNUCKLE DISASSEMBLY/ASSEMBLY

id031100152100

1. Disassemble in the order indicated in the table.

1	Dust Cover
2	Wheel hub component (See 03-11-4 Wheel Hub Component Removal Note.) (See 03-11-7 Wheel Hub Component Installation Note.)
3	Retaining clip
4	Wheel bearing (See 03-11-6 Wheel Bearing Removal Note.) (See 03-11-7 Wheel Bearing Installation Note.)
5	Steering knuckle
6	Hub bolt (See 03-11-6 Wheel Hub Bolt Removal Note.) (See 03-11-6 Wheel Hub Bolt Installation Note.)

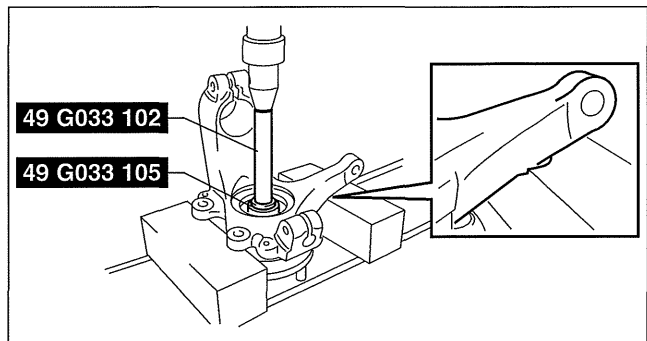
2. Assemble in the reverse order of disassembly.



am3uuw0000536

Wheel Hub Component Removal Note

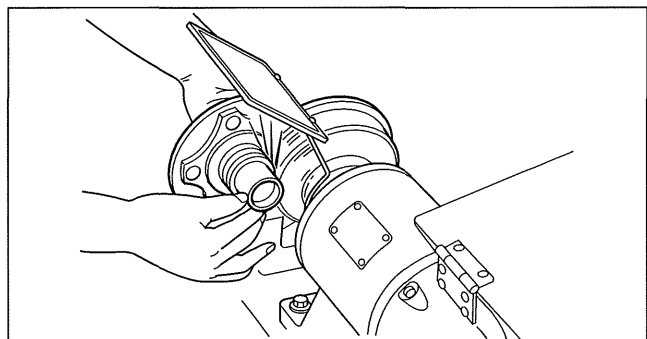
- Remove the wheel hub component using the SSTs.
- If the bearing inner race remains on the front wheel hub component, perform the following procedure:



am3uuw0000617

Without using SST

- Grind a section of the bearing inner race until **approx. 0.5 mm {0.02 in}** remains.
- Remove the bearing inner race using a chisel.

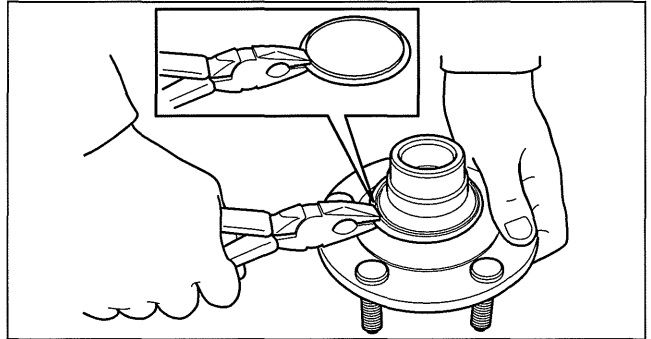


am3uuw0000120

FRONT AXLE

With using SST

1. Remove the part as shown in the figure.



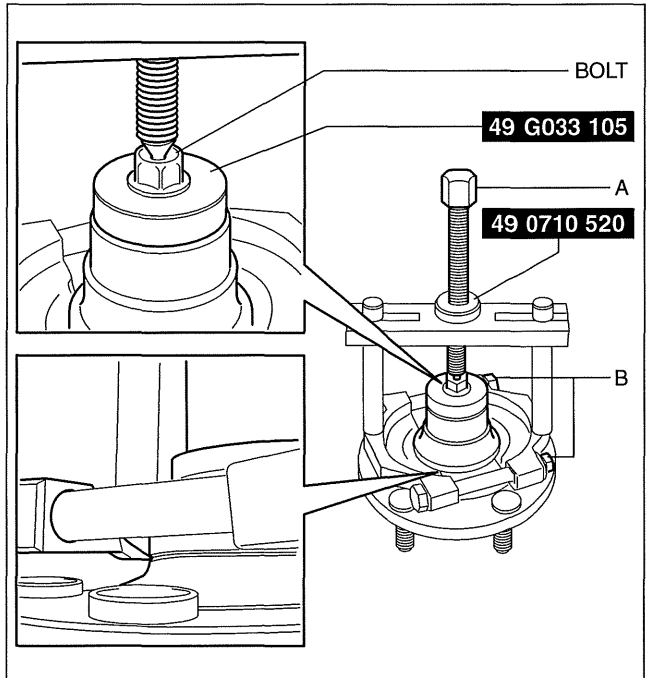
am3uuw0000120

03-11

2. Position the **SSTs** and a spare bolt (M10 length 90 mm {3.5 in} or less) as shown in the figure.

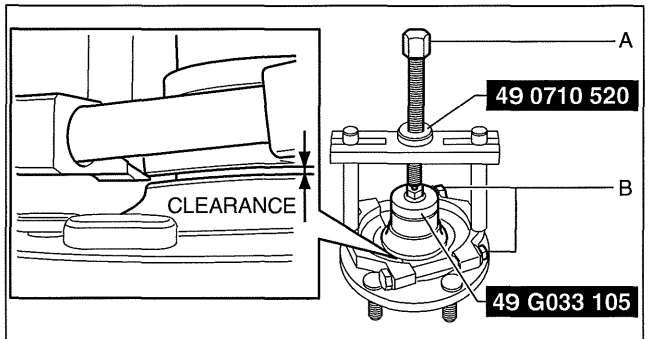
Caution

- When tightening section A, tighten section B securely because the engagement of the SST tab is shallow and it can come off easily.



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3. Tighten **SST** section A until the space between the bearing inner race and wheel hub component is 1—2 mm {0.04—0.07 in}.
4. Temporarily loosen **SST** section A and position the **SST** again.
5. Tighten **SST** section A and remove the bearing inner race.

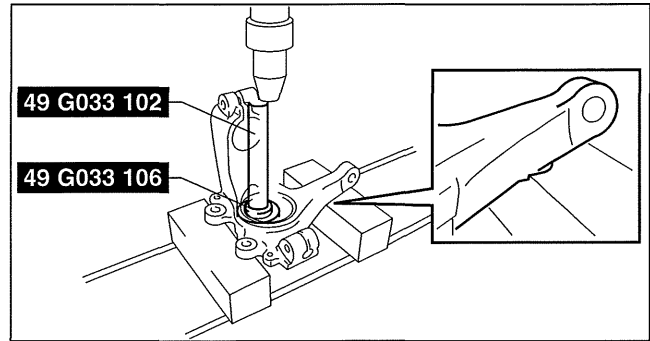


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FRONT AXLE

Wheel Bearing Removal Note

1. Remove the wheel bearing using the SSTs.



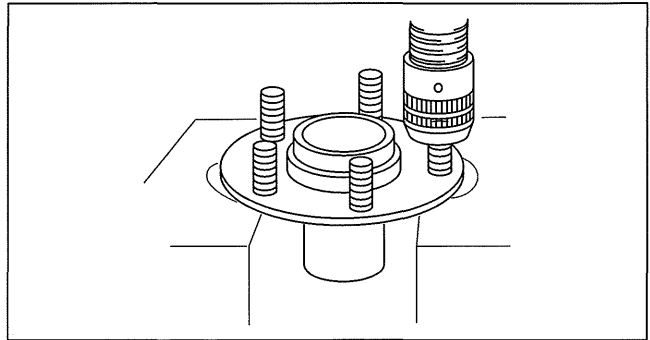
am3uuw0000618

Wheel Hub Bolt Removal Note

Note

- The hub bolts do not need to be removed unless they are being replaced.

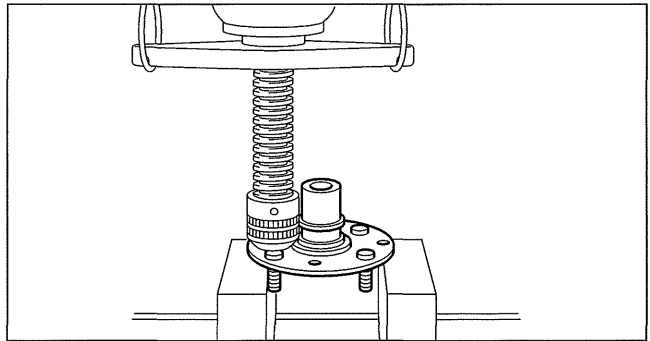
1. Remove the hub bolt using a press.



am3uuw0000090

Wheel Hub Bolt Installation Note

1. Install the new hub bolt using a press.



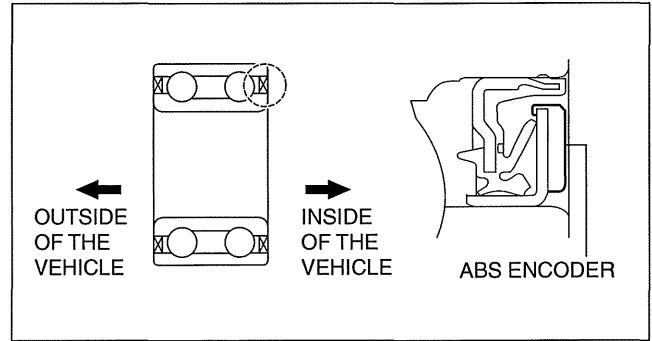
acxjw00001128

FRONT AXLE

Wheel Bearing Installation Note

Note

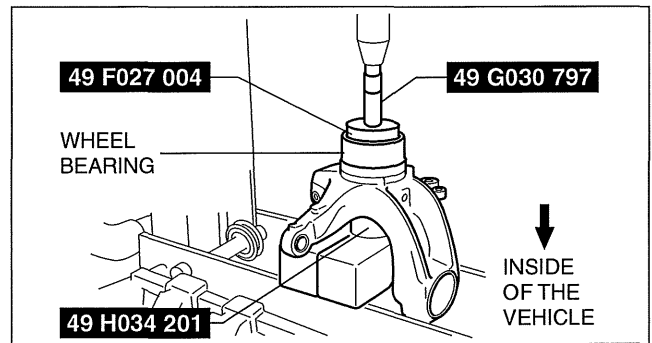
- Install the wheel bearing with the ABS encoder facing inside of the vehicle.



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03-11

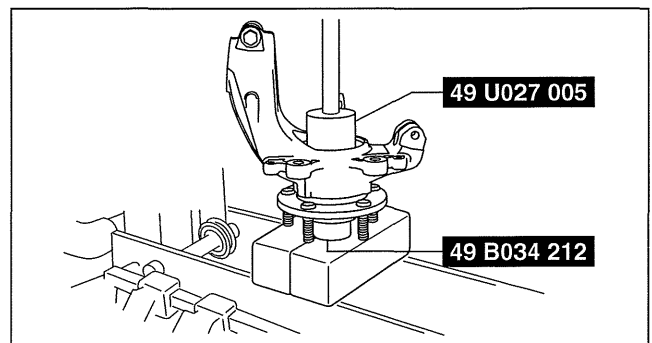
1. Install the new wheel bearing using the SSTs.



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Wheel Hub Component Installation Note

1. Install the wheel hub component using the SSTs.



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FRONT AXLE

FRONT WHEEL HUB BOLT REPLACEMENT

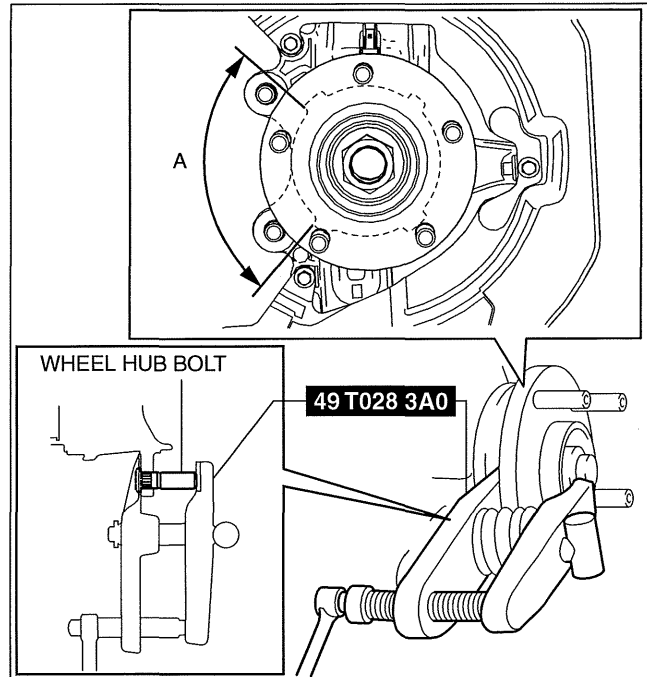
id031100800200

1. Remove the brake calliper component and disc plate. (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.)
2. Remove the wheel hub bolt using the **SST** as shown in the figure.

Note

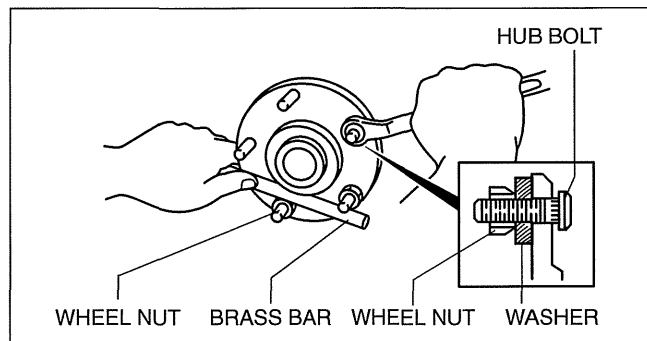
- When removing the wheel hub bolts, perform the work between range A shown in the figure to assure a space for the bolt removal.

3. Place a new wheel hub bolt in the wheel hub.



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4. Install the wheel hub by placing a proper sized washer on the hub, and tightening the nut as shown in the figure.



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03-12 REAR AXLE

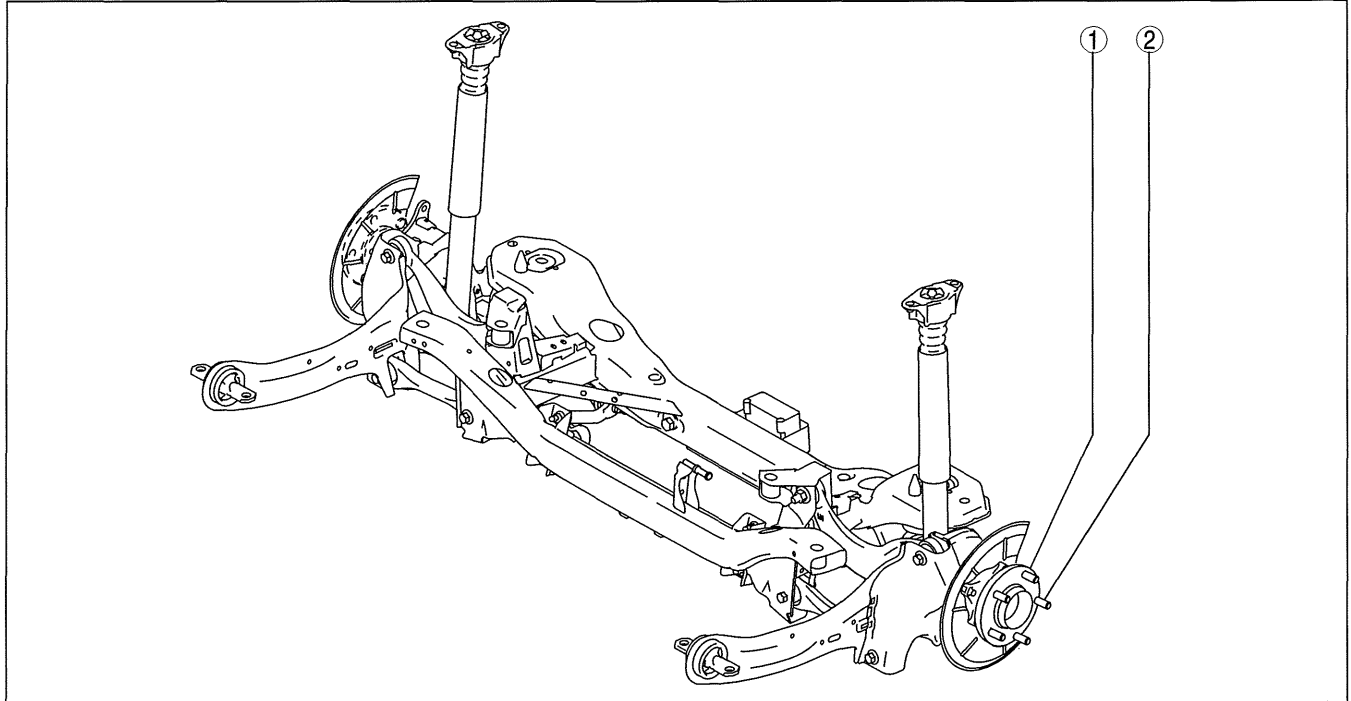
REAR AXLE LOCATION INDEX..... 03-12-1
 WHEEL HUB COMPONENT INSPECTION..... 03-12-1
 Wheel Bearing Excessive Play Inspection..... 03-12-1

WHEEL HUB COMPONENT REMOVAL/INSTALLATION03-12-2
 Brake Caliper Component Removal Note.....03-12-2
 Wheel Hub Bolt Removal Note03-12-3
 Wheel Hub Bolt Installation Note03-12-3
 WHEEL HUB BOLT REPLACEMENT ...03-12-3

REAR AXLE LOCATION INDEX

id031200800100

03-12



am3uuw0000459

1	Wheel hub component (See 03-12-1 WHEEL HUB COMPONENT INSPECTION.) (See 03-12-2 WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)
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2	Wheel hub bolt (See 03-12-3 WHEEL HUB BOLT REPLACEMENT.)
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WHEEL HUB COMPONENT INSPECTION

id031200800300

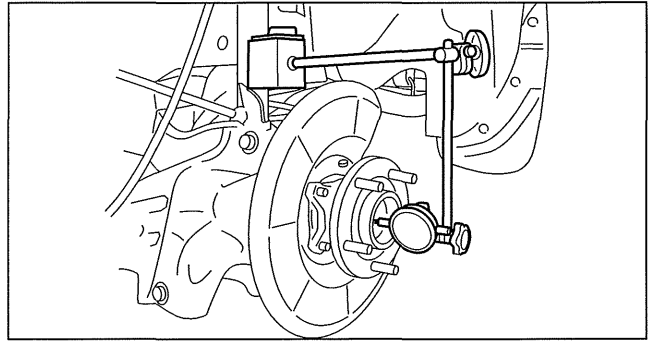
Wheel Bearing Excessive Play Inspection

1. Remove the brake caliper component and disc plate. (See 03-12-2 WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)

REAR AXLE

- Install the magnetic base and dial gauge as shown in the figure and measure the wheel bearing axial excessive play.
 - If it exceeds the maximum specification, replace the wheel hub component.

Maximum rear wheel bearing play
0.05 mm {0.002 in}



am3uuw000459

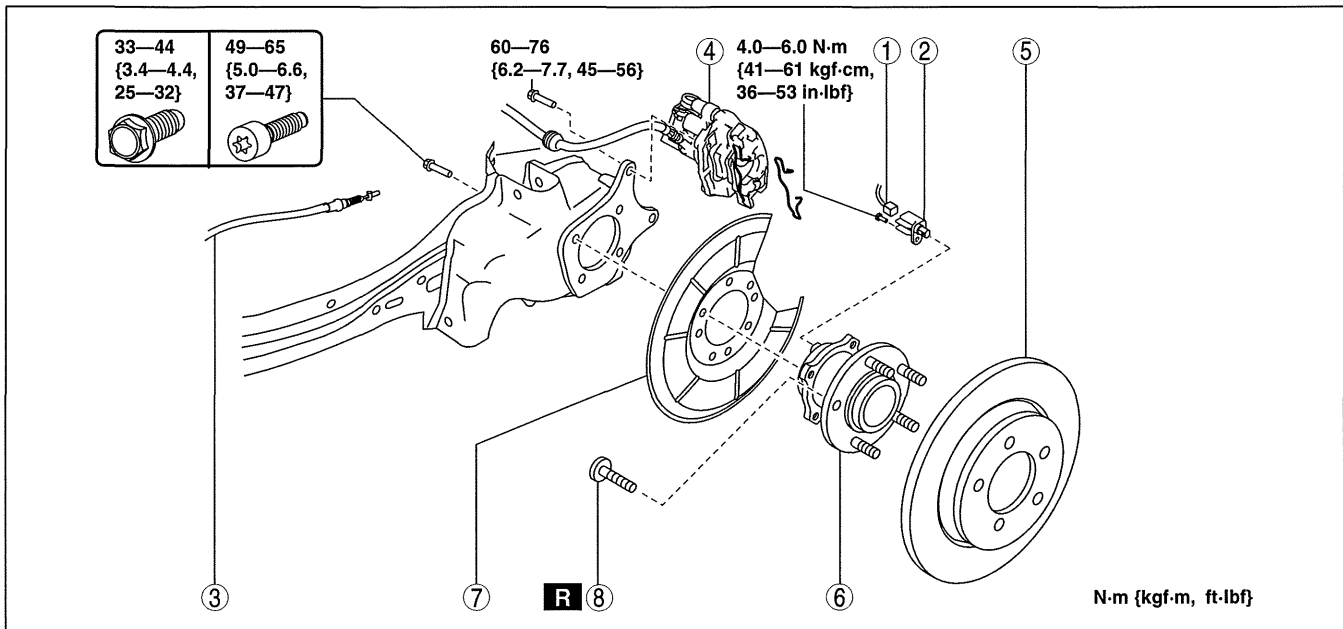
WHEEL HUB COMPONENT REMOVAL/INSTALLATION

id031200800400

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

- Remove in the order indicated in the table.
- Install in the reverse order of removal.



am3uuw0000545

1	ABS wheel-speed sensor connector
2	ABS wheel-speed sensor
3	Rear parking brake cable (See 04-12-3 PARKING BRAKE LEVER REMOVAL/INSTALLATION.)
4	Brake caliper component (See 03-12-2 Brake Caliper Component Removal Note.) (See 04-11-35 REAR BRAKE (DISC) REMOVAL/INSTALLATION.)

5	Disc plate
6	Wheel hub component
7	Dust cover
8	Wheel hub bolt (See 03-12-3 Wheel Hub Bolt Removal Note.) (See 03-12-3 Wheel Hub Bolt Installation Note.)

Brake Caliper Component Removal Note

- Remove the retaining clip and mounting support installing bolt.
- Remove the brake caliper component from the trailing link and suspend it out of the way using a cable.

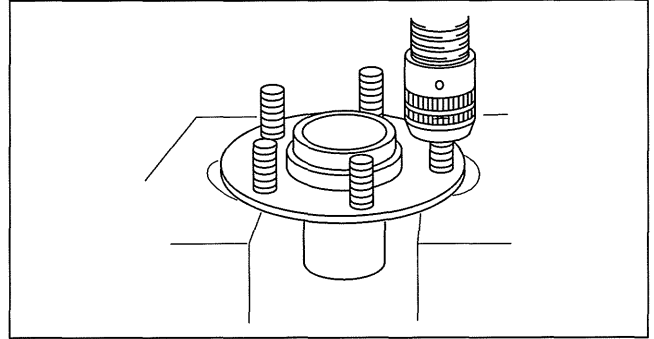
REAR AXLE

Wheel Hub Bolt Removal Note

Note

- The hub bolts do not need to be removed unless they are being replaced.

1. Remove the hub bolt using a press.

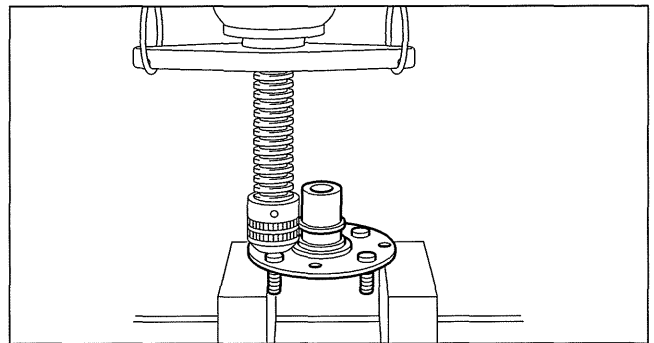


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03-12

Wheel Hub Bolt Installation Note

1. Install the new hub bolt using a press.

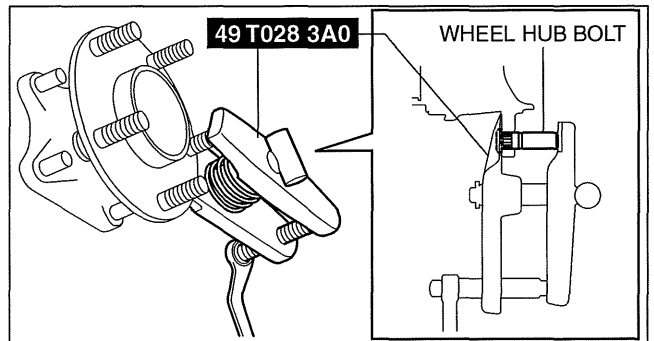


acxjiw00001128

WHEEL HUB BOLT REPLACEMENT

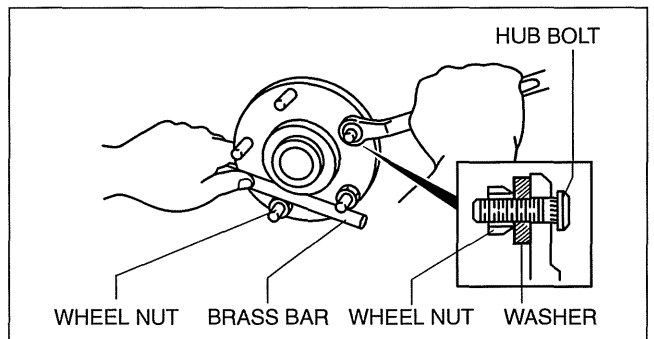
id031200800800

1. Remove the brake calliper component and disc plate. (See 03-12-2 WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)
2. Remove the wheel hub bolt using the **SST** as shown in the figure.
3. Place a new wheel hub bolt in the wheel hub.



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4. Install the wheel hub by placing a proper sized washer on the hub, and tightening the nut as shown in the figure.



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03-13 DRIVE SHAFT

DRIVE SHAFT LOCATION INDEX 03-13-2

DRIVE SHAFT INSPECTION 03-13-2

DRIVE SHAFT

REMOVAL/INSTALLATION 03-13-3

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 Drive Shaft Clip Installation Note 03-13-4

 Drive Shaft Installation Note 03-13-4

 Front Lower Arm Ball Joint Installation Note 03-13-5

DRIVE SHAFT (TRIPOD JOINT) DISASSEMBLY/ASSEMBLY 03-13-6

 Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Disassembly Note 03-13-6

 Boot Band (Transaxle Side Larger Diameter) Disassembly Note 03-13-7

 Outer Ring Disassembly Note 03-13-7

 Snap Ring, Tripod Joint Disassembly Note 03-13-7

 Boot Disassembly Note 03-13-7

 Dynamic Damper Assembly Note 03-13-8

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 Boot Band (Transaxle Side Larger Diameter) Assembly Note 03-13-10

 Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Assembly Note 03-13-10

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JOINT SHAFT

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 Joint Shaft Bracket (LF) Installation Note 03-13-15

 Joint Shaft (L3 WITH TC, L5) Installation Note 03-13-16

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 Dust Seal (RH) Assembly Note 03-13-19

 Bearing Assembly Note 03-13-20

 Dust Seal (LH) Assembly Note 03-13-20

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JOINT SHAFT ASSEMBLY [L3 WITH TC] 03-13-21

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 Dust Seal (LH) Assembly Note 03-13-22

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JOINT SHAFT ASSEMBLY [L5 (ATX)] 03-13-23

 Bearing Assembly Note 03-13-23

 Dust Seal (RH) Assembly Note 03-13-24

 Dust Seal (LH) Assembly Note 03-13-24

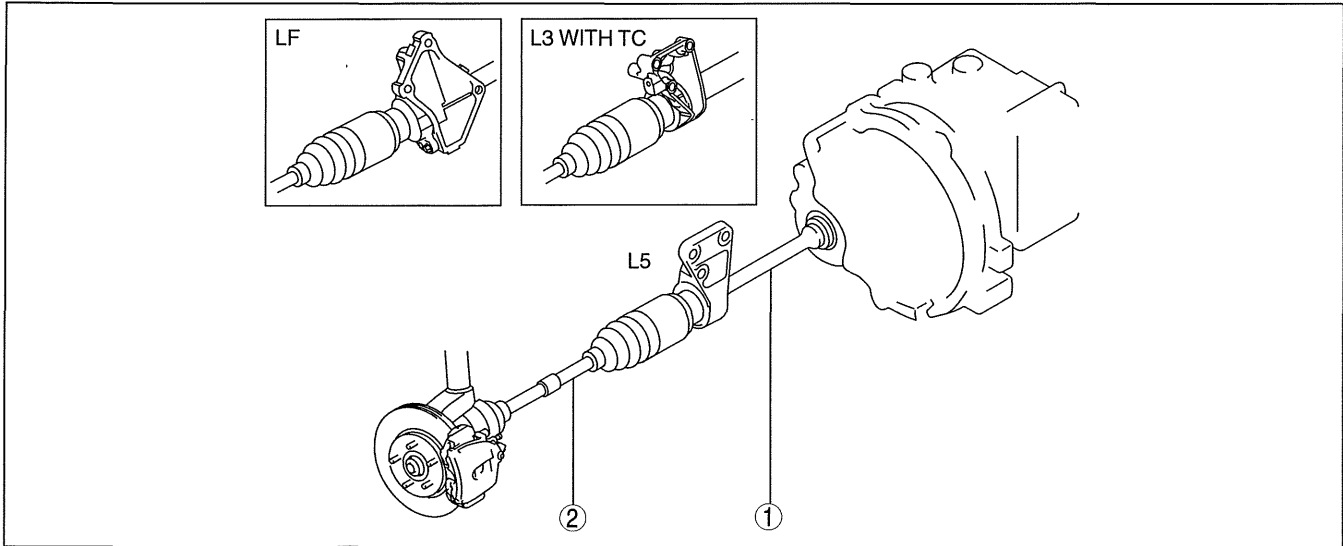
 Joint Shaft Assembly Note 03-13-24

03-13

DRIVE SHAFT

DRIVE SHAFT LOCATION INDEX

id031300800100



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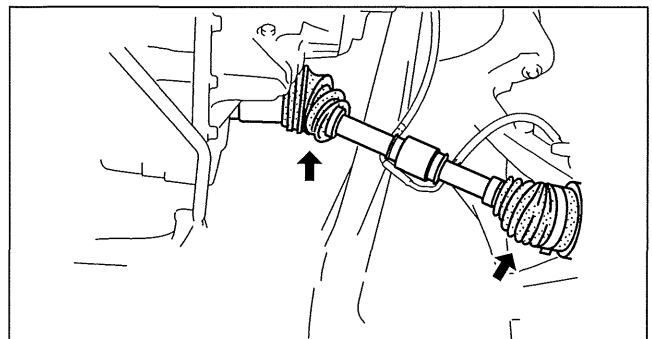
1	Joint shaft (See 03-13-13 JOINT SHAFT INSPECTION.) (See 03-13-13 JOINT SHAFT REMOVAL/ INSTALLATION.) (See 03-13-16 JOINT SHAFT DISASSEMBLY [LF, L5].) (See 03-13-17 JOINT SHAFT DISASSEMBLY [L3 WITH TC].) (See 03-13-19 JOINT SHAFT ASSEMBLY [LF, L5 (MTX)].) (See 03-13-21 JOINT SHAFT ASSEMBLY [L3 WITH TC].) (See 03-13-23 JOINT SHAFT ASSEMBLY [L5 (ATX)].)
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2	Drive shaft (See 03-13-2 DRIVE SHAFT INSPECTION.) (See 03-13-3 DRIVE SHAFT REMOVAL/ INSTALLATION.) (See 03-13-6 DRIVE SHAFT (TRIPOD JOINT) DISASSEMBLY/ASSEMBLY.) (See 03-13-10 DRIVE SHAFT (DOUBLE OFFSET JOINT) DISASSEMBLY/ASSEMBLY.)
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DRIVE SHAFT INSPECTION

id031300801800

1. Inspect the connections for any looseness.
 - If there is any malfunction, tighten or replace the applicable part.
2. Inspect the dust boot for damage and cracks.
 - If there is any malfunction, replace the applicable part.
3. Move the spline and joint up and down, left and right by hand and verify that there is no excessive play.
 - If there is any malfunction, replace the applicable part.



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DRIVE SHAFT

DRIVE SHAFT REMOVAL/INSTALLATION

id031300801900

Caution

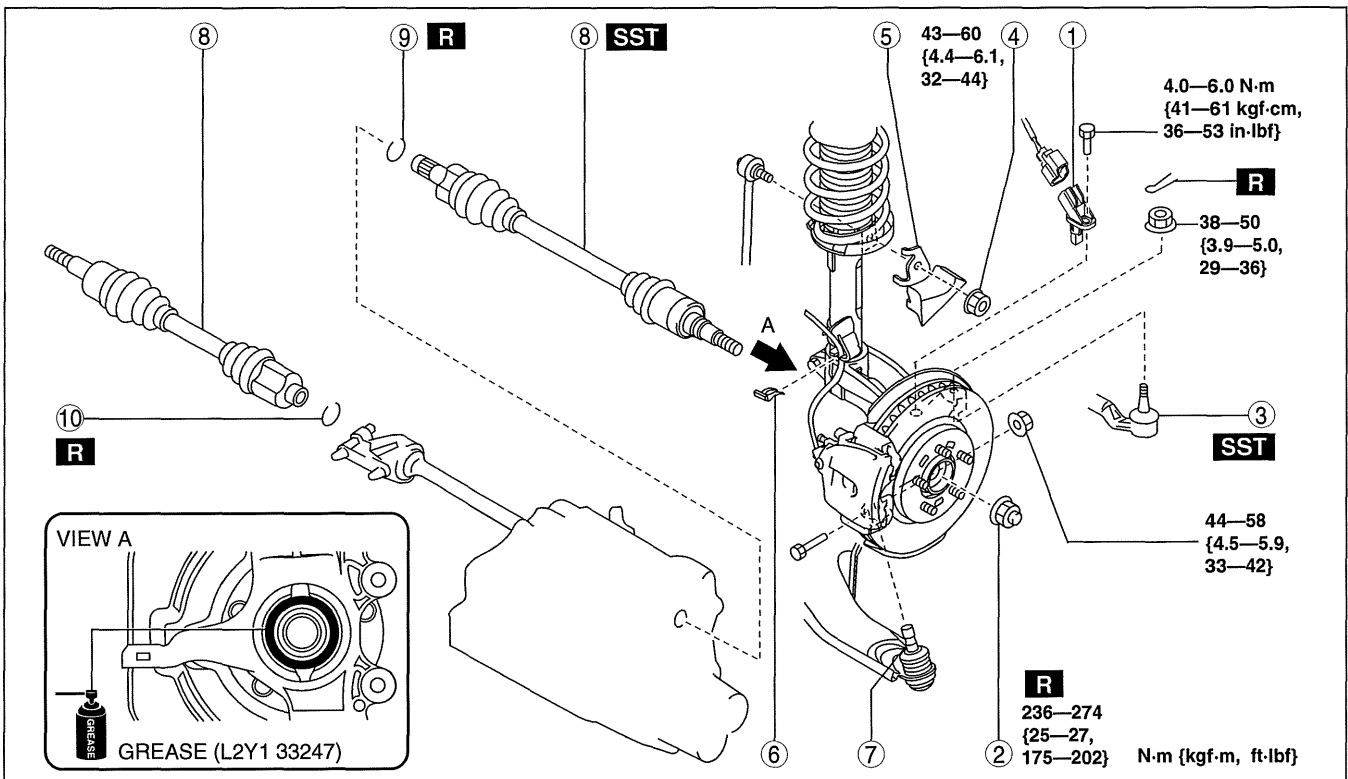
- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.

Note

- The right-side drive shaft of L3 WITH TC equipped vehicles cannot be disassembled. Therefore, replace the front drive shaft as a single unit if there is any malfunction of the boots, boot bands, or constant velocity joints.

03-13

- Remove the aerodynamic under cover No.2 and splash shield as a unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
- Drain the transaxle oil or ATF. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].) (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].) (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].) (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
- When working on the left side of the vehicle, disconnect the front auto leveling sensor link. (Vehicle with Adaptive Front Lighting System (AFS)) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
- Remove in the order indicated in the table.
- Install in the reverse order of removal.



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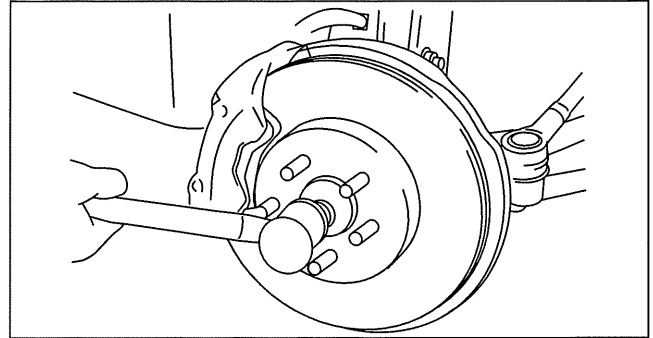
1	ABS wheel-speed sensor
2	Locknut (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.)
3	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
4	Stabilizer control link upper nut
5	Dynamic damper
6	Brake hose clip

7	Front lower arm ball joint (See 03-13-5 Front Lower Arm Ball Joint Installation Note.)
8	Drive shaft (See 03-13-4 Drive Shaft Removal Note.) (See 03-13-4 Drive Shaft Installation Note.)
9	Drive shaft clip (See 03-13-4 Drive Shaft Clip Installation Note.)
10	Joint shaft clip (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)

DRIVE SHAFT

Drive Shaft Removal Note

1. Install a spare nut onto the drive shaft.
2. Tap the nut with a copper hammer and separate the drive shaft from the axle.
3. Separate the drive shaft from the wheel hub.

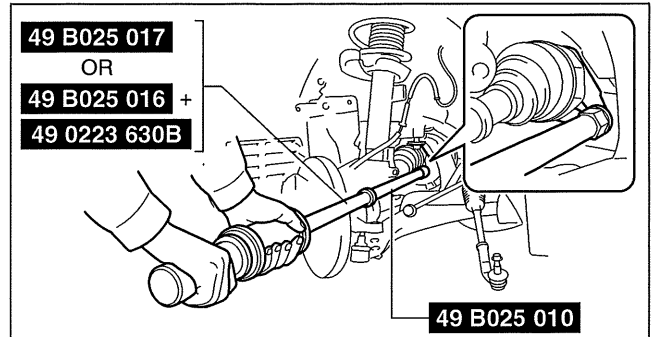


am3uuw000042

4. Separate the drive shaft (LH) from the transaxle using the SSTs.

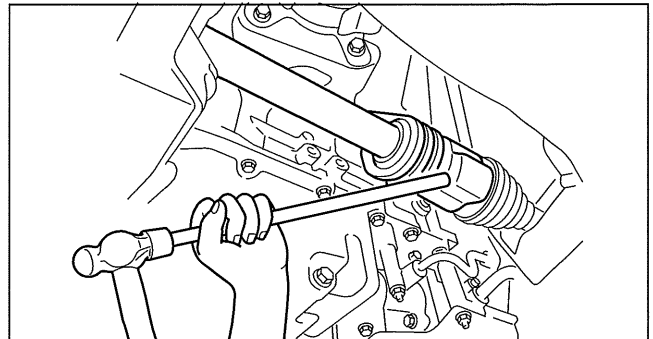
Caution

- Be careful not to damage the transaxle oil seal with the bar.



am3uuw0000470

5. Disconnect the drive shaft (RH) from the joint shaft by tapping the transaxle side outer ring with a brass bar and hammer.



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Drive Shaft Clip Installation Note

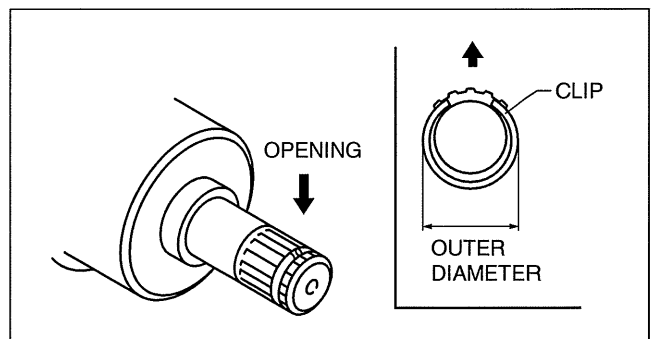
1. Install a new drive shaft clip to the clip groove at the end of the drive shaft with the clip opening facing upward and the clip width within the specification.

Standard

LF, L5: 31.2 mm {1.23 in}

L3 WITH TC: 33.2 mm {1.31 in}

2. After installation, measure the outer diameter.
 - If it exceeds the specification, repeat installation using a new clip.



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Drive Shaft Installation Note

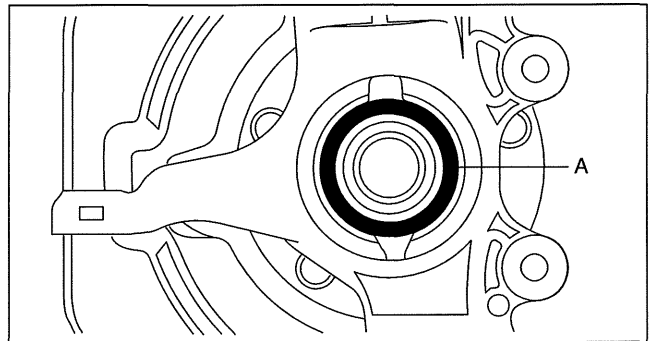
Left side

Caution

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful when installing the drive shaft to the transaxle.

DRIVE SHAFT

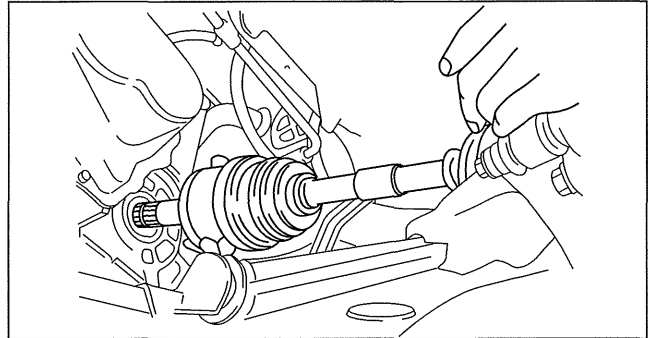
1. Apply transaxle oil to the oil seal lip.
2. Apply grease (L2Y1 33247) to the wheel bearing inner race and drive shaft contact surface (Area A in figure).
3. Insert the drive shaft into the wheel hub.



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03-13

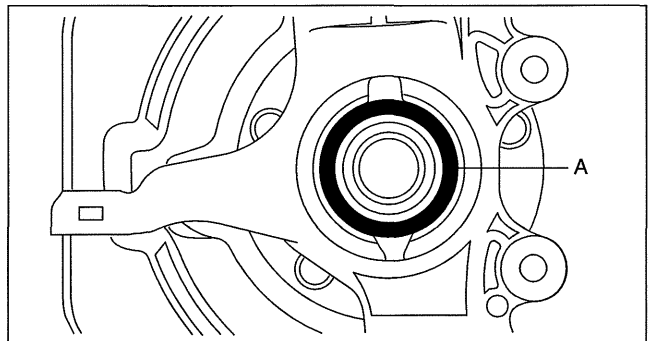
4. Install the drive shaft to the transaxle.
5. After installation, pull the transaxle side outer ring forward to confirm that the drive shaft is securely held by the clip.



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Right side

1. Install a new clip onto the joint shaft. (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
2. Apply grease (L2Y1 33247) to the wheel bearing inner race and drive shaft contact surface (Area A in figure).
3. Insert the drive shaft to the wheel hub.
4. Insert the drive shaft to the joint shaft.
5. After installation, pull the transaxle side outer ring forward to confirm that the drive shaft is securely held by the clip.



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Front Lower Arm Ball Joint Installation Note

Note

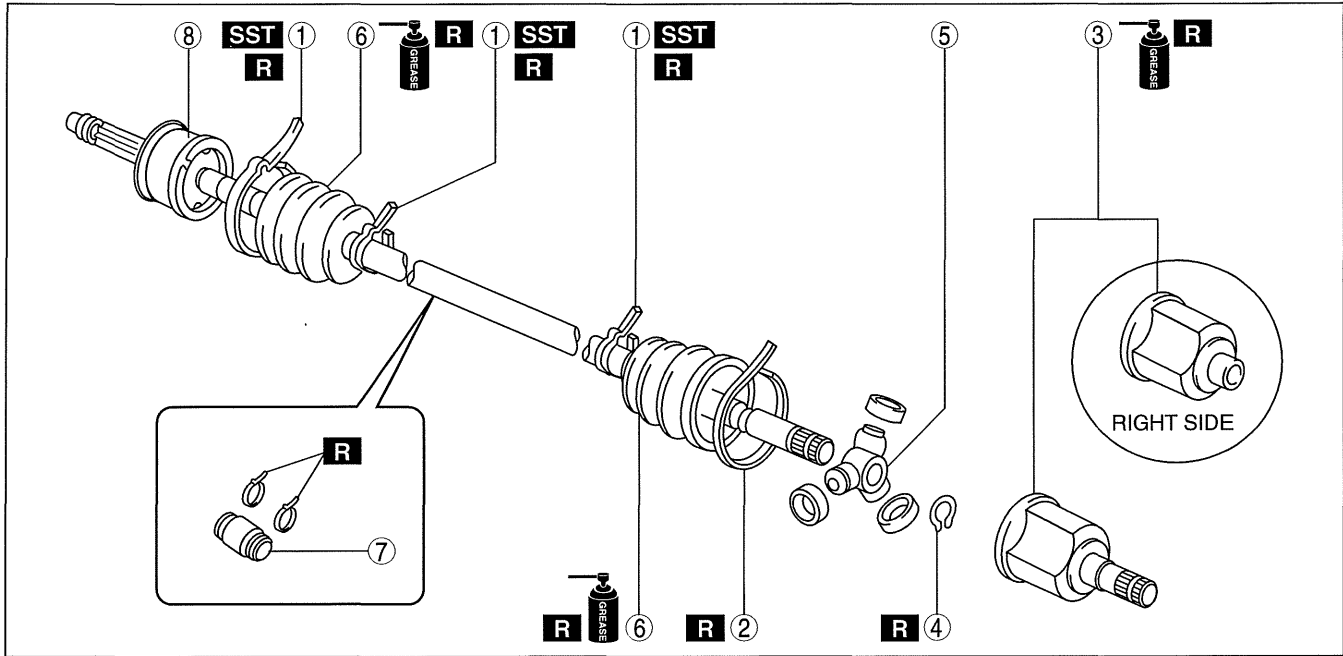
- The bolt insertion direction can be either front or rear of the vehicle, however, keep the insertion direction the same on both the left and right sides of the vehicle.

DRIVE SHAFT

id031300801700

DRIVE SHAFT (TRIPOD JOINT) DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



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1	Boot band (wheel side, transaxle side smaller diameter) (See 03-13-6 Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Disassembly Note.) (See 03-13-10 Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Assembly Note.)
2	Boot band (transaxle side larger diameter) (See 03-13-7 Boot Band (Transaxle Side Larger Diameter) Disassembly Note.) (See 03-13-10 Boot Band (Transaxle Side Larger Diameter) Assembly Note.)
3	Outer ring (See 03-13-7 Outer Ring Disassembly Note.) (See 03-13-9 Outer Ring Assembly Note)

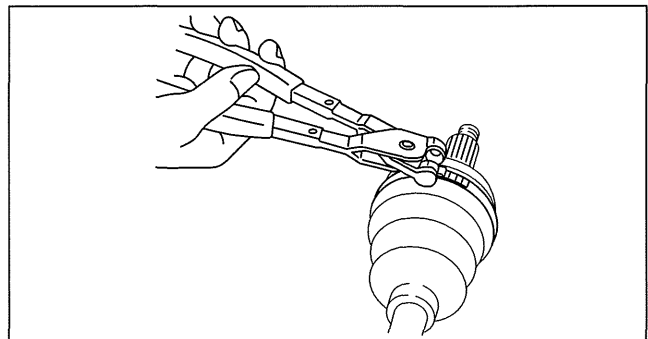
4	Snap ring (See 03-13-7 Snap Ring, Tripod Joint Disassembly Note.) (See 03-13-8 Tripod Joint, Snap Ring Assembly Note.)
5	Tripod joint (See 03-13-7 Snap Ring, Tripod Joint Disassembly Note.) (See 03-13-8 Tripod Joint, Snap Ring Assembly Note.)
6	Boot (See 03-13-7 Boot Disassembly Note.) (See 03-13-8 Boot Assembly Note.)
7	Dynamic damper (See 03-13-8 Dynamic Damper Assembly Note.)
8	Shaft and ball joint component

Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Disassembly Note

Note

- Remove the boot band only if there is a malfunction.

1. Remove the boot band using end clamp pliers.

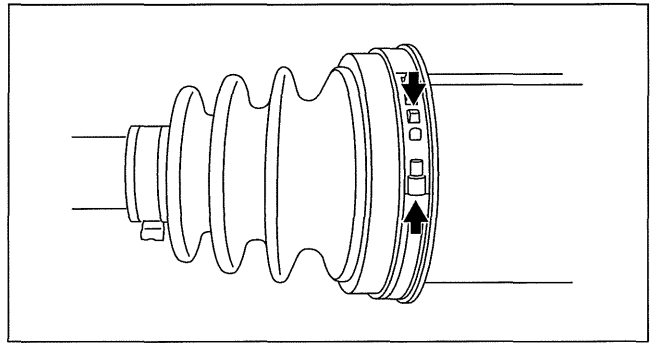


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DRIVE SHAFT

Boot Band (Transaxle Side Larger Diameter) Disassembly Note

1. Pry up the boot band at the points indicated in the figure using pliers and remove the band.

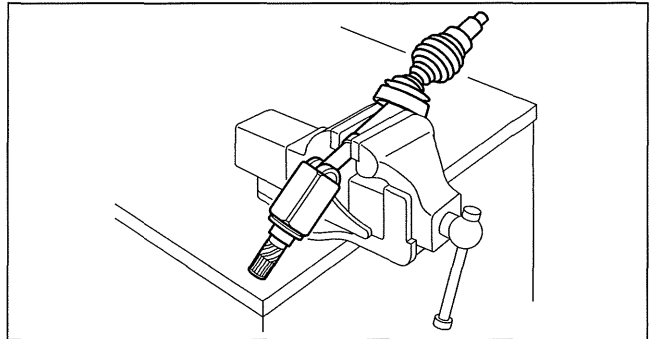


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03-13

Outer Ring Disassembly Note

1. Secure the drive shaft using a vise.

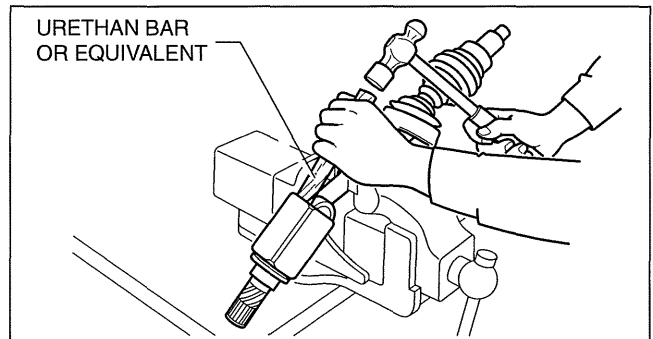


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2. Tap the outer ring slightly by using a hummer and urethan bar or equivalent, and remove the outer ring from the drive shaft.

Caution

- Lightly tap the outer ring carefully, otherwise the tripod joint rollers could be damaged.



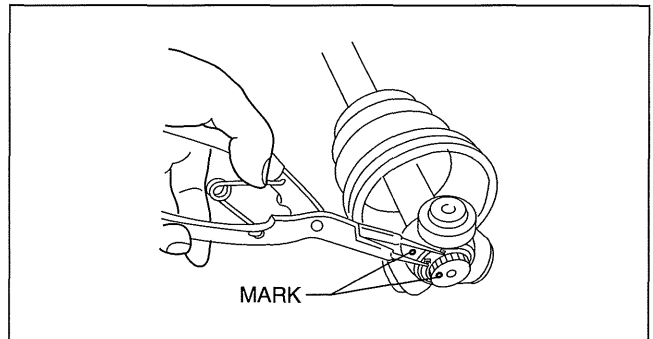
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Snap Ring, Tripod Joint Disassembly Note

1. Place an alignment mark on the shaft and tripod joint.
2. Remove the snap ring using snap ring pliers.
3. Remove the tripod joint from the shaft.

Caution

- Do not try to remove the tripod joint by hitting it with a hammer. The tripod joint could be damaged.



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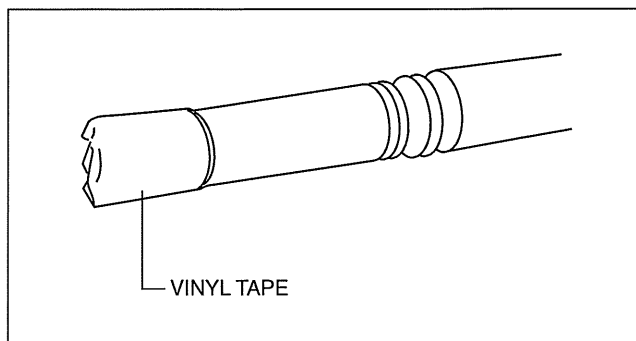
Boot Disassembly Note

Note

- Remove the wheel side boot only if there is any malfunction.

DRIVE SHAFT

1. Wrap the shaft splines with tape.
2. Remove the boot.



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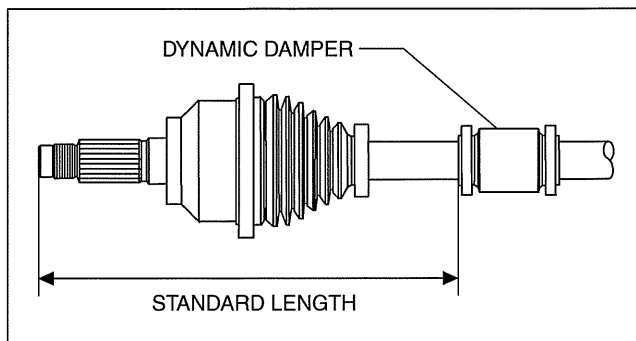
Dynamic Damper Assembly Note

1. Install the dynamic damper as shown in the figure.

Standard length

289.7—301.7 mm {11.41—11.87 in}

2. Install the new boot band onto the dynamic damper.



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Boot Assembly Note

Note

- The boot shapes on the wheel side and the differential side are different. Do not install the wrong boot by mistake.

1. Fill the inside of the new dust boot (wheel side) with grease.

Note

- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

Grease amount

96—106 g {3.4—3.7 oz}

2. Install the boot with the drive shaft spline still wrapped with vinyl tape.
3. Remove the vinyl tape.

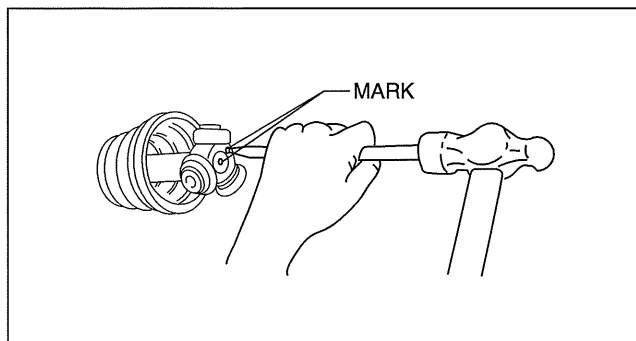
Tripod Joint, Snap Ring Assembly Note

1. While aligning the marks on the shaft and the tripod joint, insert the tripod joint using a bar and a hammer.

Caution

- Do not hit the rollers, otherwise the tripod joint rollers could be damaged.

2. Insert a new snap ring using snap ring pliers.
3. Verify that the snap ring is engaged correctly in the groove of the shaft.



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DRIVE SHAFT

Outer Ring Assembly Note

1. Fill the outer ring and boot (transaxle side) with the specified grease.

Note

- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

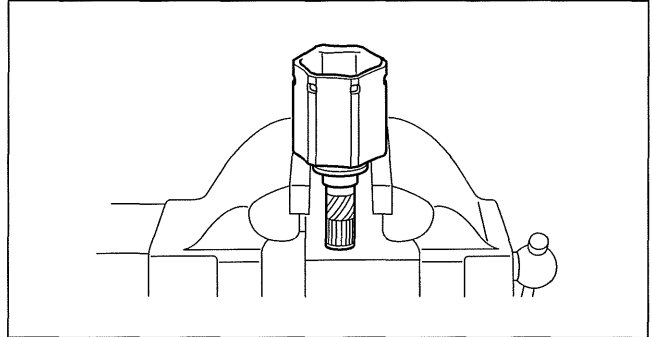
Grease amount

89—99 g {3.2—3.4 oz}

2. Secure the outer ring using a vise.

Caution

- Carefully perform the work when securing the outer ring to the vise, otherwise otherwise the oil seal could be deformed.



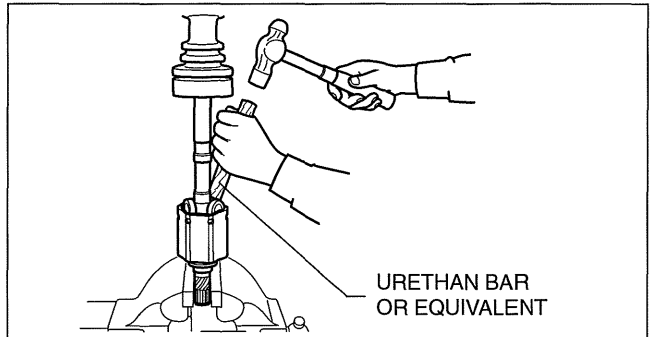
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03-13

3. Align the roller with the outer ring, tap the roller slightly using a hammer and urethan bar or equivalent, and install the drive shaft to the outer ring with keeping the drive shaft vertically.

Caution

- Be careful that no foreign matter such as dust or dirt gets into the outer ring, otherwise the drive shaft could be damaged.



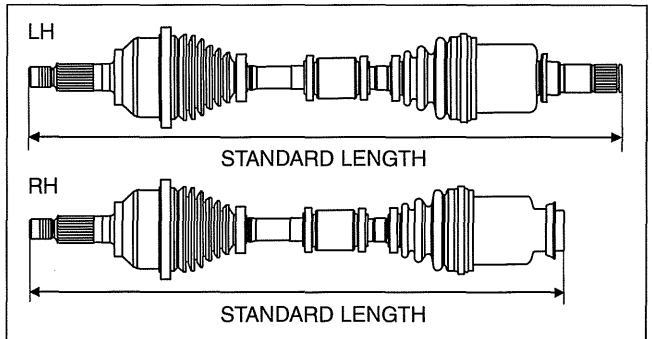
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4. Set the drive shaft to the standard length.

Front drive shaft standard length

LH: 654.31—663.31 mm {25.761—26.114 in}

RH: 572.73—581.73 mm {22.549—22.902 in}

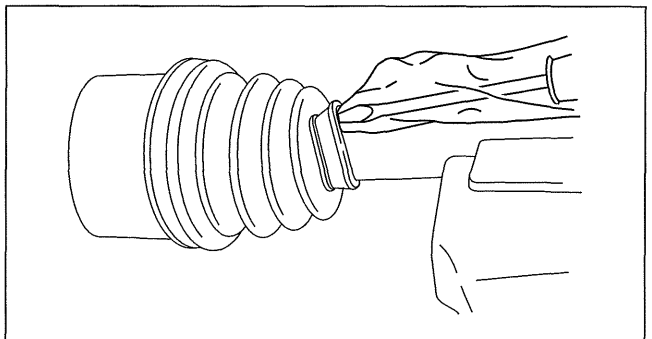


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5. Release any trapped air from the boots by carefully lifting up the small end of each boot with a cloth wrapped screwdriver.

Note

- Verify that there is no grease leak while being careful not to damage the boot.
- If the boot is damaged, it may not be possible to perform the full-length adjustment of the drive shaft.



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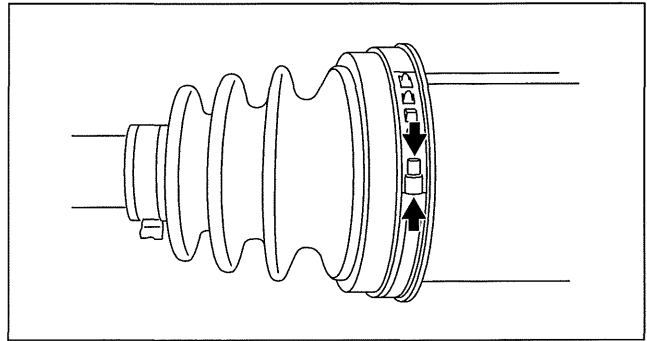
6. Verify that the drive shaft length is within the specification under atmospheric pressure inside the boot.

- If not within the specification, repeat from Step 3.

DRIVE SHAFT

Boot Band (Transaxle Side Larger Diameter) Assembly Note

1. Pry up the boot band at the points indicated in the figure using pliers and tighten the boot band.
2. Verify that the boot band is installed to the boot slot securely.

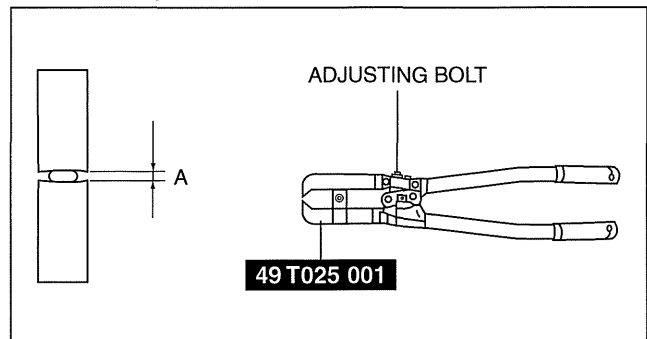


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Boot Band (Wheel Side, Transaxle Side Smaller Diameter) Assembly Note

1. Adjust opening width A by turning the adjusting bolt of the SST.

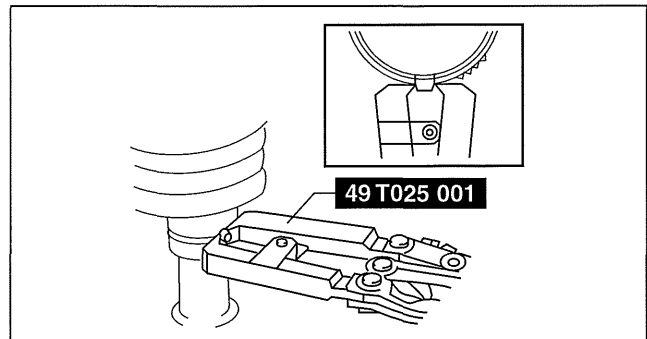
Standard A
1.6 mm {0.063 in}



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2. Crimp the wheel side small boot band completely closed so there is no gap using the SST.
3. Verify that the boot band does not protrude from the boot band installation area.
 - If the boot band protrudes from the boot band installation area, replace the boot band and repeat Step 2.
4. Fill the boot with the repair kit grease.
5. Adjust opening width A of the SST to the specification.

Standard A
2.0 mm {0.079 in}



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6. Crimp the wheel side large boot band completely closed so there is no gap using the SST.
7. Verify that the boot band does not protrude from the boot band installation area.
 - If the boot band protrudes from the boot band installation area, replace the boot band and repeat Step 6.

DRIVE SHAFT (DOUBLE OFFSET JOINT) DISASSEMBLY/ASSEMBLY

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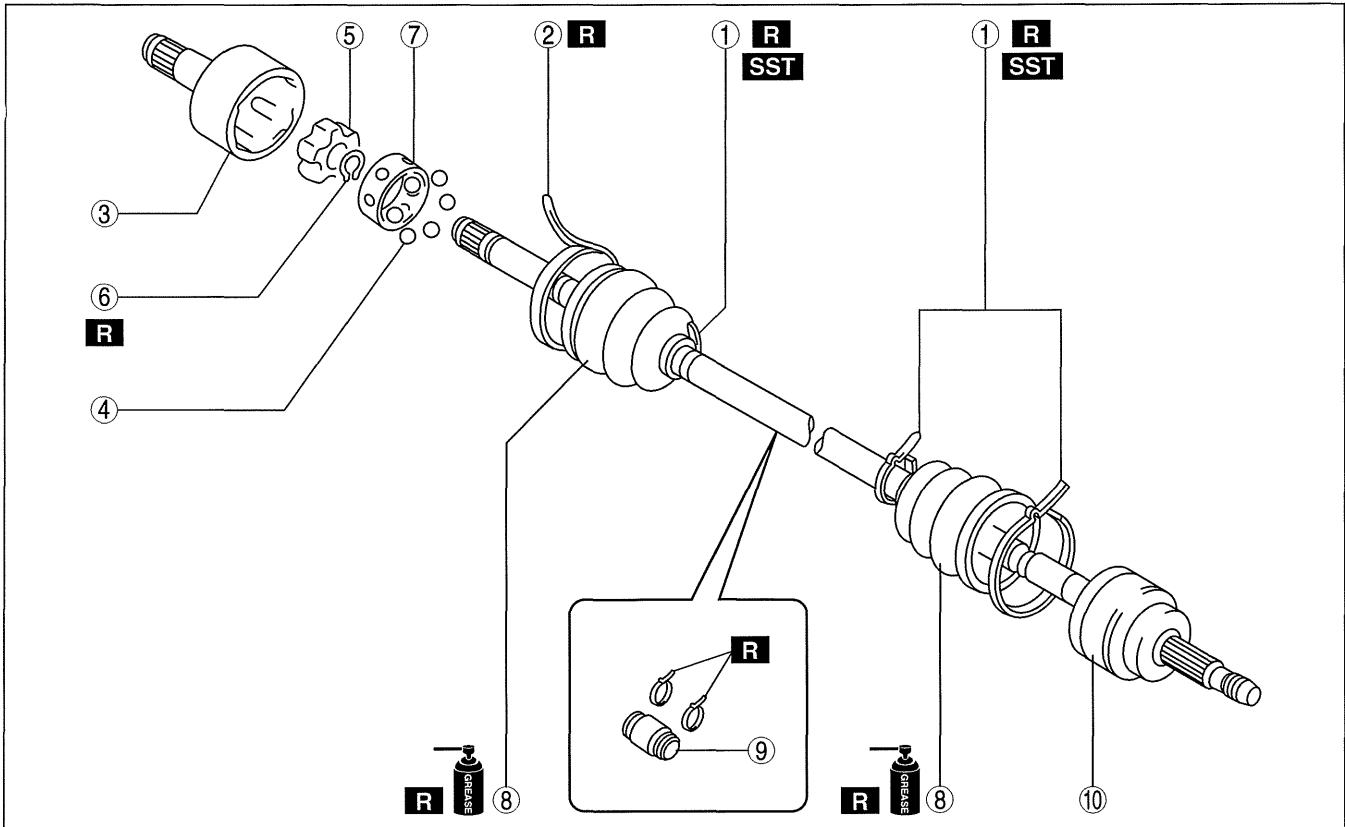
Note

- The right-side drive shaft of L3 WITH TC equipped vehicles cannot be disassembled. Therefore, replace the front drive shaft as a single unit if there is any malfunction of the boots, boot bands, or constant velocity joints.

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

DRIVE SHAFT

03-13



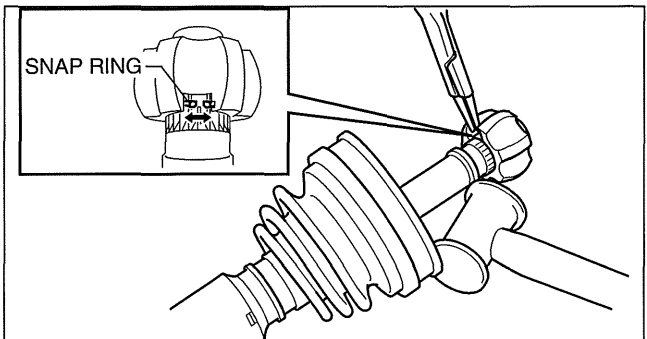
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1	Boot band (wheel side, transaxle side: smaller diameter) (See 03-13-6 DRIVE SHAFT (TRIPOD JOINT) DISASSEMBLY/ASSEMBLY.)
2	Boot band (transaxle side larger diameter) (See 03-13-6 DRIVE SHAFT (TRIPOD JOINT) DISASSEMBLY/ASSEMBLY.)
3	Outer ring (See 03-13-13 Outer Ring, Clip Assembly Note.)
4	Balls (See 03-13-12 Cage, Inner Ring, Balls, Snap Ring Assembly Note.)

5	Inner Ring (See 03-13-11 Inner Ring Disassembly Note.) (See 03-13-12 Cage, Inner Ring, Balls, Snap Ring Assembly Note.)
6	Snap ring (See 03-13-12 Cage, Inner Ring, Balls, Snap Ring Assembly Note.)
7	Cage
8	Boot (See 03-13-12 Boot Assembly Note.)
9	Dynamic damper (See 03-13-12 Dynamic Damper Assembly Note.)
10	Shaft and ball joint component

Inner Ring Disassembly Note

1. Move the dynamic damper to the wheel side of the drive shaft.
2. Move the boot and cage to the wheel side of the drive shaft.
3. Tap the inner ring using a plastic hammer while spreading the snap ring, and disassemble the inner ring from the drive shaft.



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DRIVE SHAFT

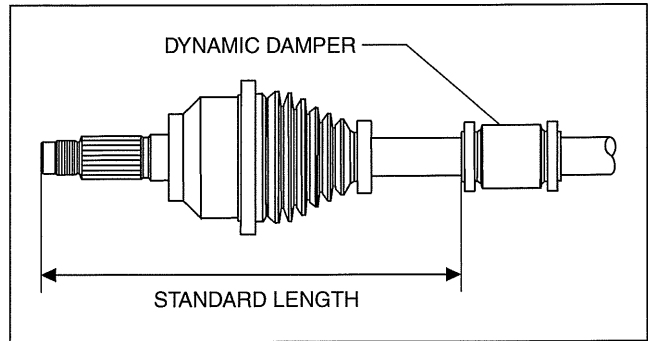
Dynamic Damper Assembly Note

1. Install the dynamic damper as shown in the figure.

Standard length

LH: 289.7—301.7 mm {11.41—11.87 in}
RH: 304.7—316.7 mm {12.00—12.46 in}

2. Install a new boot band onto the dynamic damper.



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Boot Assembly Note

Note

- The wheel-side and transaxle-side boots are different.

1. Fill the boot (wheel side) with the specified grease.

Note

- Do not touch grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

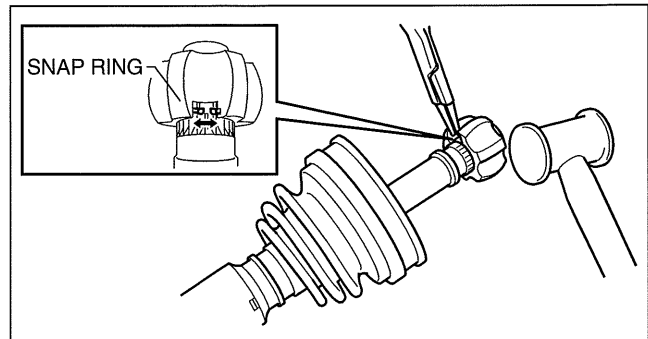
Grease amount

LF, L5: 96—106 g {3.4—3.7 oz}
L3 WITH TC (LH): 106—116 g {3.74—4.09 oz}

2. Install the boot with the splines of the shaft still wrapped in tape from disassembly.
3. Remove the tape.

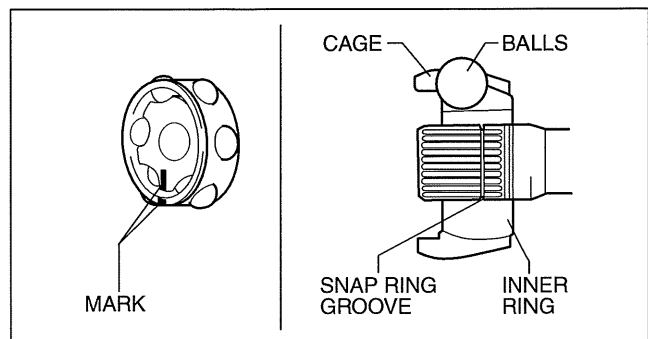
Cage, Inner Ring, Balls, Snap Ring Assembly Note

1. Tap the inner ring using a plastic hammer while spreading the snap ring, and assemble the inner ring to the drive shaft.



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2. Align the marks and install the balls and cage to the inner ring as shown in the figure.



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DRIVE SHAFT

Outer Ring, Clip Assembly Note

1. Fill the outer ring and boot (transaxle side) with the specified grease.

Note

- Do not touch grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

Grease amount

LF, L5: 139—149 g {4.91—5.25 oz}

L3 WITH TC (LH): 155—165 g {5.47—5.82 oz}

2. Install the outer ring on to the shaft.
3. Install the boot.
4. Set the drive shaft to the standard length.

Front drive shaft standard length

LF, L5

— LH: 656.56—665.56 mm {25.849—26.203 in}

— RH: 607.54—616.54 mm {23.919—24.273 in}

L3 WITH TC

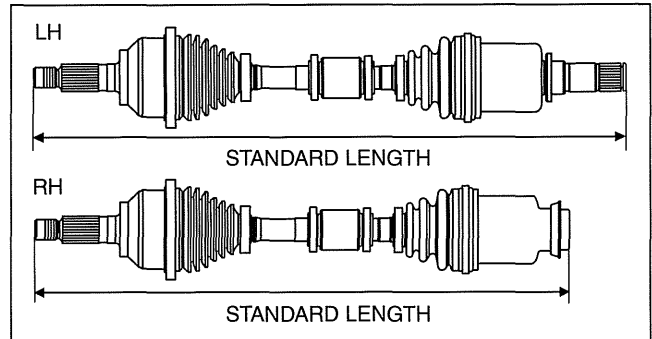
— LH: 619.07—628.07 mm {24.373—24.727 in}

5. Release any trapped air from the boots by carefully lifting up the small end of each boot with a cloth wrapped screwdriver.

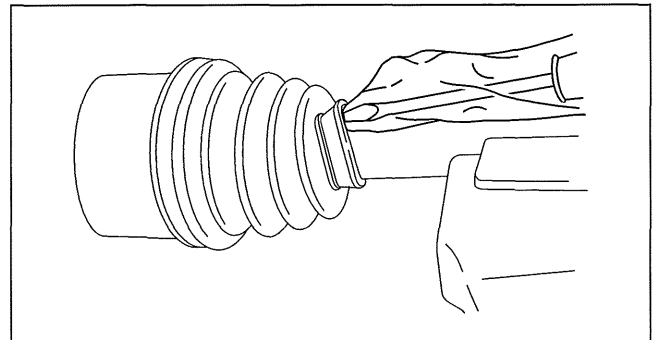
Caution

- Be careful not to allow the grease to leak.
- Do not damage the boot.

6. Verify that the drive shaft length is within the specification.



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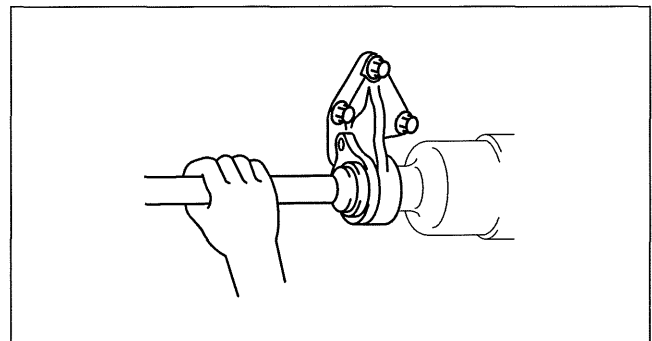


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JOINT SHAFT INSPECTION

1. Verify that there is no torsion or cracks on the joint shaft.
 - If there is any malfunction, replace the joint shaft.
2. Turn the joint shaft by hand and verify that the bearing rotates smoothly.
 - If there is any malfunction, replace the joint shaft.



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id031300800900

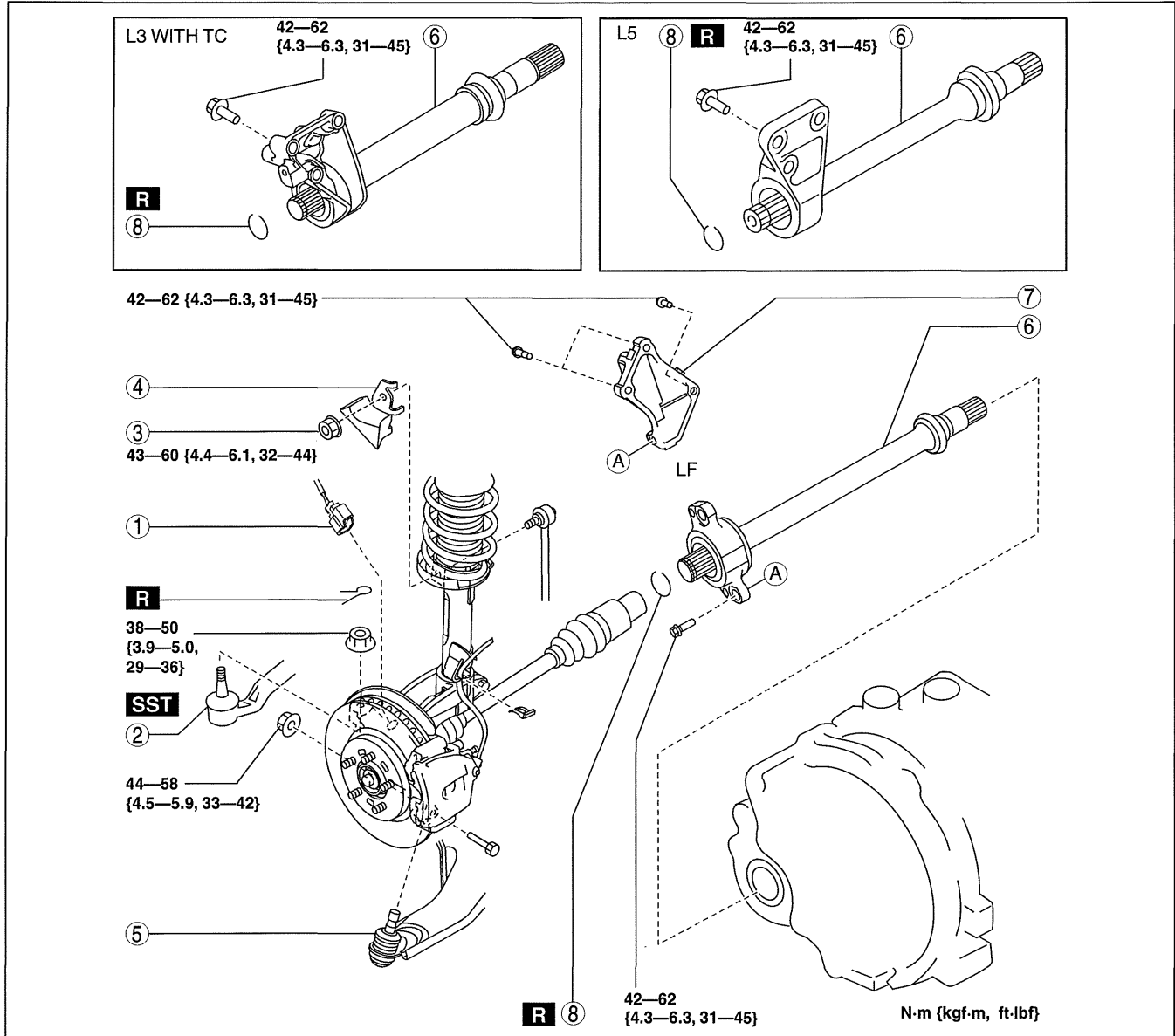
JOINT SHAFT REMOVAL/INSTALLATION

Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor connector (axle side) and fix it to an appropriate place where the sensor wiring harness will not be pulled by mistake while servicing the vehicle.

DRIVE SHAFT

1. Remove the aerodynamic under cover No.2 and splash shield as a unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.) (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
2. Drain the transaxle oil or ATF. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].) (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].) (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].) (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



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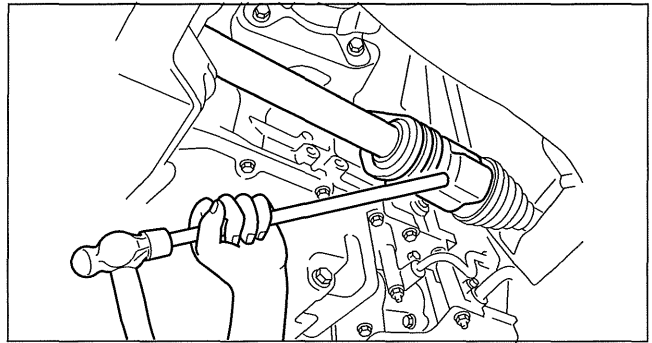
1	ABS wheel-speed sensor connector
2	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
3	Stabilizer control link upper nut
4	Dynamic damper
5	Front lower arm ball joint (See 03-13-16 Front Lower Arm Ball Joint Installation Note.)

6	Joint shaft (See 03-13-15 Joint Shaft Removal Note.) (See 03-13-16 Joint Shaft (L3 WITH TC, L5) Installation Note.)
7	Joint shaft bracket (LF) (See 03-13-15 Joint Shaft Bracket (LF) Installation Note.)
8	Joint shaft clip (See 03-13-15 Joint Shaft Clip Installation Note.)

DRIVE SHAFT

Joint Shaft Removal Note

1. Disconnect the drive shaft (RH) from the joint shaft by tapping the transaxle side outer ring with a brass bar and hammer.



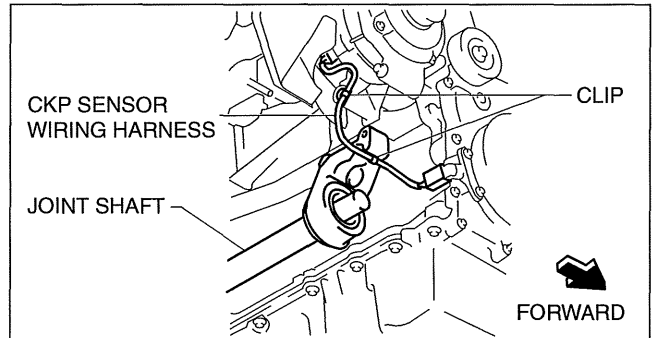
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03-13

2. Disconnect the clips to set the CKP sensor wiring harness out of the way to prevent interference with the joint shaft. (L5)
3. Remove the joint shaft installation bolts.
4. Remove the joint shaft.

Caution

- The sharp edges of the joint shaft can slice or puncture the oil seal. Be careful when removing the joint shaft from the transaxle.



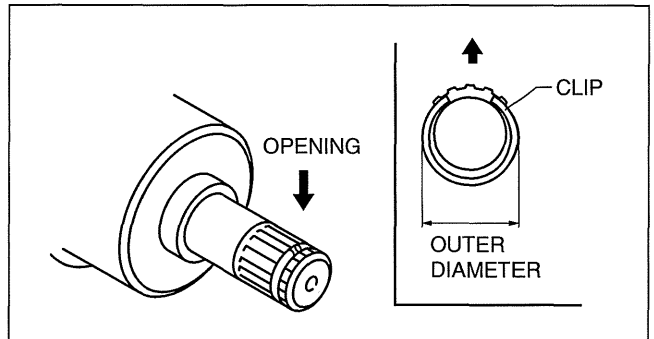
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Joint Shaft Clip Installation Note

1. Install a new joint shaft clip to the clip groove at the end of the joint shaft with the clip opening facing upward and the clip width within the specification.
2. After installation, measure the outer diameter.
 - If it exceeds the specification, repeat installation using a new clip.

Standard

31.2 mm {1.23 in} or less



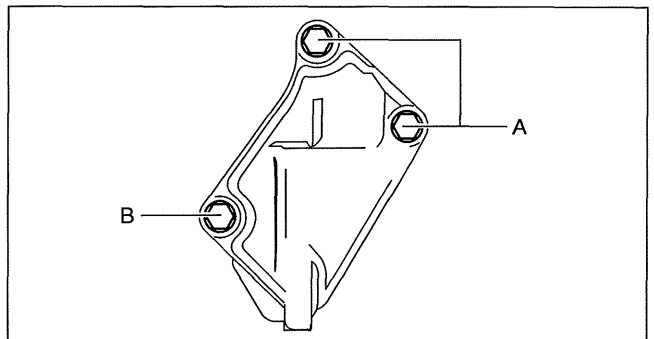
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Joint Shaft Bracket (LF) Installation Note

1. Temporarily tighten the bolts A and B.
2. Tighten the bolts A, then tighten the bolt B to the specified torque.

Tightening torque

42—62 N·m {4.3—6.3 kgf·m, 31—45 ft·lbf}



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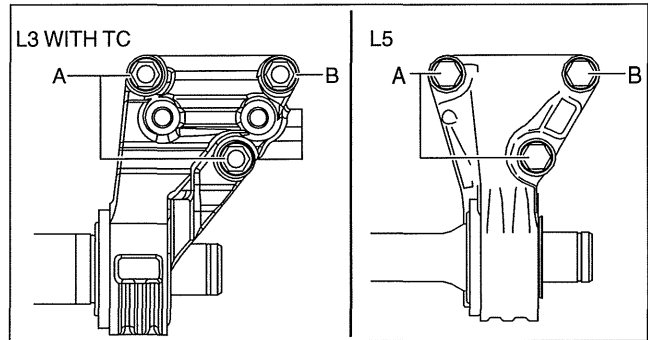
DRIVE SHAFT

Joint Shaft (L3 WITH TC, L5) Installation Note

1. Insert the joint shaft into the transaxle.
2. Temporarily tighten the bolts A and B.
3. Tighten the bolts A, then tighten the bolt B to the specified torque.

Tightening torque

42—62 N·m {4.3—6.3 kgf·m, 31—45 ft·lbf}



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Front Lower Arm Ball Joint Installation Note

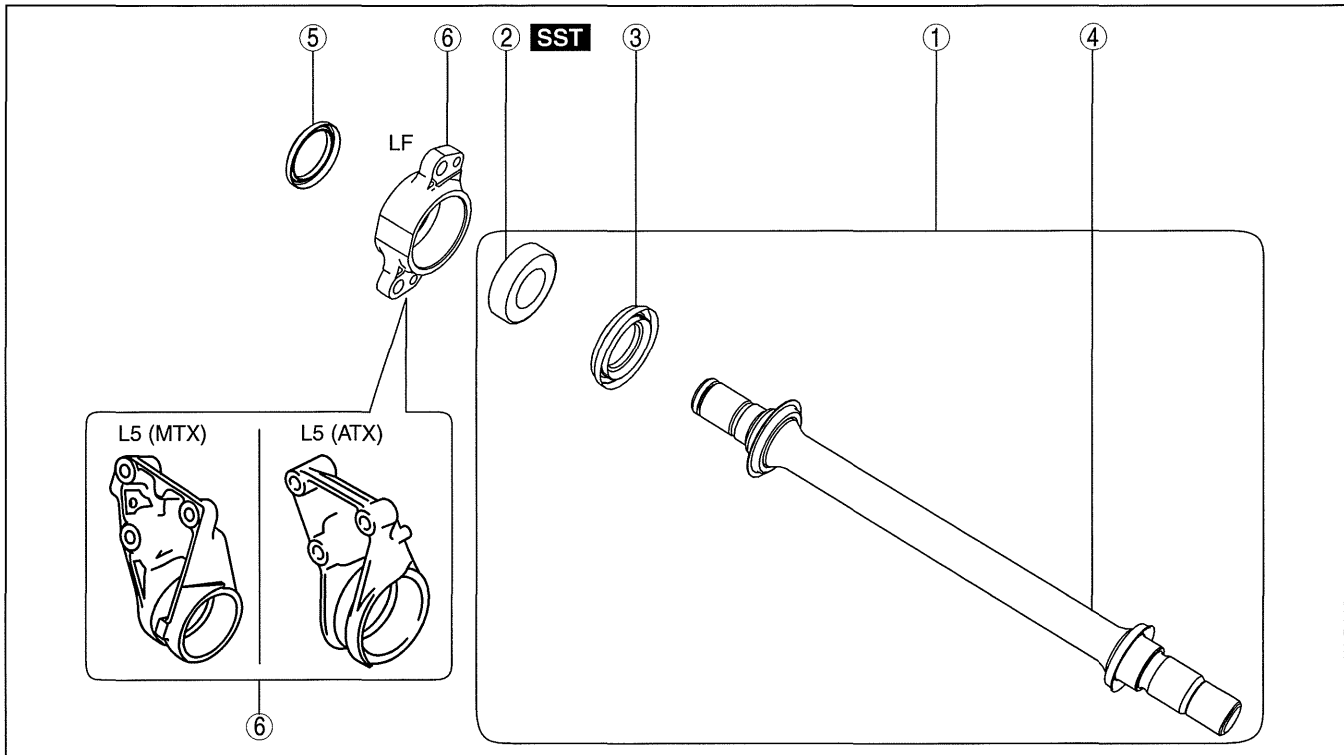
Note

- The bolt insertion direction can be either front or rear of the vehicle, however, keep the insertion direction the same on both the left and right sides of the vehicle.

JOINT SHAFT DISASSEMBLY [LF, L5]

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1. Disassemble in the order indicated in the table.



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1	Joint shaft component (See 03-13-17 Joint Shaft Component Disassembly Note.)
2	Bearing (See 03-13-17 Bearing Disassembly Note.)

3	Dust seal (LH)
4	Joint shaft
5	Dust seal (RH)
6	Bracket

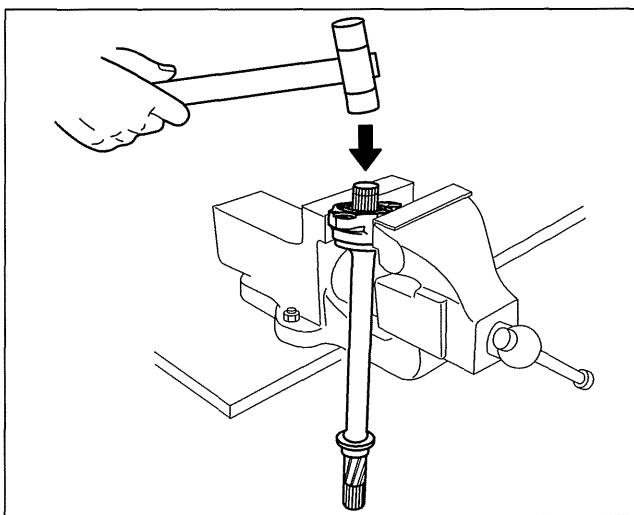
DRIVE SHAFT

Joint Shaft Component Disassembly Note

1. Secure the bracket to the vise at the position shown in the figure and remove the joint shaft component using the plastic hammer.

Caution

- Do not drop the joint shaft because it could be damaged.

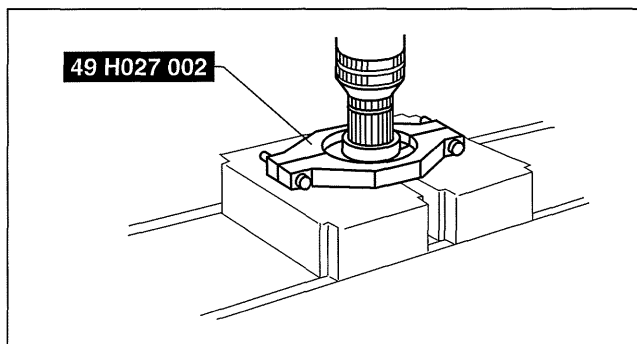


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03-13

Bearing Disassembly Note

1. Set the SST and joint shaft to the press.

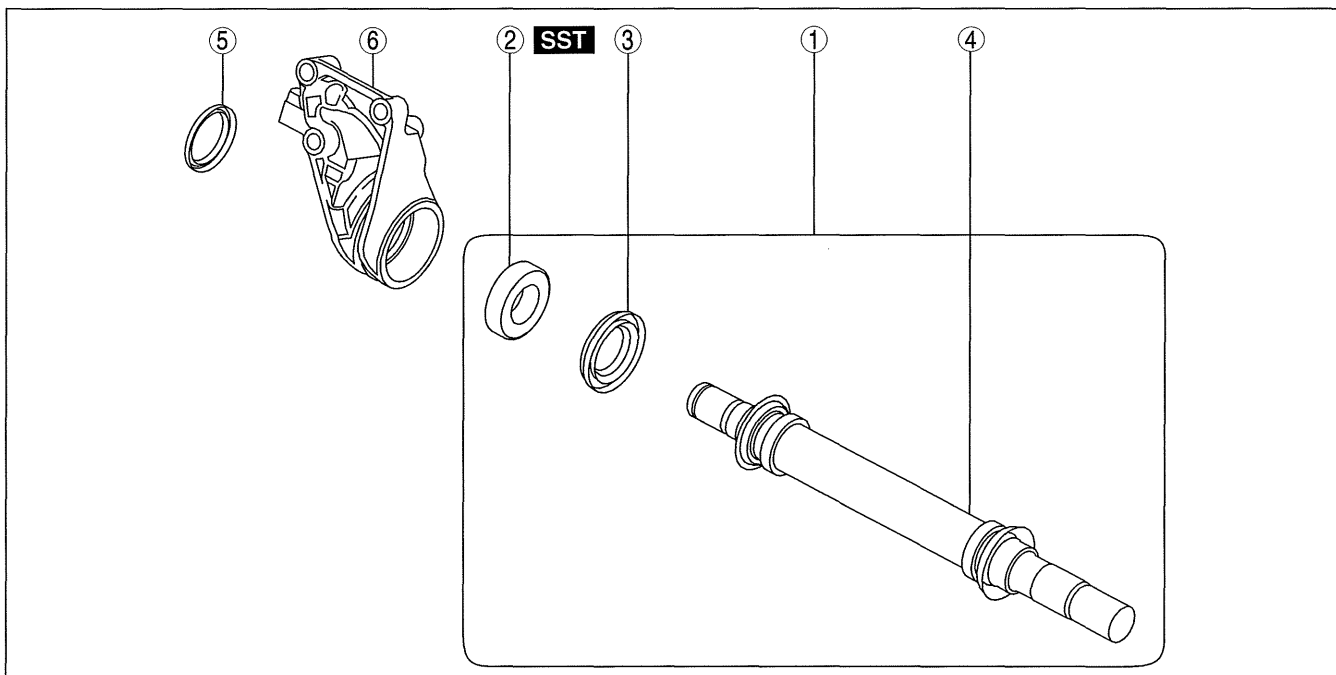


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JOINT SHAFT DISASSEMBLY [L3 WITH TC]

1. Disassemble in the order indicated in the table.

id031300801039



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DRIVE SHAFT

1	Joint shaft component (See 03-13-18 Joint Shaft Component Disassembly Note.)
2	Bearing (See 03-13-18 Bearing Disassembly Note.)

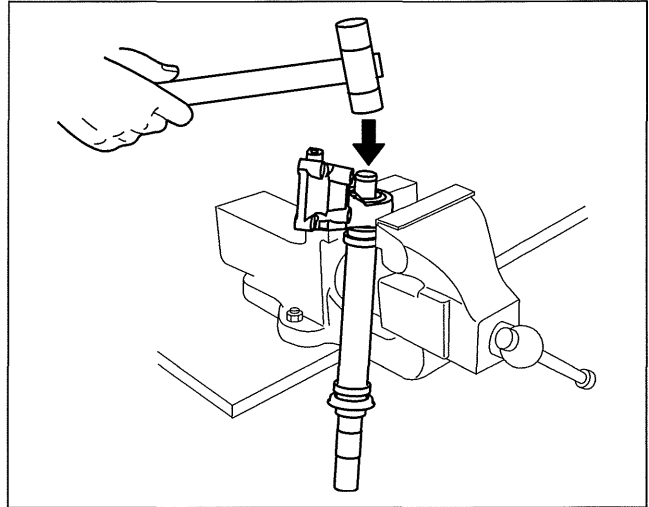
3	Dust seal (LH)
4	Joint shaft
5	Dust seal (RH)
6	Bracket

Joint Shaft Component Disassembly Note

1. Secure the bracket to the vise at the position shown in the figure and remove the joint shaft component using the plastic hammer.

Caution

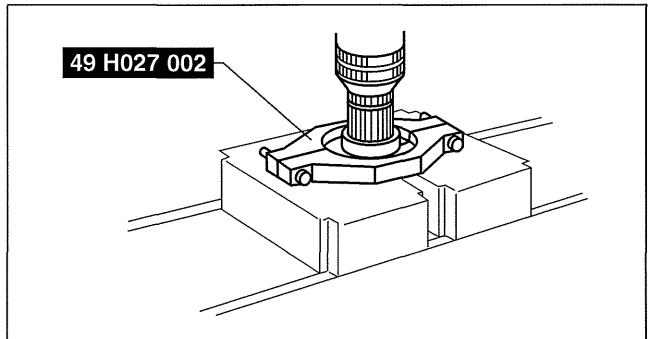
- Do not drop the joint shaft because it could be damaged.



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Bearing Disassembly Note

1. Set the SST and joint shaft to the press.



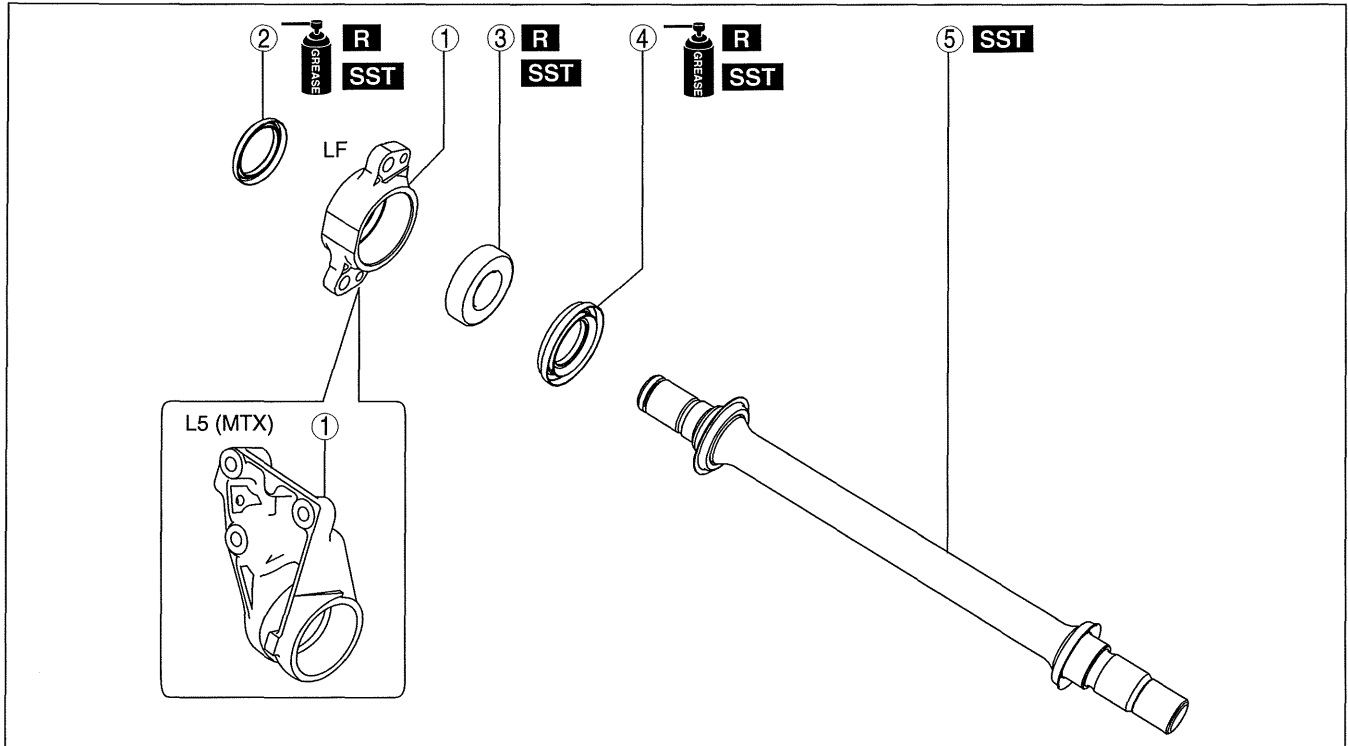
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DRIVE SHAFT

JOINT SHAFT ASSEMBLY [LF, L5 (MTX)]

id03130080112

1. Assemble in the order indicated in the table.



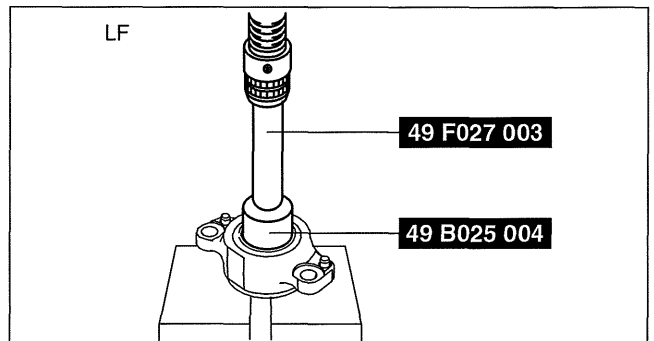
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1	Bracket
2	Dust seal (RH) (See 03-13-19 Dust Seal (RH) Assembly Note.)
3	Bearing (See 03-13-20 Bearing Assembly Note.)

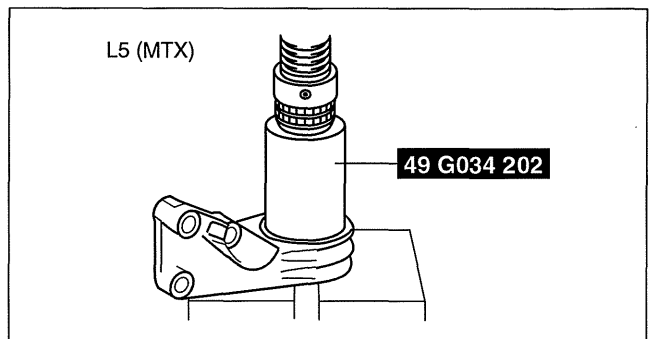
4	Dust seal (LH) (See 03-13-20 Dust Seal (LH) Assembly Note.)
5	Joint shaft (See 03-13-21 Joint Shaft Assembly Note.)

Dust Seal (RH) Assembly Note

1. Apply grease to a new dust seal lip.
2. Install the dust seal (RH) using the SSTs.



am3uuw0000502



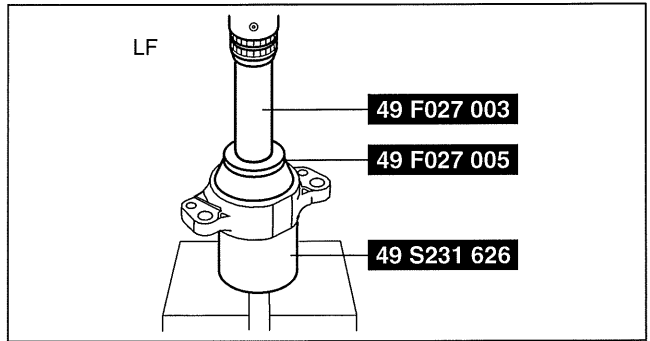
am3uuw0000620

03-13

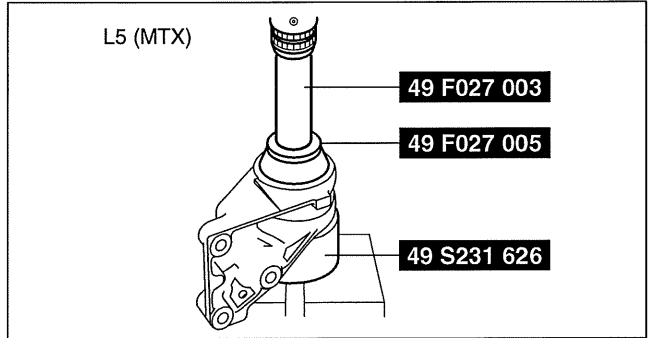
DRIVE SHAFT

Bearing Assembly Note

1. Install a new bearing using the **SSTs**.



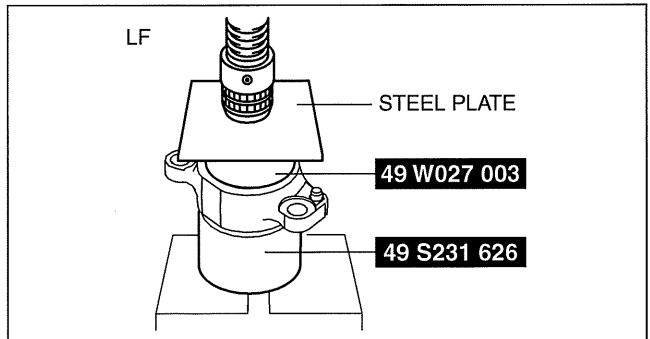
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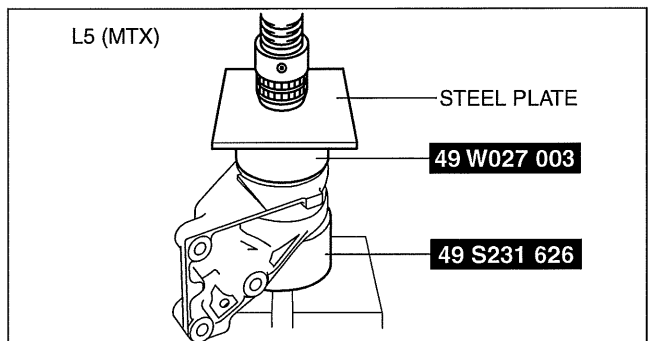
am3uuw0000620

Dust Seal (LH) Assembly Note

1. Apply grease to a new dust seal lip.
2. Install a new dust seal (LH) using the steel plate and the **SSTs**.



am3uuw0000462

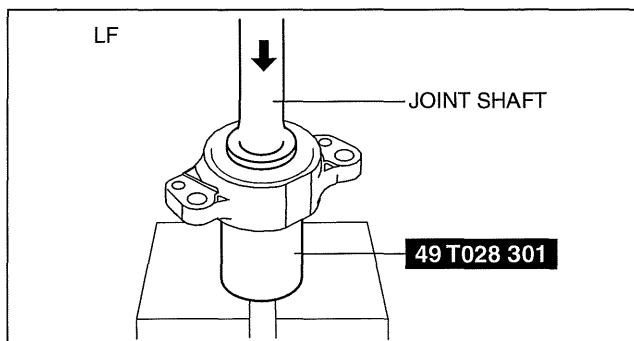


am3uuw0000620

DRIVE SHAFT

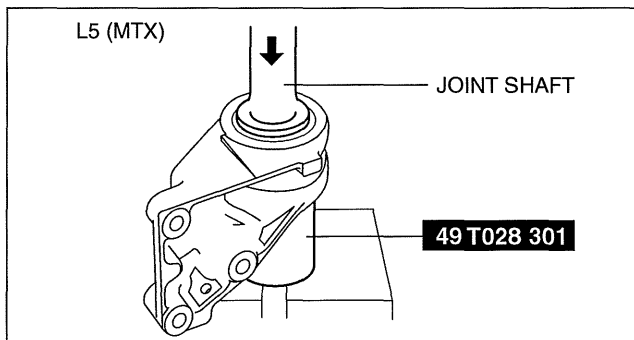
Joint Shaft Assembly Note

1. Press fit the joint shaft using the **SST** and a press.



am3uuw0000503

03-13

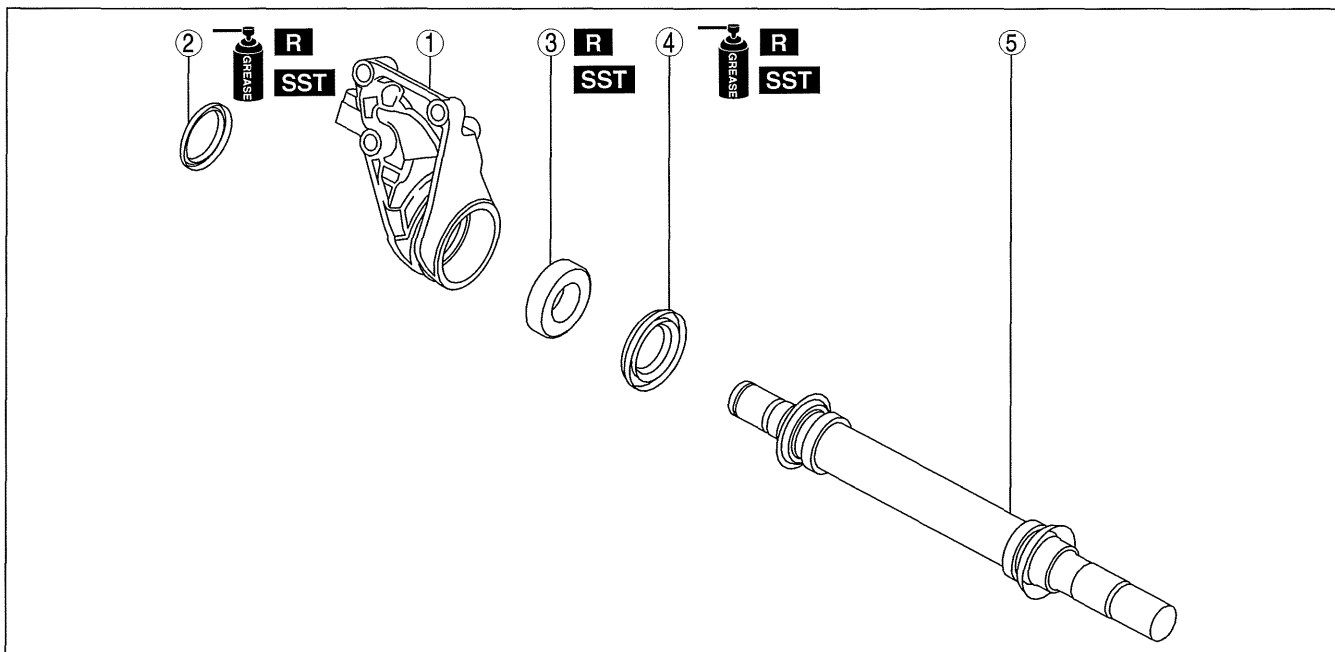


am3uuw0000620

JOINT SHAFT ASSEMBLY [L3 WITH TC]

id031300801139

1. Assemble in the order indicated in the table.



am3uuw0000617

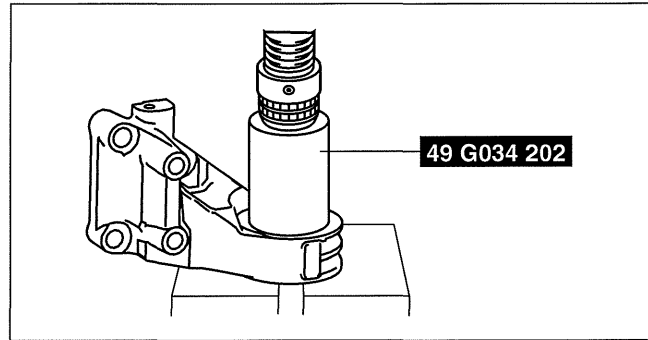
1	Bracket
2	Dust seal (RH) (See 03-13-22 Dust Seal (RH) Assembly Note.)
3	Bearing (See 03-13-22 Bearing Assembly Note.)

4	Dust seal (LH) (See 03-13-22 Dust Seal (LH) Assembly Note.)
5	Joint shaft (See 03-13-22 Joint Shaft Assembly Note.)

DRIVE SHAFT

Dust Seal (RH) Assembly Note

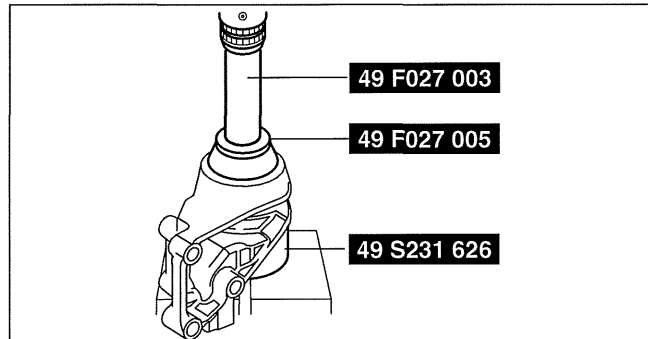
1. Apply grease to a new dust seal lip.
2. Install the dust seal (RH) using the **SST**.



am3uuw0000617

Bearing Assembly Note

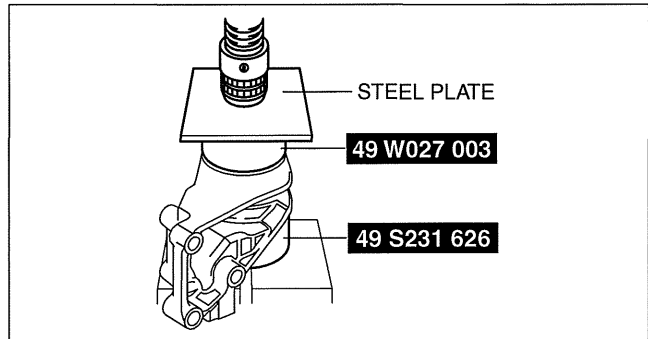
1. Install a new bearing using the **SSTs**.



am3uuw0000617

Dust Seal (LH) Assembly Note

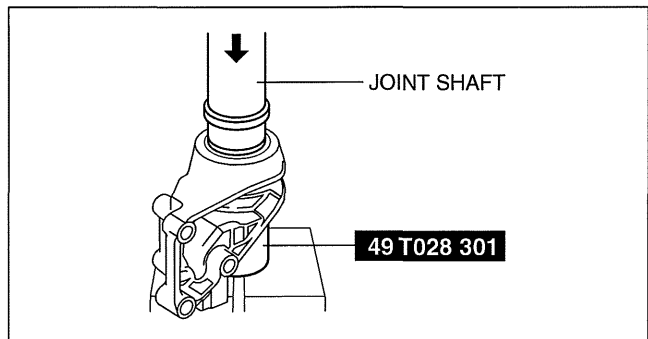
1. Apply grease to a new dust seal lip.
2. Install a new dust seal (LH) using the steel plate and the **SSTs**.



am3uuw0000617

Joint Shaft Assembly Note

1. Press fit the joint shaft using the **SST** and a press.



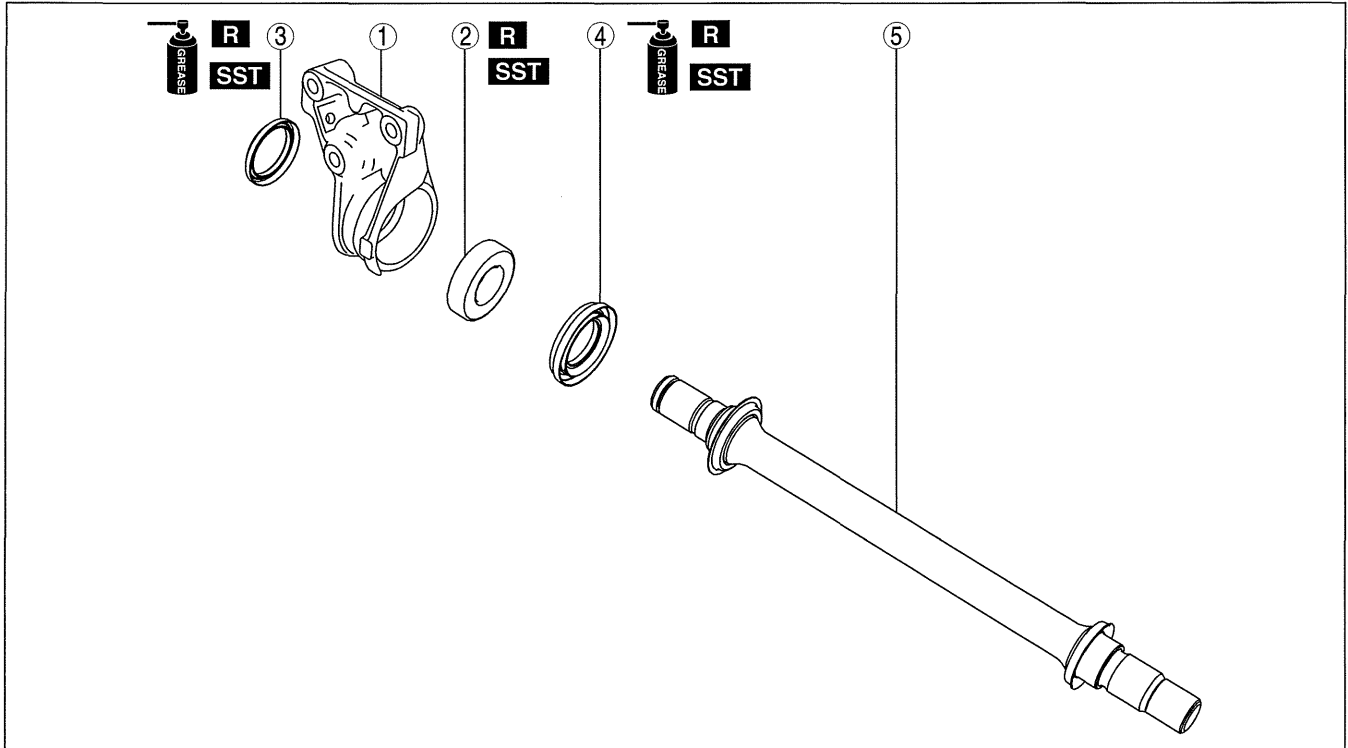
am3uuw0000617

DRIVE SHAFT

JOINT SHAFT ASSEMBLY [L5 (ATX)]

id031300801114

1. Assemble in the order indicated in the table.



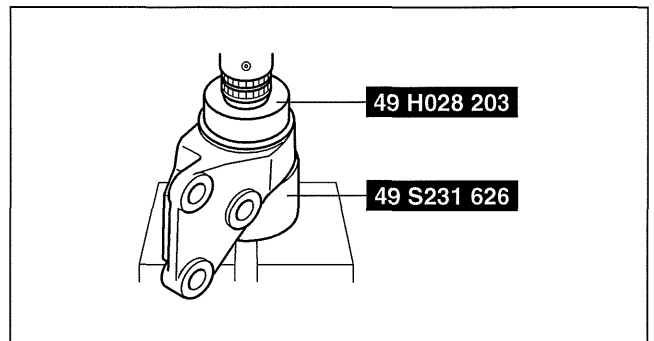
am3uuw0000620

1	Bracket
2	Bearing (See 03-13-23 Bearing Assembly Note.)
3	Dust seal (RH) (See 03-13-24 Dust Seal (RH) Assembly Note.)

4	Dust seal (LH) (See 03-13-24 Dust Seal (LH) Assembly Note.)
5	Joint shaft (See 03-13-24 Joint Shaft Assembly Note.)

Bearing Assembly Note

1. Install a new bearing using the SSTs.



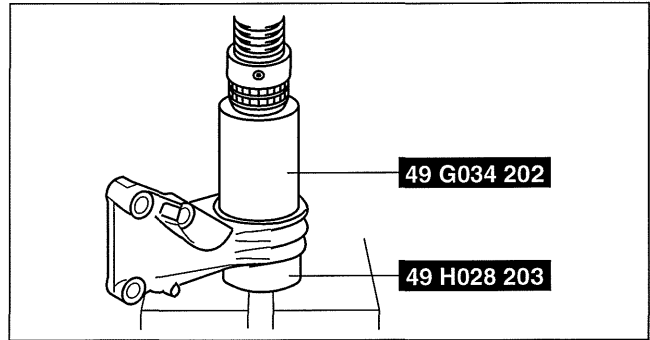
am3uuw0000620

03-13

DRIVE SHAFT

Dust Seal (RH) Assembly Note

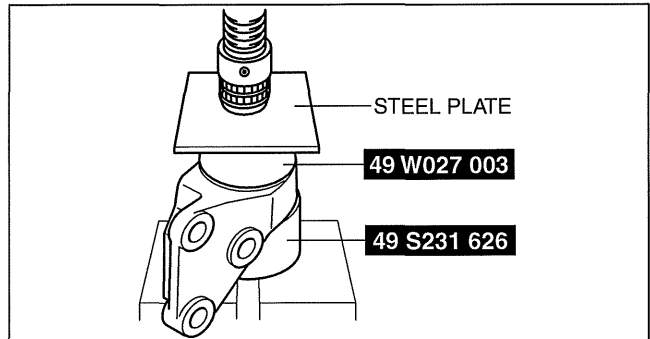
1. Apply grease to a new dust seal lip.
2. Install the dust seal (RH) using the **SSTs**.



am3uuw0000620

Dust Seal (LH) Assembly Note

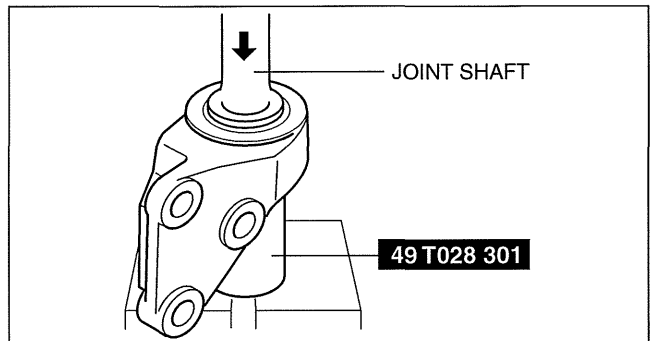
1. Apply grease to a new dust seal lip.
2. Install a new dust seal (LH) using the steel plate and the **SSTs**.



am3uuw0000620

Joint Shaft Assembly Note

1. Press fit the joint shaft using the **SST** and a press.



am3uuw0000620

TECHNICAL DATA

03-50 TECHNICAL DATA

DRIVELINE/AXLE TECHNICAL
DATA 03-50-1

DRIVELINE/AXLE TECHNICAL DATA

id035000800100

Item		Specification	
Maximum front wheel bearing play		0.05 mm {0.002 in}	
Maximum rear wheel bearing play		0.05 mm {0.002 in}	
Front drive shaft standard length	ATX	LH: 654.31—663.31 mm {25.761—26.114 in} RH: 572.73—581.73 mm {22.549—22.902 in}	
	MTX	LF, L5	LH: 656.56—665.56 mm {25.849—26.203 in} RH: 607.54—616.54 mm {23.919—24.273 in}
		L3 WITH TC	LH: 619.07—628.07 mm {24.373—24.727 in}

03-50

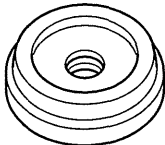
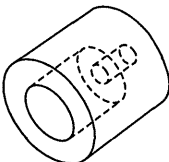
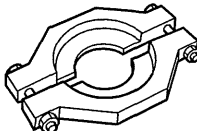

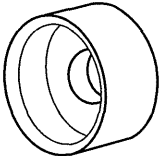

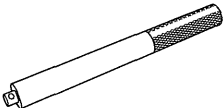
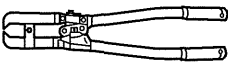
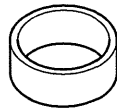
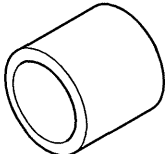
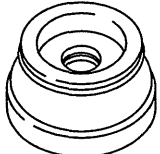
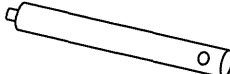

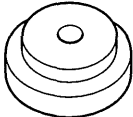
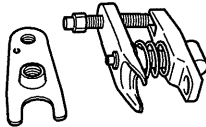
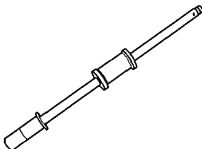
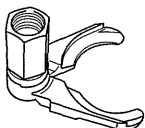
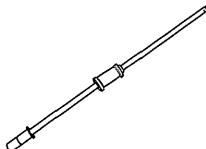
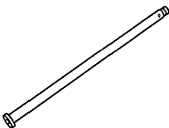
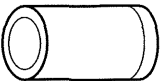
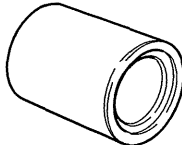
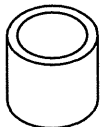
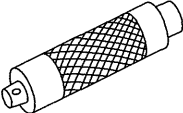
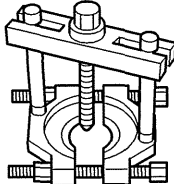
SERVICE TOOLS

03-60 SERVICE TOOLS

DRIVELINE/AXLE SST 03-60-1

DRIVELINE/AXLE SST

id036000800200

49 F027 004 Attachment ø80		49 U027 005 Bearing installer		49 H027 002 Bearing remover	
49 H034 201 Support block		49 H028 203 Block S		49 B025 004 Dust seal installer	
49 F027 003 Handle		49 T025 001 Boot clamp crimper		49 S231 626 Support block	
49 W027 003 Bearing installer		49 F027 005 Attachment ø62		49 G033 102 Handle	
49 G033 105 Attachment		49 G033 106 Attachment		49 T028 3A0 Ball Joint Puller set	
49 0223 630B Rear shaft puller body		49 B025 010 Attachment		49 B025 017 Sliding hammer	
49 B025 016 Extension		49 G034 202 Support block		49 T028 301 Dust boot installer	
49 B034 212 Rubber bush replacer		49 G030 797 Handle (Part of 49 G030 795)		49 0710 520 Universal Bearing Puller	

03-60

BRAKES

04
SECTION

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ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]04-02B	CONVENTIONAL BRAKE SYSTEM 04-11
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SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]04-03B	ANTILOCK BRAKE SYSTEM 04-13
	DYNAMIC STABILITY CONTROL 04-15
	TECHNICAL DATA 04-50
	SERVICE TOOLS 04-60

04-02A

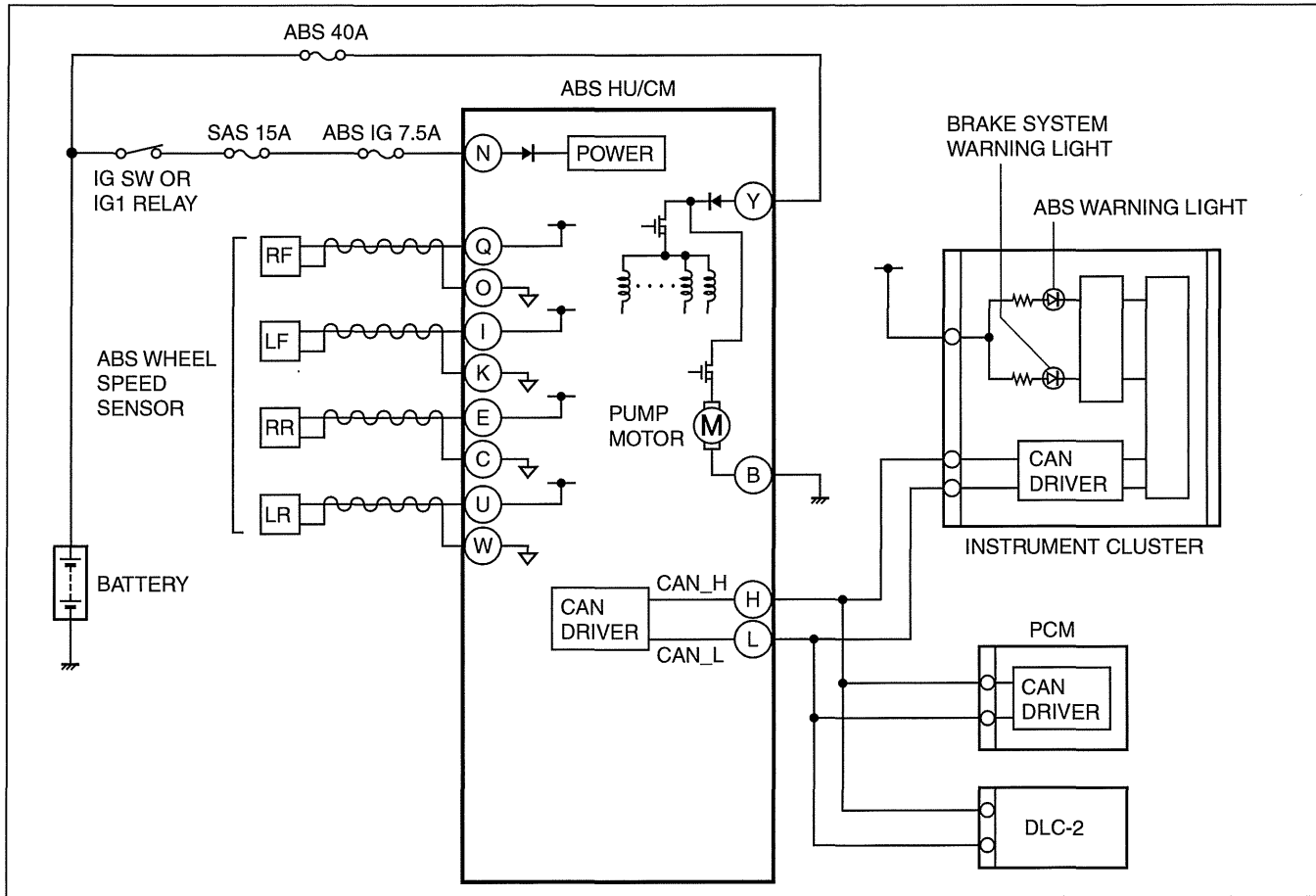
04-02A ON-BOARD DIAGNOSTIC [ABS]

ABS SYSTEM WIRING DIAGRAM [ABS] 04-02A-2	DTC C0020:01/C0020:1C/C0020:71 [ABS] 04-02A-7
ON-BOARD DIAGNOSIS [ABS] 04-02A-2	DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS] 04-02A-9
On-Board Diagnostic (OBD) Test Description 04-02A-2	DTC C0031:01/C0034:01/C0037:01/C003A:01 [ABS] 04-02A-11
Reading DTCs Procedure..... 04-02A-3	DTC C0040:64 [ABS] 04-02A-13
Clearing DTCs Procedures..... 04-02A-3	DTC C0082:47/C0082:48/C0082:49 [ABS] 04-02A-14
PID/Data Monitor and Record Procedure 04-02A-3	DTC U0001:88/U0100:00/U0155:00 [ABS] 04-02A-15
Active Command Modes Procedure ... 04-02A-4	Diagnostic procedure 04-02A-15
DTC Table 04-02A-4	DTC U2100:00/U2101:00 [ABS] 04-02A-15
PID/DATA Monitor Table 04-02A-5	DTC U3003:16/U3003:17 [ABS] 04-02A-16
Active Command Modes Table 04-02A-6	
DTC C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [ABS] 04-02A-6	

ON-BOARD DIAGNOSTIC [ABS]

ABS SYSTEM WIRING DIAGRAM [ABS]

id0402a7160900



am3zzn0000245

ON-BOARD DIAGNOSIS [ABS]

id0402a7805500

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the ABS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the ABS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the ABS HU/CM memory.

PID/Data monitor and record

- This function allows you to access certain data values, input signals, calculated values, and system status information.

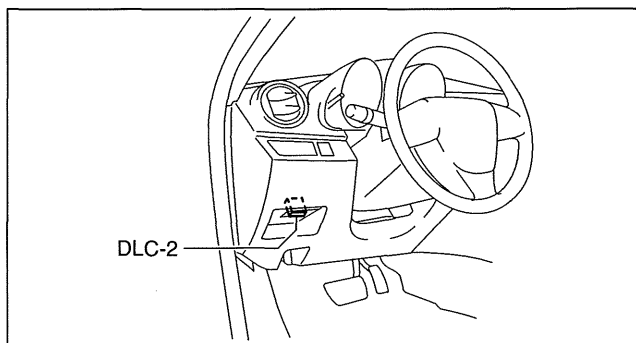
Active command modes

- This function allows you to control devices through the M-MDS.

ON-BOARD DIAGNOSTIC [ABS]

Reading DTCs Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the ABS. (See 04-02A-3 Clearing DTCs Procedures.)

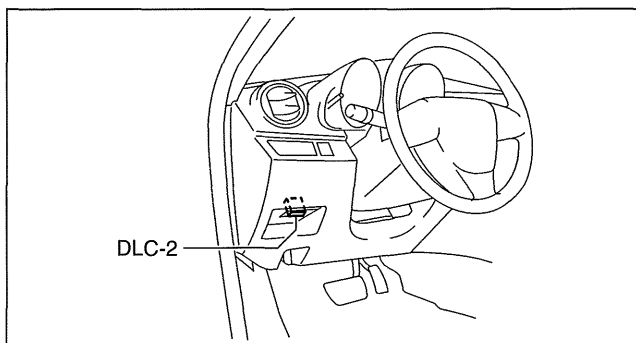


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04-02A

Clearing DTCs Procedures

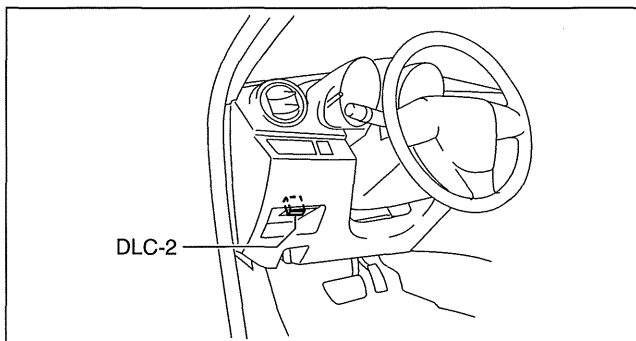
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 04-02A-3 Reading DTCs Procedure.)
8. Verify that no DTCs are displayed.



am3zzn0000236

PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



am3zzn0000236

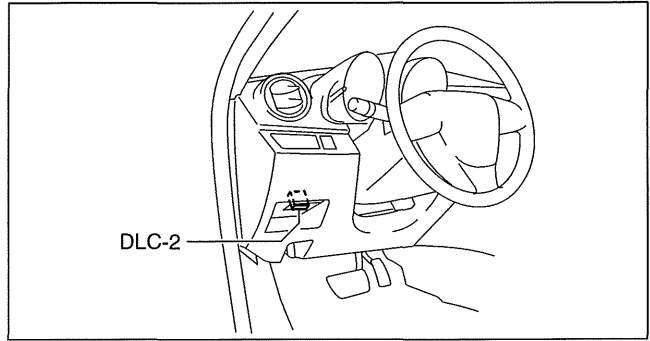
Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

ON-BOARD DIAGNOSTIC [ABS]

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".
3. Select the active command modes from the PID table.
4. Perform the active command modes, inspect the operations for each parts.
 - If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.



am3zzn0000236

DTC Table

DTC	System malfunction location	Page
M-MDS		
C0010:01	ABS HU/CM internal malfunction (LF inlet solenoid)	(See 04-02A-6 DTC C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [ABS].)
C0011:01	ABS HU/CM internal malfunction (LF outlet solenoid)	
C0014:01	ABS HU/CM internal malfunction (RF inlet solenoid)	
C0015:01	ABS HU/CM internal malfunction (RF outlet solenoid)	
C0018:01	ABS HU/CM internal malfunction (LR inlet solenoid)	
C0019:01	ABS HU/CM internal malfunction (LR outlet solenoid)	
C001C:01	ABS HU/CM internal malfunction (RR inlet solenoid)	
C001D:01	ABS HU/CM internal malfunction (RR outlet solenoid)	
C0020:01	Pump motor, motor relay	(See 04-02A-7 DTC C0020:01/C0020:1C/C0020:71 [ABS].)
C0020:1C	Pump motor, motor relay	
C0020:71	Pump motor, motor relay	
C0030:07	LF ABS sensor rotor	(See 04-02A-9 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS].)
C0031:01	LF ABS wheel-speed sensor	(See 04-02A-11 DTC C0031:01/C0034:01/C0037:01/C003A:01 [ABS].)
C0031:07	LF ABS wheel-speed sensor/ABS sensor rotor	(See 04-02A-9 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS].)
C0033:07	RF ABS sensor rotor	
C0034:01	RF ABS wheel-speed sensor	(See 04-02A-11 DTC C0031:01/C0034:01/C0037:01/C003A:01 [ABS].)
C0034:07	RF ABS wheel-speed sensor/ABS sensor rotor	(See 04-02A-9 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS].)
C0036:07	LR ABS sensor rotor	
C0037:01	LR ABS wheel-speed sensor	(See 04-02A-11 DTC C0031:01/C0034:01/C0037:01/C003A:01 [ABS].)
C0037:07	LR ABS wheel-speed sensor/ABS sensor rotor	(See 04-02A-9 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS].)
C0039:07	RR ABS sensor rotor	
C003A:01	RR ABS wheel-speed sensor	(See 04-02A-11 DTC C0031:01/C0034:01/C0037:01/C003A:01 [ABS].)

ON-BOARD DIAGNOSTIC [ABS]

DTC M-MDS	System malfunction location	Page
C003A:07	RR ABS wheel-speed sensor/ABS sensor rotor	(See 04-02A-9 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS].)
C0040:64	Brake switch	(See 04-02A-13 DTC C0040:64 [ABS].)
C0082:47	ABS HU/CM (internal malfunction)	(See 04-02A-14 DTC C0082:47/C0082:48/C0082:49 [ABS].)
C0082:48	ABS HU/CM (internal malfunction)	
C0082:49	ABS HU/CM (internal malfunction)	
U0001:88	CAN line	(See 04-02A-15 DTC U0001:88/U0100:00/U0155:00 [ABS].)
U0100:00	CAN line	
U0155:00	CAN line	
U2100:00	ABS HU/CM configuration	(See 04-02A-15 DTC U2100:00/U2101:00 [ABS].)
U2101:00	ABS HU/CM configuration	
U3003:16	Power supply system	(See 04-02A-16 DTC U3003:16/U3003:17 [ABS].)
U3003:17	Power supply system	

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PID/DATA Monitor Table

PID name (definition)	Unit/ Condition	Operation condition (reference)	Action	ABS HU/CM terminal
BRAKE_SW	Off/On	<ul style="list-style-type: none"> Brake pedal released: Off Brake pedal depressed: On 	Inspect the brake switch. (See 04-11-10 BRAKE SWITCH INSPECTION.)	—
EX_TEMP	°C, °F	<ul style="list-style-type: none"> Ambient temperature 	—	—
PMP_MTR	Off/On	<ul style="list-style-type: none"> Pump motor not activated: Off Pump motor activated: On 	Inspect the ABS HU/CM. (See 04-13-5 ABS HU/CM INSPECTION.)	—
VSPD	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS HU/CM. (See 04-13-5 ABS HU/CM INSPECTION.) Inspect the ABS wheel-speed sensor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)	—
VPWR	V	<ul style="list-style-type: none"> Switch the ignition to ON: Approx. 12.2 V Idling: Approx. 14.1 V 	Inspect power supply circuit. (See 04-13-5 ABS HU/CM INSPECTION.)	N
V_LF_INL	Off/On	<ul style="list-style-type: none"> Solenoid valve not activated: Off Solenoid valve activated: On 	Inspect the ABS HU/CM. (See 04-13-5 ABS HU/CM INSPECTION.)	—
V_LF_OTL				
V_LR_INL				
V_LR_OTL				
V_RF_INL				
V_RF_OTL				
V_RR_INL				
V_RR_OTL				
WSPD_LF	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the front ABS wheel-speed sensor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)	I, K
WSPD_LR			Inspect the rear ABS wheel-speed sensor. (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)	U, W
WSPD_RF			Inspect the front ABS wheel-speed sensor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)	O, Q
WSPD_RR			Inspect the rear ABS wheel-speed sensor. (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)	C, E

ON-BOARD DIAGNOSTIC [ABS]

Active Command Modes Table

Command name	Output part	Operation	Operating condition
PMP_MTR	Pump motor	Off/On	Switch the ignition to ON
V_LF_INL	LF inlet solenoid valve		
V_LF_OTL	LF outlet solenoid valve		
V_LR_INL	LR inlet solenoid valve		
V_LR_OTL	LR outlet solenoid valve		
V_RF_INL	RF inlet solenoid valve		
V_RF_OTL	RF outlet solenoid valve		
V_RR_INL	RR inlet solenoid valve		
V_RR_OTL	RR outlet solenoid valve		

DTC C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [ABS]

id0402a7877200

DTC	C0010:01	LF inlet solenoid valve system
	C0011:01	LF outlet solenoid valve system
	C0014:01	RF inlet solenoid valve system
	C0015:01	RF outlet solenoid valve system
	C0018:01	LR inlet solenoid valve system
	C0019:01	LR outlet solenoid valve system
	C001C:01	RR inlet solenoid valve system
	C001D:01	RR outlet solenoid valve system
DETECTION CONDITION	<ul style="list-style-type: none"> Malfunction detected in the ABS HU/CM solenoid valve or internal circuit by the ABS HU/CM on-board diagnostic function 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Open or short circuit in the ABS HU/CM internal solenoid valves Solenoid valve malfunction Poor connection at connectors (female terminal) 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY SOLENOID VALVE OPERATION <ul style="list-style-type: none"> Switch the ignition to off. Connect the M-MDS to the DLC-2. Switch the ignition to ON. Access the active command mode for the solenoid valve using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Does the solenoid valve operate? 	Yes	Go to the next step.
		No	Replace the ABS HU/CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Gradually slow down and stop vehicle. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

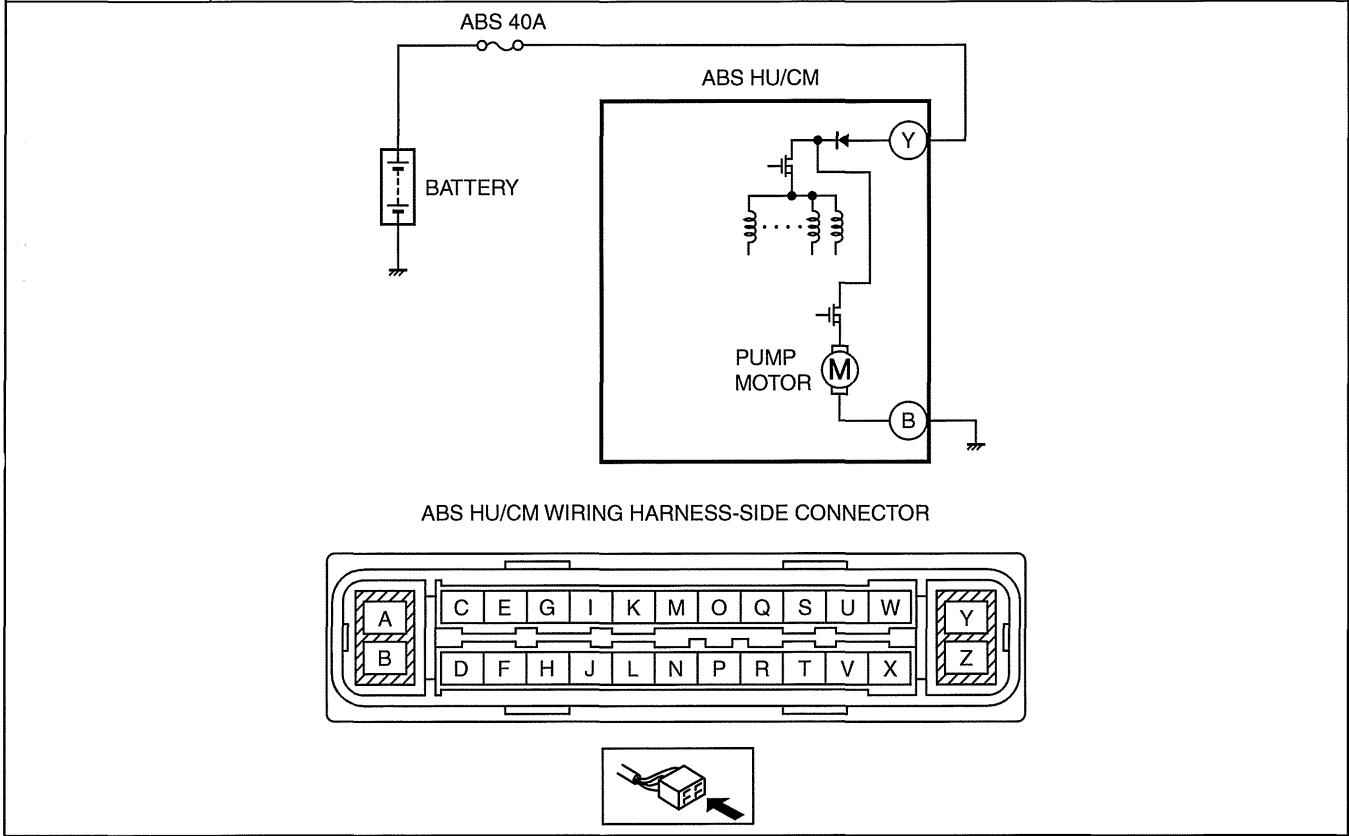
ON-BOARD DIAGNOSTIC [ABS]

DTC C0020:01/C0020:1C/C0020:71 [ABS]

id0402a7877000

DTC	C0020:01, C0020:1C, C0020:71	Pump motor, motor relay
DETECTION CONDITION	<ul style="list-style-type: none"> • C0020:01 — ABS motor relay signal does not correspond to ABS HU/CM ON signal. • C0020:1C — ABS motor monitor signal does not correspond to ABS HU/CM OFF signal. — ABS motor monitor signal does not correspond to ABS HU/CM ON signal. • C0020:71 — ABS HU/CM motor monitor ON signal is not input within specified time limit or more when motor signal is switched from ON to OFF by ABS HU/CM. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ABS 40A fuse malfunction • Open or short circuit in ABS HU/CM internal motor relay, or stuck motor relay • Open or short circuit in ABS HU/CM internal pump motor, or frozen pump motor • Open circuit or short to ground in the wiring harness between the battery and ABS HU/CM terminal Y • Open circuit in the wiring harness between ABS HU/CM terminal B and body ground • Poor connection at connectors (female terminal) 	

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ON-BOARD DIAGNOSTIC [ABS]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT ABS FUSE CONDITION <ul style="list-style-type: none"> Is the ABS fuse (ABS 40A) normal? 	Yes	Go to the next step.
		No	Replace the fuse, then go to Step 6.
2	VERIFY PUMP MOTOR OPERATION <ul style="list-style-type: none"> Switch the ignition to off. Connect the M-MDS to the DLC-2. Switch the ignition to ON. Access PMP_MTR active command modes using the M-MDS. Does the pump motor operate? 	Yes	Go to the next step.
		No	Replace the ABS HU/CM, then go to Step 6. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
3	INSPECT MOTOR RELAY POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the ABS HU/CM connector. Inspect for continuity between ABS HU/CM terminal Y and the positive battery terminal. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
4	INSPECT MOTOR RELAY POWER SUPPLY FOR SHORT CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between ABS HU/CM terminal Y and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 6.
		No	Go to the next step.
5	INSPECT PUMP MOTOR GROUND FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between ABS HU/CM terminal B and body ground. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to the next step.
6	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Reconnect all disconnected connectors. Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ABS]

DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [ABS]

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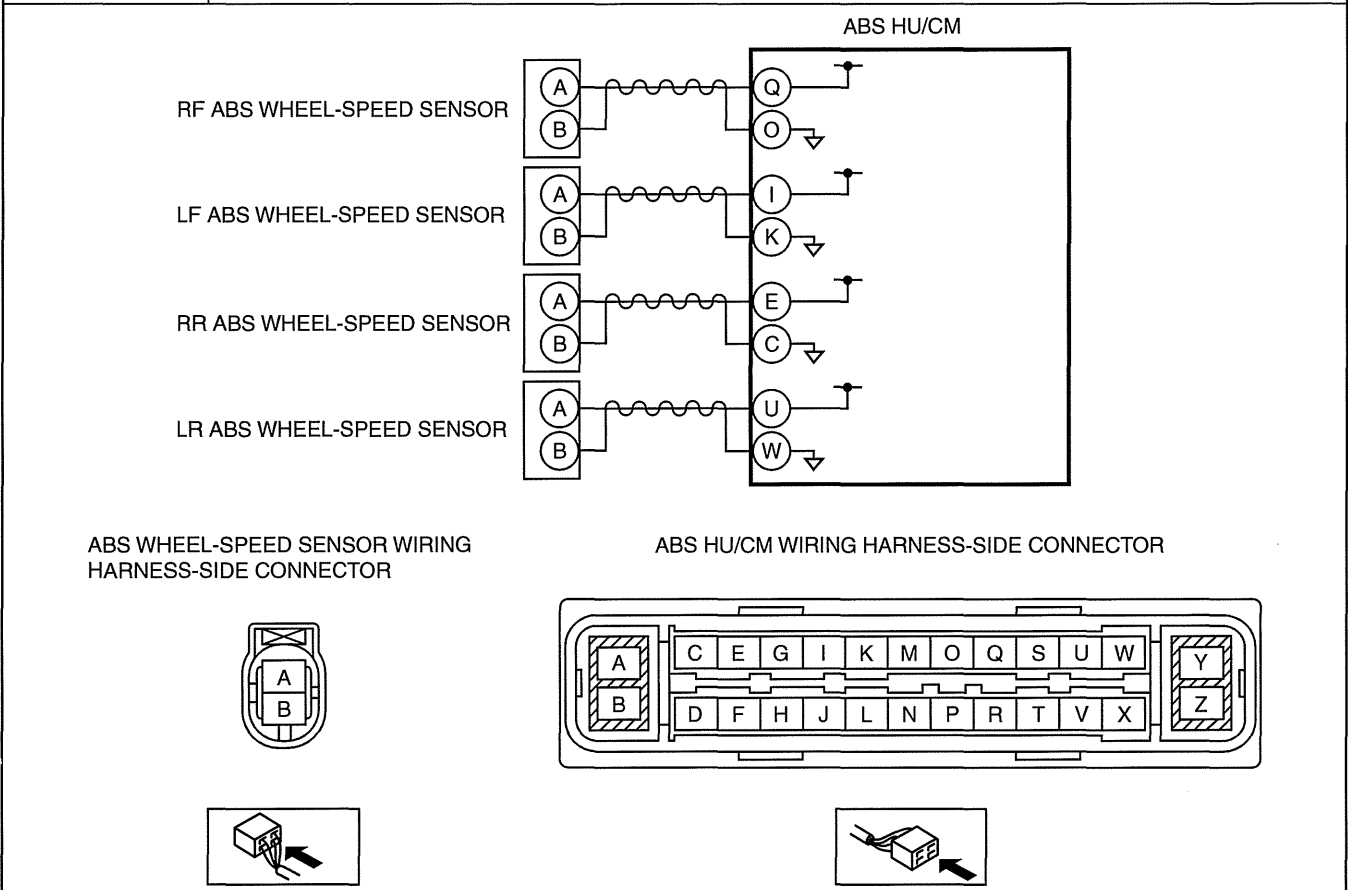
Note

- When only the driving wheels are rotated while the vehicle is jacked up, DTCs C0037:07 and C003A:07 are input to the memory.

DTC	C0030:07	LF ABS sensor rotor
	C0031:07	LF ABS wheel-speed sensor/ABS sensor rotor
	C0033:07	RF ABS sensor rotor
	C0034:07	RF ABS wheel-speed sensor/ABS sensor rotor
	C0036:07	LR ABS sensor rotor
	C0037:07	LR ABS wheel-speed sensor/ABS sensor rotor
	C0039:07	RR ABS sensor rotor
	C003A:07	RR ABS wheel-speed sensor/ABS sensor rotor

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DETECTION CONDITION	<ul style="list-style-type: none"> • C0030:07, C0033:07, C0036:07, C0039:07 — Periodic abnormality is detected in the signal wave pattern from the ABS wheel-speed sensors. • C0031:07, C0034:07, C0037:07, C003A:07 — (1) The wheel-speed signal is not input or an extremely low wheel-speed signal is detected from any of the four wheels when driving at a vehicle speed of 10 km/h {6.2 mph} or more — (2) A large, sudden change in the wheel speed-signal is detected. — (3) ABS control continues to operate for 28 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • C0030:07, C0033:07, C0036:07, C0039:07 — ABS sensor rotor malfunction (missing ABS sensor rotor teeth due to foreign material obstruction) — ABS sensor rotor installation malfunction (If the ABS sensor rotor is installed at an angle, it may cause output of abnormal wave pattern at high speeds.) • C0031:07, C0034:07, C0037:07, C003A:07 — Conditions (1) and (2) are detected: <ul style="list-style-type: none"> • Excessive clearance between the ABS wheel-speed sensor and sensor rotor • ABS sensor rotor malfunction (foreign material adhering) • ABS sensor rotor installation malfunction (If the sensor rotor is installed at an angle, it may cause output of abnormal wave pattern at high speeds.) • ABS wheel-speed sensor malfunction — When condition (3) is detected: <ul style="list-style-type: none"> • Continuous ABS operation



ON-BOARD DIAGNOSTIC [ABS]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT PID FOR ABS WHEEL-SPEED SENSOR OUTPUT ERROR USING M-MDS <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the M-MDS to the DLC-2. • Select the following PIDs using the M-MDS: WSPD_LF WSPD_LR WSPD_RF WSPD_RR • Drive the vehicle. • Verify that the vehicle speeds detected by the four ABS wheel-speed sensors are approximately the same. • Are the vehicle speeds approximately the same? 	Yes	Go to Step 3.
		No	Go to the next step.
2	INSPECT FOR SHORT TO GROUND BETWEEN ABS WHEEL-SPEED SENSOR CONNECTORS AND GROUND <ul style="list-style-type: none"> • Disconnect the ABS wheel-speed sensor connectors. • Inspect for no continuity between the following ABS wheel-speed sensor connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — ABS wheel-speed sensor (RF): B—Body ground — ABS wheel-speed sensor (LF): B—Body ground — ABS wheel-speed sensor (RR): B—Body ground — ABS wheel-speed sensor (LR): B—Body ground • Is the continuity normal? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 5.
3	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE. <ul style="list-style-type: none"> • Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.) • Is the clearance normal? 	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to Step 5. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION <ul style="list-style-type: none"> • Is the result normal? 	Yes	Go to the next step.
		No	Replace the front wheel bearing or the rear wheel hub component, then go to the next step. <ul style="list-style-type: none"> • Front wheel bearing (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See 03-11-4 WHEEL HUB, STEERING KNUCKLE DISASSEMBLY/ASSEMBLY.) • Rear wheel hub component (See 03-12-2 WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

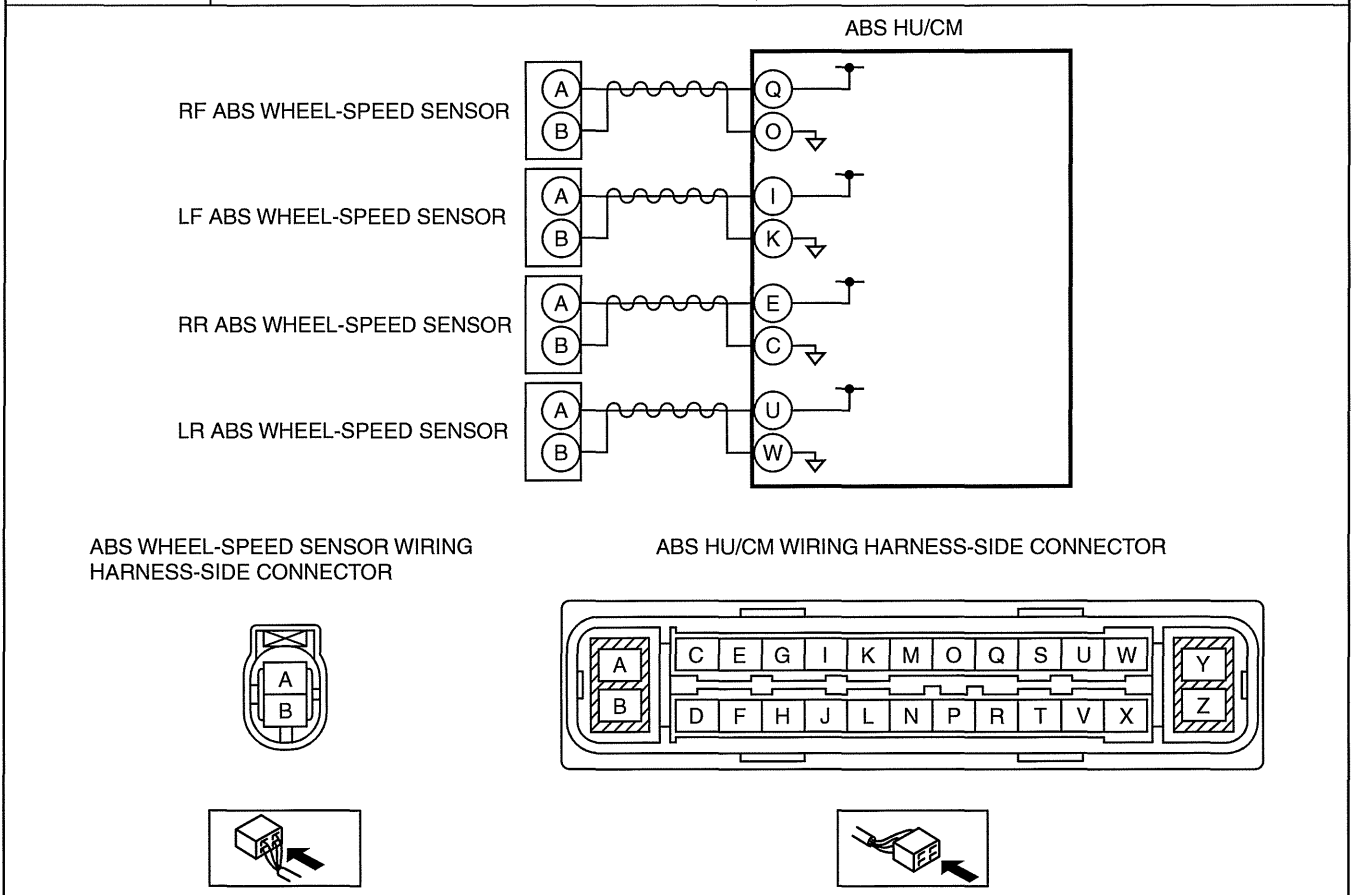
ON-BOARD DIAGNOSTIC [ABS]

DTC C0031:01/C0034:01/C0037:01/C003A:01 [ABS]

id0402a7877300

DTC	C0031:01	LF ABS wheel-speed sensor
	C0034:01	RF ABS wheel-speed sensor
	C0037:01	LR ABS wheel-speed sensor
	C003A:01	RR ABS wheel-speed sensor
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit or short to ground has been detected in the ABS wheel-speed sensor wiring harness on any of the four vehicle wheels. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Open circuit or short to ground in the wiring harness between the following ABS HU/CM terminals and ABS wheel-speed sensor terminals: <ul style="list-style-type: none"> — ABS HU/CM terminal Q—RF ABS wheel-speed sensor terminal A — ABS HU/CM terminal O—RF ABS wheel-speed sensor terminal B — ABS HU/CM terminal I—LF ABS wheel-speed sensor terminal A — ABS HU/CM terminal K—LF ABS wheel-speed sensor terminal B — ABS HU/CM terminal E—RR ABS wheel-speed sensor terminal A — ABS HU/CM terminal C—RR ABS wheel-speed sensor terminal B — ABS HU/CM terminal U—LR ABS wheel-speed sensor terminal A — ABS HU/CM terminal W—LR ABS wheel-speed sensor terminal B Malfunction in the ABS wheel-speed sensor Poor connection at connectors (female terminal) 	

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ON-BOARD DIAGNOSTIC [ABS]

Diagnostic procedure

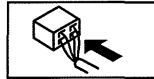
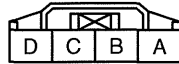
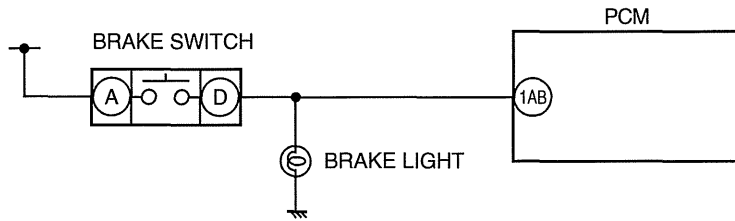
STEP	INSPECTION	ACTION	
1	INSPECT ABS WHEEL-SPEED SENSOR FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the ABS HU/CM connectors. • Inspect for continuity between the following ABS HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — RF ABS wheel-speed sensor(+): Q — RF ABS wheel-speed sensor(-): O — LF ABS wheel-speed sensor(+): I — LF ABS wheel-speed sensor(-): K — RR ABS wheel-speed sensor(+): E — RR ABS wheel-speed sensor(-): C — LR ABS wheel-speed sensor(+): U — LR ABS wheel-speed sensor(-): W • Is there continuity? 	Yes	Go to the next step.
		No	Go to Step 3.
2	INSPECT ABS WHEEL-SPEED SENSOR WIRING HARNESS FOR SHORT TO GROUND <ul style="list-style-type: none"> • Disconnect the ABS wheel-speed sensor connectors. • Inspect for continuity between the following ABS HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — RF ABS wheel-speed sensor(+): Q — RF ABS wheel-speed sensor(-): O — LF ABS wheel-speed sensor(+): I — LF ABS wheel-speed sensor(-): K — RR ABS wheel-speed sensor(+): E — RR ABS wheel-speed sensor(-): C — LR ABS wheel-speed sensor(+): U — LR ABS wheel-speed sensor(-): W • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 4.
		No	Replace the ABS wheel-speed sensor, then go to Step 4. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
3	INSPECT FOR OPEN CIRCUIT IN ABS WHEEL-SPEED SENSOR WIRING HARNESS <ul style="list-style-type: none"> • Inspect for continuity between the ABS HU/CM connectors (vehicle harness-side) and the following vehicle harness-side connector terminals of the ABS wheel-speed sensors: <ul style="list-style-type: none"> — RF ABS wheel-speed sensor(+): Q—A — RF ABS wheel-speed sensor(-): O—B — LF ABS wheel-speed sensor(+): I—A — LF ABS wheel-speed sensor(-): K—B — RR ABS wheel-speed sensor(+): E—A — RR ABS wheel-speed sensor(-): C—B — LR ABS wheel-speed sensor(+): U—A — LR ABS wheel-speed sensor(-): W—B • Is there continuity? 	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to the next step. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ABS]

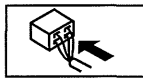
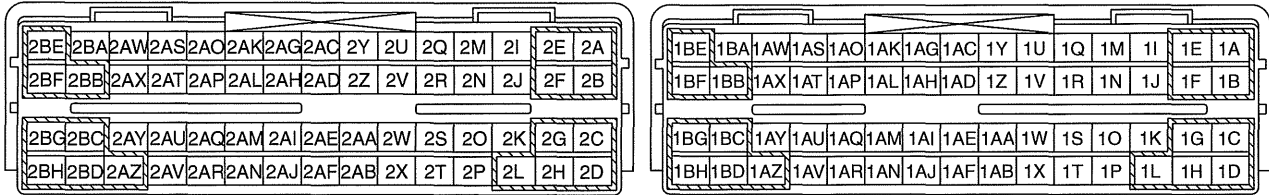
DTC C0040:64 [ABS]

id0402a7877500

DTC	C0040:64	Brake switch
DETECTION CONDITION	<ul style="list-style-type: none"> • Brake switch ON signal is input for 6 min or more when driving at a vehicle speed of 20 km/h {12 mph} or more. • Brake switch ON signal is not input even though the control module determines vehicle deceleration. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in wiring harness between the brake switch and PCM terminal 1AB • Brake switch malfunction • Poor connection at connectors (female terminal) 	



PCM WIRING HARNESS-SIDE CONNECTOR



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ON-BOARD DIAGNOSTIC [ABS]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY OPEN OR SHORT CIRCUIT IN BRAKE SWITCH SIGNAL <ul style="list-style-type: none"> Switch the ignition to ON. Measure the voltage between the PCM terminal 1AB (vehicle harness-side) and body ground when the brake pedal is depressed and released: Voltage Brake pedal depressed: B+ Brake pedal released: 1 V or less 	Yes	Go to Step 5.
		No	If it is B+ under any condition, then go to the next step. If it is 1 V or less under any condition, then go to Step 3.
2	INSPECT BRAKE SWITCH SIGNAL FOR SHORT TO POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> Disconnect the brake switch connector. Measure voltage between the brake switch connector terminal D (vehicle harness-side) and body ground. Is the voltage 1 V or less? 	Yes	Go to Step 4.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5.
3	INSPECT BRAKE SWITCH SIGNAL FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the PCM connectors. Disconnect the brake switch connector. Inspect continuity between the PCM connector terminal 1AB (vehicle harness-side) and brake switch terminal D (vehicle harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5.
4	INSPECT BRAKE SWITCH <ul style="list-style-type: none"> Inspect the brake switch. (See 04-11-10 BRAKE SWITCH INSPECTION.) Is the brake switch normal? 	Yes	Go to the next step.
		No	Replace the brake switch, then go to the next step. (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Reconnect all disconnected connectors. Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Start the engine and drive the vehicle at 20 km/h {12 mph} or more. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

DTC C0082:47/C0082:48/C0082:49 [ABS]

id0402a7884200

DTC	C0082:47, C0082:48, C0082:49	ABS HU/CM (internal malfunction)
DETECTION CONDITION	<ul style="list-style-type: none"> The ABS CM on-board diagnostic function detects control module internal malfunction. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> ABS HU/CM internal malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY NO ABS HU/CM MALFUNCTION <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Start the engine and drive the vehicle at 10km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ABS]

DTC U0001:88/U0100:00/U0155:00 [ABS]

id0402a7884800

DTC	U0001:88, U0100:00, U0155:00	CAN line
DETECTION CONDITION	<ul style="list-style-type: none"> • U0001:88 — Open or short circuit in CAN system wiring harness is detected. • U0100:00 — Communication error with PCM is detected in CAN communication. • U0155:00 — Communication error with instrument cluster is detected in CAN communication. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CAN system wiring harness open or short circuit • CAN system wiring harness open or short circuit with PCM • CAN system wiring harness open or short circuit with instrument cluster • instrument cluster malfunction 	

Diagnostic procedure

- Inspect according to diagnostic procedure in BODY & ACCESSORIES. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

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DTC U2100:00/U2101:00 [ABS]

id0402a7887800

DTC	U2100:00, U2101:00	Configuration data not recorded
DETECTION CONDITION	<ul style="list-style-type: none"> • ABS CM detects configuration data not record or data error 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Module configuration procedure is not done properly • Correct data cannot be received from instrument cluster • ABS CM malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	RECORD THE CAR CONFIGURATION DATA <ul style="list-style-type: none"> • Switch the ignition to off. • Switch the ignition to ON, and maintain this condition for approx. 30 s. 	Go to the next step.				
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are the same DTCs present? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Repeat the inspection from Step 1. If the malfunction recurs, go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to Step 5.</td> </tr> </table>	Yes	Repeat the inspection from Step 1. If the malfunction recurs, go to the next step.	No	Go to Step 5.
Yes	Repeat the inspection from Step 1. If the malfunction recurs, go to the next step.					
No	Go to Step 5.					
3	INSPECT FOR INSTRUMENT CLUSTER MALFUNCTION <ul style="list-style-type: none"> • Switch the ignition to off. • Using the M-MDS, perform the DTC inspection for the instrument cluster. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs detected? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) After repairing the instrument cluster, perform the "INSTRUMENT CLUSTER CONFIGURATION", then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Go to applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) After repairing the instrument cluster, perform the "INSTRUMENT CLUSTER CONFIGURATION", then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)	No	Go to the next step.
Yes	Go to applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) After repairing the instrument cluster, perform the "INSTRUMENT CLUSTER CONFIGURATION", then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)					
No	Go to the next step.					
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are the same DTCs present? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)	No	Go to the next step.
Yes	Replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)					
No	Go to the next step.					
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)					
No	DTC troubleshooting completed.					

ON-BOARD DIAGNOSTIC [ABS]

DTC U3003:16/U3003:17 [ABS]

id0402a7877800

DTC	U3003:16, U3003:17	Power supply system
DETECTION CONDITION	<ul style="list-style-type: none"> • U3003:16 — When driving the vehicle at 20 km/h {12 mph} or more, low ignition voltage (10 V or less) is detected at the voltage monitor of the solenoid valve or motor monitor. • U3003:17 — High ignition voltage (18 V or more) is detected at the voltage monitor of the solenoid valve or motor monitor. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Battery deterioration • Generator malfunction • SAS 15A/ABS IG 7.5A/ABS 40A fuse malfunction • Open or short circuit in wiring harness between ABS HU/CM terminal N and battery • Open or short circuit in wiring harness between ABS HU/CM terminal Y and battery • Open circuit in wiring harness between ABS HU/CM terminal B and body ground • ABS HU/CM malfunction • Poor connection at connectors (female terminal) 	
<p style="text-align: center;">ABS HU/CM WIRING HARNESS-SIDE CONNECTOR</p>		

ON-BOARD DIAGNOSTIC [ABS]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BATTERY VOLTAGE <ul style="list-style-type: none"> Is the battery positive terminal voltage normal? 	Yes Inspect for normal connection of the battery terminals. Go to the next step.
		No Charge or replace the battery, then go to Step 7. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2	INSPECT BATTERY GRAVITY <ul style="list-style-type: none"> Is battery specific gravity as specified? 	Yes Go to the next step.
		No Replace the battery, then go to Step 7. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3	INSPECT CHARGING SYSTEM <ul style="list-style-type: none"> Are the generator and the drive belt tensions normal? 	Yes Go to the next step.
		No Replace the generator and/or drive belt if necessary. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].) Go to Step 7.
4	INSPECT ABS FUSE CONDITION <ul style="list-style-type: none"> Is the ABS fuse (SAS 15A/ABS IG 7.5A/ABS 40A) normal? 	Yes Go to the next step.
		No Replace the fuse, then go to Step 7.
5	INSPECT ABS HU/CM POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the ABS HU/CM connectors. Switch the ignition to ON. Measure the voltage between following connector terminals of the ABS HU/CM (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — ABS HU/CM: N—Body ground — ABS HU/CM: Y—Body ground Is the voltage 10 V or more? 	Yes Go to the next step.
		No Repair or replace the wiring harness, then go to Step 7.
6	INSPECT ABS HU/CM GROUND FOR POOR GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> Switch the ignition to off. Measure the resistance between following connector terminal of ABS HU/CM (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — ABS HU/CM: B—Body ground Is the resistance within 0—1 ohm? 	Yes Go to the next step.
		No If there is open circuit: <ul style="list-style-type: none"> Repair or replace the wiring harness, then go to the next step. If resistance is not within specification: <ul style="list-style-type: none"> Repair or replace the poor ground part, then go to the next step.
7	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Reconnect all disconnected connectors. Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Start the engine and drive the vehicle at 20 km/h {12 mph} or more. Are the same DTCs present? 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION)
		No Go to the next step.
8	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No DTC troubleshooting completed.

04-02A

04-02B ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DYNAMIC STABILITY CONTROL SYSTEM WIRING DIAGRAM [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-2

ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-2

 On-Board Diagnostic (OBD) Test Description 04-02B-2

 Reading DTCs Procedure 04-02B-3

 Clearing DTCs Procedures 04-02B-3

 PID/Data Monitor and Record Procedure 04-02B-3

 Active Command Modes Procedure 04-02B-4

 DTC Table 04-02B-4

 PID/DATA Monitor Table 04-02B-6

 Active Command Modes Table 04-02B-8

DTC B10DF:46/C0082:47/C0082:48/C0082:49/U2007:46 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-8

DTC C0001:01/C0002:01/C0003:01/C0004:01/C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-9

DTC C0020:01/C0020:1C/C0020:71 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-10

DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-12

DTC C0031:01/C0034:01/C0037:01/C003A:01 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-14

DTC C0040:64 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-16

DTC C0044:01/C0044:28/C0044:54/C0044:64 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-17

DTC C0051:28 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-18

DTC C0061:01/C0061:28/C0061:64/C0063:01/C0063:28/C0063:64/C006A:01/C006A:16/C006A:17 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-19

DTC C0061:54/C0063:54 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-20

DTC C006A:95 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-20

DTC C006A:04/C006A:47 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-21

DTC C006B:00/C0072:68 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-22

DTC C1109:64 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-22

DTC U0001:88/U0100:00/U0101:00/U0140:00/U0155:00 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-23

 Diagnostic procedure 04-02B-23

DTC U0125:00/U0125:88 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-24

DTC U0401:00 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-25

DTC U0402:00 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-26

DTC U0422:00/U0428:62/U0428:64 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-26

DTC U2100:00/U2101:00 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-27

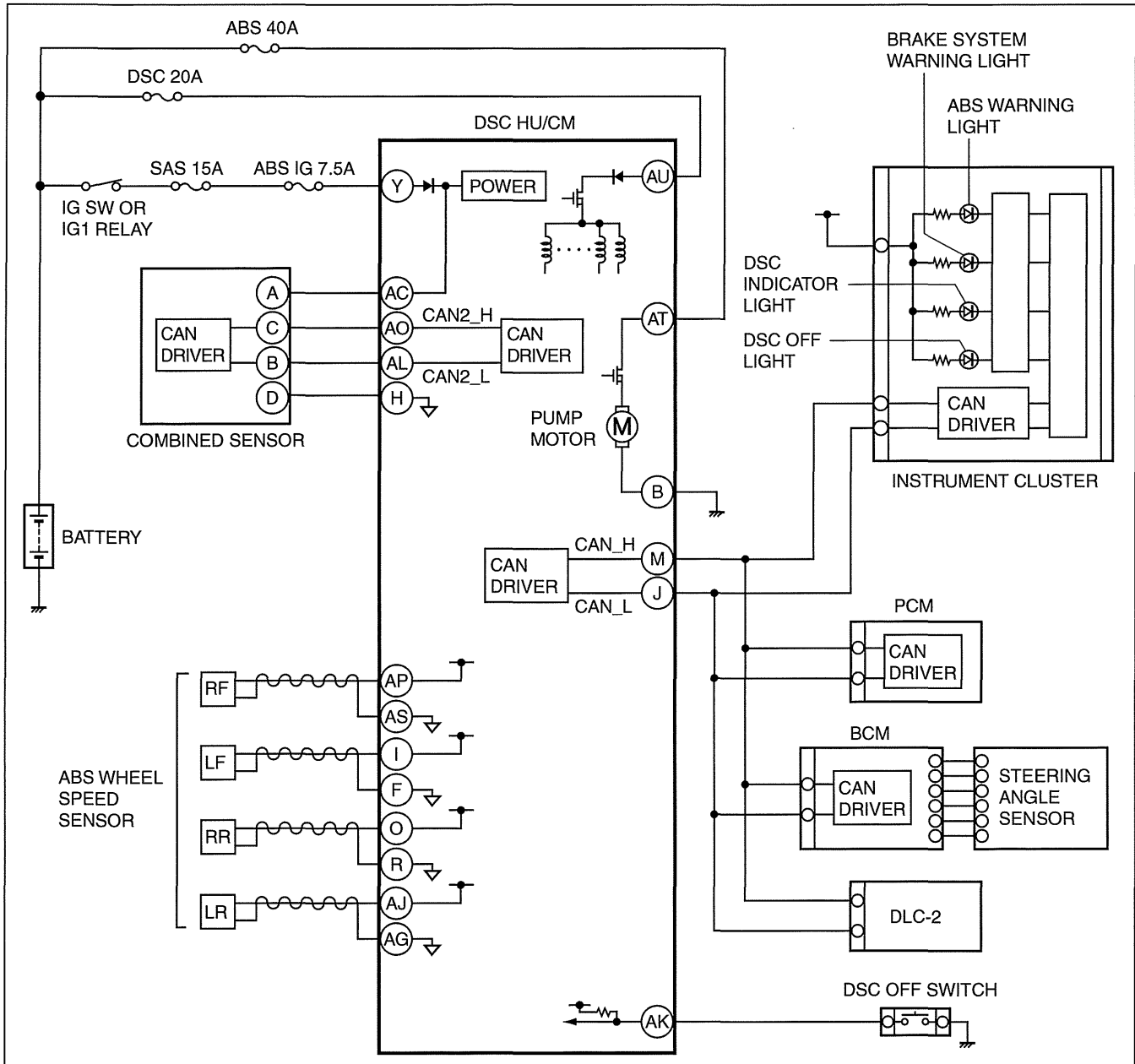
DTC U3003:16/U3003:17 [DYNAMIC STABILITY CONTROL (DSC)] 04-02B-28

04-02B

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DYNAMIC STABILITY CONTROL SYSTEM WIRING DIAGRAM [DYNAMIC STABILITY CONTROL (DSC)]

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ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2800200

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the DSC and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the DSC usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the DSC HU/CM memory.

PID/Data monitor and record

- This function allows you to access certain data values, input signals, calculated values, and system status information.

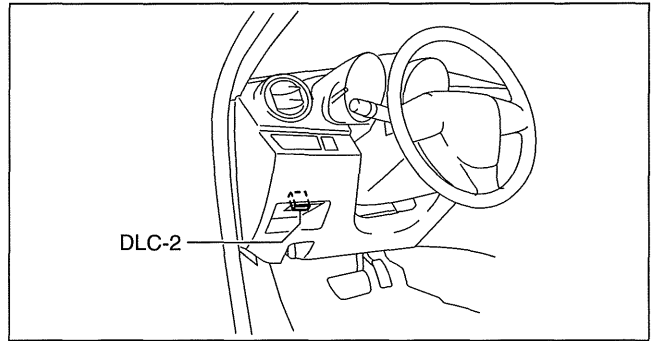
ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

Active command modes

- This function allows you to control devices through the M-MDS.

Reading DTCs Procedure

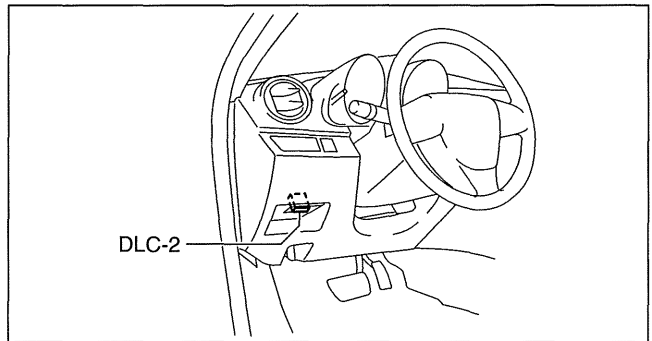
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the DSC. (See 04-02B-3 Clearing DTCs Procedures.)



04-02B

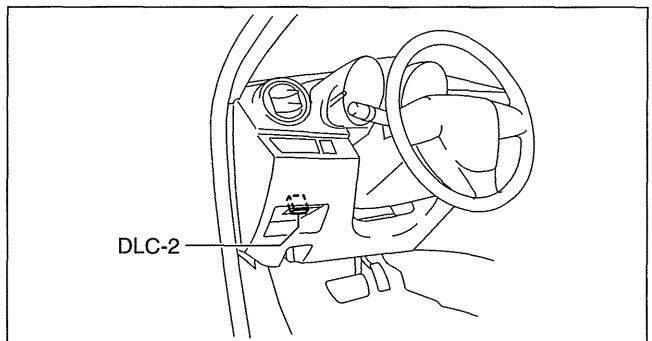
Clearing DTCs Procedures

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 04-02B-3 Reading DTCs Procedure.)
8. Verify that no DTCs are displayed.



PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



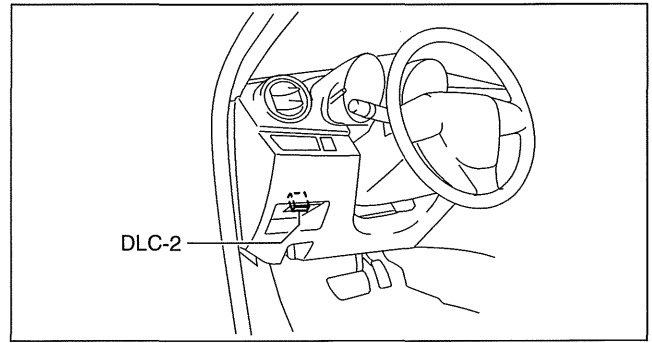
Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".
3. Select the active command modes from the PID table.
4. Perform the active command modes, inspect the operations for each parts.
 - If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.



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DTC Table

DTC M-MDS	System malfunction location	Page	
B10DF:46	DSC HU/CM (internal malfunction)	(See 04-02B-8 DTC B10DF:46/C0082:47/C0082:48/C0082:49/U2007:46 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0001:01	DSC HU/CM internal malfunction (traction control solenoid valve system)	(See 04-02B-9 DTC C0001:01/C0002:01/C0003:01/C0004:01/C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0002:01			
C0003:01	DSC HU/CM internal malfunction (stability control solenoid valve system)	(See 04-02B-9 DTC C0001:01/C0002:01/C0003:01/C0004:01/C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0004:01			
C0010:01	DSC HU/CM internal malfunction (LF inlet solenoid)	(See 04-02B-9 DTC C0001:01/C0002:01/C0003:01/C0004:01/C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/C001C:01/C001D:01 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0011:01	DSC HU/CM internal malfunction (LF outlet solenoid)		
C0014:01	DSC HU/CM internal malfunction (RF inlet solenoid)		
C0015:01	DSC HU/CM internal malfunction (RF outlet solenoid)		
C0018:01	DSC HU/CM internal malfunction (LR inlet solenoid)		
C0019:01	DSC HU/CM internal malfunction (LR outlet solenoid)		
C001C:01	DSC HU/CM internal malfunction (RR inlet solenoid)		
C001D:01	DSC HU/CM internal malfunction (RR outlet solenoid)		
C0020:01	Pump motor, motor relay		(See 04-02B-10 DTC C0020:01/C0020:1C/C0020:71 [DYNAMIC STABILITY CONTROL (DSC)].)
C0020:1C	Pump motor, motor relay		
C0020:71	Pump motor, motor relay		
C0030:07	LF ABS sensor rotor	(See 04-02B-12 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0031:01	LF ABS wheel-speed sensor	(See 04-02B-14 DTC C0031:01/C0034:01/C0037:01/C003A:01 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0031:07	LF ABS wheel-speed sensor/ABS sensor rotor	(See 04-02B-12 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0033:07	RF ABS sensor rotor		
C0034:01	RF ABS wheel-speed sensor	(See 04-02B-14 DTC C0031:01/C0034:01/C0037:01/C003A:01 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0034:07	RF ABS wheel-speed sensor/ABS sensor rotor	(See 04-02B-12 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)].)	
C0036:07	LR ABS sensor rotor		

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC	System malfunction location	Page
M-MDS		
C0037:01	LR ABS wheel-speed sensor	(See 04-02B-14 DTC C0031:01/C0034:01/C0037:01/C003A:01 [DYNAMIC STABILITY CONTROL (DSC)].)
C0037:07	LR ABS wheel-speed sensor/ABS sensor rotor	(See 04-02B-12 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)].)
C0039:07	RR ABS sensor rotor	
C003A:01	RR ABS wheel-speed sensor	(See 04-02B-14 DTC C0031:01/C0034:01/C0037:01/C003A:01 [DYNAMIC STABILITY CONTROL (DSC)].)
C003A:07	RR ABS wheel-speed sensor/ABS sensor rotor	(See 04-02B-12 DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)].)
C0040:64	Brake switch	(See 04-02B-16 DTC C0040:64 [DYNAMIC STABILITY CONTROL (DSC)].)
C0044:01	Brake fluid pressure sensor	(See 04-02B-17 DTC C0044:01/C0044:28/C0044:54/C0044:64 [DYNAMIC STABILITY CONTROL (DSC)].)
C0044:28	Brake fluid pressure sensor	
C0044:54	Brake fluid pressure sensor	
C0044:64	Brake fluid pressure sensor	
C0051:28	Steering angle sensor	(See 04-02B-18 DTC C0051:28 [DYNAMIC STABILITY CONTROL (DSC)].)
C0061:01	Combined sensor system	(See 04-02B-19 DTC C0061:01/C0061:28/C0061:64/C0063:01/C0063:28/C0063:64/C006A:01/C006A:16/C006A:17 [DYNAMIC STABILITY CONTROL (DSC)].)
C0061:28	Combined sensor system	
C0061:54	Combined sensor system (unperformed initialization procedure)	(See 04-02B-20 DTC C0061:54/C0063:54 [DYNAMIC STABILITY CONTROL (DSC)].)
C0061:64	Combined sensor system	(See 04-02B-19 DTC C0061:01/C0061:28/C0061:64/C0063:01/C0063:28/C0063:64/C006A:01/C006A:16/C006A:17 [DYNAMIC STABILITY CONTROL (DSC)].)
C0063:01	Combined sensor system	
C0063:28	Combined sensor system	
C0063:54	Combined sensor system (unperformed initialization procedure)	
C0063:64	Combined sensor system	(See 04-02B-19 DTC C0061:01/C0061:28/C0061:64/C0063:01/C0063:28/C0063:64/C006A:01/C006A:16/C006A:17 [DYNAMIC STABILITY CONTROL (DSC)].)
C006A:01	Combined sensor system	
C006A:04	Combined sensor (internal malfunction)	(See 04-02B-21 DTC C006A:04/C006A:47 [DYNAMIC STABILITY CONTROL (DSC)].)
C006A:16	Combined sensor system	(See 04-02B-19 DTC C0061:01/C0061:28/C0061:64/C0063:01/C0063:28/C0063:64/C006A:01/C006A:16/C006A:17 [DYNAMIC STABILITY CONTROL (DSC)].)
C006A:17	Combined sensor system	
C006A:47	Combined sensor (internal malfunction)	(See 04-02B-21 DTC C006A:04/C006A:47 [DYNAMIC STABILITY CONTROL (DSC)].)
C006A:95	Combined sensor mismatched installation	(See 04-02B-20 DTC C006A:95 [DYNAMIC STABILITY CONTROL (DSC)].)
C006B:00	TCS/DSC control system	(See 04-02B-22 DTC C006B:00/C0072:68 [DYNAMIC STABILITY CONTROL (DSC)].)
C0072:68	TCS/DSC control system	
C0082:47	DSC HU/CM (internal malfunction)	(See 04-02B-8 DTC B10DF:46/C0082:47/C0082:48/C0082:49/U2007:46 [DYNAMIC STABILITY CONTROL (DSC)].)
C0082:48	DSC HU/CM (internal malfunction)	
C0082:49	DSC HU/CM (internal malfunction)	
C1109:64	DSC OFF switch	(See 04-02B-22 DTC C1109:64 [DYNAMIC STABILITY CONTROL (DSC)].)
U0001:88	CAN line	(See 04-02B-23 DTC U0001:88/U0100:00/U0101:00/U0140:00/U0155:00 [DYNAMIC STABILITY CONTROL (DSC)].)
U0100:00	CAN line	
U0101:00*	CAN line	
U0125:00	Combined sensor system (CAN2 line malfunction)	(See 04-02B-24 DTC U0125:00/U0125:88 [DYNAMIC STABILITY CONTROL (DSC)].)
U0125:88	Combined sensor system (CAN2 line malfunction)	
U0140:00	CAN line	(See 04-02B-23 DTC U0001:88/U0100:00/U0101:00/U0140:00/U0155:00 [DYNAMIC STABILITY CONTROL (DSC)].)
U0155:00	CAN line	
U0401:00	Abnormal message from PCM	(See 04-02B-25 DTC U0401:00 [DYNAMIC STABILITY CONTROL (DSC)].)

04-02B

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC	System malfunction location	Page
M-MDS		
U0402:00*	Abnormal message from TCM	(See 04-02B-26 DTC U0402:00 [DYNAMIC STABILITY CONTROL (DSC)].)
U0422:00	Abnormal message from BCM	(See 04-02B-26 DTC U0422:00/U0428:62/U0428:64 [DYNAMIC STABILITY CONTROL (DSC)].)
U0428:62	Abnormal message from BCM	
U0428:64	Abnormal message from BCM	
U2007:46	DSC HU/CM (internal malfunction)	(See 04-02B-8 DTC B10DF:46/C0082:47/C0082:48/C0082:49/U2007:46 [DYNAMIC STABILITY CONTROL (DSC)].)
U2100:00	DSC HU/CM configuration	(See 04-02B-27 DTC U2100:00/U2101:00 [DYNAMIC STABILITY CONTROL (DSC)].)
U2101:00	DSC HU/CM configuration	
U3003:16	Power supply system	(See 04-02B-28 DTC U3003:16/U3003:17 [DYNAMIC STABILITY CONTROL (DSC)].)
U3003:17	Power supply system	

* : ATX

PID/DATA Monitor Table

PID name (definition)	Unit/Condition	Operation condition (reference)	Action	DSC HU/CM terminal
BRAKE_SW	Off/On	<ul style="list-style-type: none"> • Brake pedal released: Off • Brake pedal depressed: On 	Inspect the brake switch. (See 04-11-10 BRAKE SWITCH INSPECTION.)	—
DSC_ST	Off/On	<ul style="list-style-type: none"> • DSC not operating: Off • DSC operating: On 	Inspect the DSC HU/CM. (See 04-15-5 DSC HU/CM INSPECTION.)	—
DSC_SW	Off/On	<ul style="list-style-type: none"> • DSC OFF switch is released: Off • DSC OFF switch is depressed: On 	Inspect the DSC OFF switch. (See 04-15-10 DSC OFF SWITCH INSPECTION.)	AK
EX_TEMP	°C, °F	<ul style="list-style-type: none"> • Ambient temperature 	—	—
LAT_ACCL	G	<ul style="list-style-type: none"> • Vehicle stopped or driving at constant speed: 0 G • Cornering to right: Changes 0 G—positive • Cornering to left: Changes 0 G—negative 	Inspect the combined sensor. (See 04-15-8 COMBINED SENSOR INSPECTION.)	—
MCYLI_P	Pa, psi	<ul style="list-style-type: none"> • Brake pedal released: 0 Pa, 0 psi • Brake pedal depressed: Changes according to the brake fluid pressure 	Inspect the brake fluid pressure sensor. (See 04-15-9 BRAKE FLUID PRESSURE SENSOR INSPECTION.)	—
PMP_MTR	Off/On	<ul style="list-style-type: none"> • Pump motor not activated: Off • Pump motor activated: On 	Inspect the DSC HU/CM. (See 04-15-5 DSC HU/CM INSPECTION.)	—
STEER_ANGL	°	<ul style="list-style-type: none"> • Steering wheel in neutral position (not turned): 0° • Steering wheel turned to left: Changes 0°—negative • Steering wheel turned to right: Changes 0°—positive 	Inspect the steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.)	—
VSPD	KPH, MPH	<ul style="list-style-type: none"> • Vehicle stopped: 0 KPH, 0 MPH • Vehicle running: Vehicle speed 	Inspect the DSC HU/CM. (See 04-15-5 DSC HU/CM INSPECTION.) Inspect the ABS wheel-speed sensor. (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)	—

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

PID name (definition)	Unit/Condition	Operation condition (reference)	Action	DSC HU/CM terminal
VPWR	V	<ul style="list-style-type: none"> Switch the ignition to ON: Approx. 12.2 V Idling: Approx. 14.1 V 	Inspect power supply circuit. (See 04-15-5 DSC HU/CM INSPECTION.)	Y
V_LF_INL	Off/On	<ul style="list-style-type: none"> Solenoid valve not activated: Off Solenoid valve activated: On 	Inspect the DSC HU/CM. (See 04-15-5 DSC HU/CM INSPECTION.)	—
V_LF_OTL				
V_LR_INL				
V_LR_OTL				
V_RF_INL				
V_RF_OTL				
V_RR_INL				
V_RR_OTL				
V_STB_L	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See 04-15-5 DSC HU/CM INSPECTION.)	—
V_STB_R				
V_TRC_L	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See 04-15-5 DSC HU/CM INSPECTION.)	—
V_TRC_R				
WSPD_LF	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the front ABS wheel-speed sensor. (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)	F, I
WSPD_LR			Inspect the rear ABS wheel-speed sensor. (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)	AG, AJ
WSPD_RF			Inspect the front ABS wheel-speed sensor. (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)	AP, AS
WSPD_RR			Inspect the rear ABS wheel-speed sensor. (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)	O, R
YAW_RATE	°/s	<ul style="list-style-type: none"> Vehicle stopped or driving straight: 0 °/s Cornering to left: Changes 0 °/s—negative Cornering to right: Changes 0 °/s—positive 	Inspect the combined sensor. (See 04-15-8 COMBINED SENSOR INSPECTION.)	—

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ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

Active Command Modes Table

Command name	Output part	Operation	Operating condition
PMP_MTR	Pump motor	Off/On	Switch the ignition to ON
V_LF_INL	LF inlet solenoid valve		
V_LF_OTL	LF outlet solenoid valve		
V_LR_INL	LR inlet solenoid valve		
V_LR_OTL	LR outlet solenoid valve		
V_RF_INL	RF inlet solenoid valve		
V_RF_OTL	RF outlet solenoid valve		
V_RR_INL	RR inlet solenoid valve		
V_RR_OTL	RR outlet solenoid valve		
V_STB_L	Left stability control solenoid valve		
V_STB_R	Right stability control solenoid valve		
V_TRC_L	Left traction control solenoid valve		
V_TRC_R	Right traction control solenoid valve		

DTC B10DF:46/C0082:47/C0082:48/C0082:49/U2007:46 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2888200

DTC	B10DF:46, C0082:47, C0082:48, C0082:49, U2007:46	DSC HU/CM (internal malfunction)
DETECTION CONDITION	<ul style="list-style-type: none"> The DSC CM on-board diagnostic function detects control module internal malfunction. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> DSC HU/CM internal malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY NO DSC HU/CM MALFUNCTION <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC C0001:01/C0002:01/C0003:01/C0004:01/C0010:01/C0011:01/C0014:01/C0015:01/C0018:01/C0019:01/
C001C:01/C001D:01 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2878200

DTC	C0001:01	Traction control solenoid valve system
	C0002:01	Traction control solenoid valve system
	C0003:01	Stability control solenoid valve system
	C0004:01	Stability control solenoid valve system
	C0010:01	LF inlet solenoid valve system
	C0011:01	LF outlet solenoid valve system
	C0014:01	RF inlet solenoid valve system
	C0015:01	RF outlet solenoid valve system
	C0018:01	LR inlet solenoid valve system
	C0019:01	LR outlet solenoid valve system
	C001C:01	RR inlet solenoid valve system
	C001D:01	RR outlet solenoid valve system
DETECTION CONDITION	<ul style="list-style-type: none"> • Malfunction detected in the DSC HU/CM solenoid valve or internal circuit by the DSC HU/CM on-board diagnostic function 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in the DSC HU/CM internal solenoid valves • Solenoid valve malfunction • Poor connection at connectors (female terminal) 	

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Diagnostic procedure

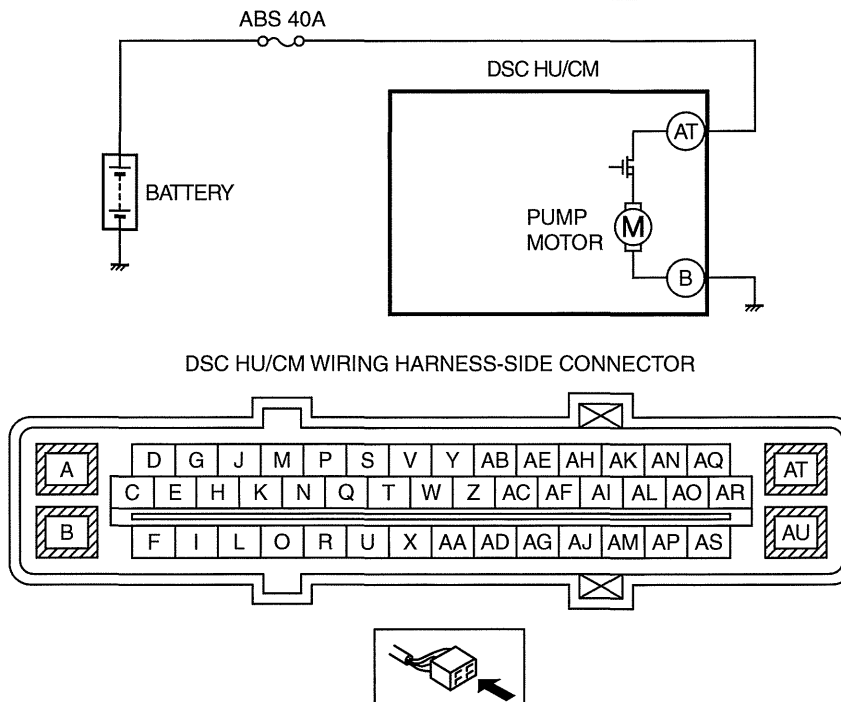
STEP	INSPECTION	ACTION	
1	VERIFY SOLENOID VALVE OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the M-MDS to the DLC-2. • Switch the ignition to ON. • Access the active command mode for the solenoid valve using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Does the solenoid valve operate? 	Yes	Go to the next step.
		No	Replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Gradually slow down and stop vehicle. • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC C0020:01/C0020:1C/C0020:71 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2877000

DTC	C0020:01, C0020:1C, C0020:71	Pump motor, motor relay
DETECTION CONDITION	<ul style="list-style-type: none"> • C0020:01 — DSC motor relay signal does not correspond to DSC HU/CM ON signal. • C0020:1C — DSC motor monitor signal does not correspond to DSC HU/CM OFF signal. — DSC motor monitor signal does not correspond to DSC HU/CM ON signal. • C0020:71 — DSC HU/CM motor monitor ON signal is not input within specified time limit or more when motor signal is switched from ON to OFF by DSC HU/CM. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ABS 40A fuse malfunction • Open circuit or short to ground in the wiring harness between the battery and DSC HU/CM terminal AT • Open circuit in the wiring harness between DSC HU/CM terminal B and body ground • Open or short circuit in DSC HU/CM internal motor relay, or stuck motor relay • Open or short circuit in DSC HU/CM internal pump motor, or frozen pump motor • Poor connection at connectors (female terminal) 	



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT DSC FUSE CONDITION <ul style="list-style-type: none"> • Is the DSC fuse (ABS 40A) normal? 	Yes	Go to the next step.
		No	Replace the fuse, then go to Step 6.
2	VERIFY PUMP MOTOR OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the M-MDS to the DLC-2. • Switch the ignition to ON. • Access PMP_MTR active command modes using the M-MDS. • Does the pump motor operate? 	Yes	Go to the next step.
		No	Replace the DSC HU/CM, then go to Step 6. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
3	INSPECT MOTOR RELAY POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the DSC HU/CM connector. • Inspect for continuity between DSC HU/CM terminal AT (vehicle harness-side) and the positive battery terminal. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
4	INSPECT MOTOR RELAY POWER SUPPLY FOR SHORT CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between DSC HU/CM terminal AT (vehicle harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 6.
		No	Go to the next step.
5	INSPECT PUMP MOTOR GROUND FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between DSC HU/CM terminal B (vehicle harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to the next step.
6	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/ INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

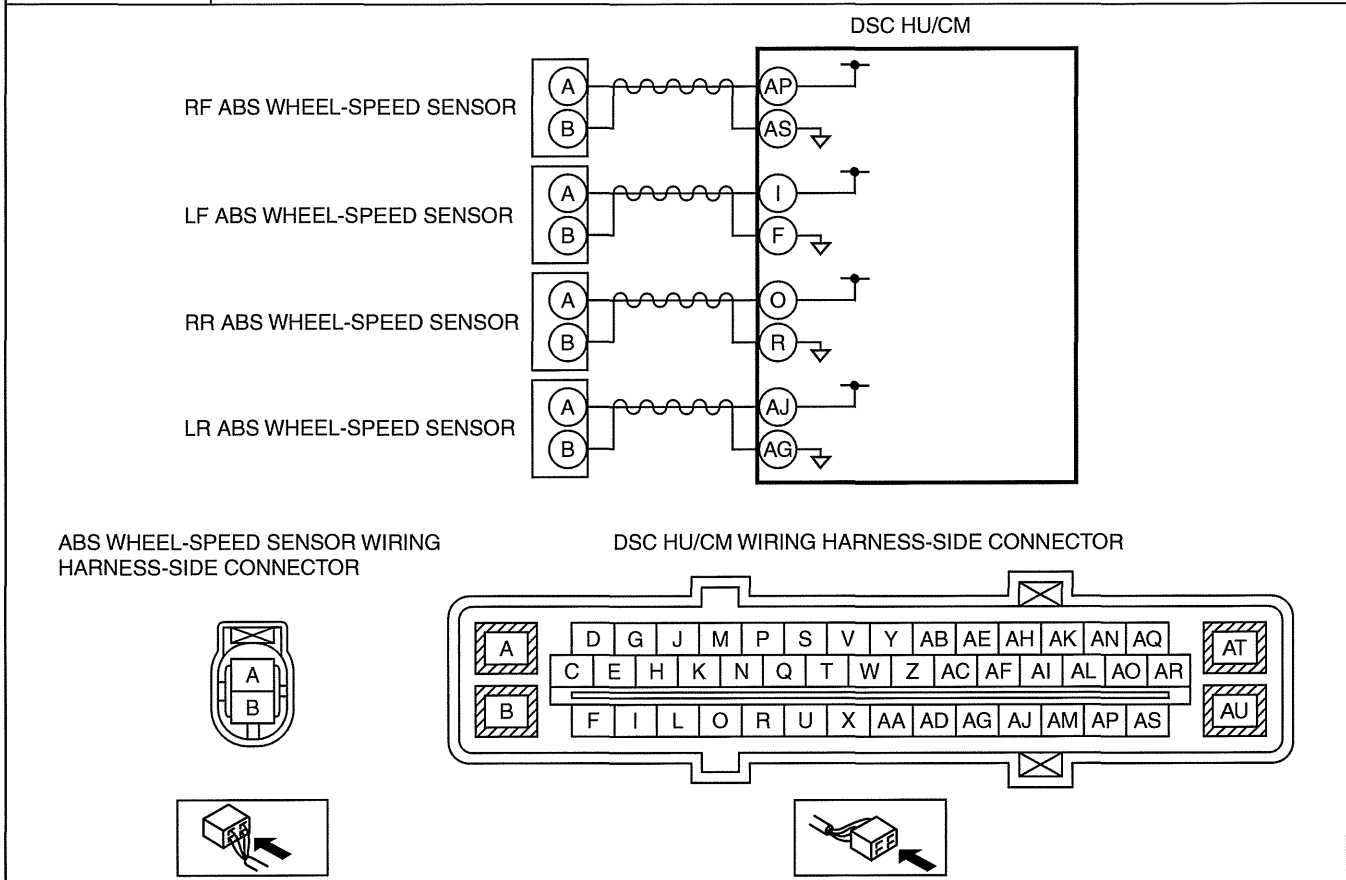
DTC C0030:07/C0031:07/C0033:07/C0034:07/C0036:07/C0037:07/C0039:07/C003A:07 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2877400

Note

- When only the driving wheels are rotated while the vehicle is jacked up, DTCs C0037:07 and C003A:07 are input to the memory.

DTC	C0030:07	LF ABS sensor rotor
	C0031:07	LF ABS wheel-speed sensor/ABS sensor rotor
	C0033:07	RF ABS sensor rotor
	C0034:07	RF ABS wheel-speed sensor/ABS sensor rotor
	C0036:07	LR ABS sensor rotor
	C0037:07	LR ABS wheel-speed sensor/ABS sensor rotor
	C0039:07	RR ABS sensor rotor
	C003A:07	RR ABS wheel-speed sensor/ABS sensor rotor
DETECTION CONDITION	<ul style="list-style-type: none"> • C0030:07, C0033:07, C0036:07, C0039:07 — Periodic abnormality is detected in the signal wave pattern from the ABS wheel-speed sensors. • C0031:07, C0034:07, C0037:07, C003A:07 — (1) The wheel-speed signal is not input or an extremely low wheel-speed signal is detected from any of the four wheels when driving at a vehicle speed of 10 km/h {6.2 mph} or more — (2) A large, sudden change in the wheel speed-signal is detected. — (3) ABS control continues to operate for 28 s or more. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • C0030:07, C0033:07, C0036:07, C0039:07 — ABS sensor rotor malfunction (missing ABS sensor rotor teeth due to foreign material obstruction) — ABS sensor rotor installation malfunction (If the ABS sensor rotor is installed at an angle, it may cause output of abnormal wave pattern at high speeds.) • C0031:07, C0034:07, C0037:07, C003A:07 — Conditions (1) and (2) are detected: <ul style="list-style-type: none"> • Excessive clearance between the ABS wheel-speed sensor and sensor rotor • ABS sensor rotor malfunction (foreign material adhering) • ABS sensor rotor installation malfunction (If the sensor rotor is installed at an angle, it may cause output of abnormal wave pattern at high speeds.) • ABS wheel-speed sensor malfunction — When condition (3) is detected: <ul style="list-style-type: none"> • Continuous ABS operation 	



ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT PID FOR ABS WHEEL-SPEED SENSOR OUTPUT ERROR USING M-MDS <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the M-MDS to the DLC-2. • Select the following PIDs using the M-MDS: WSPD_LF WSPD_LR WSPD_RF WSPD_RR • Drive the vehicle. • Verify that the vehicle speeds detected by the four ABS wheel-speed sensors are approximately the same. • Are the vehicle speeds approximately the same? 	Yes	Go to Step 3.
		No	Go to the next step.
2	INSPECT FOR SHORT TO GROUND BETWEEN ABS WHEEL-SPEED SENSOR CONNECTORS AND GROUND <ul style="list-style-type: none"> • Disconnect the ABS wheel-speed sensor connectors. • Inspect for no continuity between the following ABS wheel-speed sensor connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — ABS wheel-speed sensor (RF): B—Body ground — ABS wheel-speed sensor (LF): B—Body ground — ABS wheel-speed sensor (RR): B—Body ground — ABS wheel-speed sensor (LR): B—Body ground • Is the continuity normal? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 5.
3	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE. <ul style="list-style-type: none"> • Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.) • Is the clearance normal? 	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to Step 5. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION <ul style="list-style-type: none"> • Is the result normal? 	Yes	Go to the next step.
		No	Replace the front wheel bearing or the rear wheel hub component, then go to the next step. <ul style="list-style-type: none"> • Front wheel bearing (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See 03-11-4 WHEEL HUB, STEERING KNUCKLE DISASSEMBLY/ASSEMBLY.) • Rear wheel hub component (See 03-12-2 WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

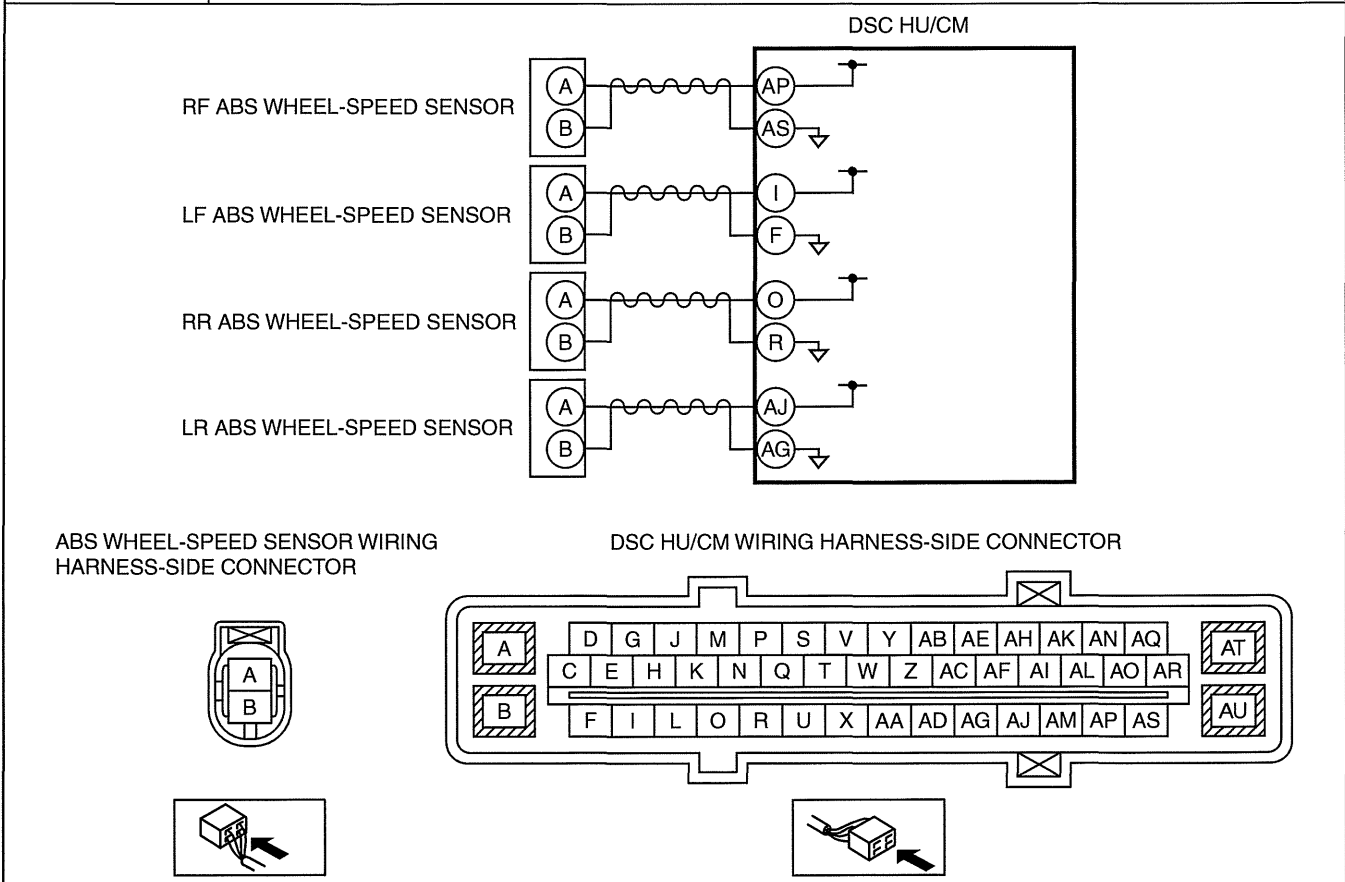
04-02B

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC C0031:01/C0034:01/C0037:01/C003A:01 [DYNAMIC STABILITY CONTROL (DSC)]

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DTC	C0031:01	LF ABS wheel-speed sensor
	C0034:01	RF ABS wheel-speed sensor
	C0037:01	LR ABS wheel-speed sensor
	C003A:01	RR ABS wheel-speed sensor
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit or short to ground has been detected in the ABS wheel-speed sensor wiring harness on any of the four vehicle wheels. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Open circuit or short to ground in the wiring harness between the following DSC HU/CM terminals and ABS wheel-speed sensor terminals: <ul style="list-style-type: none"> — DSC HU/CM terminal AP—RF ABS wheel-speed sensor terminal A — DSC HU/CM terminal AS—RF ABS wheel-speed sensor terminal B — DSC HU/CM terminal I—LF ABS wheel-speed sensor terminal A — DSC HU/CM terminal F—LF ABS wheel-speed sensor terminal B — DSC HU/CM terminal O—RR ABS wheel-speed sensor terminal A — DSC HU/CM terminal R—RR ABS wheel-speed sensor terminal B — DSC HU/CM terminal AJ—LR ABS wheel-speed sensor terminal A — DSC HU/CM terminal AG—LR ABS wheel-speed sensor terminal B Malfunction in the ABS wheel-speed sensor Poor connection at connectors (female terminal) 	



ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT ABS WHEEL-SPEED SENSOR FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the DSC HU/CM connectors. • Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — RF ABS wheel-speed sensor(+): AP — RF ABS wheel-speed sensor(-): AS — LF ABS wheel-speed sensor(+): I — LF ABS wheel-speed sensor(-): F — RR ABS wheel-speed sensor(+): O — RR ABS wheel-speed sensor(-): R — LR ABS wheel-speed sensor(+): AJ — LR ABS wheel-speed sensor(-): AG • Is there continuity? 	Yes	Go to the next step.
		No	Go to Step 3.
2	INSPECT ABS WHEEL-SPEED SENSOR WIRING HARNESS FOR SHORT TO GROUND <ul style="list-style-type: none"> • Disconnect the ABS wheel-speed sensor connectors. • Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — RF ABS wheel-speed sensor(+): AP — RF ABS wheel-speed sensor(-): AS — LF ABS wheel-speed sensor(+): I — LF ABS wheel-speed sensor(-): F — RR ABS wheel-speed sensor(+): O — RR ABS wheel-speed sensor(-): R — LR ABS wheel-speed sensor(+): AJ — LR ABS wheel-speed sensor(-): AG • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 4.
		No	Replace the ABS wheel-speed sensor, then go to Step 4. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
3	INSPECT FOR OPEN CIRCUIT IN ABS WHEEL-SPEED SENSOR WIRING HARNESS <ul style="list-style-type: none"> • Inspect for continuity between the DSC HU/CM connectors (vehicle harness-side) and the following vehicle harness-side connector terminals of the ABS wheel-speed sensors: <ul style="list-style-type: none"> — RF ABS wheel-speed sensor(+): AP—A — RF ABS wheel-speed sensor(-): AS—B — LF ABS wheel-speed sensor(+): I—A — LF ABS wheel-speed sensor(-): F—B — RR ABS wheel-speed sensor(+): O—A — RR ABS wheel-speed sensor(-): R—B — LR ABS wheel-speed sensor(+): AJ—A — LR ABS wheel-speed sensor(-): AG—B • Is there continuity? 	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to the next step. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

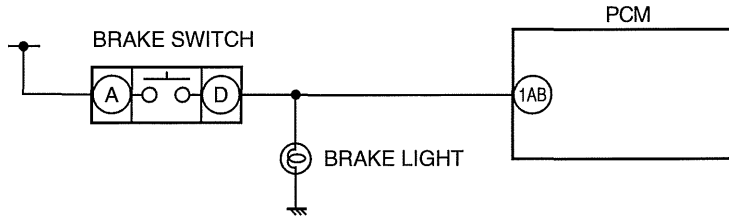
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ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

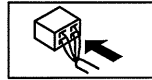
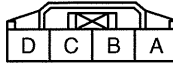
DTC C0040:64 [DYNAMIC STABILITY CONTROL (DSC)]

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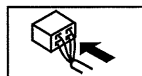
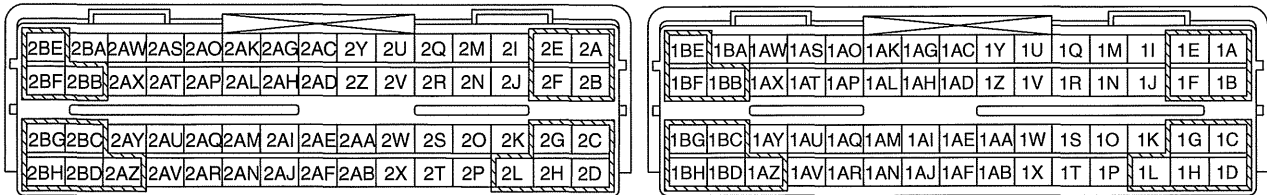
DTC	C0040:64	Brake switch
DETECTION CONDITION	<ul style="list-style-type: none"> Brake switch ON signal is input for 6 min or more when driving at a vehicle speed of 20 km/h {12 mph} or more. Brake switch ON signal is not input even though the control module determines vehicle deceleration. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Open or short circuit in wiring harness between the brake switch and PCM terminal 1AB Brake switch malfunction Poor connection at connectors (female terminal) 	



BRAKE SWITCH WIRING
HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY OPEN OR SHORT CIRCUIT IN BRAKE SWITCH SIGNAL <ul style="list-style-type: none"> Switch the ignition to ON. Measure the voltage between the PCM terminal 1AB (vehicle harness-side) and body ground when the brake pedal is depressed and released. Voltage Brake pedal depressed: B+ Brake pedal released: 1 V or less	Yes	Go to Step 5.
		No	If it is B+ under any condition, then go to the next step. If it is 1 V or less under any condition, then go to Step 3.
2	INSPECT BRAKE SWITCH SIGNAL FOR SHORT TO POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> Disconnect the brake switch connector. Measure voltage between the brake switch connector terminal D (vehicle harness-side) and body ground. Is the voltage 1 V or less? 	Yes	Go to Step 4.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
3	INSPECT BRAKE SWITCH SIGNAL FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the PCM connectors. Disconnect the brake switch connector. Inspect continuity between the PCM connector terminal 1AB (vehicle harness-side) and brake switch terminal D (vehicle harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5.
4	INSPECT BRAKE SWITCH <ul style="list-style-type: none"> Inspect the brake switch. (See 04-11-10 BRAKE SWITCH INSPECTION.) Is the brake switch normal? 	Yes	Go to the next step.
		No	Replace the brake switch, then go to the next step. (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Reconnect all disconnected connectors. Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 20 km/h {12 mph} or more. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

04-02B

DTC C0044:01/C0044:28/C0044:54/C0044:64 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2888500

DTC	C0044:01, C0044:28, C0044:54, C0044:64	Brake fluid pressure sensor
DETECTION CONDITION	<ul style="list-style-type: none"> C0044:01 <ul style="list-style-type: none"> The voltage value from the brake fluid pressure sensor is not within specification. C0044:28, C0044:64 <ul style="list-style-type: none"> The pressure from the brake fluid pressure sensor is not within specification. C0044:54 <ul style="list-style-type: none"> The brake fluid pressure sensor detects the initialization procedure has not been perform. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> The initialization procedure for the brake fluid pressure sensor has not been performed. Brake fluid pressure sensor malfunction Open or short circuit in the brake fluid pressure sensor circuit in DSC HU/CM 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY INITIALIZATION PROCEDURE <ul style="list-style-type: none"> Has the brake fluid pressure sensor initialization procedure been performed? 	Yes	Go to the next step.
		No	Perform the brake fluid pressure sensor initialization procedure, then go to the next step. (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)
2	VERIFY NO ABNORMALITY ON BRAKE FLUID PRESSURE SENSOR <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC C0051:28 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2884500

DTC	C0051:28	Steering angle sensor
DETECTION CONDITION	<ul style="list-style-type: none"> The steering angle sensor detects signal modulation or steering angle that exceeds specification. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Improper installation or positioning of the steering angle sensor Steering angle sensor malfunction Connector or terminal malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	PERFORM BCM DTC INSPECTION <ul style="list-style-type: none"> Perform the BCM DTC inspection. (See 09-02F-7 DTC INSPECTION [BCM].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

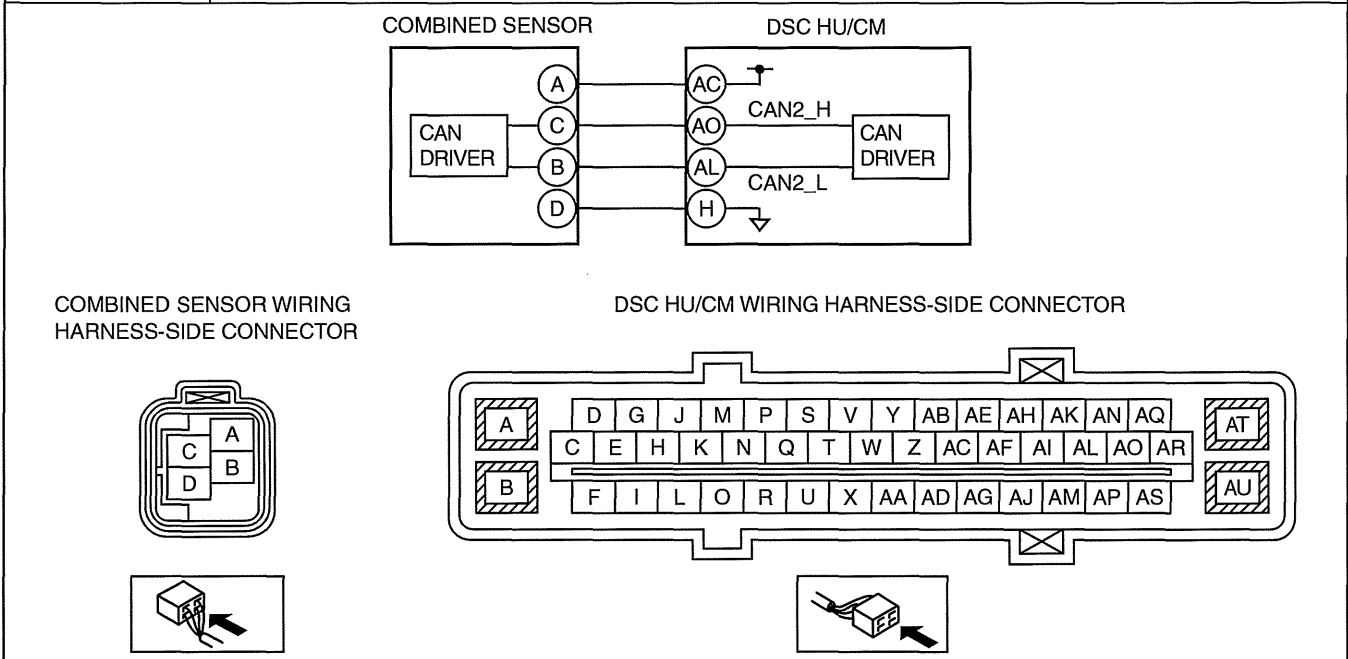
ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC C0061:01/C0061:28/C0061:64/C0063:01/C0063:28/C0063:64/C006A:01/C006A:16/C006A:17 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2888400

DTC	C0061:01, C0061:28, C0061:64, C0063:01, C0063:28, C0063:64, C006A:01, C006A:16, C006A:17	Combined sensor system
DETECTION CONDITION	<ul style="list-style-type: none"> • C0061:01, C0063:01 — The voltage value from the combined sensor is not within specification. • C0061:28, C0061:64 — Out-of-specification signal modulation or lateral-G value is detected from the combined sensor (lateral-G part). • C0063:28, C0063:64 — Out-of-specification signal modulation or yaw rate value is detected from the combined sensor (yaw rate part). • C006A:01, C006A:16, C006A:17 — An error is detected for the voltage to the combined sensor. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in the wiring harness between DSC HU/CM terminal AC and combined sensor terminal A • Open or short circuit in the wiring harness between DSC HU/CM terminal H and combined sensor terminal D • Combined sensor malfunction • Poor connection at connectors (female terminal) 	

04-02B



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMBINED SENSOR POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Measure the voltage between the combined sensor terminal A and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 4.
2	INSPECT COMBINED SENSOR GROUND FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect for continuity between the combined sensor terminal D and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 4.
3	INSPECT COMBINED SENSOR <ul style="list-style-type: none"> • Inspect the combined sensor. (See 04-15-8 COMBINED SENSOR INSPECTION.) • Is the combined sensor normal? 	Yes	Go to the next step.
		No	Replace the combined sensor, then go to the next step. (See 04-15-7 COMBINED SENSOR REMOVAL/INSTALLATION.)

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

DTC C0061:54/C0063:54 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2888100

DTC	C0061:54, C0063:54	Combined sensor system (unperformed initialization procedure)
DETECTION CONDITION	<ul style="list-style-type: none"> DSC detects that the initialization procedure for combined sensor has not been performed. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Initialization procedure for the combined sensor not performed Combined sensor malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY INITIALIZATION PROCEDURE <ul style="list-style-type: none"> Was the combined sensor initialization procedure performed? 	Yes	Go to the next step.
		No	Perform the combined sensor initialization procedure, then go to the next step. (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

DTC C006A:95 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2884900

DTC	C006A:95	Combined sensor mismatched installation
DETECTION CONDITION	<ul style="list-style-type: none"> Communication error with combined sensor is detected in CAN communication (CAN2 line). 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Mismatched installation of combined sensor 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT COMBINED SENSOR FOR MISMATCHED INSTALLATION <ul style="list-style-type: none"> Verify combined sensor part number. Has a combined sensor with the correct part number been installed? 	Yes	Go to the next step.
		No	Replace with correct combined sensor part number, then go to the next step. (See 04-15-7 COMBINED SENSOR REMOVAL/INSTALLATION.)
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

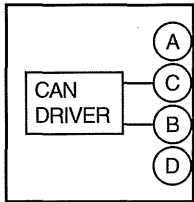
STEP	INSPECTION		ACTION
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCS output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

DTC C006A:04/C006A:47 [DYNAMIC STABILITY CONTROL (DSC)]

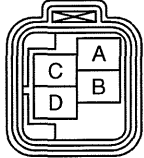

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DTC	C006A:04, C006A:47	Combined sensor (internal malfunction)
DETECTION CONDITION	<ul style="list-style-type: none"> Combined sensor internal malfunction is detected. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Combined sensor internal malfunction 	

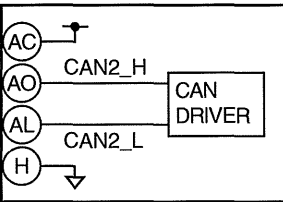
COMBINED SENSOR



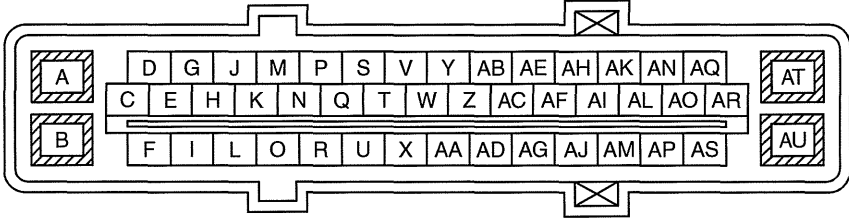

COMBINED SENSOR WIRING HARNESS-SIDE CONNECTOR

DSC HU/CM



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR

04-02B

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY COMBINED SENSOR MALFUNCTION <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Replace the combined sensor, then go to the next step. (See 04-15-7 COMBINED SENSOR REMOVAL/ INSTALLATION.)
		No	Go to the next step.
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/ INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCS output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC C006B:00/C0072:68 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2884600

DTC	C006B:00, C0072:68	TCS/DSC control system
DETECTION CONDITION	<ul style="list-style-type: none"> • C006B:00 — DSC control continues for a specified period of time or more • C0072:68 — Due to excessive braking, TCS control using braking is temporarily inhibited. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • This does not indicate a malfunction since constant TCS or DSC control over an extended period of time is inhibited to protect the DSC solenoid valve inside the DSC HU or the engine. 	

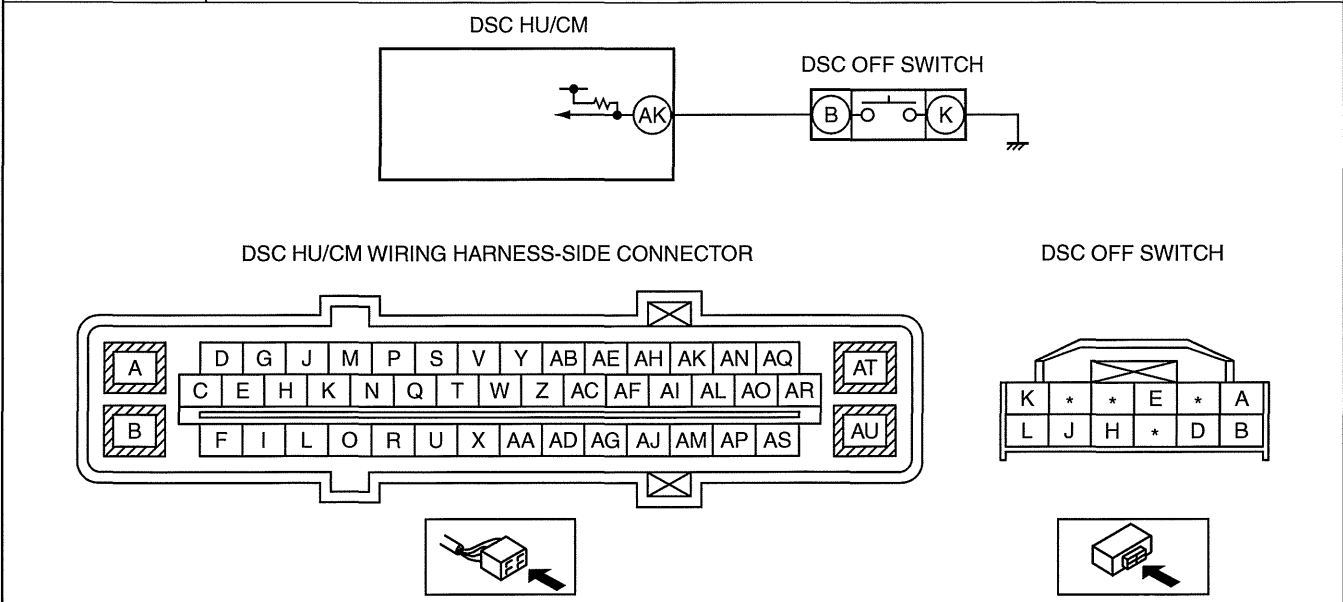
Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are the same DTCs present? 	Yes	Replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

DTC C1109:64 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2878700

DTC	C1109:64	DSC OFF switch
DETECTION CONDITION	<ul style="list-style-type: none"> • Continuous ON signal from the DSC OFF switch for 10 s or more is detected. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The driver pressed and held the DSC OFF switch for 10 s or more. • Short to ground in the wiring harness between DSC OFF switch and DSC HU/CM terminal AK • DSC OFF switch malfunction • Poor connection at connectors (female terminal) 	



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT DSC OFF SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the DSC HU/CM connector. • Inspect for continuity between DSC HU/CM connector (vehicle harness-side) terminal AK and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 3.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
2	INSPECT DSC OFF SWITCH <ul style="list-style-type: none"> • Inspect the DSC OFF switch. (See 04-15-10 DSC OFF SWITCH INSPECTION.) • Is the DSC OFF switch normal? 	Yes	Go to the next step.
		No	Replace the DSC OFF switch, then go to the next step. (See 04-15-10 DSC OFF SWITCH REMOVAL/INSTALLATION.)
3	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

04-02B

DTC U0001:88/U0100:00/U0101:00/U0140:00/U0155:00 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2888000

DTC	U0001:88, U0100:00, U0101:00, U0140:00, U0155:00	CAN line
DETECTION CONDITION	<ul style="list-style-type: none"> • U0001:88 — Open or short circuit in CAN system wiring harness is detected. • U0100:00 — Communication error with PCM is detected in CAN communication. • U0101:00 — Communication error with TCM is detected in CAN communication. • U0140:00 — Communication error with BCM is detected in CAN communication. • U0155:00 — Communication error with instrument cluster is detected in CAN communication. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CAN system wiring harness open or short circuit • CAN system wiring harness open or short circuit with PCM • CAN system wiring harness open or short circuit with TCM • CAN system wiring harness open or short circuit with BCM • CAN system wiring harness open or short circuit with instrument cluster • instrument cluster malfunction 	

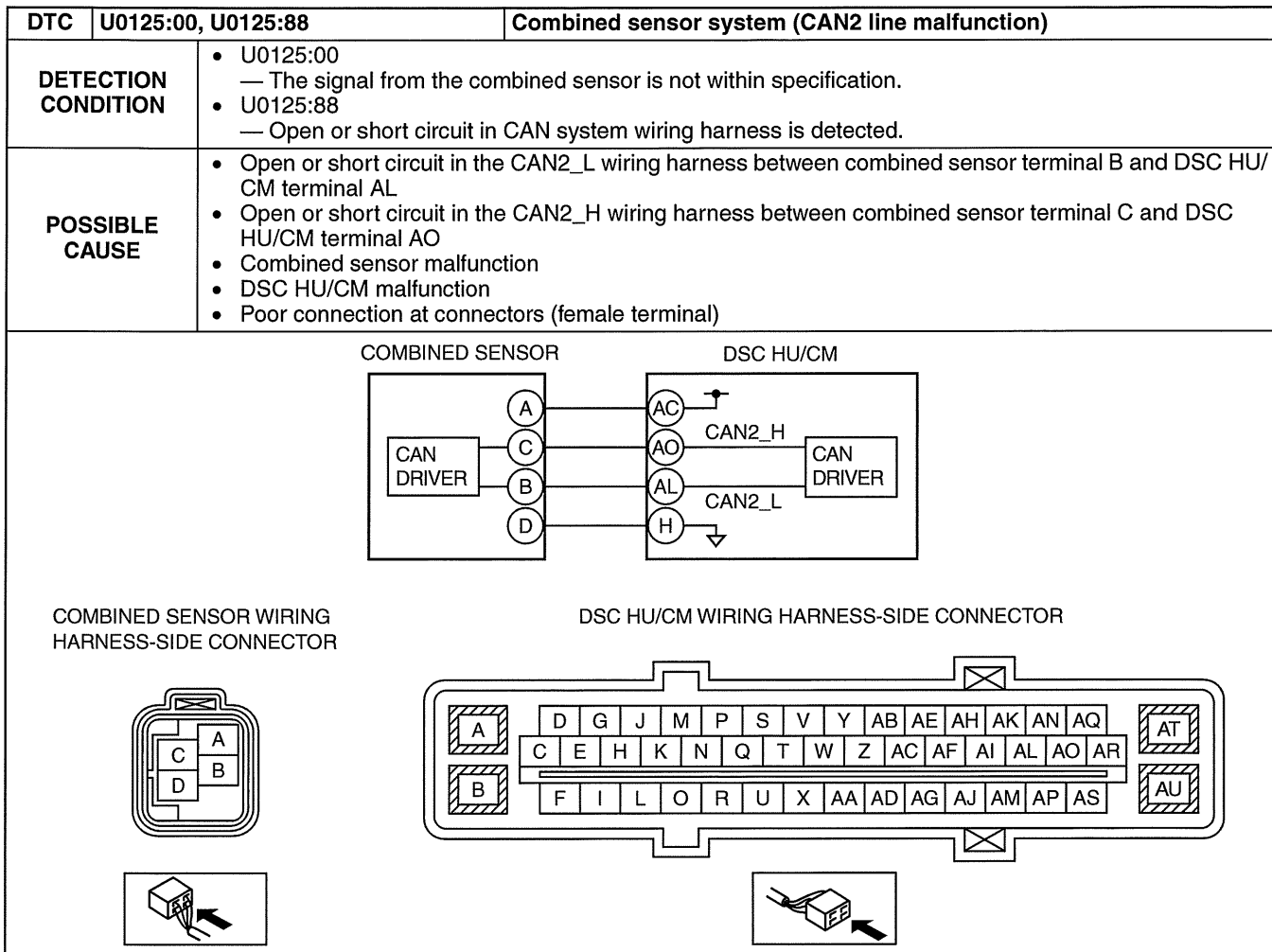
Diagnostic procedure

- Inspect according to diagnostic procedure in BODY & ACCESSORIES. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC U0125:00/U0125:88 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2879000



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMBINED SENSOR SIGNAL (CAN2 LINE) FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the DSC HU/CM connectors. • Disconnect the combined sensor connectors. • Inspect for continuity between the DSC HU/CM connectors (vehicle harness-side) and the following combined sensor connector terminals (vehicle harness-side): <ul style="list-style-type: none"> — Combined sensor (CAN2_L): AL—B — Combined sensor (CAN2_H): AO—C • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 4.
2	INSPECT COMBINED SENSOR SIGNAL (CAN2 LINE) FOR SHORT CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — Combined sensor (CAN2_L): B — Combined sensor (CAN2_H): C • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 4.
		No	Go to the next step.
3	INSPECT THE COMBINED SENSOR <ul style="list-style-type: none"> • Reconnect all disconnected connectors. Inspect the combined sensor. (See 04-15-8 COMBINED SENSOR INSPECTION.) • Is the combined sensor normal? 	Yes	Go to the next step.
		No	Replace the combined sensor, then go to the next step. (See 04-15-7 COMBINED SENSOR REMOVAL/INSTALLATION.)

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No DTC troubleshooting completed.

DTC U0401:00 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2887900

DTC	U0401:00	Abnormal message from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> Correct data cannot be received from PCM 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction 	

04-02B

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FOR PCM MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to off. Using the M-MDS, perform the DTC inspection for the PCM. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs detected? 	Yes Go to applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC U0402:00 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2881800

DTC	U0402:00	Abnormal message from TCM
DETECTION CONDITION	<ul style="list-style-type: none"> Correct data cannot be received from TCM 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR TCM MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to off. Using the M-MDS, perform the DTC inspection for the TCM. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs detected? 	Yes	Go to applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

DTC U0422:00/U0428:62/U0428:64 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2884300

DTC	U0422:00, U0428:62, U0428:64	Abnormal message from BCM
DETECTION CONDITION	<ul style="list-style-type: none"> Correct data cannot be received from BCM 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering angle sensor malfunction BCM malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR BCM MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to off. Using the M-MDS, perform the DTC inspection for the BCM. (See 09-02F-7 DTC INSPECTION [BCM].) Are any DTCs detected? 	Yes	Go to applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC U2100:00/U2101:00 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2887800

DTC	U2100:00, U2101:00	Configuration data not recorded
DETECTION CONDITION	<ul style="list-style-type: none"> DSC CM detects configuration data not record or data error 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Module configuration procedure is not done properly Correct data cannot be received from instrument cluster DSC CM malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	RECORD THE CAR CONFIGURATION DATA <ul style="list-style-type: none"> Switch the ignition to off. Switch the ignition to ON, and maintain this condition for approx. 30 s. 		Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, go to the next step.
		No	Go to Step 5.
3	INSPECT FOR INSTRUMENT CLUSTER MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to off. Using the M-MDS, perform the DTC inspection for the instrument cluster. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs detected? 	Yes	Go to applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) After repairing the instrument cluster, perform the "INSTRUMENT CLUSTER CONFIGURATION", then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)
		No	Go to the next step.
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are the same DTCs present? 	Yes	Replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/ INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

04-02B

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

DTC U3003:16/U3003:17 [DYNAMIC STABILITY CONTROL (DSC)]

id0402b2877800

DTC	U3003:16, U3003:17	Power supply system
DETECTION CONDITION	<ul style="list-style-type: none"> • U3003:16 — When driving the vehicle at 20 km/h {12 mph} or more, low ignition voltage (10 V or less) is detected at the voltage monitor of the solenoid valve or motor monitor. • U3003:17 — High ignition voltage (18 V or more) is detected at the voltage monitor of the solenoid valve or motor monitor. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Battery deterioration • Generator malfunction • ABS 40A/DSC 20A/SAS 15A/ABS IG 7.5A fuse malfunction • Open or short circuit in wiring harness between DSC HU/CM terminal Y and battery • Open or short circuit in wiring harness between DSC HU/CM terminal AU and battery • Open or short circuit in wiring harness between DSC HU/CM terminal AT and battery • Open circuit in wiring harness between DSC HU/CM terminal B and body ground • Poor connection at connectors (female terminal) 	

DSC HU/CM WIRING HARNESS-SIDE CONNECTOR

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT BATTERY VOLTAGE <ul style="list-style-type: none"> • Is the battery positive terminal voltage normal? 	Yes	Inspect for normal connection of the battery terminals. Go to the next step.
		No	Charge or replace the battery, then go to Step 7. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2	INSPECT BATTERY GRAVITY <ul style="list-style-type: none"> • Is battery specific gravity as specified? 	Yes	Go to the next step.
		No	Replace the battery, then go to Step 7. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
3	INSPECT CHARGING SYSTEM <ul style="list-style-type: none"> • Are the generator and the drive belt tensions normal? 	Yes	Go to the next step.
		No	Replace the generator and/or drive belt if necessary. (See 01-17A-6 GENERATOR REMOVAL/ INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/ INSTALLATION [L3 WITH TC].) (See 01-10A-6 DRIVE BELT REMOVAL/ INSTALLATION [LF, L5].) (See 01-10B-4 DRIVE BELT REMOVAL/ INSTALLATION [L3 WITH TC].) Go to Step 7.
4	INSPECT ABS FUSE CONDITION <ul style="list-style-type: none"> • Is the ABS fuse (ABS 40A/DSC 20A/SAS 15A/ABS IG 7.5A) normal? 	Yes	Go to the next step.
		No	Replace the fuse, then go to Step 7.
5	INSPECT DSC HU/CM POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the DSC HU/CM connectors. • Switch the ignition to ON. • Measure the voltage between following connector terminals of the DSC HU/CM (vehicle harness-side) and body ground: <ul style="list-style-type: none"> — DSC HU/CM: Y—Body ground — DSC HU/CM: AU—Body ground — DSC HU/CM: AT—Body ground • Is the voltage 10 V or more? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 7.
6	INSPECT DSC HU/CM GROUND FOR POOR GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Measure the resistance between the DSC HU/CM terminal B (vehicle harness-side) and body ground. • Is the resistance within 0—1 ohm? 	Yes	Go to the next step.
		No	If there is open circuit: <ul style="list-style-type: none"> • Repair or replace the wiring harness, then go to the next step. If resistance is not within specification: <ul style="list-style-type: none"> • Repair or replace the poor ground part, then go to the next step.
7	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 20 km/h {12 mph} or more. • Are the same DTCs present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See 04-15-2 DSC HU/CM REMOVAL/ INSTALLATION)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

04-02B

04-03A SYMPTOM TROUBLESHOOTING [ABS]

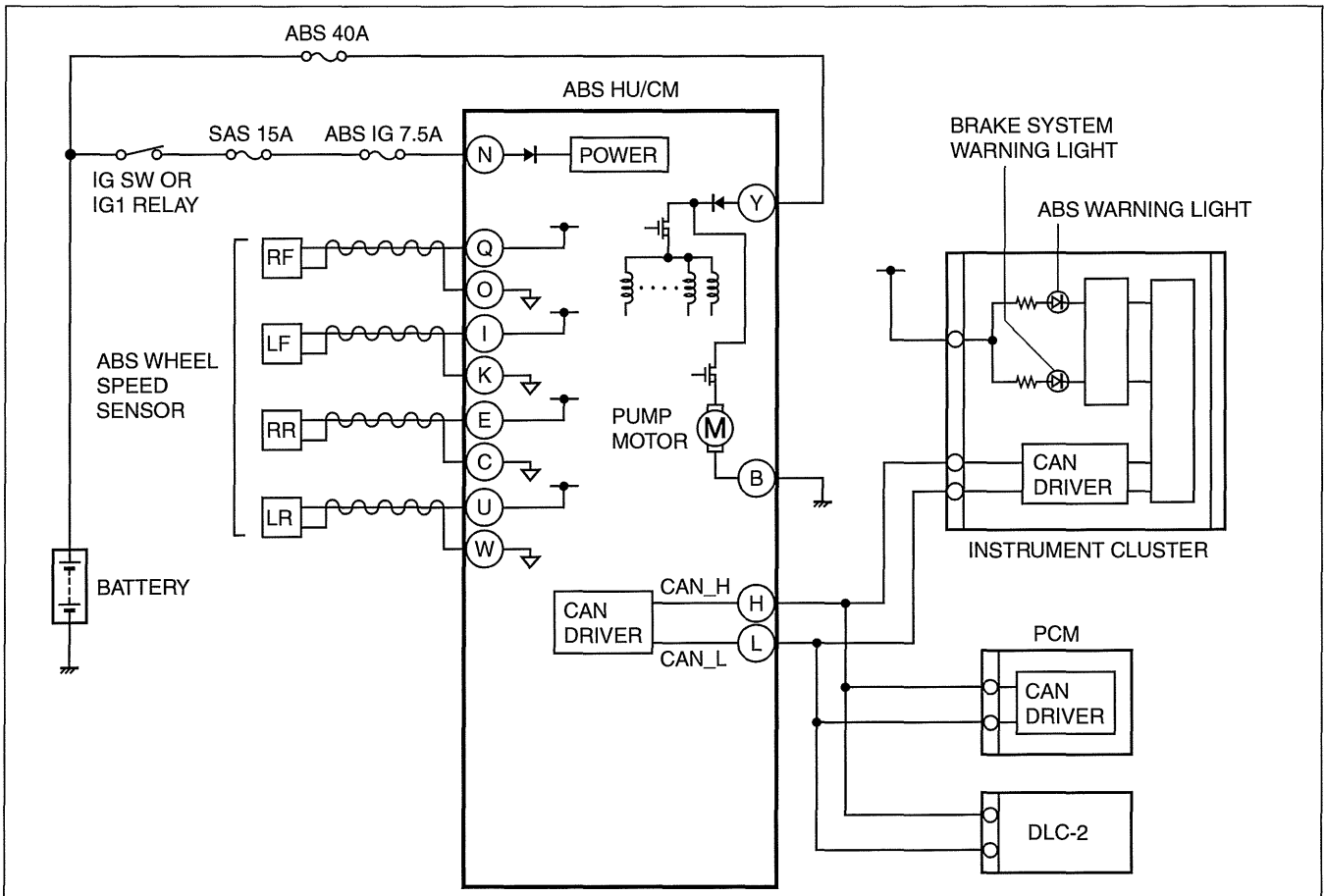
SYSTEM WIRING DIAGRAM [ABS] 04-03A-1
 FOREWORD [ABS] 04-03A-1
 PRECAUTION [ABS] 04-03A-2
 Intermittent Concern
 Troubleshooting 04-03A-3
SYMPTOM TROUBLESHOOTING
[ABS] 04-03A-4
NO.1 NEITHER ABS WARNING LIGHT
NOR BRAKE SYSTEM WARNING LIGHT
ILLUMINATE WITH SWITCH THE
IGNITION TO ON [ABS] 04-03A-6
NO.2 ABS WARNING LIGHT DOES NOT
ILLUMINATE WITH SWITCH THE
IGNITION TO ON [ABS] 04-03A-7
NO.3 BRAKE SYSTEM WARNING LIGHT
DOES NOT ILLUMINATE WITH SWITCH
THE IGNITION TO ON [ABS] 04-03A-7

NO.4 BOTH ABS WARNING LIGHT AND
BRAKE SYSTEM WARNING LIGHT
STAY ON 4 S OR MORE WITH SWITCH
THE IGNITION TO ON [ABS] 04-03A-8
NO.5 ABS WARNING LIGHT STAYS
ON 4 S OR MORE WITH SWITCH THE
IGNITION TO ON [ABS] 04-03A-9
NO.6 BRAKE SYSTEM WARNING LIGHT
STAYS ON 4 S OR MORE WITH SWITCH
THE IGNITION TO ON (PARKING
BRAKE IS RELEASED) [ABS] 04-03A-11
NO.7 THERE IS MALFUNCTION IN THE
SYSTEM EVEN THOUGH ABS
WARNING LIGHT, BRAKE SYSTEM
WARNING LIGHT, DO NOT ILLUMINATE
[ABS] 04-03A-12

04-03A

SYSTEM WIRING DIAGRAM [ABS]

id0403a5806400



am3zzn0000245

FOREWORD [ABS]

id0403a5804000

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic inspection. To inspect the DTC, follow the DTC Inspection steps. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)

SYMPTOM TROUBLESHOOTING [ABS]

id0403a5804100

PRECAUTION [ABS]

- Any one or a combination of the ABS warning and brake system warning lights illuminates even when the system is normal.

Warning lights that may illuminate and/or flash	Cases in which the light may illuminate	Conditions in which the light will go out	ABS, EBD control
Either or both of the following lights illuminate: <ul style="list-style-type: none"> ABS warning light Brake system warning light^{*1} 	When the front wheels are jacked up, stuck, or placed on a chassis roller, and only the front wheel ABS wheel-speed sensors are spun.	After switching the ignition to off, vehicle is driven at speed greater than 10 km/h {6.2 mph} and normal operation is confirmed.	<ul style="list-style-type: none"> ABS: Cuts control EBD: <ol style="list-style-type: none"> Cuts control, in cases where the light may illuminate, only when ABS CM detects that a wheel-speed sensor determines that more than two wheels are malfunctioning. Operates control, if wheel-speed sensor determines that more than three wheels are functioning correctly.
	Parking brake is not fully released while driving.		
	Brake drag.		
	Sudden acceleration/ deceleration.		
	Left/right or front/rear tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)		
Both of the following lights illuminate: <ul style="list-style-type: none"> ABS warning light Brake system warning light 	Battery voltage at ABS HU/CM ignition terminal N drops below approx. 8 V. ^{*2}	Battery voltage rises above approx. 8 V.	<ul style="list-style-type: none"> ABS: Cuts control EBD: Cuts control

^{*1} : In cases where the light may illuminate, only when ABS HU/CM detects that a wheel-speed sensor determines that more than two wheels are malfunctioning.

^{*2} : If battery voltage drops **below 8 V** while vehicle speed is **greater than 20 km/h {12.4 mph}**, ABS HU/CM records DTC U3003:16.

2. Precautions during servicing of ABS

The ABS is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

(1) Malfunctions in electrical system

- The ABS hydraulic unit and control module (ABS HU/CM) has an on-board diagnostic function. With this function, the ABS warning light and/or brake system warning light will illuminate when there is a problem in the electrical system. Also, past and present malfunctions are recorded in the ABS HU/CM. This function can find malfunctions that do not occur during periodic inspections. Connect the M-MDS to the DLC-2. The stored malfunctions will be displayed in the order of occurrence. To find out the causes of ABS malfunctions, use these on-board diagnostic results.
- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness. The ABS HU/CM usually operates normally. Be careful when searching for the cause of malfunction.
- After repair, it is necessary to clear the DTC from the ABS HU/CM memory. Also, if the ABS related parts have been replaced, verify that the no DTC has been displayed after repairs.
- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the ABS CM (ABS motor or ABS motor relay or solenoid valve), the ABS warning light may not go out* even when the ignition is switched to ON. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure that ABS warning light goes out, and then clear the DTC.

* The brake system warning light also illuminates when any two wheels malfunction, or battery voltage drops **below 8 V**.
- When repairing, if the ABS related connectors are disconnected and the ignition is switched to ON, the ABS CM will mistakenly detect a fault and record it as a malfunction.
- To protect the ABS HU/CM, make sure the ignition is switched to off before connecting or disconnecting the ABS CM connector.

(2) Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in an ABS component or the conventional brake system.
- The ABS hydraulic unit contains delicate mechanical parts. If foreign material enters into the component, the ABS may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the ABS does not. Make sure foreign material does not enter when servicing the ABS (e.g. brake fluid replacement, pipe removal).

SYMPTOM TROUBLESHOOTING [ABS]

Intermittent Concern Troubleshooting

Vibration method

- If malfunction occurs or becomes worse while driving on a rough road or when engine is vibrating, perform the steps below.

Note

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to inspect are:
 - Connectors not fully seated.
 - Wiring harness not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harness pass through the firewall, body panels, etc. are the major areas to be inspected.

Inspection method for switch connectors or wiring harnesses

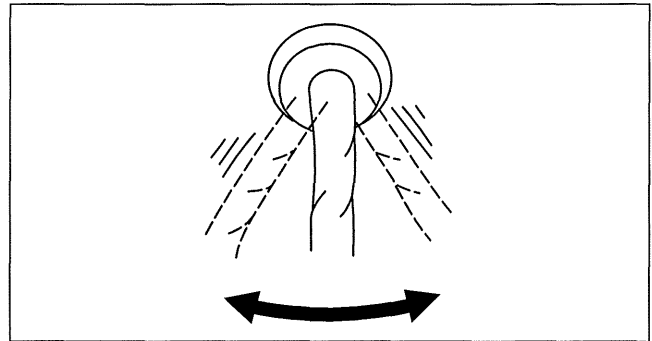
1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.
4. Turn switch on manually.
5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.

- If the PID value is unstable, inspect poor connection.



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Inspection method for sensor connectors or wiring harnesses

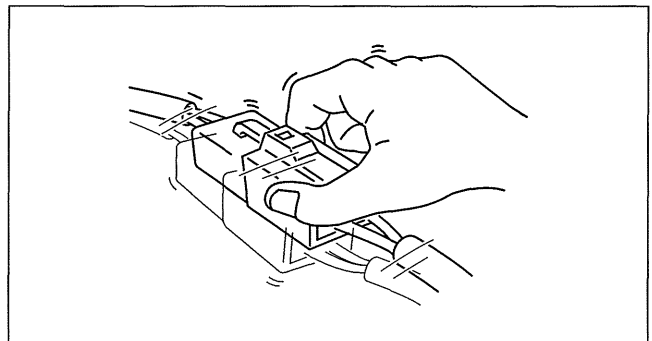
1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.
4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.

- If the PID value is unstable, inspect poor connection.



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04-03A

SYMPTOM TROUBLESHOOTING [ABS]

Inspection method for sensors

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

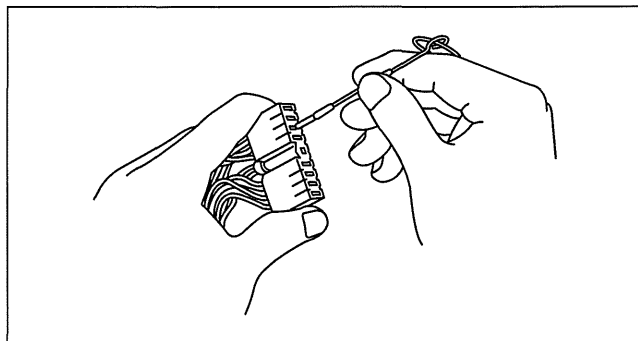
3. Access PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.
 - If the PID value is unstable or malfunction occurs, inspect the sensor for poor connection and/or poor mounting.

Malfunction data monitor method

1. Perform malfunction reappearance test according to malfunction reappearance mode and malfunction data monitor. The malfunction cause is found in the malfunction data.

Connector terminal inspection method

1. Inspect the connection condition of each female terminal.
2. Insert the male terminal to the female terminal and inspect the female terminal for looseness.



am3zzw0000170

SYMPTOM TROUBLESHOOTING [ABS]

id0403a5804200

- Verify the symptoms, and perform troubleshooting according to the appropriate number.

No.	Symptom
1	Neither ABS warning light nor brake system warning light illuminate with switch the ignition to ON
2	ABS warning light does not illuminate with switch the ignition to ON
3	Brake system warning light does not illuminate with switch the ignition to ON
4	Both ABS warning light and brake system warning light stay on 4 s or more with switch the ignition to ON
5	ABS warning light stays on 4 s or more with switch the ignition to ON
6	Brake system warning light stays on 4 s or more with switch the ignition to ON (Parking brake is released)
7	There is a malfunction in the system even through ABS warning light, brake system warning light, do not illuminate

SYMPTOM TROUBLESHOOTING [ABS]

x: Applicable

Possible factor														
Troubleshooting item		ABS HU/CM	Instrument cluster	CAN communication	Battery	Brake fluid	Parking brake	Charging system	ABS HU/CM power supply system	ABS HU/CM ground system	Instrument cluster power supply system	Instrument cluster ground system	Conventional brakes	Brake pipe routing
1	Neither ABS warning light nor brake system warning light illuminate with switch the ignition to ON	X	X	X							X	X		
2	ABS warning light does not illuminate with switch the ignition to ON	X	X											
3	Brake system warning light does not illuminate with switch the ignition to ON	X	X											
4	Both ABS warning light and brake system warning light stay on 4 s or more with switch the ignition to ON	X	X	X	X			X	X	X				
5	ABS warning light stays on 4 s or more with switch the ignition to ON	X	X	X	X				X	X				
6	Brake system warning light stays on 4 s or more with switch the ignition to ON (Parking brake is released)	X	X			X	X							
7	There is a malfunction in the system even through ABS warning light, brake system warning light, do not illuminate	X											X	X

04-03A

am3uuw0000268

SYMPTOM TROUBLESHOOTING [ABS]

NO.1 NEITHER ABS WARNING LIGHT NOR BRAKE SYSTEM WARNING LIGHT ILLUMINATE WITH SWITCH THE IGNITION TO ON [ABS]

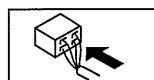
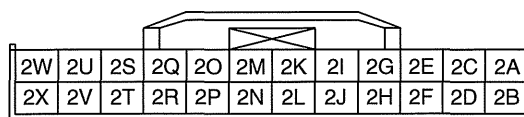
id0403a5950300

1	Neither ABS warning light nor brake system warning light illuminate with switch the ignition to ON
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • ABS DTC is stored • CAN communication malfunction • Instrument cluster malfunction • Instrument cluster power supply malfunction <ul style="list-style-type: none"> — Short to ground in instrument cluster power supply circuit — Instrument cluster power supply fuse malfunction • Open circuit in wiring harness between instrument cluster power supply circuit • Open circuit in wiring harness between instrument cluster and body ground • Instrument cluster malfunction • ABS CM malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM ABS DTC <ul style="list-style-type: none"> • Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) If the instrument cluster is normal: <ul style="list-style-type: none"> • Inspect CAN communication. If the instrument cluster has a malfunction: <ul style="list-style-type: none"> • Go to the next step.
2	VERIFY WHETHER MALFUNCTION IS IN WARNING LIGHTS AND INDICATOR LIGHT'S COMMON POWER SUPPLY, OR IN OTHER WARNING LIGHTS AND INDICATOR LIGHTS <ul style="list-style-type: none"> • Do other warning and indicator lights illuminate when the ignition is switched to ON? 	Yes	Replace the instrument cluster (open circuit in instrument cluster). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	INSPECT INSTRUMENT CLUSTER POWER SUPPLY FUSE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect the instrument cluster ignition power supply fuse. • Is the fuse normal? 	Yes	Go to the next step.
		No	Inspect for short to ground in ignition power supply circuit. Repair or replace if necessary. Install appropriate amperage fuse.
*4	INSPECT INSTRUMENT CLUSTER POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at instrument cluster terminal 2S (wiring harness-side). • Is the voltage approx. 12 V? 	Yes	Replace the instrument cluster (open circuit in instrument cluster). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Inspect for open circuit in wiring harness between instrument cluster and body ground. If the wiring harness has a malfunction: <ul style="list-style-type: none"> • Repair or replace the wiring harness. If the wiring harness is normal: <ul style="list-style-type: none"> • Replace the ABS CM. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)

INSTRUMENT CLUSTER
WIRING HARNESS-SIDE CONNECTOR



- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

SYMPTOM TROUBLESHOOTING [ABS]

NO.2 ABS WARNING LIGHT DOES NOT ILLUMINATE WITH SWITCH THE IGNITION TO ON [ABS]

id0403a5950400

2	ABS warning light does not illuminate with switch the ignition to ON
[TROUBLESHOOTING HINTS]	
<ul style="list-style-type: none"> • Instrument cluster malfunction • ABS CM internal malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM ABS DTC <ul style="list-style-type: none"> • Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
3	INSPECT WHETHER MALFUNCTION IS IN ABS HU/CM OR INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Turn on all the warning light and indicator light using the M-MDS simulation function WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Does the ABS warning light illuminate? 	Yes	Replace the ABS CM (ABS CM internal malfunction). (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

04-03A

NO.3 BRAKE SYSTEM WARNING LIGHT DOES NOT ILLUMINATE WITH SWITCH THE IGNITION TO ON [ABS]

id0403a5950500

3	Brake system warning light does not illuminate with switch the ignition to ON
[TROUBLESHOOTING HINTS]	
<ul style="list-style-type: none"> • Instrument cluster malfunction • Communication error between ABS HU/CM and instrument cluster • ABS CM internal malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM ABS DTC <ul style="list-style-type: none"> • Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
3	INSPECT WHETHER MALFUNCTION IS IN ABS HU/CM OR INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Turn on all the warning light and indicator light using the M-MDS simulation function WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Does the ABS warning light illuminate? 	Yes	Replace the ABS CM (ABS CM internal malfunction). (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [ABS]

NO.4 BOTH ABS WARNING LIGHT AND BRAKE SYSTEM WARNING LIGHT STAY ON 4 S OR MORE WITH SWITCH THE IGNITION TO ON [ABS]

id0403a5950600

4	Both ABS warning light and brake system warning light stay on 4 s or more with switch the ignition to ON
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • ABS HU/CM power supply fuse malfunction • Short to ground in ABS HU/CM power supply circuit • ABS CM malfunction <ul style="list-style-type: none"> — ABS HU/CM power supply malfunction (ABS HU/CM ignition terminal N voltage is below about 8 V) • Instrument cluster malfunction • ABS HU/CM connector is not connected securely • Battery malfunction • Charging system malfunction • Open circuit in ABS HU/CM ground • Communication network malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT ABS HU/CM POWER SUPPLY FUSE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect the ABS HU/CM ignition power supply fuse. • Is the fuse normal? 	Yes	Go to the next step.
		No	Inspect for short to ground in power supply circuit. Repair or replace if necessary. Install appropriate amperage fuse.
2	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR OPEN CIRCUIT AND SHORT CIRCUIT <ul style="list-style-type: none"> • Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Is any error message displayed regarding communication between ABS HU/CM and M-MDS? 	Yes	If the communication error message is displayed even after inspecting according to the procedure displayed on the M-MDS: <ul style="list-style-type: none"> • Go to Step 6.
		No	Go to the next step.
3	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the DTC U0415:92 present? 	Yes	Go to the next step.
		No	Go to Step 6.
*4	INSPECT ABS HU/CM POWER SUPPLY VOLTAGE <ul style="list-style-type: none"> • Access the VPWR PID using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Is the VPWR PID value above 10 V? 	Yes	Replace the ABS CM (ABS CM internal malfunction). (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT WHETHER MALFUNCTION IS IN INSTRUMENT CLUSTER OR ELSEWHERE <ul style="list-style-type: none"> • Release the parking brake. • Turn on all the warning light and indicator light using the M-MDS simulation function WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Does the ABS warning light turn off? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
6	INSPECT FOR CONNECTION OF ABS HU/CM CONNECTOR <ul style="list-style-type: none"> • Is the ABS HU/CM connector connected securely? 	Yes	Go to Step 7.
		No	Connect the ABS HU/CM connector securely, then go to the next step.
7	VERIFY ABS WARNING LIGHT OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Does the ABS warning light turn off 4 s after the ignition is switched to ON. 	Yes	Symptom troubleshooting is completed (ABS HU/CM connector is not connected securely).
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [ABS]

STEP	INSPECTION	ACTION	
8	INSPECT BATTERY <ul style="list-style-type: none"> Measure the battery voltage. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) Is the battery voltage normal? 	Yes	Go to the next step.
		No	Inspect the battery and charging system. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results.
9	INSPECT CHARGING SYSTEM <ul style="list-style-type: none"> Measure the battery voltage. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) Is the battery voltage normal with electrical load (such as A/C, headlight) on and engine idling? 	Yes	Go to the next step.
		No	Inspect the charging system (such as drive belt tension and generator). (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results.
10	INSPECT BATTERY VOLTAGE WHILE ELECTRICAL LOAD IS OPERATING <ul style="list-style-type: none"> Inspect the battery voltage while electrical load (A/C, headlight etc.) is operating. Is the battery voltage normal? 	Yes	Inspect the wiring harness in ABS HU/CM terminal N and terminal B related circuit. Repair or replace the suspected wiring harness.
		No	Inspect the charging system (such as drive belt tension and generator). (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results.

04-03A

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

NO.5 ABS WARNING LIGHT STAYS ON 4 S OR MORE WITH SWITCH THE IGNITION TO ON [ABS]

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5	ABS warning light stays on 4 s or more with switch the ignition to ON
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> ABS DTC is stored Instrument cluster malfunction ABS CM internal malfunction ABS HU/CM connector is not connected securely Battery malfunction Charging system malfunction Communication network malfunction ABS CM detects power supply voltage low ABS CM malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR OPEN CIRCUIT AND SHORT CIRCUIT <ul style="list-style-type: none"> Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Is any error message displayed regarding communication between ABS HU/CM and M-MDS? 	Yes	If the communication error message is displayed even after inspecting according to the procedure displayed on the M-MDS: <ul style="list-style-type: none"> Go to Step 6.
		No	Go to the next step.
2	CONFIRM ABS DTC <ul style="list-style-type: none"> Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) If the instrument cluster is normal: <ul style="list-style-type: none"> Go to the next step. If the instrument cluster has a malfunction: <ul style="list-style-type: none"> Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)

SYMPTOM TROUBLESHOOTING [ABS]

STEP	INSPECTION	ACTION	
3	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the DTC U0415:92 present? 	Yes	Go to the next step.
		No	Go to Step 6.
*4	INSPECT ABS HU/CM POWER SUPPLY VOLTAGE <ul style="list-style-type: none"> • Access the VPWR PID using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Is the VPWR PID value above 10 V? 	Yes	Replace the ABS CM (ABS CM internal malfunction). (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT WHETHER MALFUNCTION IS IN INSTRUMENT CLUSTER OR ELSEWHERE <ul style="list-style-type: none"> • Release the parking brake. • Turn on all the warning light and indicator light using the M-MDS simulation function WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Does the ABS warning light turn off? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
6	INSPECT FOR CONNECTION OF ABS HU/CM CONNECTOR <ul style="list-style-type: none"> • Is the ABS HU/CM connector connected securely? 	Yes	Go to Step 7.
		No	Connect the ABS HU/CM connector securely, then go to the next step.
7	VERIFY ABS WARNING LIGHT OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Does the ABS warning light turn off 4 s after the ignition is switched to ON. 	Yes	Symptom troubleshooting is completed (ABS HU/CM connector is not connected securely).
		No	Go to the next step.
8	INSPECT BATTERY <ul style="list-style-type: none"> • Measure the battery voltage. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) • Is the battery voltage normal? 	Yes	Go to the next step.
		No	Inspect the battery and charging system. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results.
9	INSPECT BATTERY VOLTAGE WHILE ELECTRICAL LOAD IS OPERATING <ul style="list-style-type: none"> • Inspect the battery voltage while electrical load (A/C, headlight etc.) is operating. • Is the battery voltage normal? 	Yes	Inspect the wiring harness in ABS HU/CM terminal N and terminal B related circuit. Repair or replace the suspected wiring harness.
		No	Inspect the charging system (such as drive belt tension and generator). (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) Repair or replace the malfunctioning part according to the inspection results.

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

SYMPTOM TROUBLESHOOTING [ABS]

NO.6 BRAKE SYSTEM WARNING LIGHT STAYS ON 4 S OR MORE WITH SWITCH THE IGNITION TO ON (PARKING BRAKE IS RELEASED) [ABS]

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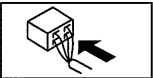
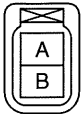
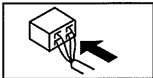
6	Brake system warning light stays on 4 s or more with switch the ignition to ON (Parking brake is released)
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • Brake fluid level is low • ABS CM malfunction <ul style="list-style-type: none"> — ABS DTC is stored • Instrument cluster malfunction • Parking brake switch circuit malfunction <ul style="list-style-type: none"> — Parking brake switch malfunction — Short to ground in wiring harness between parking brake switch and BCM — BCM malfunction • Brake fluid level sensor circuit malfunction <ul style="list-style-type: none"> — Brake fluid level sensor malfunction — Short to ground in wiring harness between brake fluid level sensor and BCM — BCM malfunction 	

04-03A

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT BRAKE FLUID LEVEL <ul style="list-style-type: none"> • Inspect the brake fluid level. • Is the brake fluid level normal? 	Yes	Go to the next step.
		No	Add the brake fluid.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the DTC U0415:92 present? 	Yes	Go to the next step.
		No	Go to Step 4.
3	CONFIRM ABS DTC <ul style="list-style-type: none"> • Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
4	INSPECT WHETHER MALFUNCTION IS IN INSTRUMENT CLUSTER OR ELSEWHERE <ul style="list-style-type: none"> • Release the parking brake. • Turn on all the warning light and indicator light using the M-MDS simulation function WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Does the ABS warning light turn off? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
5	INSPECT WHETHER MALFUNCTION IS IN BRAKE SYSTEM WARNING LIGHT RELATED SWITCHES OR ELSE WHERE <ul style="list-style-type: none"> • Inspect the following parts for continuity: <ul style="list-style-type: none"> — Parking brake switch (See 04-12-5 PARKING BRAKE SWITCH INSPECTION.) — Brake fluid level sensor (See 04-11-13 BRAKE FLUID LEVEL SENSOR INSPECTION.) • Is the continuity condition normal? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. (See 04-12-3 PARKING BRAKE LEVER REMOVAL/INSTALLATION.) (See 04-11-11 MASTER CYLINDER REMOVAL/INSTALLATION [LF, L5].)
*6	INSPECT FOR SHORT TO GROUND IN WIRING HARNESS BETWEEN BCM AND BRAKE SYSTEM WARNING LIGHT RELATED SWITCHES <ul style="list-style-type: none"> • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Parking switch terminal A — Brake fluid level sensor terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground.
		No	Replace the BCM. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [ABS]

STEP	INSPECTION	ACTION
	PARKING BRAKE SWITCH WIRING HARNESS-SIDE CONNECTOR  	BRAKE FLUID LEVEL SENSOR WIRING HARNESS-SIDE CONNECTOR  

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

NO.7 THERE IS MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DO NOT ILLUMINATE [ABS]

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7	There is a malfunction in the system even through ABS warning light, brake system warning light, do not illuminate
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • There is a difference in size or air pressure between the front and rear tires • ABS DTC is stored • Conventional brake system malfunction • ABS system malfunction • Brake pipe passage malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM ABS DTC <ul style="list-style-type: none"> • Retrieve the ABS DTC using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
2	INSPECT ABS HU <ul style="list-style-type: none"> • Perform the ABS HU system inspection. • Is the system normal? 	Yes	Inspect the conventional brake system.
		No	If the wheels do not rotate: <ul style="list-style-type: none"> • Replace the ABS HU/CM. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.) If the wheels rotate but order in which wheels rotate is incorrect: <ul style="list-style-type: none"> • Inspect the brake pipe passage to the ABS HU/CM.

04-03B SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

SYSTEM WIRING DIAGRAM
[DYNAMIC STABILITY CONTROL (DSC)] 04-03B-2

FOREWORD [DYNAMIC STABILITY CONTROL (DSC)] 04-03B-2

PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)] 04-03B-3

Intermittent Concern Troubleshooting 04-03B-4

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)] 04-03B-5

NO.1 ANY OF THE FOLLOWING LIGHTS DO NOT ILLUMINATE WITH SWITCH THE IGNITION TO ON: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT)
[DYNAMIC STABILITY CONTROL (DSC)] 04-03B-7

NO.2 ANY OF THE FOLLOWING LIGHTS STAY ON: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT)
[DYNAMIC STABILITY CONTROL (DSC)] 04-03B-9

NO.3 THERE IS A MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND DSC OFF LIGHT DO NOT ILLUMINATE
[DYNAMIC STABILITY CONTROL (DSC)] 04-03B-12

NO.4 ABS OR TCS*¹ OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *¹:
DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC OPERATES
[DYNAMIC STABILITY CONTROL (DSC)] 04-03B-12

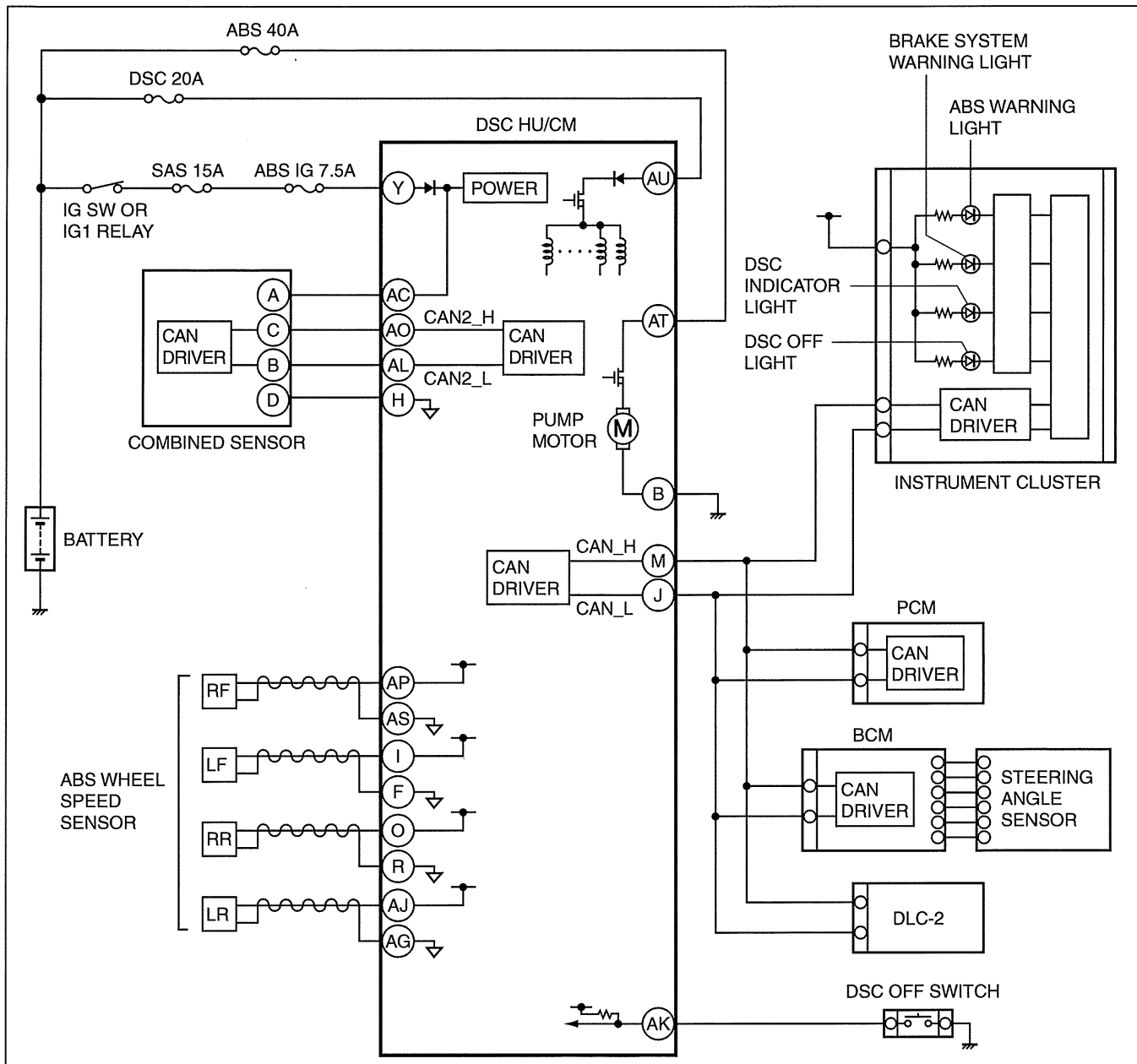
NO.5 DSC*² OPERATES FREQUENTLY/ DSC DOES NOT WORK CORRECTLY *²:
DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC OPERATES
[DYNAMIC STABILITY CONTROL (DSC)] 04-03B-13

04-03B

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

SYSTEM WIRING DIAGRAM [DYNAMIC STABILITY CONTROL (DSC)]

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FOREWORD [DYNAMIC STABILITY CONTROL (DSC)]

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- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To check the DTC, follow the DTC Inspection steps. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

id0403b2804100

PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)]

1. The ABS warning light and/or brake system warning light and/or DSC indicator light and/or DSC OFF light illuminate even when the system is normal.

Warning lights that may illuminate and/or flash	Cases in which the light may illuminate	Conditions in which the light will go out	ABS, EBD, TCS and DSC control
<ul style="list-style-type: none"> • ABS warning light • Brake system warning light*¹ • DSC indicator light • DSC OFF light 	Only the front wheels rotate under the following condition while jacked up, stuck or on the chassis dynamometer: <ul style="list-style-type: none"> • Detected 8 times for a continuous 20 s while at a vehicle speed of 20 km/h {12.4 mph} or more (one detection period is when ignition is switched from ON to off). 	After switching ignition to off, vehicle is driven at speed greater than 10 km/h {6.2 mph} and normal operation is confirmed.	<ul style="list-style-type: none"> • ABS: Cuts control • EBD: Cuts control • TCS: Cuts control • DSC: Cuts control
	Parking brake is not fully released while driving.		
	Brake drag.		
	Sudden acceleration/ deceleration.		
	Left/right or front/rear tires are different. (Size, radius, tire pressure or wear is other than that listed on tire label.)		
<ul style="list-style-type: none"> • Brake system warning light • DSC indicator light • DSC OFF light 	Brake fluid amount is low.	Brake fluid level lower than recommended amount.	<ul style="list-style-type: none"> • ABS: Operates control • EBD: Operates control • TCS: Operates control • DSC: Operates control
	Battery voltage at DSC HU/CM ignition terminal Y drops below about 9.5 V² .	Battery voltage rises above about 9.5 V .	<ul style="list-style-type: none"> • ABS: Operates control • EBD: Operates control • TCS: Operates control • DSC: Operates control

04-03B

*¹ : In case where the light may illuminate, only when DSC HU/CM detects that a wheel-speed sensor determines that more than two wheels are malfunctioning.

*² : If battery voltage drops **below 10 V** while vehicle speed is greater than **3 km/h {2 mph}**, DSC HU/CM detects DTC U3003:16.

2. Precautions during servicing of DSC. The DSC is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

(1) Malfunction in electrical system

- The control module has an on-board diagnostic function. With this function, the ABS warning light and/or brake system warning light and/or DSC indicator light and/or DSC OFF light will come on when there is a problem in the electrical system.
Also, past and present malfunctions are recorded in the control module. This function can find malfunction that do not occur during periodic inspections. Connect the M-MDS to the DLC-2. The stored malfunctions will be displayed in the order of occurrence. To fine out the causes of DSC malfunction, use these on-board diagnostic results.
- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the harness.
The control module usually operates normally. Be careful when searching for the cause of malfunction.
- After repair, it is necessary to clear the DTC from the control module memory.
Also, if the DSC related parts have been replaced, verify that the no DTC has been displayed after repairs.
- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the control module, the ABS warning light may not go off even when the ignition is switched ON. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure the ABS warning light goes off, then clear the DTC.
- When repairing, if the DSC related connectors are disconnected and the ignition is switched ON, the control module will mistakenly detect a fault and record it as a malfunction.

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

Caution

- In DSC vehicles, when any DSC HU/CM, steering angle sensor and combined sensor are replaced, perform the sensor standard point installation of each sensor.
- To protect the control module, make sure the ignition is off before connecting or disconnecting the control module connector.

(2) Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in a DSC component or the conventional brake system.
- The hydraulic unit contains delicate mechanical parts. If foreign materials get into the component, the DSC may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the DSC does not. Make sure foreign materials do not get inside when servicing the DSC (e.g.brake fluid replacement, pipe removal).

Intermittent Concern Troubleshooting

Vibration method

- If malfunction occurs or becomes worse while driving on a rough road or when engine is vibrating, perform the steps below.

Note

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to check for are:
 - Connectors not fully seated.
 - Wire harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wire harnesses pass through the firewall, body panels, etc. are the major areas to be checked.

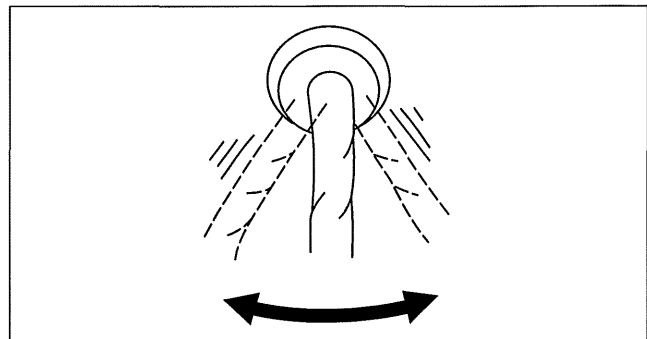
Inspection method for switch connectors or wires

1. Connect the M-MDS to DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

3. Access the PIDs for the switch you are inspecting.
4. Turn switch on manually.
5. Shake each connector or wire harness a bit vertically and horizontally while monitoring the PID.
 - If the PID value is unstable, check for poor connection.



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Inspection method for sensor connectors or wires

1. Connect the M-MDS to DLC-2.
2. Switch the ignition to ON (engine off).

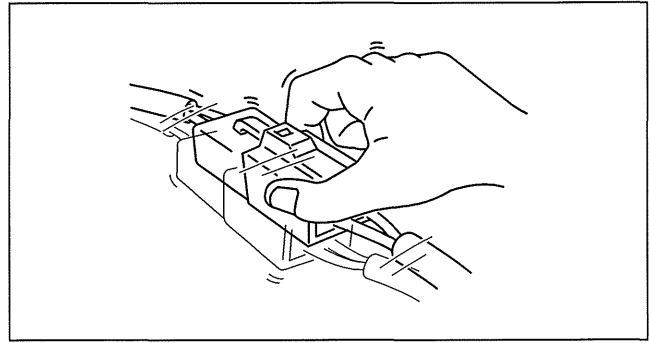
Note

- If engine starts and runs, perform the following steps at idle.

3. Access the PIDs for the switch you are inspecting.

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

4. Shake each connector or wire harness a bit vertically and horizontally while monitoring the PID.
 - If the PID value is unstable, check for poor connection.



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Inspection method for sensors

1. Connect the M-MDS to DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If engine starts and runs, perform the following steps at idle.

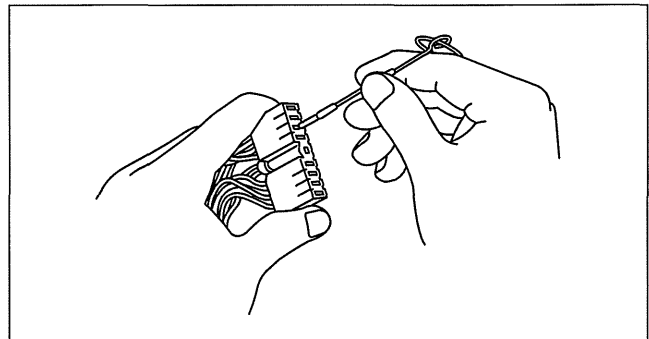
3. Access the PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.
 - If the PID value is unstable or malfunction occurs, check for poor connection and/or poorly mounted sensor.

Malfunction data monitor method

1. Perform malfunction reappearance test according to malfunction reappearance mode and malfunction data monitor. The malfunction cause is found in the malfunction data.

Connector terminal check method

1. Check the connection condition of each female terminal.
2. Insert male terminal; fit female terminal size to female terminal and check to see whether malfunction is in female terminal or not.



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SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

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- Verify the symptoms and perform troubleshooting according to the appropriate number.

No.	Symptom
1	Any of the following lights do not illuminate with switch the ignition to ON: <ul style="list-style-type: none"> • ABS warning light • Brake system warning light • DSC indicator light • DSC OFF light
2	Any of the following lights stay on: <ul style="list-style-type: none"> • ABS warning light • Brake system warning light • DSC indicator light • DSC OFF light
3	There is a malfunction in the system even though ABS warning light, brake system warning light, DSC indicator light and DSC OFF light do not illuminate
4	ABS or TCS ^{*1} operates frequently/TCS does not work correctly
5	DSC ^{*2} operates frequently/DSC does not work correctly

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

*1 : DSC system function contains traction control function, DSC indicator light goes on and off while DSC operates.

*2 : DSC indicator light goes on and off while DSC operates.

x: Applicable

Possible factor																							
Troubleshooting item		DSC HU/CM	Instrument cluster	BCM malfunction	CAN communication	ABS warning light circuit	Brake system warning light circuit	DSC indicator light circuit	DSC OFF light circuit	Each sensor installation	Battery	Charging system	Brake fluid	Parking brake	Tire	Tire air pressure	DSC HU/CM power supply system	DSC HU/CM ground system	Instrument cluster power supply system	Instrument cluster ground system	Conventional brake	Module configuration	
1	Any of the following lights do not illuminate with switch the ignition to ON: <ul style="list-style-type: none"> • ABS warning light • Brake system warning light • DSC indicator light • DSC OFF light 	X	X		X														X	X			
2	Any of the following lights stay on: <ul style="list-style-type: none"> • ABS warning light • Brake system warning light • DSC indicator light • DSC OFF light 	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X					
3	There is a malfunction in the system even though ABS warning light, brake system warning light, DSC indicator light and DSC OFF light do not illuminate																				X		
4	ABS or TCS* ¹ operates frequently/ TCS does not work correctly* ¹	X								X					X	X							
5	DSC* ² operates frequently/ DSC does not work correctly* ²	X								X													X

*1: DSC system function contains traction control function, DSC indicator light goes on and off while DSC

*2: DSC indicator light goes on and off while DSC operates

am3uuw0000501

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

NO.1 ANY OF THE FOLLOWING LIGHTS DO NOT ILLUMINATE WITH SWITCH THE IGNITION TO ON: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT) [DYNAMIC STABILITY CONTROL (DSC)]

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1	<p>Any of the following lights do not illuminate with switch the ignition to ON:</p> <ul style="list-style-type: none"> • ABS warning light • Brake system warning light • DSC indicator light • DSC OFF light
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • Instrument cluster power supply malfunction <ul style="list-style-type: none"> — Short to ground in ignition power supply circuit — Instrument cluster power supply fuse malfunction • Open circuit in instrument cluster power supply circuit • Open circuit in instrument cluster ground circuit • DSC DTC is stored • DSC HU/CM power supply malfunction <ul style="list-style-type: none"> — Short to ground in ignition power supply circuit — DSC HU/CM power supply fuse malfunction • Open circuit in DSC HU/CM power supply circuit • Open circuit in DSC HU/CM ground circuit • Instrument cluster DTC is stored • DSC CM malfunction • Instrument cluster malfunction 	

04-03B

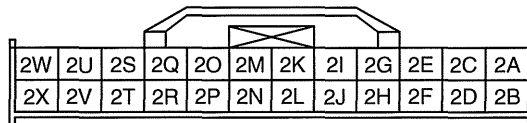
Diagnostic procedure

STEP	INSPECTION		ACTION
1	<p>VERIFY WHETHER MALFUNCTION IS IN WARNING LIGHT AND INDICATOR LIGHT'S COMMON POWER SUPPLY OR IN OTHER WARNING LIGHTS AND INDICATOR LIGHT</p> <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Turn on all warning lights and indicator lights using the instrument cluster PID WL+IL of active command modes. • Do the other warning and indicator lights illuminate? 	Yes	Go to Step 5.
		No	<p>If the communication error message is displayed on M-MDS screen:</p> <ul style="list-style-type: none"> • Go to the next step. <p>If the communication error message is not displayed:</p> <ul style="list-style-type: none"> • Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
2	<p>INSPECT INSTRUMENT CLUSTER POWER SUPPLY FUSE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect the instrument cluster ignition power supply fuse. • Is the fuse normal? 	Yes	Go to the next step.
		No	<p>Inspect for short to ground in ignition power supply circuit. Repair or replace if necessary. Install the appropriate amperage fuse.</p>
*3	<p>INSPECT INSTRUMENT CLUSTER POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at instrument cluster terminal 2S (wiring harness-side). • Is the voltage approx. 12 V? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
*4	<p>INSPECT INSTRUMENT CLUSTER GROUND CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the instrument cluster connector. • Inspect for continuity between instrument cluster terminal 2K (wiring harness-side) and body ground. • Is there continuity? 	Yes	<p>Replace the instrument cluster (open circuit in instrument cluster). (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)</p>
		No	Repair or replace the wiring harness for a possible open circuit.

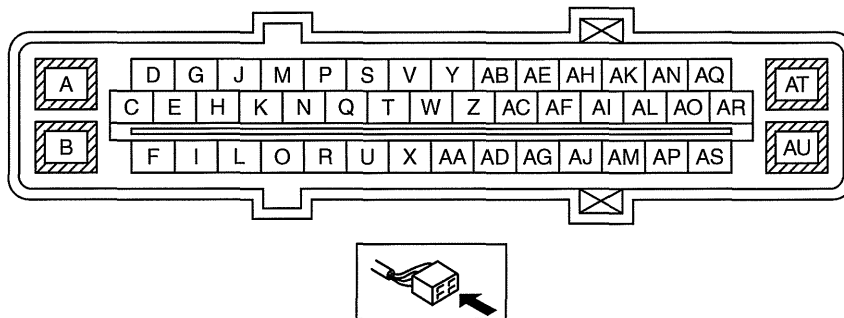
SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION		ACTION
5	CONFIRM DSC DTC <ul style="list-style-type: none"> • Retrieve the DSC DTC using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	If the communication error message is displayed in M-MDS screen: <ul style="list-style-type: none"> • Go to the next step. If the communication error message is not displayed: <ul style="list-style-type: none"> • Go to Step 9.
6	INSPECT DSC HU/CM POWER SUPPLY FUSE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect the DSC HU/CM ignition power supply fuse. • Is the fuse normal? 	Yes	Go to the next step.
		No	Inspect for a short to ground in ignition power supply circuit. Repair or replace if necessary. Install appropriate amperage fuse.
*7	INSPECT DSC HU/CM POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at DSC HU/CM terminal Y (wiring harness-side). • Is the voltage approx. 12 V? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
*8	INSPECT DSC HU/CM GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the DSC HU/CM connector. • Inspect for continuity between DSC HU/CM terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Replace the DSC HU/CM (open circuit in DSC CM). (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness for a possible open circuit.
9	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present? 	Yes	Go to the applicable DTC troubleshooting. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

INSTRUMENT CLUSTER
WIRING HARNESS-SIDE CONNECTOR



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

NO.2 ANY OF THE FOLLOWING LIGHTS STAY ON: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT) [DYNAMIC STABILITY CONTROL (DSC)]

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2	<p>Any of the following lights stay on:</p> <ul style="list-style-type: none"> • ABS warning light • Brake system warning light • DSC indicator light • DSC OFF light
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • Brake fluid level is low • Parking brake lever malfunction • Brake system warning light related switches malfunction <ul style="list-style-type: none"> — Parking brake switch malfunction — Brake fluid level sensor malfunction • Brake system warning light related wiring harness malfunction <ul style="list-style-type: none"> — Short to ground in wiring harness between parking brake switch circuit — Short to ground in wiring harness between brake fluid level sensor circuit • BCM DTC is stored • BCM malfunction • DSC DTC is stored • DSC HU/CM connector or terminals malfunction • DSC HU/CM power supply malfunction <ul style="list-style-type: none"> — DSC HU/CM power supply fuse malfunction — DSC HU/CM power supply circuit malfunction • Open circuit in DSC HU/CM power supply circuit • Open circuit in DSC HU/CM ground circuit • Instrument cluster DTC is stored • DSC CM malfunction • Instrument cluster malfunction 	

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	<p>INSPECT BRAKE FLUID LEVEL</p> <ul style="list-style-type: none"> • Inspect the brake fluid level. • Is the brake fluid level normal? 	Yes	Go to the next step.
		No	Add the brake fluid. If the brake fluid refilled: <ul style="list-style-type: none"> • Inspect and repair brake line for leakage.
2	<p>VERIFY PARKING BRAKE</p> <ul style="list-style-type: none"> • Verify the parking brake. • Is the parking brake lever released? 	Yes	Go to the next step.
		No	Release the parking brake lever.
3	<p>CONFIRM SYMPTOM</p> <ul style="list-style-type: none"> • Confirm the brake system warning light. • Is it only brake system warning light remains on? 	Yes	Go to the next step.
		No	Go to Step 6.
4	<p>INSPECT WHETHER MALFUNCTION IS IN BRAKE SYSTEM WARNING LIGHT RELATED SWITCHES OR ELSEWHERE</p> <ul style="list-style-type: none"> • Inspect for following part: <ul style="list-style-type: none"> — Parking brake switch (See 04-12-5 PARKING BRAKE SWITCH INSPECTION.) — Brake fluid level sensor (See 04-11-13 BRAKE FLUID LEVEL SENSOR INSPECTION.) • Is there any malfunction? 	Yes	Replace the malfunctioning part according to the inspection results. (See 04-12-3 PARKING BRAKE LEVER REMOVAL/ INSTALLATION.) (See 04-11-11 MASTER CYLINDER REMOVAL/ INSTALLATION [LF, L5].) (See 04-11-12 MASTER CYLINDER REMOVAL/ INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

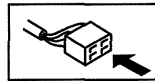
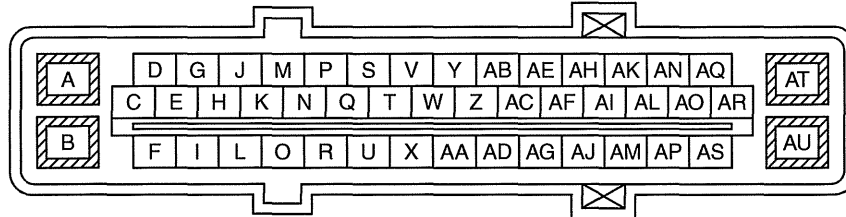
SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
*5	INSPECT FOR SHORT TO GROUND IN WIRING HARNESS BETWEEN BCM AND BRAKE SYSTEM WARNING LIGHT RELATED SWITCHES <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the parking brake switch and brake fluid level sensor connectors. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Parking brake switch terminal A — Brake fluid level sensor terminal A • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground.
		No	Retrieve the BCM DTC using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) If the DTC present: <ul style="list-style-type: none"> • Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].) If the DTC does not present: <ul style="list-style-type: none"> • Replace the BCM. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
6	CONFIRM DSC DTC <ul style="list-style-type: none"> • Retrieve the DSC DTC using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	If the communication error message is displayed on the M-MDS screen: <ul style="list-style-type: none"> • Go to the next step. If the communication error is not displayed: <ul style="list-style-type: none"> • Go to Step 11.
7	INSPECT DSC HU/CM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the DSC HU/CM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
8	INSPECT DSC HU/CM POWER SUPPLY FUSE <ul style="list-style-type: none"> • Inspect the DSC HU/CM ignition power supply fuse. • Is the fuse normal? 	Yes	Go to the next step.
		No	Inspect for open circuit in DSC HU/CM ignition power supply circuit. Repair or replace if necessary. Install appropriate amperage fuse.
*9	INSPECT DSC HU/CM POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • DSC HU/CM connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at DSC HU/CM terminal Y (wiring harness-side). • Is the voltage approx. 12 V? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
*10	INSPECT DSC HU/CM GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • DSC HU/CM connector is disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between DSC HU/CM terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Replace the DSC HU/CM (open circuit in DSC CM). (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness for a possible open circuit.
11	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Retrieve the instrument cluster DTC using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

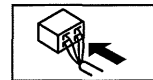
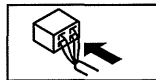
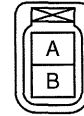
STEP	INSPECTION		ACTION
12	VERIFY WHETHER MALFUNCTION IS IN INSTRUMENT CLUSTER OR BCM <ul style="list-style-type: none"> Turn off and on all warning light and indicator lights using the instrument cluster PID WL+IL of active command modes using the M-MDS. Do the ABS warning light, brake system warning light, DSC indicator light and DSC OFF light turn on and off according to active command modes? 	Yes	Replace the DSC HU/CM (internal fault). (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



PARKING BRAKE SWITCH
WIRING HARNESS-SIDE CONNECTOR

BRAKE FLUID LEVEL SENSOR
WIRING HARNESS-SIDE CONNECTOR



04-03B

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

NO.3 THERE IS A MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND DSC OFF LIGHT DO NOT ILLUMINATE [DYNAMIC STABILITY CONTROL (DSC)]

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3	There is a malfunction in the system even though ABS warning light, brake system warning light, DSC indicator light and DSC OFF light do not illuminate
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • There is a mechanical malfunction in system <ul style="list-style-type: none"> — DSC DTC is stored — Conventional brake system malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM DSC DTC <ul style="list-style-type: none"> • Retrieve the DSC DTC using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
2	VERIFY SOLENOID VALVE OPERATION <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the M-MDS to the DLC-2. • Switch the ignition to ON (engine off). • Access the active command mode for the solenoid valve using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Does the solenoid valve operate properly? 	Yes	Inspect the conventional brake system. Repair or replace if necessary.
		No	Repair or replace the malfunctioning part.

NO.4 ABS OR TCS*¹ OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *¹: DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC OPERATES [DYNAMIC STABILITY CONTROL (DSC)]

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4	ABS or TCS* ¹ operates frequently/TCS does not work correctly* ¹ : DSC system function contains traction control function, DSC indicator light goes on and off while DSC operates
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • DSC DTC is stored • Engine control system malfunction • Tire and air pressure malfunction <ul style="list-style-type: none"> — The difference of size or air pressure between the front tires and rear tires • ABS wheel-speed sensor malfunction <ul style="list-style-type: none"> — Incorrect ABS wheel-speed signal is inputted to DSC HU/CM 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM DSC AND/OR PCM DTC <ul style="list-style-type: none"> • Retrieve the DSC DTC using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Perform the PCM DTC using the M-MDS, if the traction control function has a problem. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT TIRE SIZE AND AIR PRESSURE <ul style="list-style-type: none"> • Inspect the tire size and air pressure. • Are size and air pressure as specified? 	Yes	Go to the next step.
		No	Replace with the specified tires and adjust the tire air pressure.

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

STEP	INSPECTION	ACTION	
*3	INSPECT ABS WHEEL-SPEED SENSOR OUTPUT PULSE <ul style="list-style-type: none"> • Perform the Voltage Pattern Inspection for each ABS wheel-speed sensor. (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR INSPECTION.) • Is the output voltage pattern normal? 	Yes	Found the malfunctioning part according to Intermittent Concern Troubleshooting. (See 04-03B-3 PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Inspect the ABS wheel-speed sensor and ABS sensor rotor for poor installation.

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

04-03B

NO.5 DSC*2 OPERATES FREQUENTLY/DSC DOES NOT WORK CORRECTLY *2: DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC OPERATES [DYNAMIC STABILITY CONTROL (DSC)]

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5	DSC*2 operates frequently/DSC does not work correctly*2: DSC indicator light goes on and off while DSC operates	
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • DSC DTC is stored • Poor installation with combined sensor and/or steering angle sensor <ul style="list-style-type: none"> — If any of the above sensors are poorly installed, DSC may operate intermittently • Initialization is not performed after replacing DSC HU/CM or steering angle sensor <ul style="list-style-type: none"> — If initialization is not performed correctly, DSC may not work correctly 		

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CONFIRM DSC DTC <ul style="list-style-type: none"> • Retrieve the DSC DTC using the M-MDS. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
2	INSPECT INSTALLATION OF COMBINED SENSOR AND STEERING ANGLE SENSOR <ul style="list-style-type: none"> • Inspect the installation of combined sensor and steering angle sensor. • Are the sensors securely installed? 	Yes	Go to the next step.
		No	Install the malfunctioning sensor securely. (See 04-15-7 COMBINED SENSOR REMOVAL/INSTALLATION.) (See 09-18-19 STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
3	INSPECT INITIALIZATION OF COMBINED SENSOR AND STEERING ANGLE SENSOR <ul style="list-style-type: none"> • Inspect the initialization of combined sensor and steering angle sensor. • Did the sensors initialize after replacement of DSC HU/CM or steering angle sensor? 	Yes	Found the malfunctioning part according to Intermittent Concern Troubleshooting. (See 04-03B-3 PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Perform the initialization procedure. (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE,)

04-10 GENERAL PROCEDURES

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 Initialization Procedure04-10-1

GENERAL PROCEDURES (BRAKE)

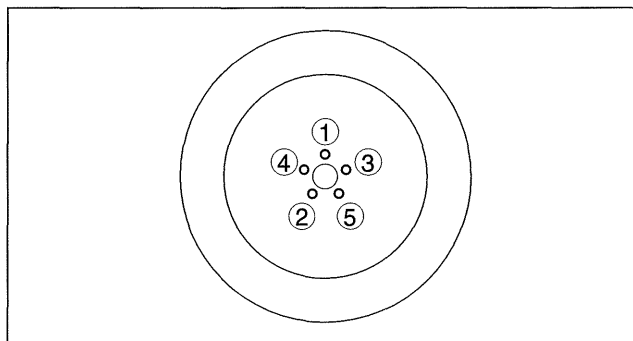
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Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.

Tightening torque

88—118 N·m {9.0—12 Kgf·m, 65—87 ft·lbf}



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04-10

Brake Lines Disconnection

1. If any brake line has been disconnected during the procedures, add brake fluid, bleed the brakes, and inspect for leakage after the procedure has been completed.

Caution

- Brake fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

Brake Pipe Flare Nut Tightening

1. Tighten the brake pipe flare nut using the commercially available flare nut wrench.

Connector Disconnection

1. Disconnect the negative battery cable before performing any work that requires handling of connectors. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

ABS/DSC Related Parts

1. Make sure that there are no DTCs in the ABS/DSC memory after working on ABS/DSC related parts. If there are any DTCs in the memory, clear them.

DSC Related Parts Sensor Initialization Procedure

Warning

- If the initialization procedure is not completed, the DSC will not operate properly and it might cause an unexpected accident. Therefore, when replacing or removing the following parts, make sure to perform the initialization procedure to ensure proper DSC operation.

1. When replacing or removing the following parts, perform the initialization procedure. (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)
 - DSC HU/CM
 - Combined sensor

04-11 CONVENTIONAL BRAKE SYSTEM

CONVENTIONAL BRAKE SYSTEM

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REAR BRAKE (DISC) REMOVAL/
INSTALLATION 04-11-35

 Caliper and Brake Hose Removal
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 Caliper and Brake Hose Installation
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 Retaining Clip Installation Note 04-11-37

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 Note 04-11-43

 Clip and Brake Pipe Installation
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BRAKE HOSE (REAR) REMOVAL/
INSTALLATION [L5, L3 WITH TC] 04-11-44

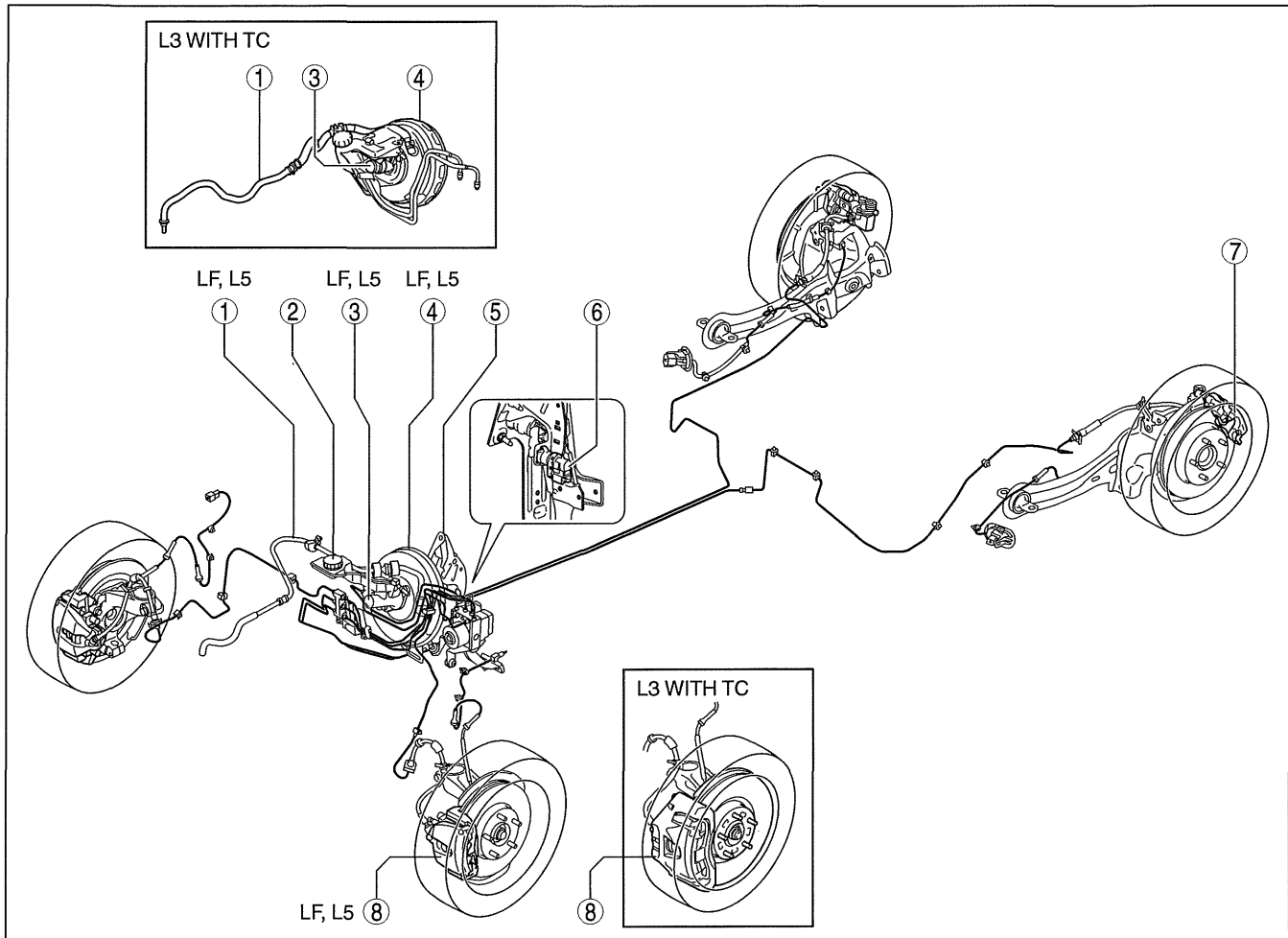
 Clip and Brake Pipe Installation
 Note 04-11-44

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CONVENTIONAL BRAKE SYSTEM

CONVENTIONAL BRAKE SYSTEM LOCATION INDEX

id041100800100



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1	Vacuum line (See 04-11-4 VACUUM LINE INSPECTION.) (See 04-11-4 VACUUM HOSE REMOVAL/ INSTALLATION [LF, L5].) (See 04-11-6 VACUUM HOSE REMOVAL/ INSTALLATION [L3 WITH TC].)
2	Brake fluid (See 04-11-3 AIR BLEEDING.)
3	Master cylinder (See 04-11-11 MASTER CYLINDER REMOVAL/ INSTALLATION [LF, L5].) (See 04-11-12 MASTER CYLINDER REMOVAL/ INSTALLATION [L3 WITH TC].) (See 04-11-13 BRAKE FLUID LEVEL SENSOR INSPECTION.)
4	Power brake unit (See 04-11-13 POWER BRAKE UNIT INSPECTION.) (See 04-11-15 POWER BRAKE UNIT REMOVAL/ INSTALLATION [LF, L5].) (See 04-11-18 POWER BRAKE UNIT REMOVAL/ INSTALLATION [L3 WITH TC].)

5	Brake pedal (See 04-11-7 BRAKE PEDAL INSPECTION.) (See 04-11-8 BRAKE PEDAL REMOVAL/ INSTALLATION.)
6	Brake switch (See 04-11-10 BRAKE SWITCH INSPECTION.)
7	Rear brake (disc) (See 04-11-32 REAR BRAKE (DISC) INSPECTION.) (See 04-11-35 REAR BRAKE (DISC) REMOVAL/ INSTALLATION.) (See 04-11-38 DISC PAD (REAR) REPLACEMENT.) (See 04-11-40 CALIPER (REAR) DISASSEMBLY/ ASSEMBLY.) (See 04-11-42 BRAKE HOSE (REAR) REMOVAL/ INSTALLATION [LF].) (See 04-11-44 BRAKE HOSE (REAR) REMOVAL/ INSTALLATION [L5, L3 WITH TC].)

CONVENTIONAL BRAKE SYSTEM

8	Front brake (disc) (See 04-11-19 FRONT BRAKE (DISC) INSPECTION.) (See 04-11-22 FRONT BRAKE (DISC) REMOVAL/ INSTALLATION [LF, L5].) (See 04-11-24 FRONT BRAKE (DISC) REMOVAL/ INSTALLATION [L3 WITH TC].) (See 04-11-26 DISC PAD (FRONT) REPLACEMENT [LF, L5].) (See 04-11-26 DISC PAD (FRONT) REPLACEMENT [L3 WITH TC].) (See 04-11-27 CALIPER (FRONT) DISASSEMBLY/ ASSEMBLY [LF, L5].) (See 04-11-29 CALIPER (FRONT) DISASSEMBLY/ ASSEMBLY [L3 WITH TC].) (See 04-11-31 BRAKE HOSE (FRONT) REMOVAL/ INSTALLATION [LF, L5].) (See 04-11-32 BRAKE HOSE (FRONT) REMOVAL/ INSTALLATION [L3 WITH TC].)
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04-11

AIR BLEEDING

id041100800200

Caution

- Brake fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

Note

- Keep the fluid level in the reserve tank at 3/4 full or more during the air bleeding.
- Begin air bleeding with the brake caliper that is furthest from the master cylinder.

Brake fluid type

SAE J1703, FMVSS 116 DOT-3

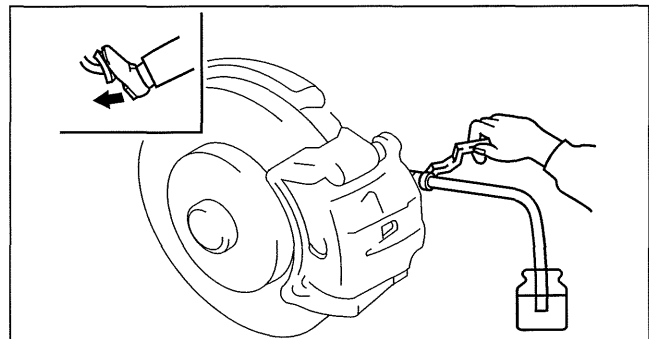
1. Remove the cap from the brake fluid reserved tank and add brake fluid.
2. Remove the bleeder cap on the brake caliper, and attach a vinyl tube to the bleeder screw.
3. Place the other end of the vinyl tube in a clear container and fill the container with fluid during air bleeding.
4. Working with two people, one should pump the brake pedal several times and depress and hold the pedal down.
5. While the brake pedal is depressed, the other should loosen the bleeder screw using a commercially available flare nut wrench, drain out any fluid containing air bubbles, and tighten the bleeder screw.

Tightening torque

Front (LF, L5): 7.0—9.0 N·m {72—91 kgf·cm, 62—79 in·lbf}

Front (L3 WITH TC): 12—16 N·m {123—163 kgf·cm, 107—141 in·lbf}

Rear: 12—16 N·m {123—163 kgf·cm, 107—141 in·lbf}



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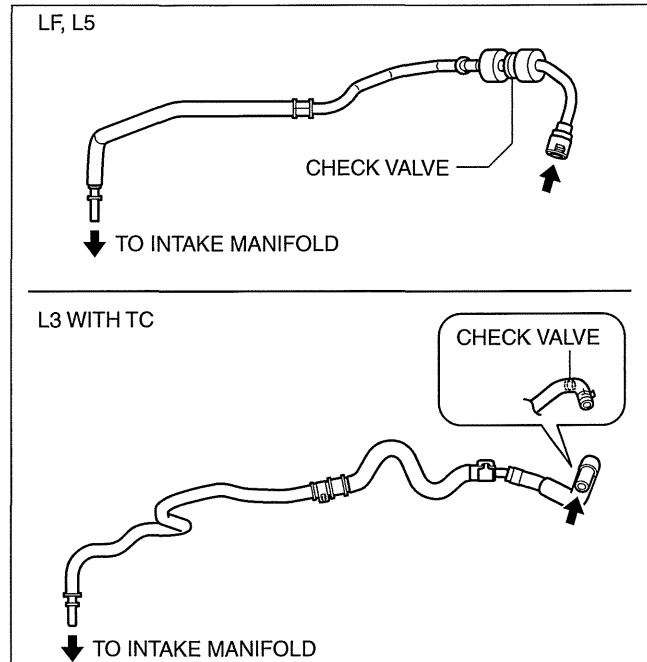
6. Repeat Steps 3 and 4 until no air bubbles are seen.
7. Perform air bleeding as described in the above procedures for all brake calipers.
8. After air bleeding, inspect the following:
 - Brake operation
 - Fluid leakage
 - Fluid level

CONVENTIONAL BRAKE SYSTEM

VACUUM LINE INSPECTION

id041100801500

1. Remove the vacuum hose. (See 04-11-4 VACUUM HOSE REMOVAL/INSTALLATION [LF, L5].) (See 04-11-6 VACUUM HOSE REMOVAL/INSTALLATION [L3 WITH TC].)
2. Verify that air can be blown from the power brake unit side of the vacuum hose towards the intake manifold side, and that air cannot be blown in the opposite direction.
 - If there is any malfunction of the inner check valve, replace it together with the vacuum hose as a single unit.

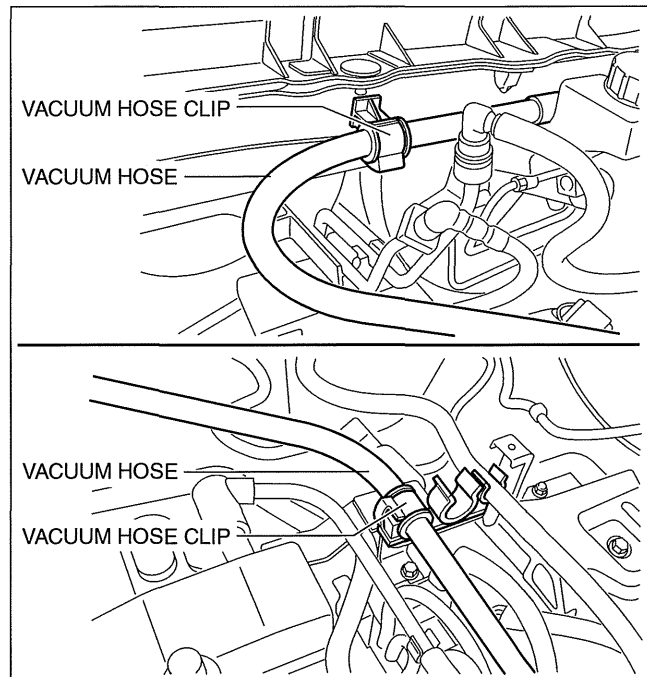


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VACUUM HOSE REMOVAL/INSTALLATION [LF, L5]

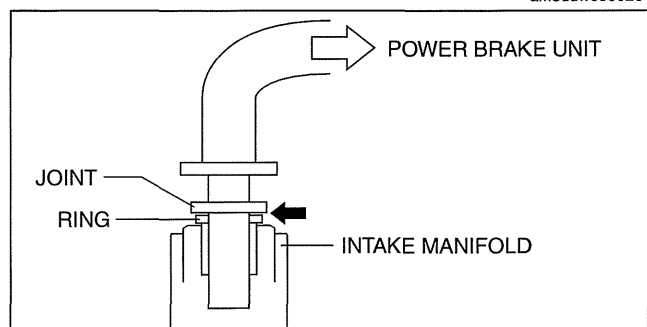
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1. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Remove the vacuum hose from the vacuum hose clip.



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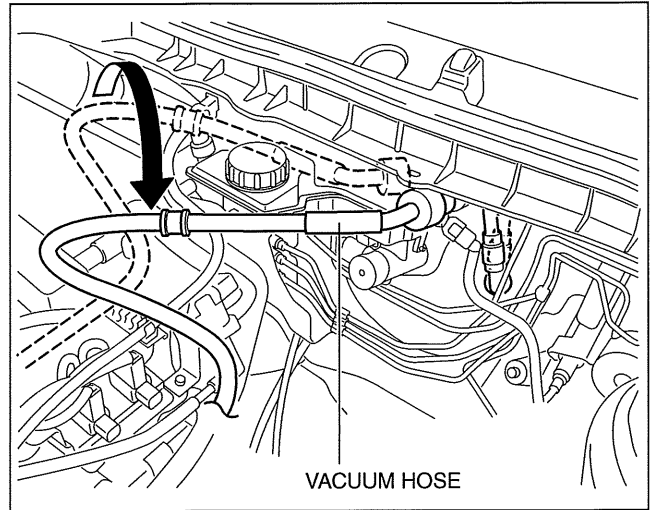
3. Insert a thin flathead screwdriver at the point indicated by the arrow in the figure, push the ring down and disconnect the vacuum hose from the intake manifold.



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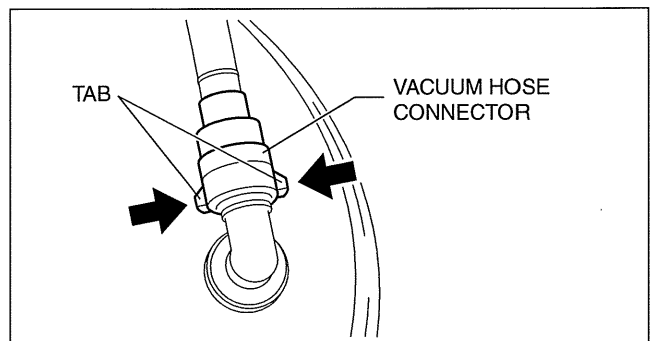
CONVENTIONAL BRAKE SYSTEM

4. Move the vacuum hose as shown in the figure.

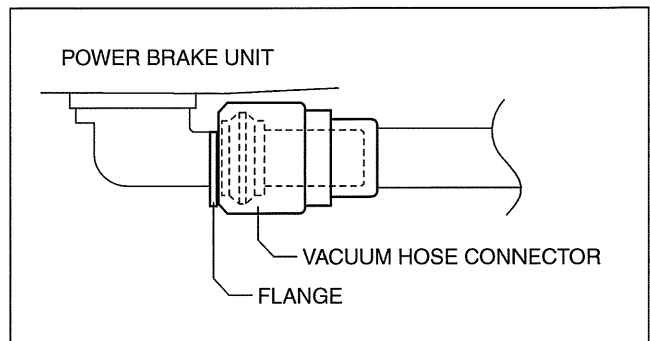


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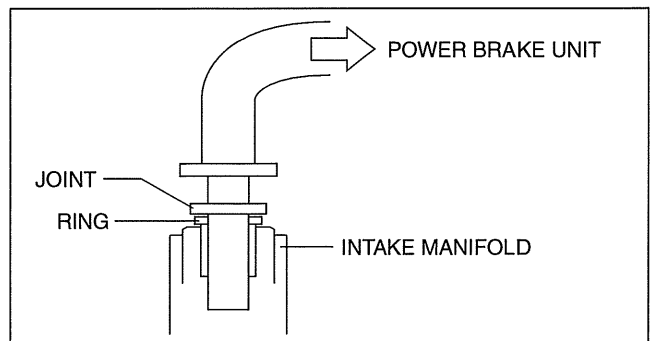
5. Disconnect the vacuum hose connector from the power brake unit while pressing the tabs of the vacuum hose connector.
6. Remove the vacuum hose.
7. Install in the reverse order of removal.
8. Insert the vacuum hose connector to the power brake unit.



9. Verify that the vacuum hose is inserted so that the connector contacts the power brake unit flange.



10. Verify that the vacuum hose is inserted so that the joint contacts the intake manifold ring.

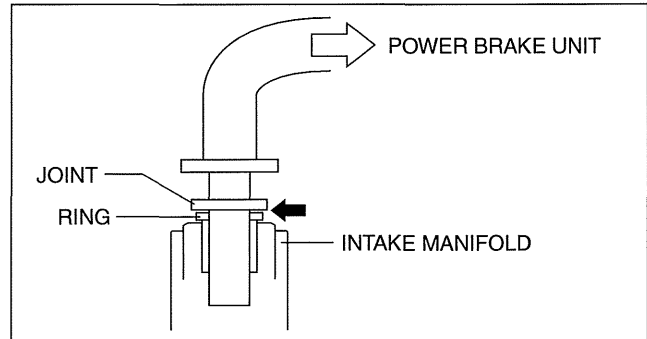


CONVENTIONAL BRAKE SYSTEM

VACUUM HOSE REMOVAL/INSTALLATION [L3 WITH TC]

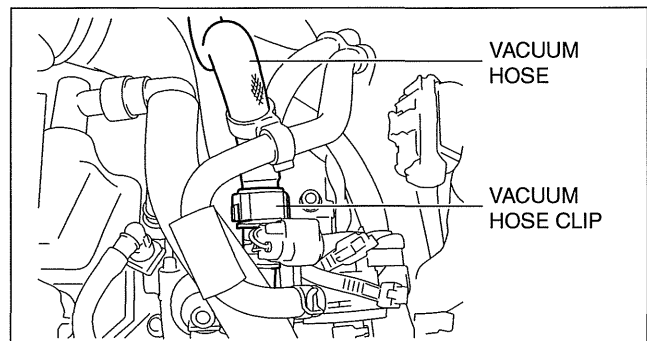
id041100801639

1. Remove the charge air cooler cover. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove the charge air cooler. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
3. Insert a thin flathead screwdriver at the point indicated by the arrow in the figure, push the ring down and disconnect the vacuum hose from the intake manifold.



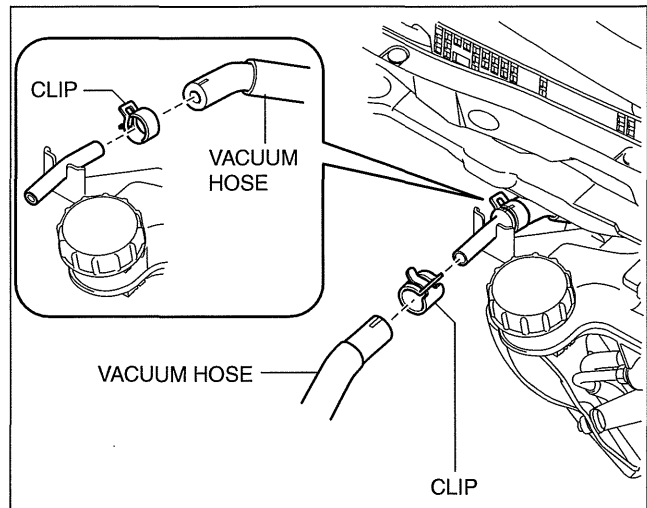
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4. Remove the vacuum hose from the vacuum hose clip.



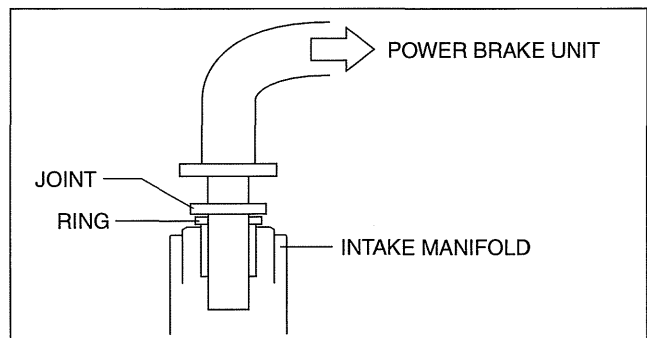
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5. Pinch open the clip using pliers and disconnect the vacuum hose from the insulator bracket as shown in the figure.
6. Pinch open the clip using pliers and disconnect the vacuum hose from the power brake unit.
7. Remove the vacuum hose.
8. Install in the reverse order of removal.



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9. Verify that the vacuum hose is inserted so that the joint contacts the intake manifold ring.



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CONVENTIONAL BRAKE SYSTEM

BRAKE PEDAL INSPECTION

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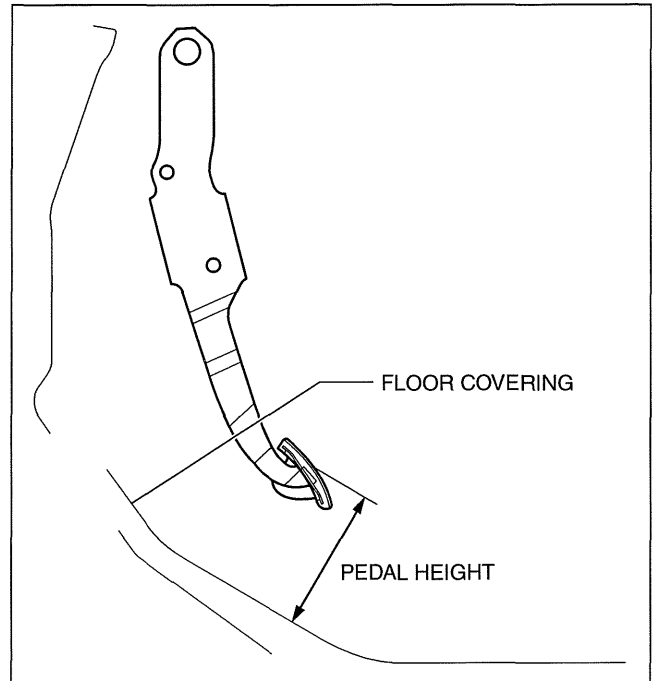
Pedal Height Inspection

1. Measure the distance from the center of the upper surface of the pedal pad to the floor covering and verify that it is as specified.
 - If not within the specification, replace the brake pedal.

Brake pedal height (reference value)

LF, L5: 125.0 mm {4.921 in}

L3 WITH TC: 128.9 mm {5.075 in}



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04-11

Pedal Play Inspection

1. Pump the pedal several times to release the vacuum in the power brake unit.
2. Gently depress the pedal by hand and measure the pedal play.
 - If not within the specification, inspect the wear of the joint pin. Replace it if there is any malfunction.

Brake pedal play

4.0—8.4 mm {0.16—0.33 in}

Note

- If there is no malfunction in the joint pin, there is a possibility that the power brake unit has some malfunction. Verify that there are no malfunctions, and replace it if necessary.

CONVENTIONAL BRAKE SYSTEM

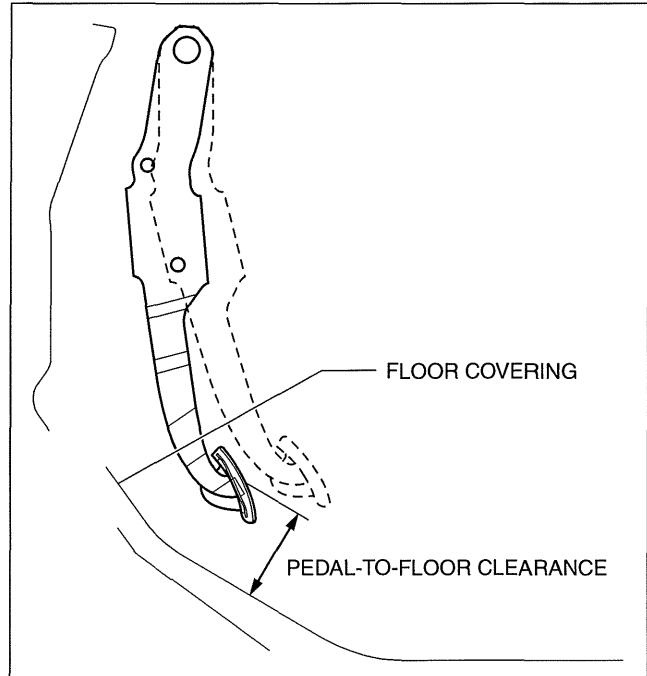
Pedal-to-floor Clearance Inspection

1. Start the engine and depress the brake pedal with a force of **147 N {15.0 kgf, 33.0 lbf}**.
2. Measure the distance from the center of the upper surface of the pedal pad to the floor covering and verify that it is as specified.
 - If it is less than the specification, inspect for air in the brake line.

Brake pedal-to-floor clearance (Brake pedal when depressed at 147 N {15.0 kgf, 33.0 lbf})

LF, L5: 83.5 mm {3.29 in} or more

L3 WITH TC: 88.6 mm {3.49 in} or more



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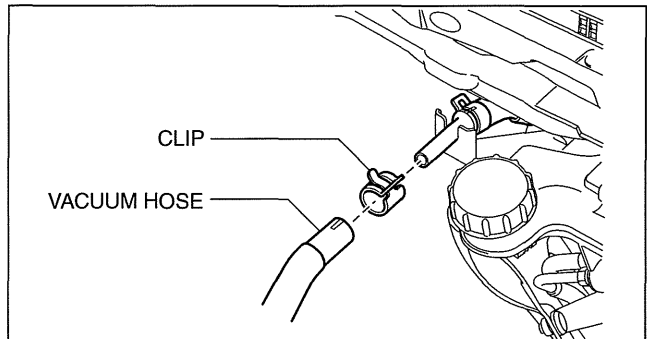
BRAKE PEDAL REMOVAL/INSTALLATION

id041100801200

Caution

- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch is inserted into the installation hole on the brake pedal and rotated to fix in place. If the brake switch is not properly installed, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake pedal is properly installed and fully released before installing the brake switch to the pedal.
- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.
- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

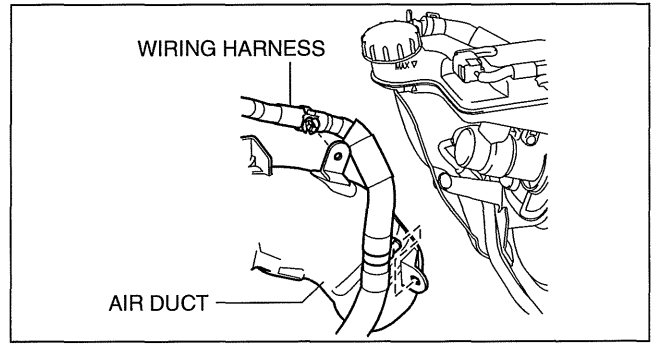
1. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the vacuum hose from the insulator bracket as shown in the figure. (L3 WITH TC)



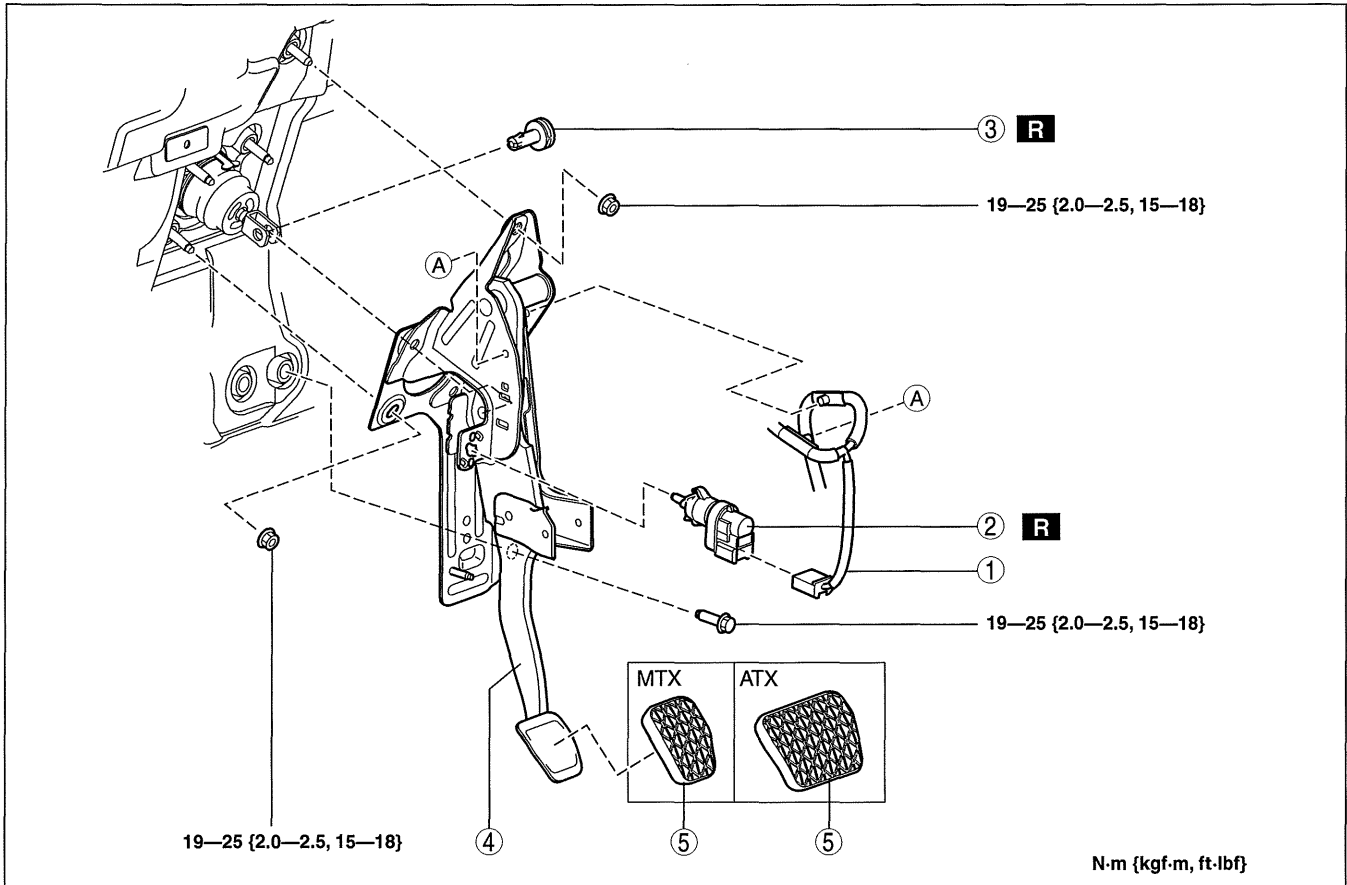
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CONVENTIONAL BRAKE SYSTEM

3. Remove the wiring harness from the air duct. (L3 WITH TC)
4. Remove the side wall (driver side). (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
5. Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/ INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
6. Remove the accelerator pedal. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.



04-11



1	Brake switch connector, wiring harness
2	Brake switch (See 04-11-10 Brake Switch Installation Note.)
3	Joint pin (See 04-11-10 Joint Pin Installation Note.)

4	Brake pedal (See 04-11-9 Brake Pedal Removal Note.)
5	Pedal pad

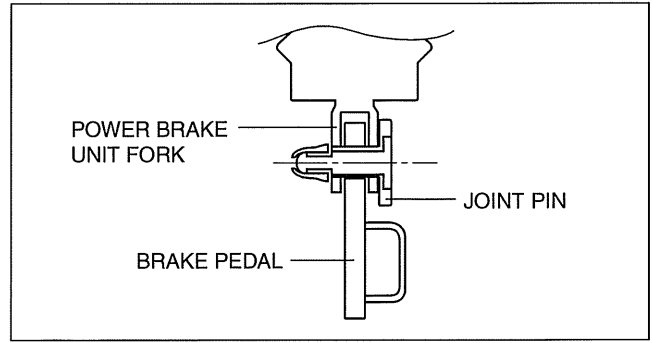
Brake Pedal Removal Note

1. Remove the brake pedal installation bolt and nuts.
2. Move the power brake unit to the vehicle front where the power brake unit fork does not interfere with the brake pedal arm.
3. Remove the brake pedal.

CONVENTIONAL BRAKE SYSTEM

Joint Pin Installation Note

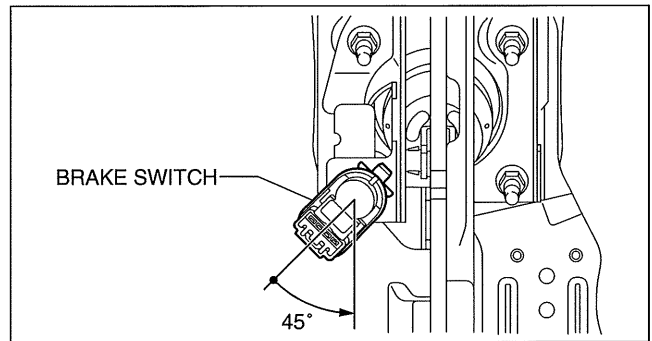
1. Install the new joint pin by aligning the pin holes of the brake pedal and power brake unit fork.
2. Verify that the joint pin touches the power brake unit fork completely.



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Brake Switch Installation Note

1. Inspect the brake pedal. (See 04-11-7 BRAKE PEDAL INSPECTION.)
2. With the brake pedal fully released, insert a new brake switch into the installation hole on the brake pedal.
3. Secure the brake switch by turning it counterclockwise 45°.



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BRAKE SWITCH INSPECTION

id041100801900

Caution

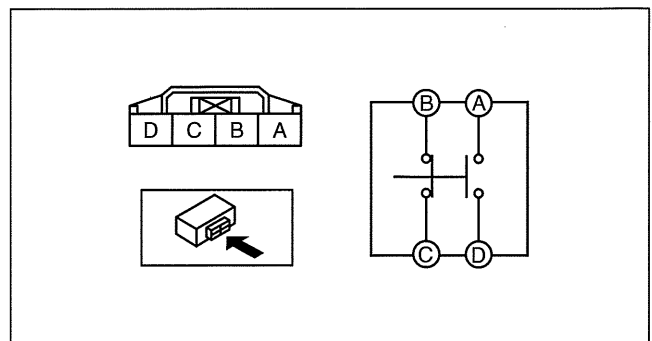
- Inspect the brake switch with it installed to the brake pedal, otherwise the brake switch may not operate normally. If the brake switch is removed from the brake pedal, replace the brake switch with a new one.

1. Disconnect the brake switch connector.
2. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the brake switch.

○—○ : Continuity

Condition	Terminal			
	A	B	C	D
When the brake pedal is depressed	○	—	—	○
When the brake pedal is not depressed (With cruise control system)		○	—	○

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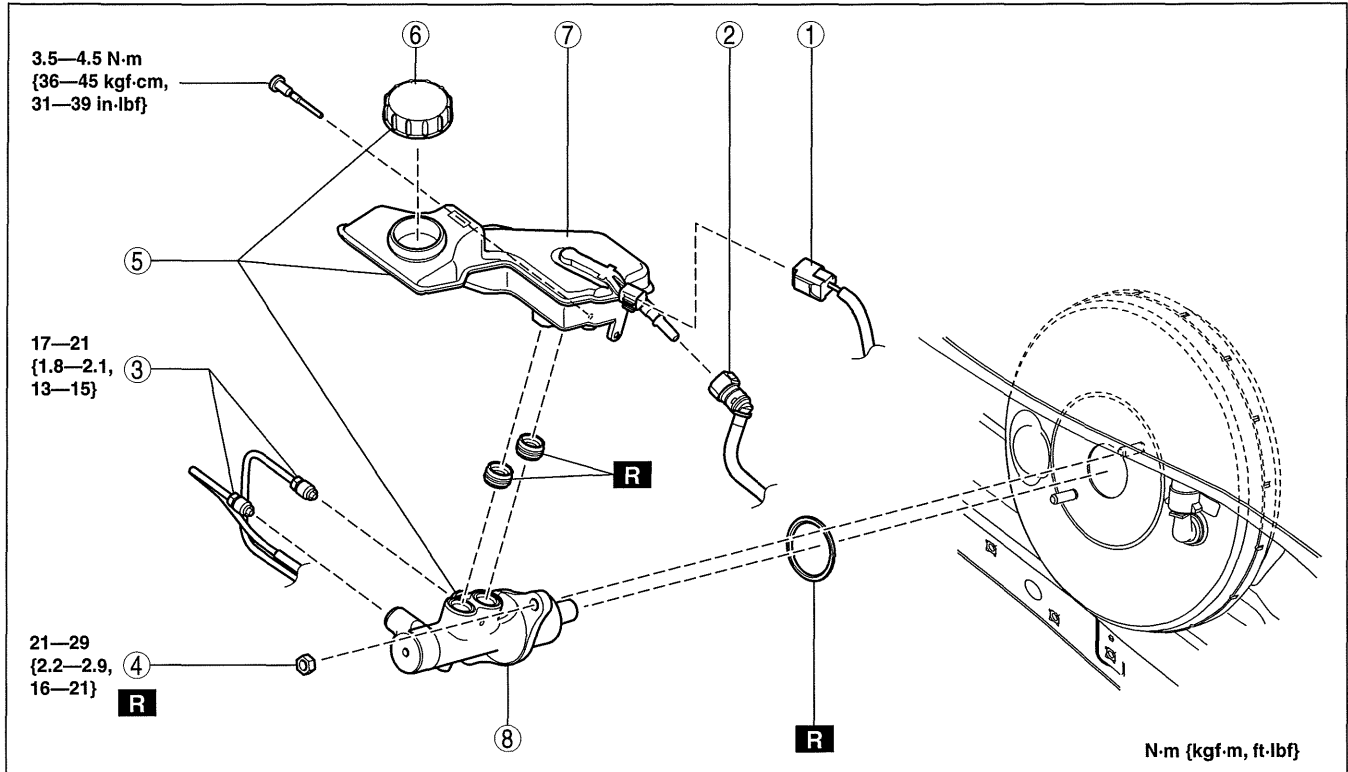
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CONVENTIONAL BRAKE SYSTEM

MASTER CYLINDER REMOVAL/INSTALLATION [LF, L5]

id041100801312

1. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



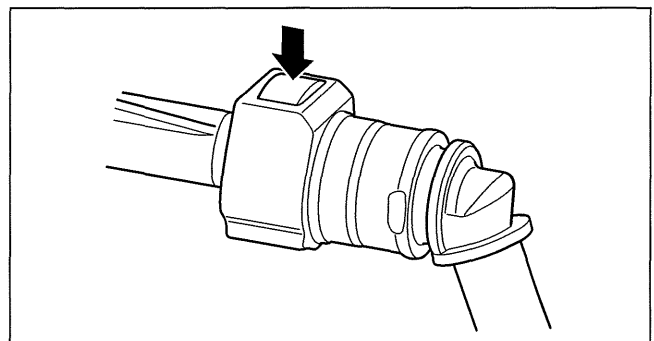
am3uuw0000621

1	Brake fluid level sensor connector
2	Reserve hose (MTX) (See 04-11-11 Reserve Hose (MTX) Removal Note.) (See 04-11-11 Reserve Hose (MTX) Installation Note.)
3	Brake pipe

4	Nut
5	Master cylinder
6	Cap
7	Reserve tank
8	Cylinder component

Reserve Hose (MTX) Removal Note

1. Remove the reserve hose from the reserve tank while pressing the point indicated by the arrow in the figure.



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Reserve Hose (MTX) Installation Note

1. Insert the reserve hose to the reserve tank until a click is heard.
2. Verify that the reserve hose is firmly installed by pulling it, and push it into the reserve tank again.

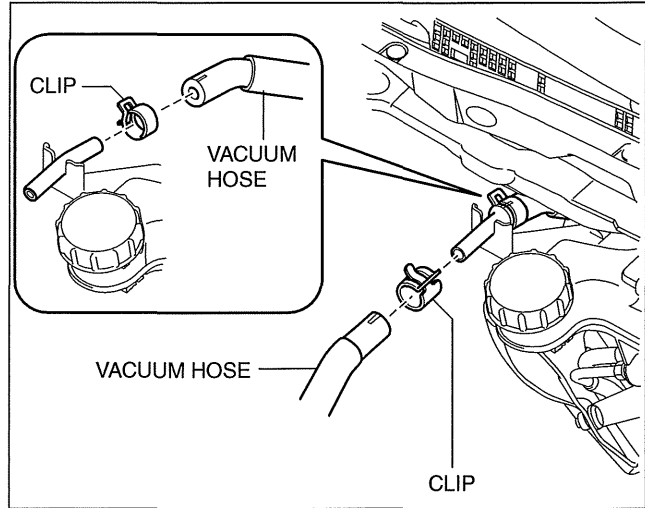
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CONVENTIONAL BRAKE SYSTEM

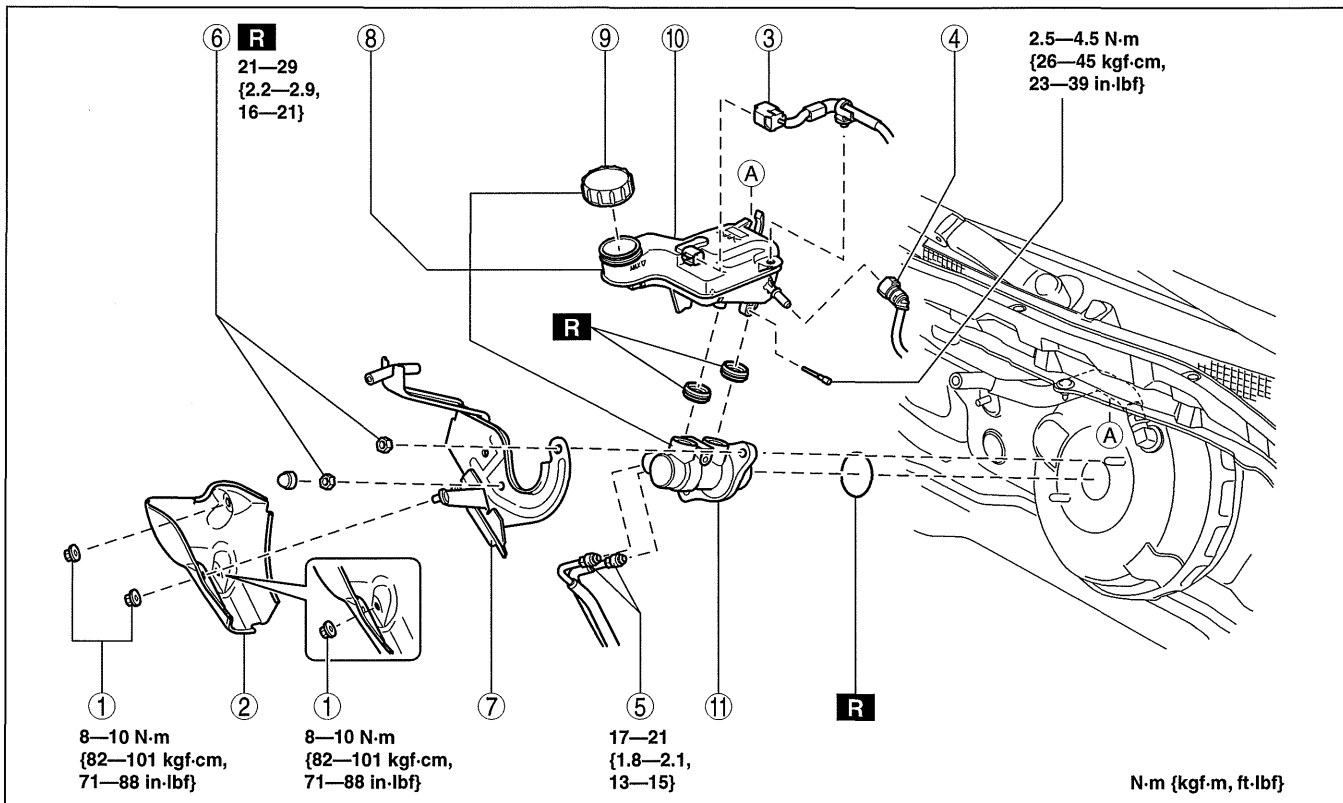
MASTER CYLINDER REMOVAL/INSTALLATION [L3 WITH TC]

id041100801339

1. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Pinch open the clip using pliers and disconnect the vacuum hose from the insulator bracket as shown in the figure.
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



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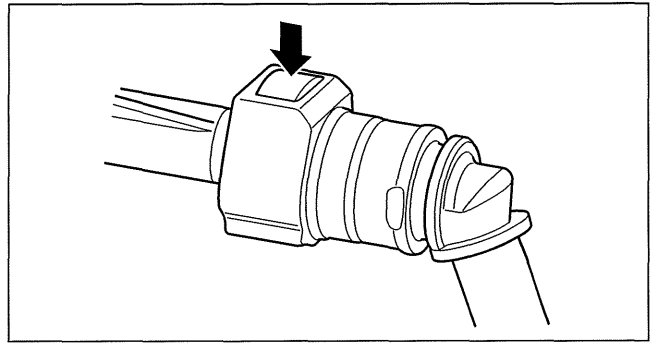
1	Nut
2	Insulator
3	Brake fluid level sensor connector
4	Reserve hose (See 04-11-13 Reserve Hose Removal Note.) (See 04-11-13 Reserve Hose Installation Note.)
5	Brake pipe
6	Nut

7	Insulator bracket (See 04-11-13 Insulator Bracket, Master Cylinder Removal Note.) (See 04-11-13 Master Cylinder, Insulator Bracket Installation Note.)
8	Master cylinder (See 04-11-13 Insulator Bracket, Master Cylinder Removal Note.) (See 04-11-13 Master Cylinder, Insulator Bracket Installation Note.)
9	Cap
10	Reserve tank
11	Cylinder component

CONVENTIONAL BRAKE SYSTEM

Reserve Hose Removal Note

1. Remove the reserve hose from the reserve tank while pressing the point indicated by the arrow in the figure.



am3uuw0000195

Insulator Bracket, Master Cylinder Removal Note

1. Remove the insulator bracket and master cylinder from the power brake unit as a single unit.
2. Remove the insulator bracket from the master cylinder.

04-11

Master Cylinder, Insulator Bracket Installation Note

1. Temporarily install the insulator bracket to the master cylinder.
2. Install the insulator bracket and master cylinder to the power brake unit as a single unit.

Reserve Hose Installation Note

1. Insert the reserve hose to the reserve tank until a click is heard.
2. Verify that the reserve hose is firmly installed by pulling it, and push it into the reserve tank again.

BRAKE FLUID LEVEL SENSOR INSPECTION

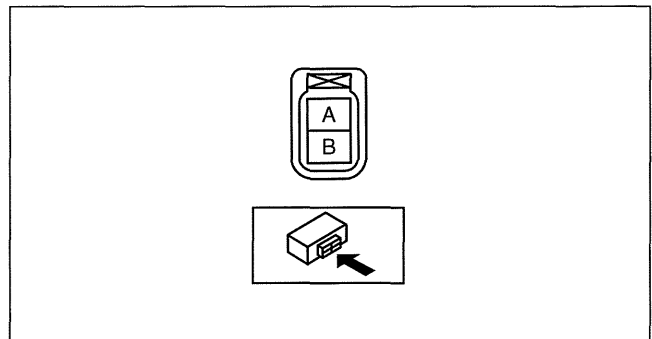
id041100801400

1. Disconnect the brake fluid level sensor connector from the master cylinder.
2. Inspect for continuity according to fluid level between the brake fluid level sensor terminals.
 - If not as indicated in the table, replace the reserve tank.

○—○ : Continuity

Condition	Terminal	
	A	B
Above MIN	○—○	○—○
Below MIN		

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am3uuw0000256

POWER BRAKE UNIT INSPECTION

id041100801700

Note

- The following inspection methods are simple inspection methods to judge the function of the power brake unit.
- If there is any malfunction in the power brake unit, replace the power brake unit as a single unit.

Without Using SST

Operation inspection

1. With the engine stopped, pump the pedal a few times.
2. With the pedal depressed, start the engine.
3. If the pedal moves down slightly immediately after starting the engine, the unit is normal.

Vacuum function inspection

1. Start the engine.
2. Stop the engine after driving the vehicle for **1—2 min.**
3. Depress the pedal with normal force.
4. If the first pedal stroke is long and becomes shorter with subsequent strokes, the unit is normal.
 - If a problem is found, inspect for damage to or improper installation of the check valve and vacuum hose. After repairing, inspect again.

CONVENTIONAL BRAKE SYSTEM

Vacuum loss function inspection

1. Start the engine.
2. Depress the pedal with normal force.
3. With the pedal depressed, stop the engine.
4. Hold the pedal depressed for **approx. 30 s.**
5. If the pedal height does not change during this time, the unit is normal.

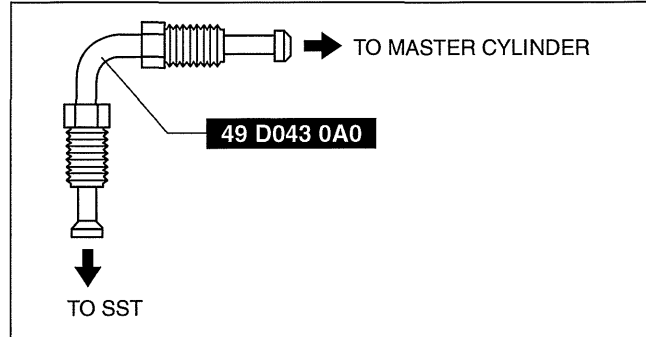
Using SST

Pre-inspection preparation

1. Install the **SST** (49 D043 0A0) to the master cylinder (secondary side) in the orientation shown in the figure.

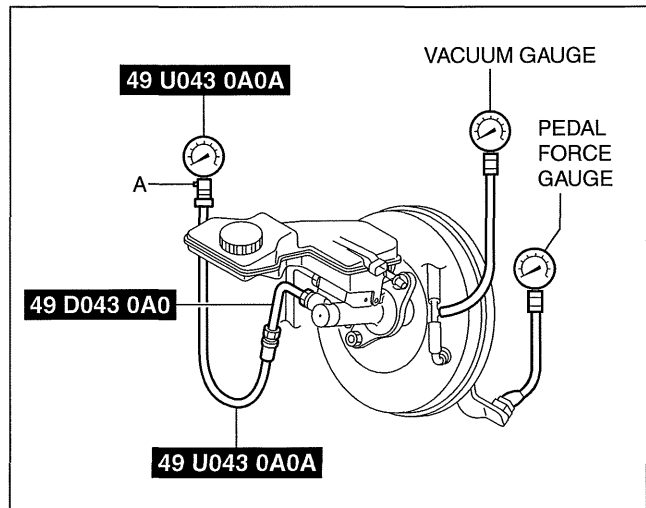
Note

- When installing the **SST** (49 D043 0A0) to the master cylinder, use a commercially available flare nut wrench.
 - Flare nut across flat: **12 mm {0.47 in}**



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2. Connect the **SSTs**, a vacuum gauge, and a pedal force gauge to the master cylinder, and bleed the air from the **SSTs** and the brake line. (Bleed the air from the **SSTs** using air bleed valve A.)



am3uuw000350

Checking for vacuum loss (loaded condition)

1. Start the engine.
2. Depress the brake pedal with a force of **200 N {20.4 kgf, 45.0 lbf}**.
3. Stop the engine when the vacuum gauge reading reaches **68 kPa {510 mmHg, 20 inHg}** with the brake pedal depressed.
4. Measure the amount of vacuum decrease for **15 s** immediately after stopping the engine.
5. If the amount of vacuum decrease is **3.3 kPa {25 mmHg, 0.97 inHg}** or less, the power brake unit is normal.

Lack of hydraulic pressure inspection

1. If the pedal force and fluid pressure correlation is within the specification with the engine stopped and a vacuum amount of **0 kPa {0 mmHg, 0 inHg}**, the system is normal.

Master cylinder fluid pressure

Vacuum amount at 0 kPa {0 mmHg, 0 inHg}	
Pedal force	Fluid pressure
200 N {20.4 kgf, 45.0 lbf}	500 kPa {5.10 kgf/cm ² , 72.5 psi} or more

CONVENTIONAL BRAKE SYSTEM

Hydraulic pressure inspection

1. Start the engine. Depress the brake pedal when the vacuum reaches **66.7 kPa {500 mmHg, 19.7 inHg}**.
2. At this time, apply the indicated pedal force and if the fluid pressure is within the specification, the unit is normal.

Master cylinder fluid pressure (LF, L5)

Vacuum amount at 66.7 kPa {500 mmHg, 19.7 inHg}	
Pedal force	Fluid pressure
200 N {20.4 kgf, 45.0 lbt}	6,500 kPa {66.28 kgf/cm ² , 942.7 psi} or more

Master cylinder fluid pressure (L3 WITH TC)

Vacuum amount at 66.7 kPa {500 mmHg, 19.7 inHg}	
Pedal force	Fluid pressure
200 N {20.4 kgf, 45.0 lbt}	7,000 kPa {71.38 kgf/cm ² , 1,015 psi} or more

04-11

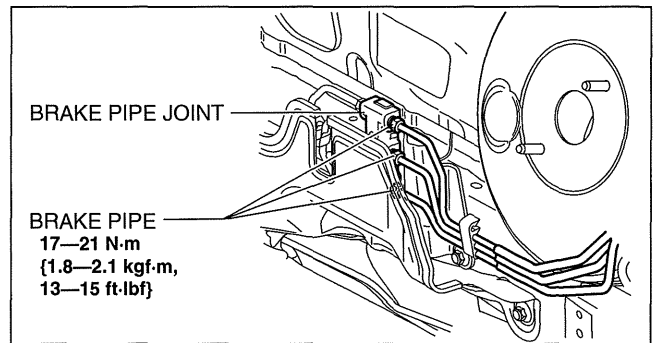
POWER BRAKE UNIT REMOVAL/INSTALLATION [LF, L5]

id041100801812

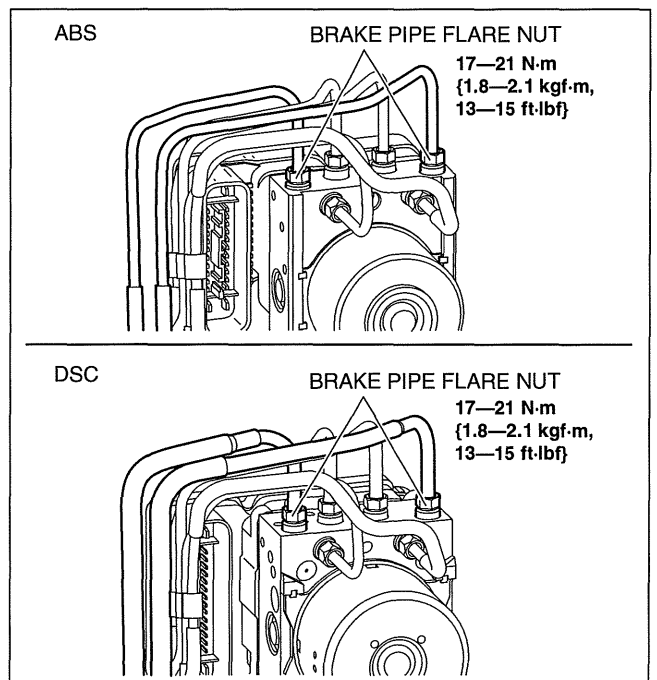
Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

1. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Remove the master cylinder. (See 04-11-11 MASTER CYLINDER REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the brake pipes from the brake pipe joint.

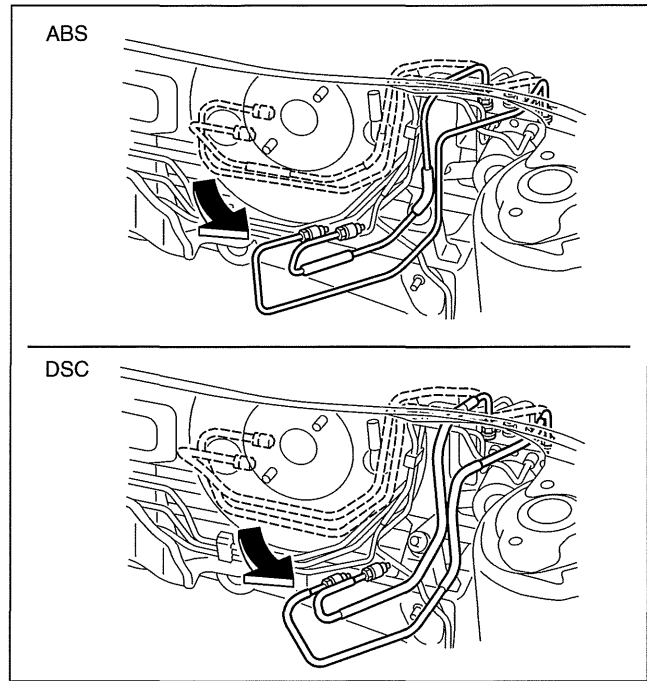


4. Loosen the brake pipe flare nuts as shown in the figure.

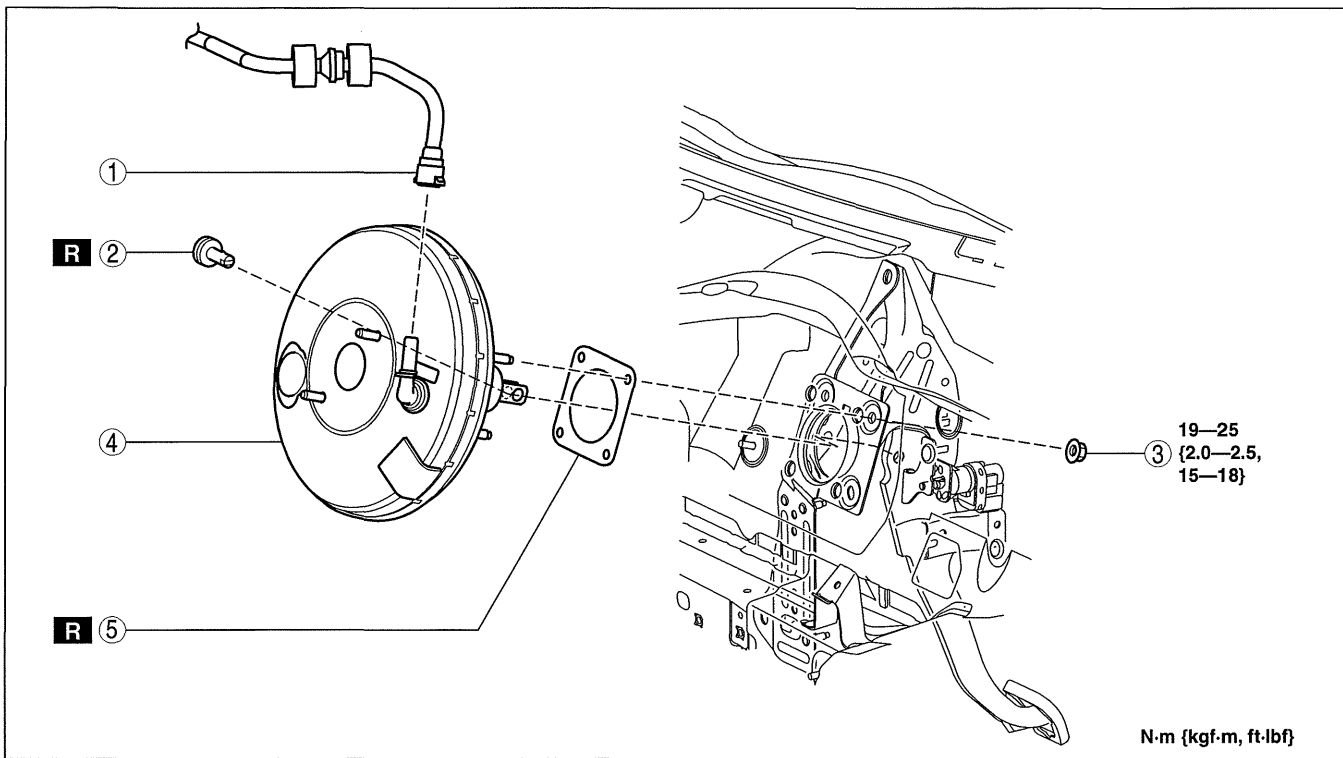


CONVENTIONAL BRAKE SYSTEM

5. Move the brake pipes as shown in the figure.
6. Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. After installation, inspect the brake pedal. (See 04-11-7 BRAKE PEDAL INSPECTION.)



am3uuw0000434



N·m {kgf-m, ft-lbf}

am3uuw0000255

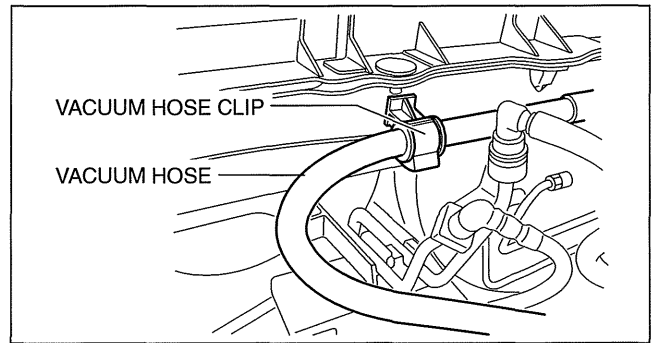
1	Vacuum hose (See 04-11-17 Vacuum Hose Removal Note.) (See 04-11-17 Vacuum Hose Installation Note.)
2	Joint pin (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)

3	Nut
4	Power brake unit
5	Gasket

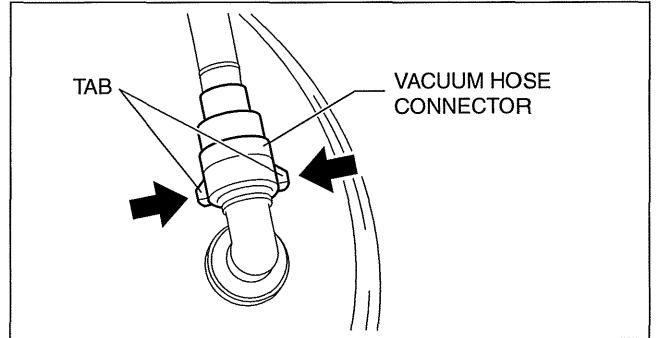
CONVENTIONAL BRAKE SYSTEM

Vacuum Hose Removal Note

1. Remove the vacuum hose from the vacuum hose clip.
2. Disconnect the vacuum hose connector from the power brake unit while pressing the tabs of the vacuum hose connector.



am3uuw0000451

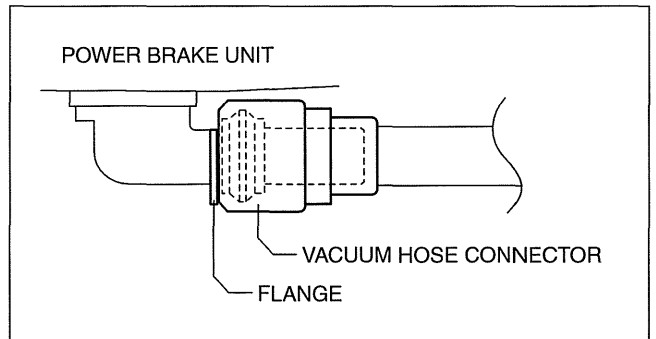


am3uuw0000179

04-11

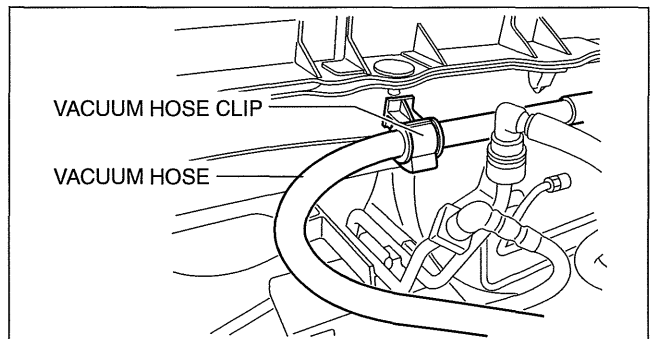
Vacuum Hose Installation Note

1. Insert the vacuum hose connector to the power brake unit.
2. Verify that the vacuum hose is inserted so that the connector contacts the power brake unit flange.



am3uuw0000180

3. Install the vacuum hose to the vacuum hose clip.



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CONVENTIONAL BRAKE SYSTEM

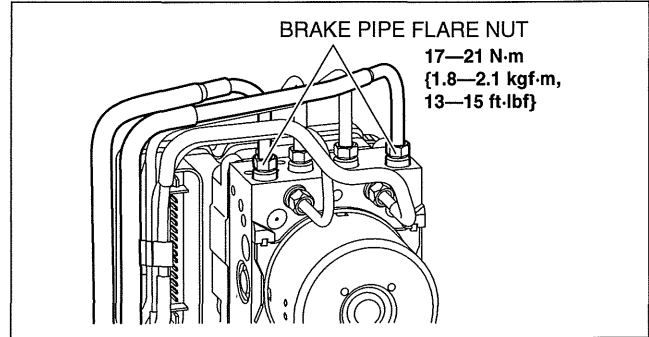
POWER BRAKE UNIT REMOVAL/INSTALLATION [L3 WITH TC]

id041100801839

Caution

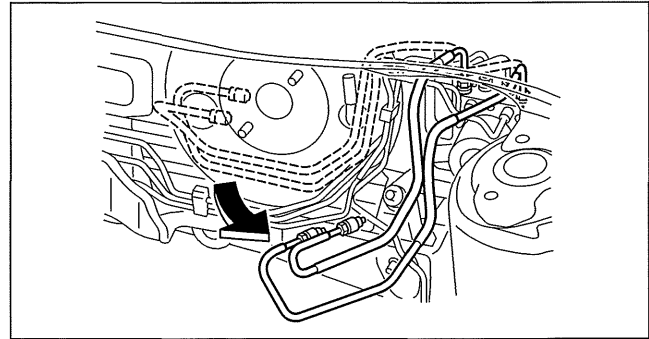
- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

- Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
- Remove the master cylinder. (See 04-11-12 MASTER CYLINDER REMOVAL/INSTALLATION [L3 WITH TC].)
- Loosen the brake pipe flare nuts as shown in the figure.

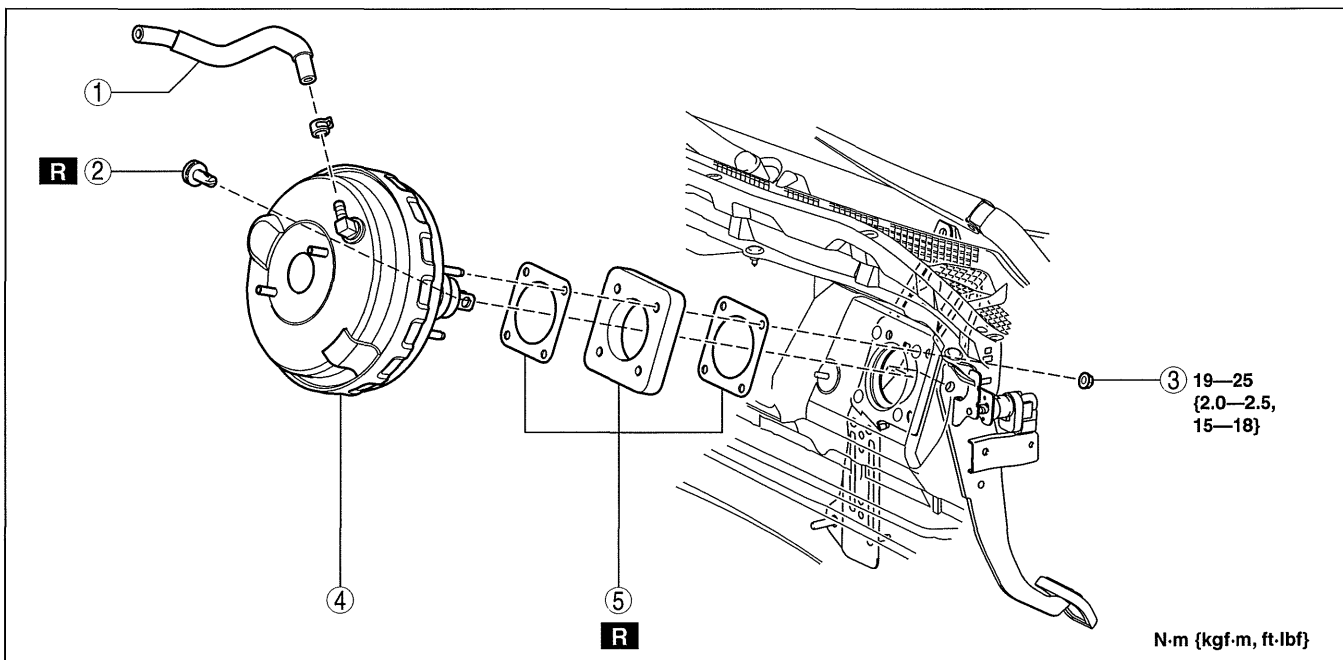


am3uuw0000593

- Move the brake pipes as shown in the figure.
- Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- Remove in the order indicated in the table.
- Install in the reverse order of removal.
- After installation, inspect the brake pedal. (See 04-11-7 BRAKE PEDAL INSPECTION.)



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am3uuw0000611

1	Vacuum hose
2	Joint pin (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)

3	Nut
4	Power brake unit
5	Gasket

CONVENTIONAL BRAKE SYSTEM

FRONT BRAKE (DISC) INSPECTION

id041100800800

Brake Judder Repair Hints

Description

1. Brake judder concern has the following 3 characteristics:

Steering wheel vibration

1. The steering wheel vibrates in the rotation direction. This characteristic is most noticeable when applying brakes at a vehicle speed of **100—140 km/h {62.2—86.9 mph}**.

Floor vibration

1. When applying the brakes, the vehicle body shakes back and forth. The seriousness of the shaking is not influenced by vehicle speed.

Brake pedal vibration

1. When applying the brakes, a pulsating force tries to push the brake pad back. The pulsation is transmitted to the brake pedal.
2. The following are the main possible causes of brake judder:

Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.

1. If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, uneven wear occurs on the disc plate because the pad contacts the plate unevenly.
2. If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

The disc plate is deformed by heat.

1. Repeated panic braking may raise the temperature in some portions of the disc plate by **approx. 1,000 °C {1,832 °F}**. This results in a deformed disc plate.

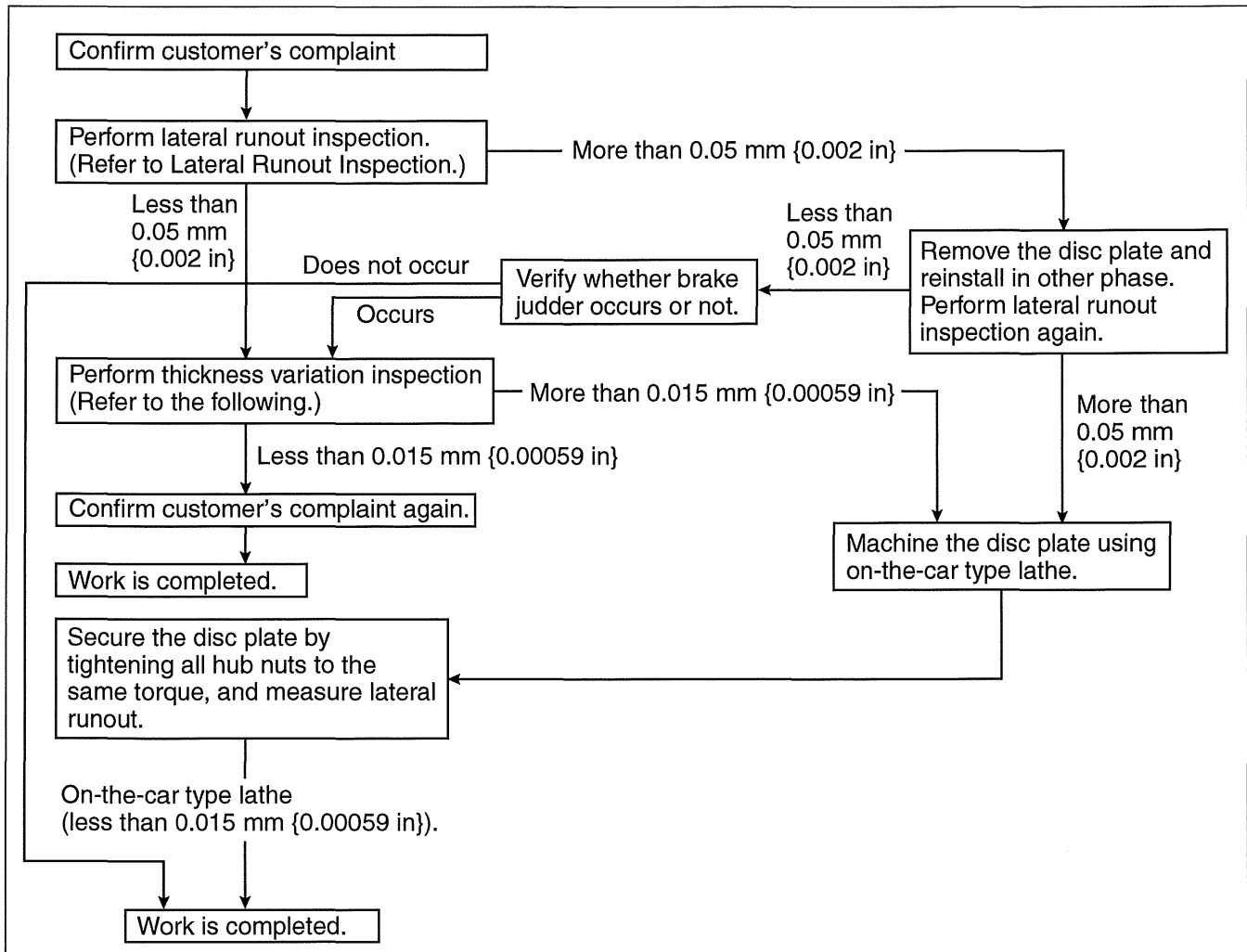
Due to corrosion, the thickness and friction coefficient of the disc plate change.

1. If the vehicle is parked in damp conditions for a long time, corrosion occurs on the friction surface of the disc plate.
2. The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

04-11

CONVENTIONAL BRAKE SYSTEM

Inspection and repair procedure



am3uuw0000178

Lateral runout inspection

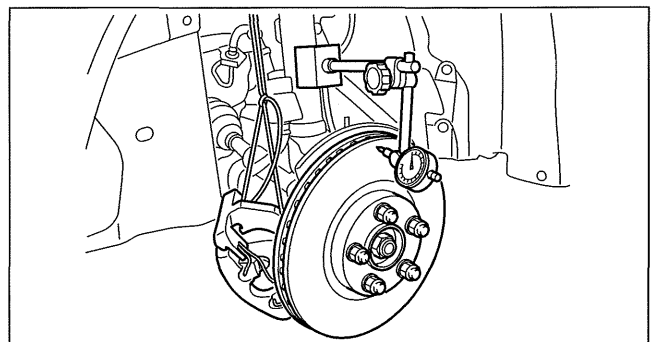
1. To secure the disc plate and the hub, insert the washer (thickness **10 mm {0.39 in}**, inner diameter **more than 12 mm {0.47 in}**) between each hub bolt and the hub nut, then tighten all the hub nuts.

Note

- The component parts of the **SST** (49 B017 001 or 49 G019 003) can be used as a suitable washer.

2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of the disc plate **10 mm {0.39 in}** from the disc plate edge.
3. Rotate the disc plate one time and measure the runout.

Front disc plate runout limit
0.05 mm {0.002 in}



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CONVENTIONAL BRAKE SYSTEM

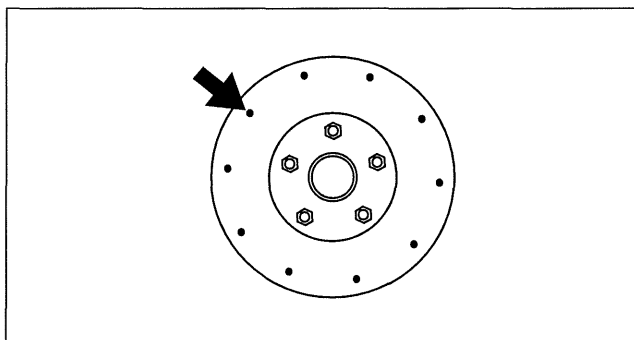
Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in the illustration using a caliper (micrometer).
3. Subtract the minimum value from the maximum, and if the result is not within the specification, machine the disc plate using a lathe.

Thickness variation limit
0.015 mm {0.00059 in}

Warning

- Do not exceed minimum disc plate thickness.



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04-11

Disc Plate Thickness Inspection

Caution

- Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.

1. Measure the thickness of the disc plate.
 - If the thickness is not within the specification, replace the disc plate.

Minimum front disc plate thickness
23 mm {0.91 in}

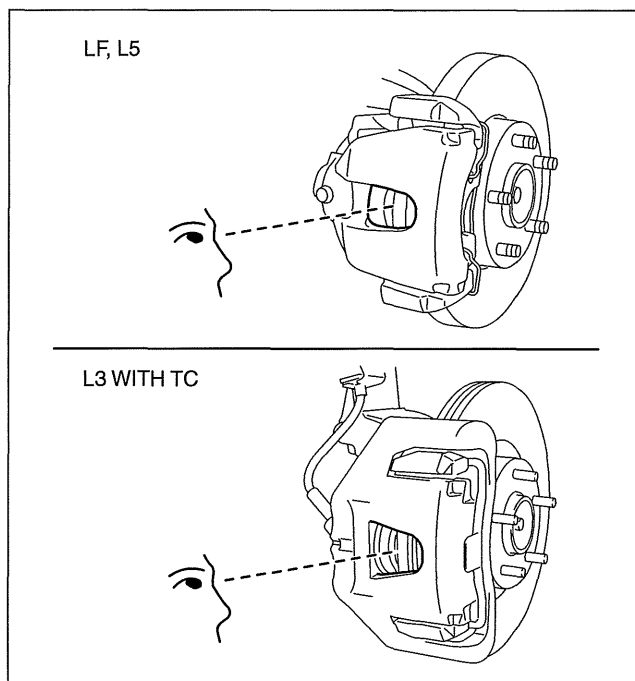
Minimum front disc plate thickness after machining using a brake lathe on-vehicle
23.8 mm {0.937 in}

Disc Pad Thickness Inspection

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheels and tires.
3. Verify the remaining thickness of the pads.

Minimum front disc pad thickness
2.0 mm {0.079 in} min.

4. Replace the pads as a set (right and left wheels) if either one is at or less than the minimum thickness.



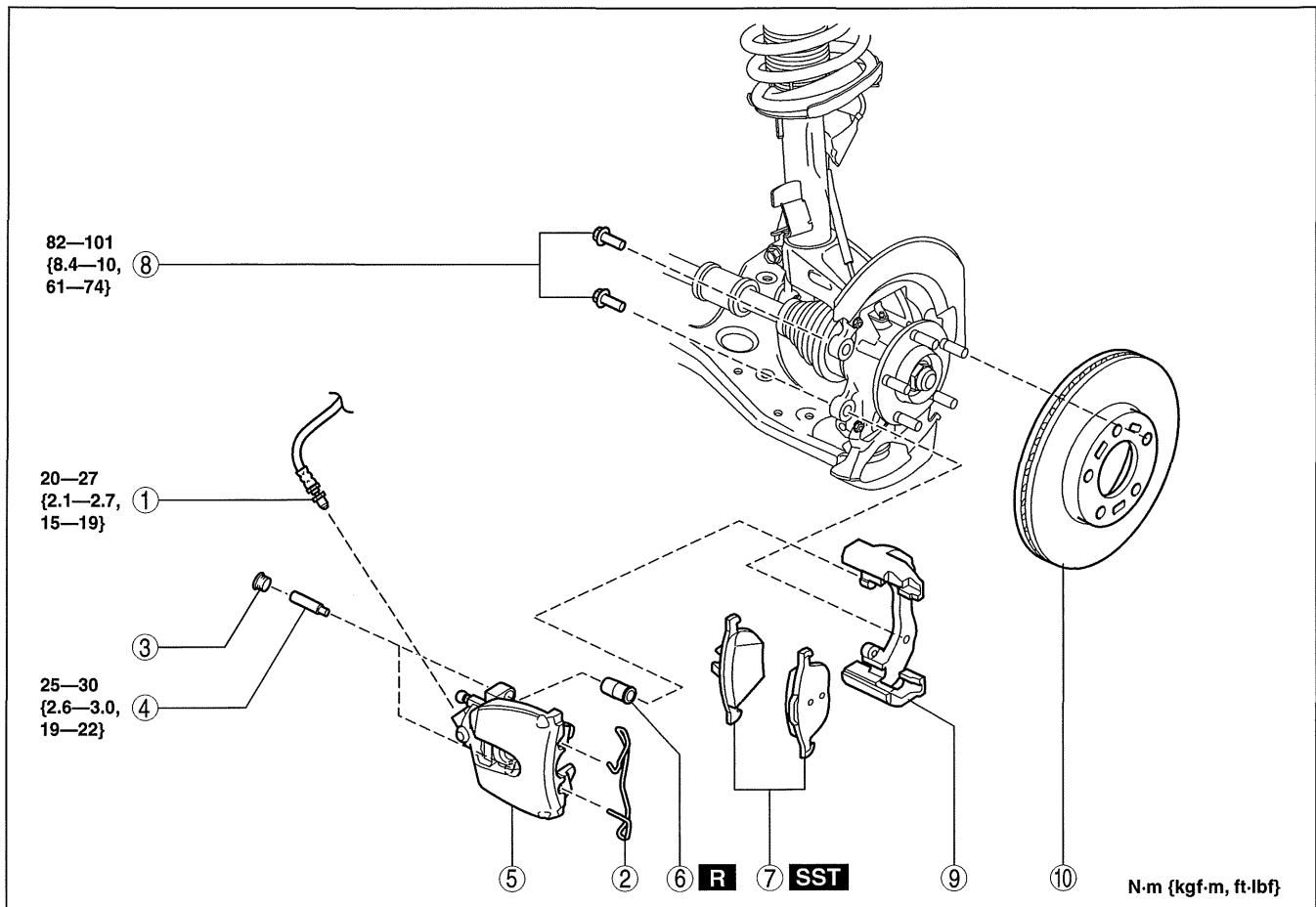
am3uuw000564

CONVENTIONAL BRAKE SYSTEM

FRONT BRAKE (DISC) REMOVAL/INSTALLATION [LF, L5]

id0411008009I2

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and verify that the brakes do not drag.



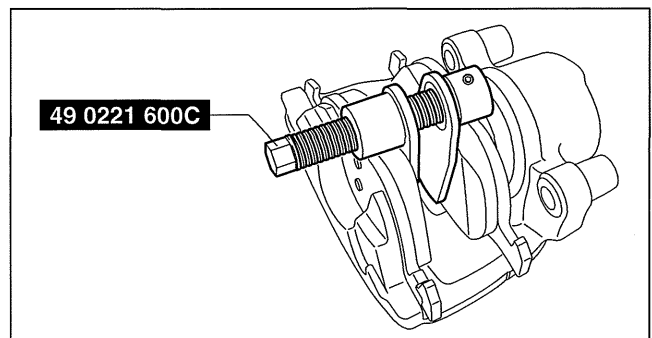
am3uuw0000313

1	Brake hose (See 04-11-23 Brake Hose Installation Note.)
2	Retaining clip (See 04-11-23 Retaining Clip Installation Note.)
3	Cap
4	Bolt
5	Caliper

6	Boot
7	Disc pad (See 04-11-22 Disc Pad Installation Note.)
8	Bolt
9	Mounting support
10	Disc plate

Disc Pad Installation Note

1. Clean the exposed area of the piston.
2. Push the piston in using the **SST**.
3. Install the disc pad (outer side) to the mounting support.
4. Install the disc pad (inner side) to the caliper.

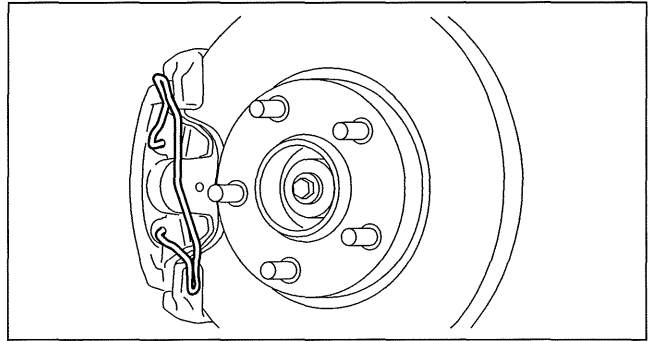


am3uuw0000465

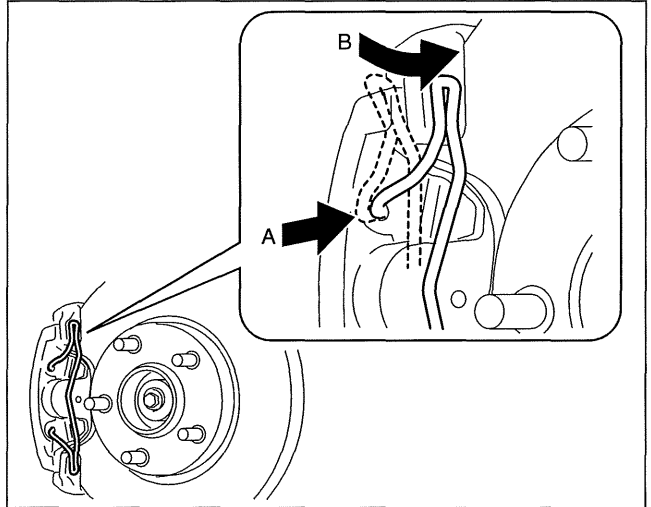
CONVENTIONAL BRAKE SYSTEM

Retaining Clip Installation Note

1. Temporarily install the retaining clip to the caliper and mounting support as shown in the figure.
2. Secure the retaining clip so that part A does not slip off from the caliper while installing part B to the mounting support.
3. Verify that the retaining clip is securely installed to the caliper and the mounting support.



am3uuw0000471

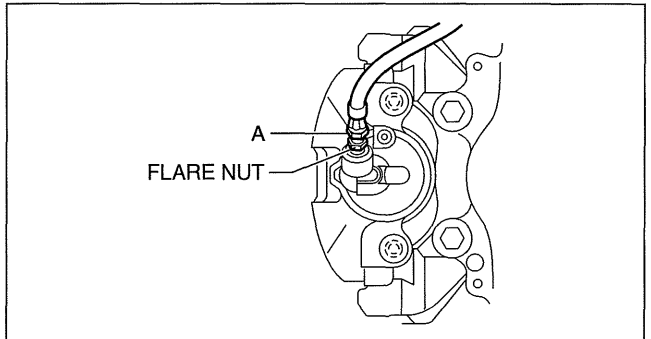


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04-11

Brake Hose Installation Note

1. Install the brake hose to the caliper.
2. Tighten the flare nut while holding the brake hose at point A with a spanner or equivalent.
3. Verify that the brake hose is not twisted.



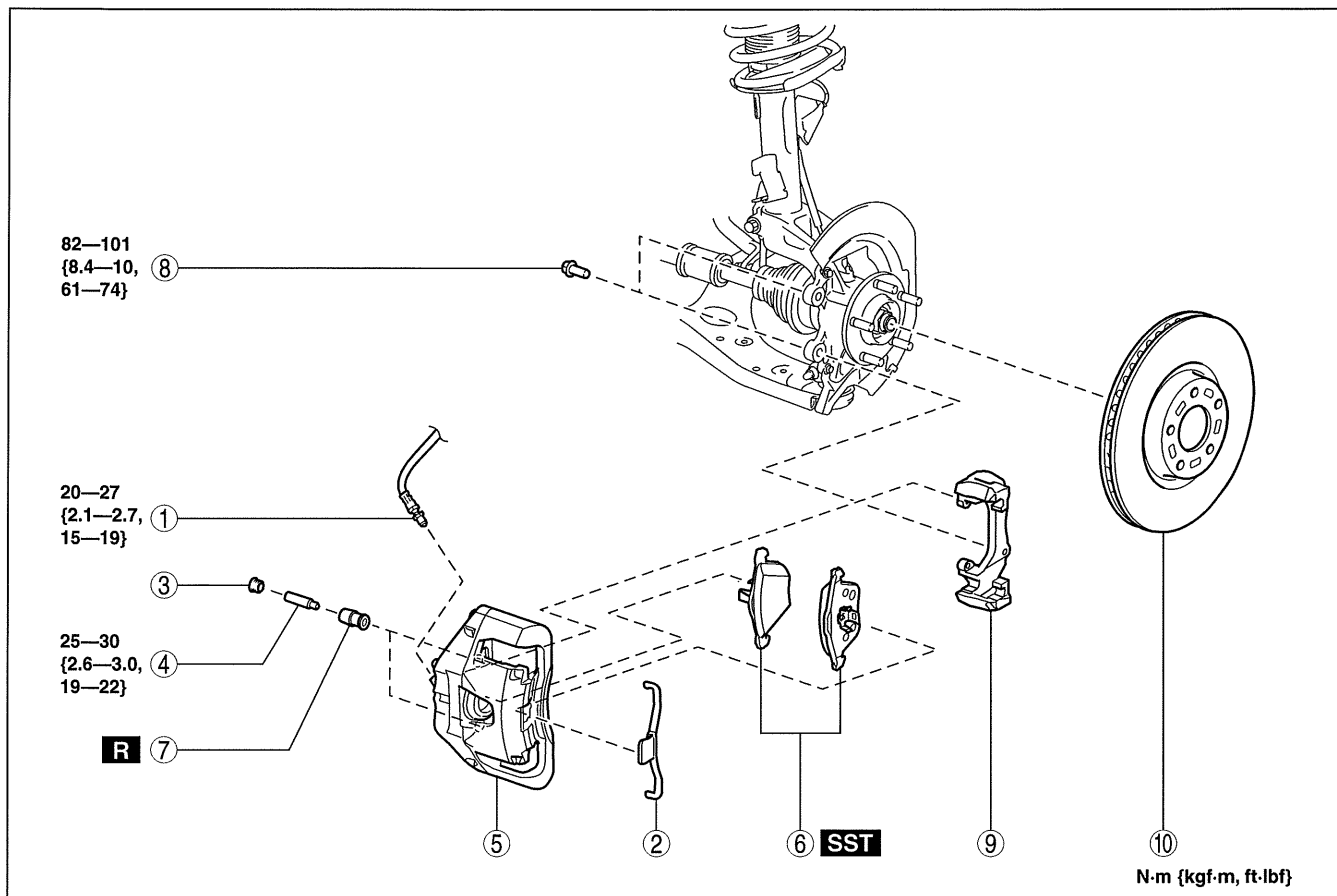
am3uuw0000178

CONVENTIONAL BRAKE SYSTEM

FRONT BRAKE (DISC) REMOVAL/INSTALLATION [L3 WITH TC]

id041100800939

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and verify that the brakes do not drag.



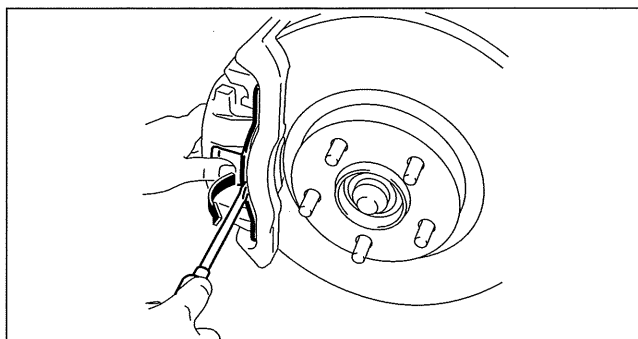
am3uuw0000575

1	Brake hose (See 04-11-25 Brake Hose Installation Note.)
2	Retaining clip (See 04-11-24 Retaining Clip Removal Note.)
3	Cap
4	Bolt
5	Caliper

6	Disc pad (See 04-11-25 Disc Pad Installation Note.)
7	Boot
8	Bolt
9	Mounting support
10	Disc plate

Retaining Clip Removal Note

1. Move the retaining clip in the direction shown by the arrow using a flathead screwdriver and remove it from the caliper.

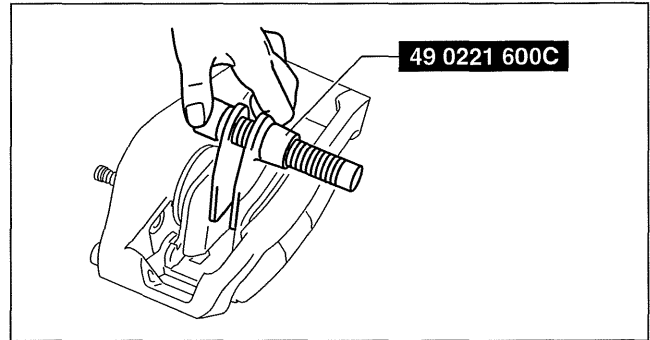


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CONVENTIONAL BRAKE SYSTEM

Disc Pad Installation Note

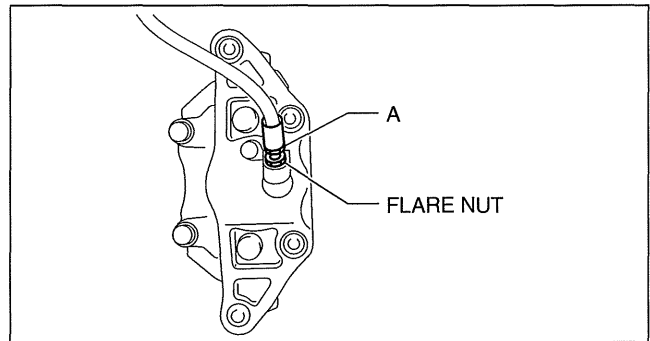
1. Clean the exposed area of the piston.
2. Push the piston in using the **SST**.
3. Install the disc pad to the caliper.



am3uuw0000565

Brake Hose Installation Note

1. Install the brake hose to the caliper.
2. Tighten the flare nut while holding the brake hose at point A with a spanner or equivalent.
3. Verify that the brake hose is not twisted.



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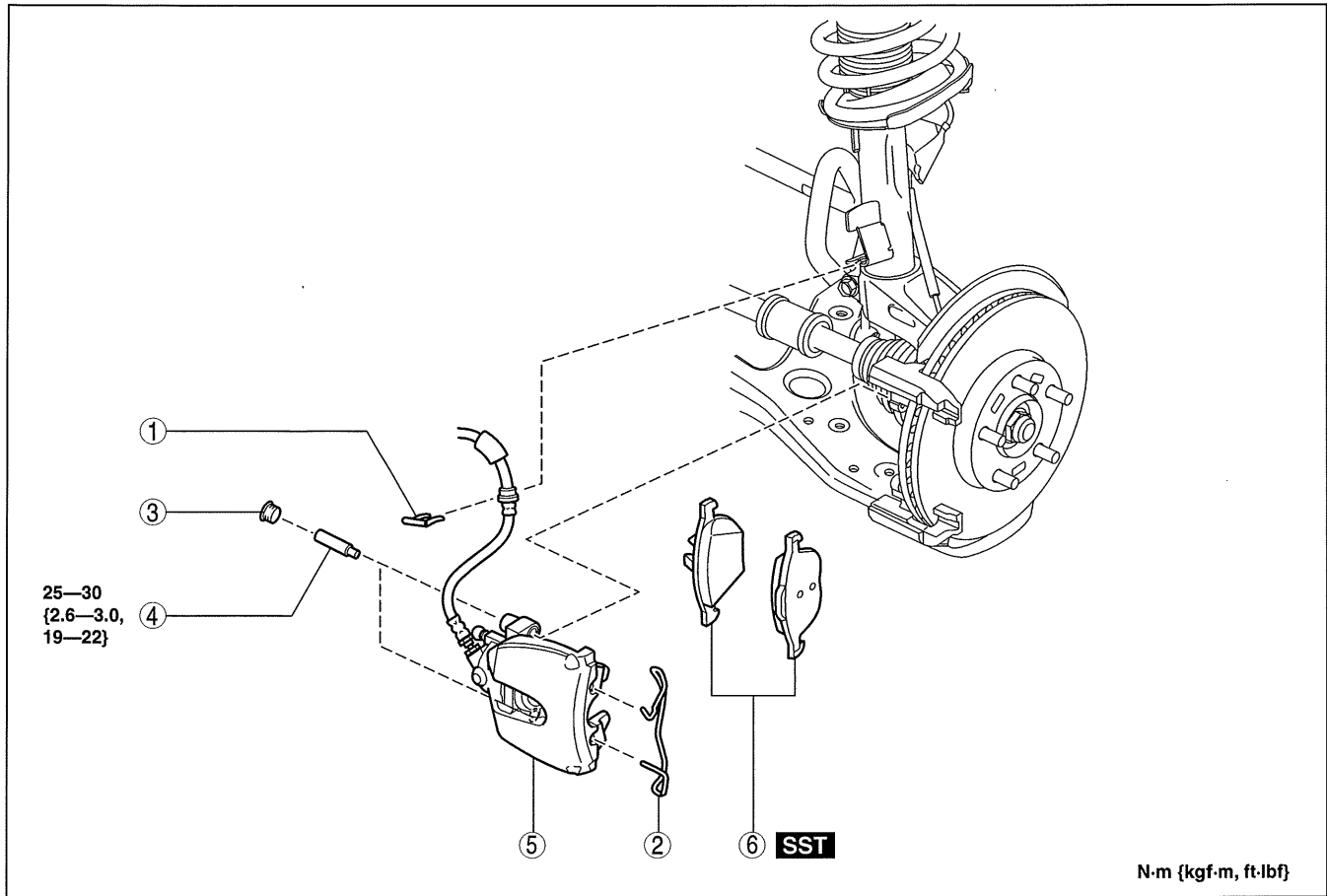
04-11

CONVENTIONAL BRAKE SYSTEM

DISC PAD (FRONT) REPLACEMENT [LF, L5]

id041100800712

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and verify that the brakes do not drag.



am3uuw0000313

1	Clip
2	Retaining clip (See 04-11-22 FRONT BRAKE (DISC) REMOVAL/ INSTALLATION [LF, L5].)
3	Cap

4	Bolt
5	Caliper
6	Disc pad (See 04-11-22 FRONT BRAKE (DISC) REMOVAL/ INSTALLATION [LF, L5].)

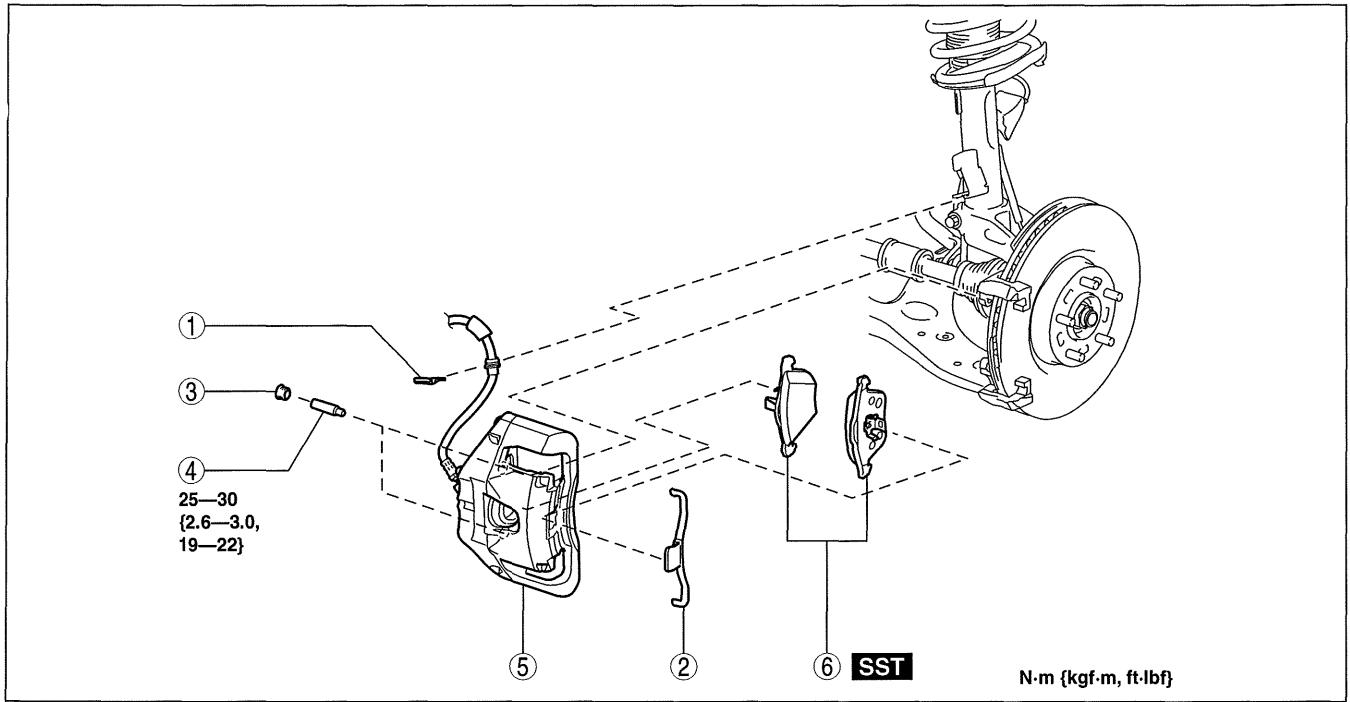
DISC PAD (FRONT) REPLACEMENT [L3 WITH TC]

id041100800739

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and verify that the brakes do not drag.

CONVENTIONAL BRAKE SYSTEM

04-11



am3uuw000575

1	Clip
2	Retaining clip (See 04-11-24 FRONT BRAKE (DISC) REMOVAL/ INSTALLATION [L3 WITH TC].)
3	Cap

4	Bolt
5	Caliper
6	Disc pad (See 04-11-24 FRONT BRAKE (DISC) REMOVAL/ INSTALLATION [L3 WITH TC].)

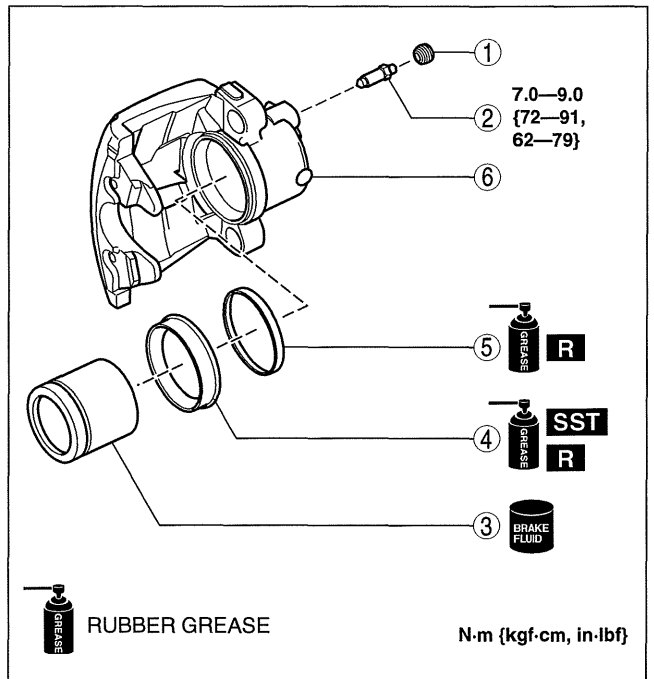
CALIPER (FRONT) DISASSEMBLY/ASSEMBLY [LF, L5]

id04110080102

1. Disassemble in the order indicated in the table.

1	Bleeder cap
2	Bleeder screw
3	Piston (See 04-11-28 Piston Disassembly Note.) (See 04-11-28 Piston Assembly Note.)
4	Dust seal (See 04-11-28 Dust Seal Assembly Note.)
5	Piston seal
6	Caliper body

2. Assemble in the reverse order of disassembly.



am3uuw000313

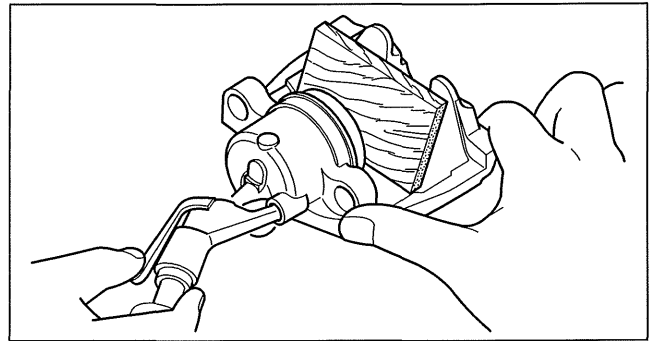
CONVENTIONAL BRAKE SYSTEM

Piston Disassembly Note

1. Insert a piece of wood in the caliper as shown in the figure and blow compressed air through the bleeder screw installation hole to remove the piston from the caliper body.

Warning

- When compressed air is blown into the caliper body, injury to a finger or other part from pinching could result from the piston springing up. When blowing in compressed air, do not place your fingers between the piston and caliper body when performing the work.



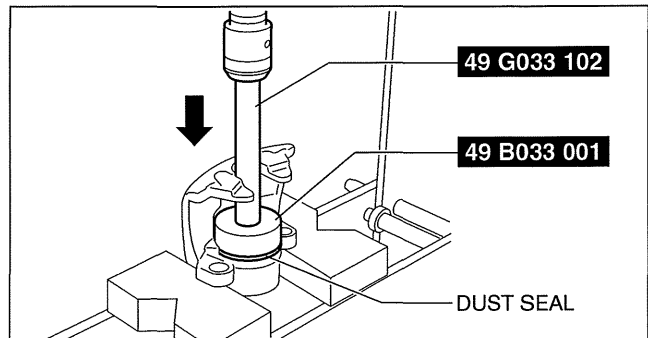
abatjw0000077

Caution

- The piston could be damaged if blown out with great force. Blow the compressed air slowly to prevent the piston from suddenly popping out.

Dust Seal Assembly Note

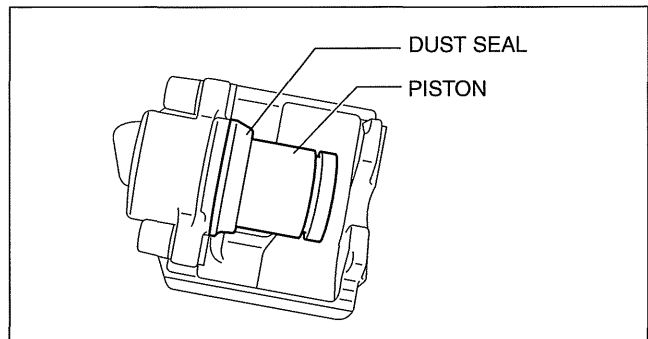
1. Assemble a new dust seal to the caliper using the SSTs and a press with a press-in force of **834 N {85 kgf, 187 in-lbf}**.
2. Verify that there is no gap between the dust seal and caliper body.



am3uuw0000179

Piston Assembly Note

1. Press the piston into the dust seal opening as shown in the figure.

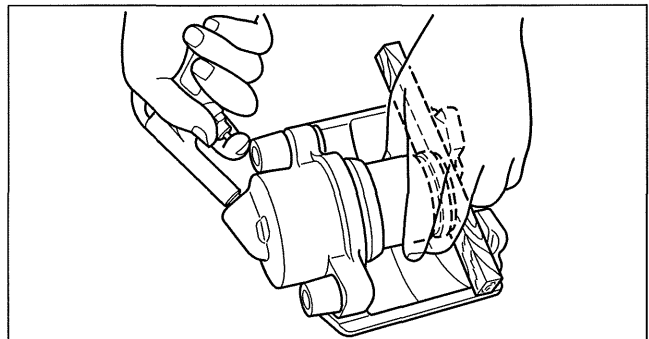


am3uuw0000179

2. Insert a piece of wood between the caliper body and the piston, and while supporting the piston by hand, blow compressed air through the brake hose installation hole.

Warning

- When blowing compressed air into the caliper body, the piston may pop out and cause injury if not supported at the correct point. Securely support the piston friction surface by hand when blowing compressed air.



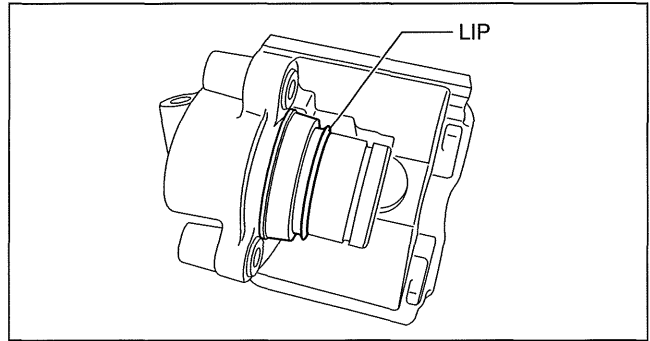
am3uuw0000179

Note

- By blowing compressed air, the dust seal expands due to air pressure and covers the piston end.

CONVENTIONAL BRAKE SYSTEM

- Verify that the dust seal lip covers the piston end as shown in the figure.
- Press the piston into the caliper body completely.



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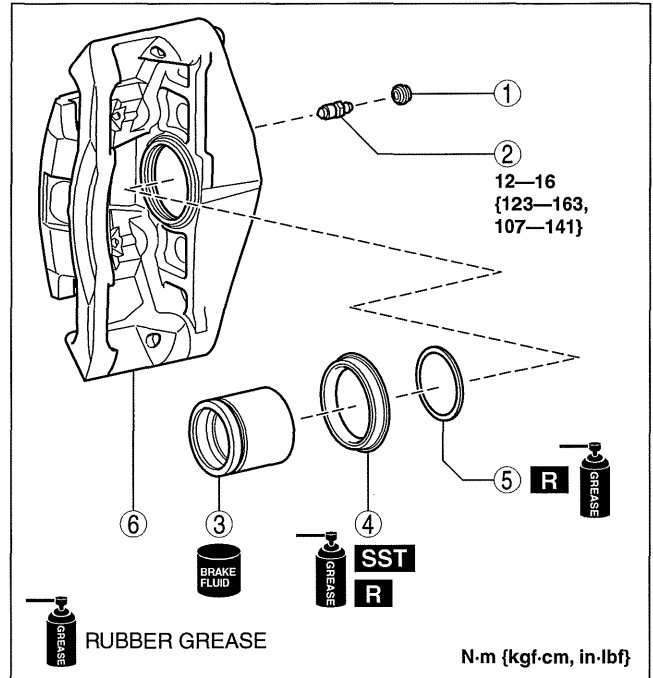
CALIPER (FRONT) DISASSEMBLY/ASSEMBLY [L3 WITH TC]

id041100801039

- Disassemble in the order indicated in the table.

1	Bleeder cap
2	Bleeder screw
3	Piston (See 04-11-29 Piston Disassembly Note.) (See 04-11-30 Piston Assembly Note.)
4	Dust seal (See 04-11-30 Dust Seal Assembly Note.)
5	Piston seal
6	Caliper body

- Assemble in the reverse order of disassembly.



am3uuw000567

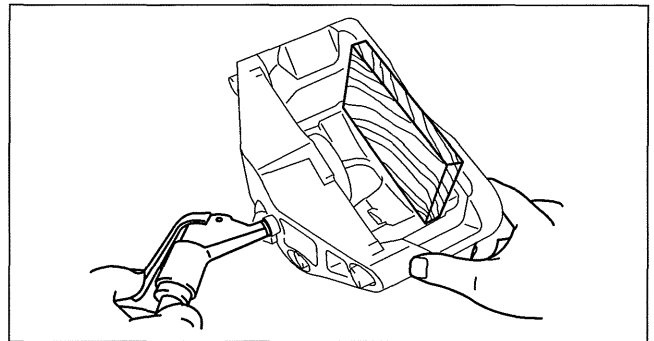
04-11

Piston Disassembly Note

- Insert a piece of wood in the caliper as shown in the figure and blow compressed air through the bleeder screw installation hole to remove the piston from the caliper body.

Warning

- When compressed air is blown into the caliper body, injury to a finger or other part from pinching could result from the piston springing up. When blowing in compressed air, do not place your fingers between the piston and caliper body when performing the work.



am3uuw000565

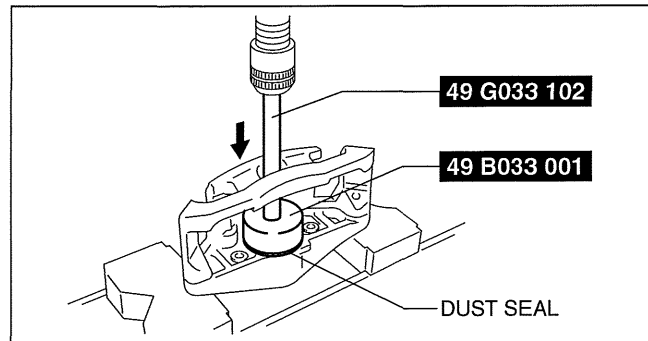
Caution

- The piston could be damaged if blown out with great force. Blow the compressed air slowly to prevent the piston from suddenly popping out.

CONVENTIONAL BRAKE SYSTEM

Dust Seal Assembly Note

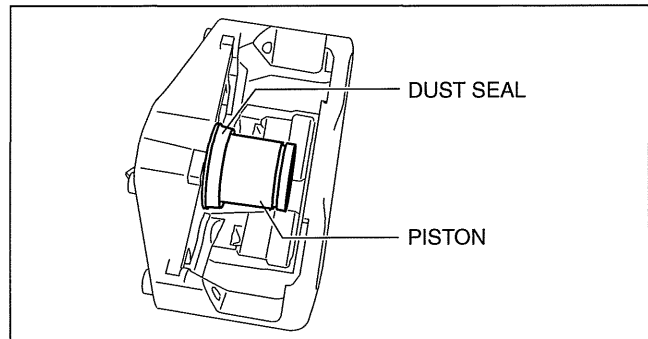
1. Assemble a new dust seal to the caliper using the **SSTs** and a press with a press-in force of **834 N {85 kgf, 187 in·lbf}**.
2. Verify that there is no gap between the dust seal and caliper body.



am3uuw0000565

Piston Assembly Note

1. Press the piston into the dust seal opening as shown in the figure.

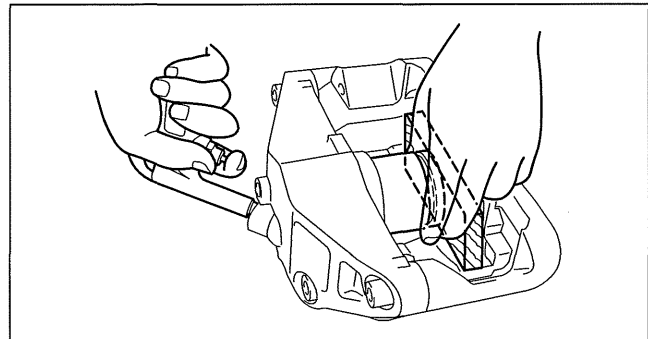


am3uuw0000565

2. Insert a piece of wood between the caliper body and the piston, and while supporting the piston by hand, blow compressed air through the brake hose installation hole.

Warning

- When blowing compressed air into the caliper body, the piston may pop out and cause injury if not supported at the correct point. Securely support the piston friction surface by hand when blowing compressed air.

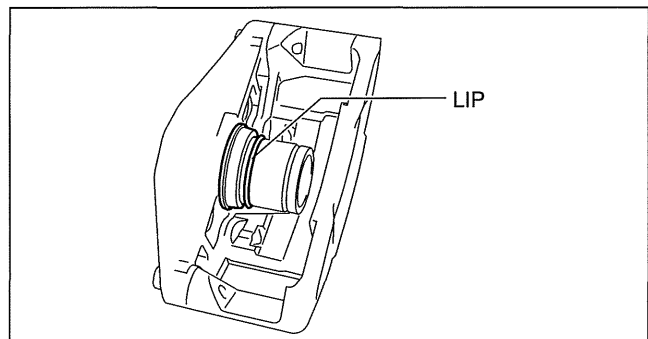


am3uuw0000565

Note

- By blowing compressed air, the dust seal expands due to air pressure and covers the piston end.

3. Verify that the dust seal lip covers the piston end as shown in the figure.
4. Press the piston into the caliper body completely.



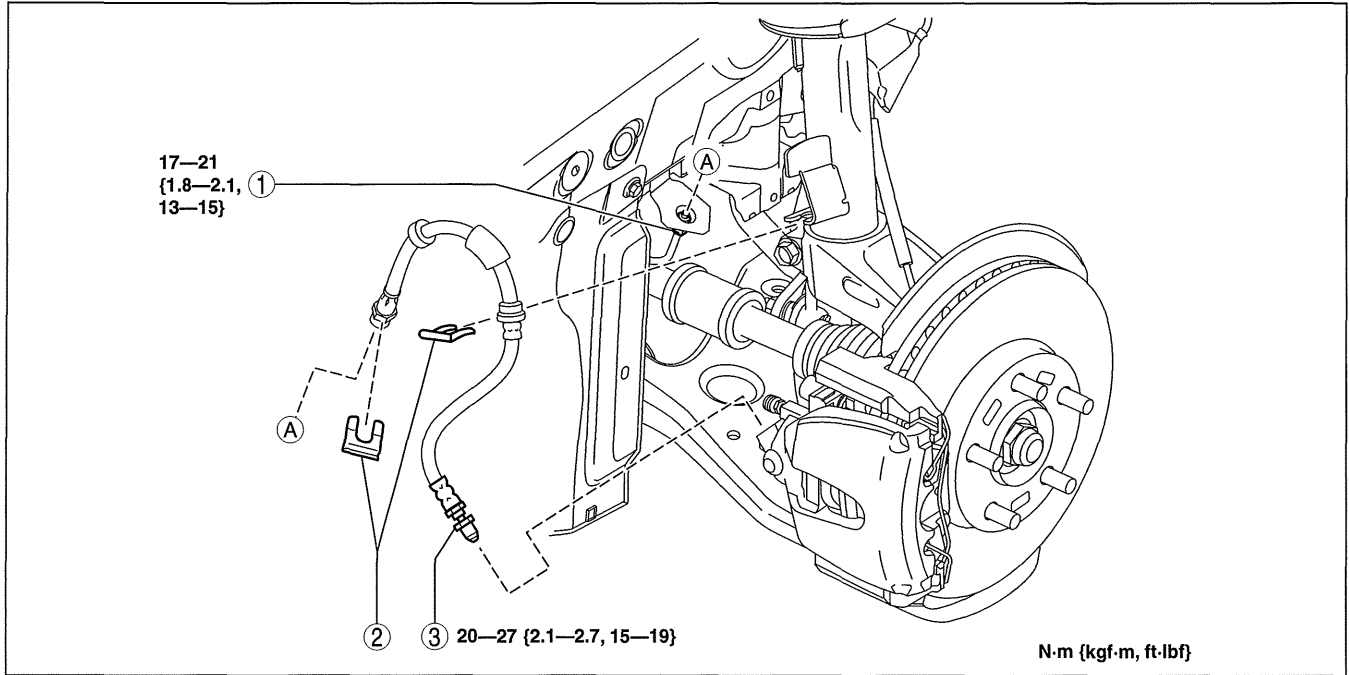
am3uuw0000565

CONVENTIONAL BRAKE SYSTEM

BRAKE HOSE (FRONT) REMOVAL/INSTALLATION [LF, L5]

id0411001903i2

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Add brake fluid, bleed the brakes, and inspect for leakage after the installation has been completed. (See 04-11-3 AIR BLEEDING.)



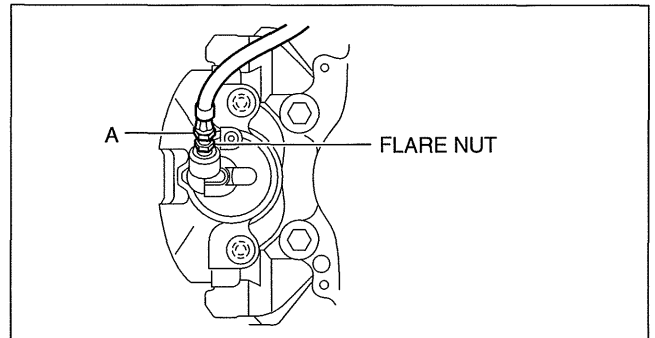
04-11

1	Brake pipe
2	Clip

3	Brake hose (See 04-11-31 Brake Hose Installation Note.)
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Brake Hose Installation Note

1. Install the brake hose to the caliper.
2. Tighten the flare nut while holding the brake hose at point A with a spanner or equivalent.
3. Verify that the brake hose is not twisted.

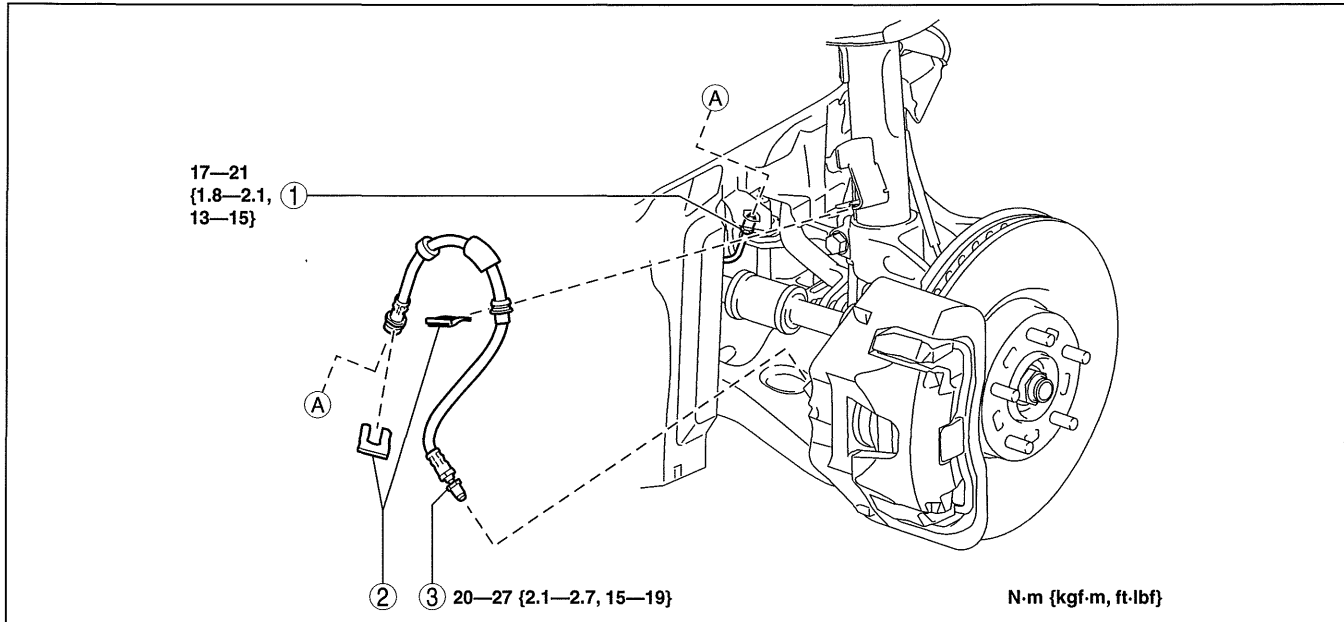


CONVENTIONAL BRAKE SYSTEM

BRAKE HOSE (FRONT) REMOVAL/INSTALLATION [L3 WITH TC]

id041100190339

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Add brake fluid, bleed the brakes, and inspect for leakage after the installation has been completed. (See 04-11-3 AIR BLEEDING.)



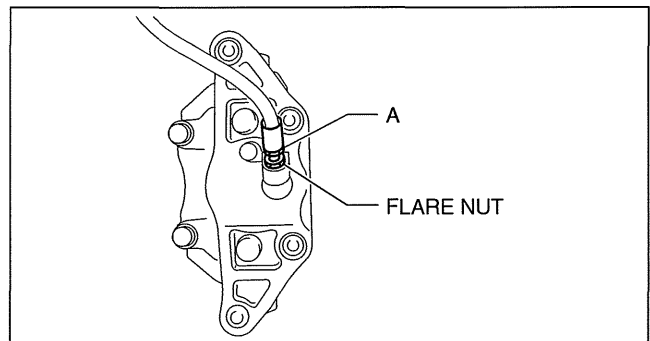
am3uuw0000574

1	Brake pipe
2	Clip

3	Brake hose (See 04-11-32 Brake Hose Installation Note.)
---	--

Brake Hose Installation Note

1. Install the brake hose to the caliper.
2. Tighten the flare nut while holding the brake hose at point A with a spanner or equivalent.
3. Verify that the brake hose is not twisted.



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REAR BRAKE (DISC) INSPECTION

id041100800400

Brake Judder Repair Hints

Description

1. Brake judder concern has the following 3 characteristics:

Steering wheel vibration

1. The steering wheel vibrates in the rotation direction. This characteristic is most noticeable when applying brakes at a vehicle speed of **100—140 km/h {62.2—86.9 mph}**.

Floor vibration

1. When applying the brakes, the vehicle body shakes back and forth. The seriousness of the shaking is not influenced by vehicle speed.

CONVENTIONAL BRAKE SYSTEM

Brake pedal vibration

1. When applying the brakes, a pulsating force tries to push the brake pad back. The pulsation is transmitted to the brake pedal.
2. The following are the main possible causes of brake judder:

Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.

1. If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, uneven wear occurs on the disc plate because the pad contacts the plate unevenly.
2. If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

The disc plate is deformed by heat.

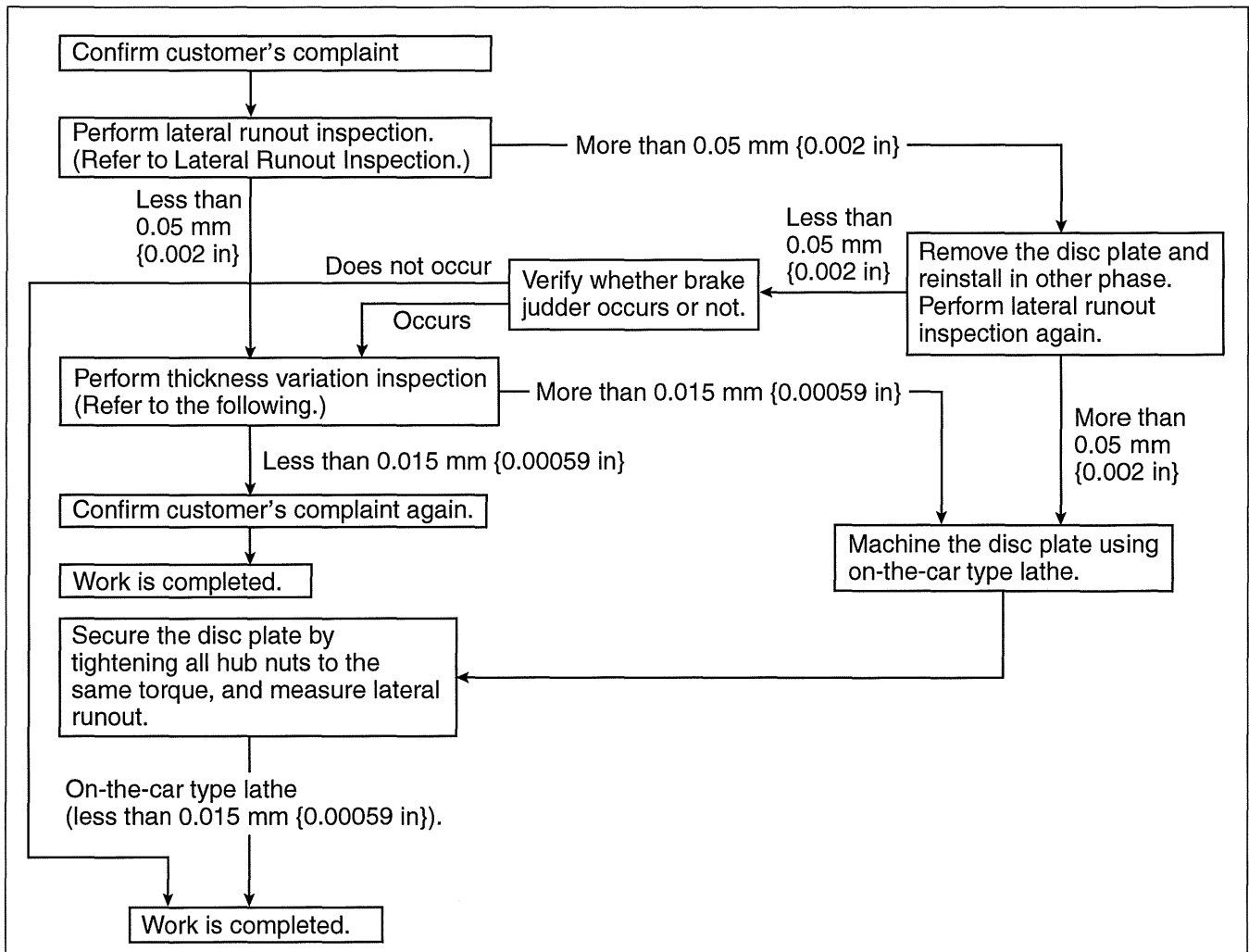
1. Repeated panic braking may raise the temperature in some portions of the disc plate by **approx. 1,000 °C {1,832 °F}**. This results in a deformed disc plate.

Due to corrosion, the thickness and friction coefficient of the disc plate change.

1. If the vehicle is parked in damp conditions for a long time, corrosion occurs on the friction surface of the disc plate.
2. The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

04-11

Inspection and repair procedure



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CONVENTIONAL BRAKE SYSTEM

Lateral runout inspection

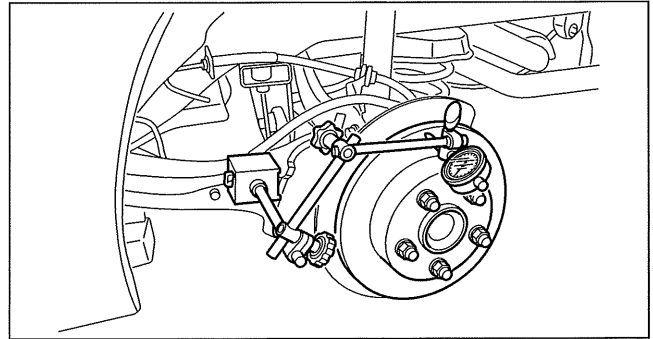
1. To secure the disc plate and the hub, insert the washer (thickness **10 mm {0.39 in}**, inner diameter **more than 12 mm {0.47 in}**) between each hub bolt and the hub nut, then tighten all the hub nuts.

Note

- The component parts of the **SST** (49 B017 001 or 49 G019 003) can be used as a suitable washer.

2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of the disc plate **10 mm {0.39 in}** from the disc plate edge.
3. Rotate the disc plate one time and measure the runout.

Rear disc plate runout limit
0.05 mm {0.002 in}



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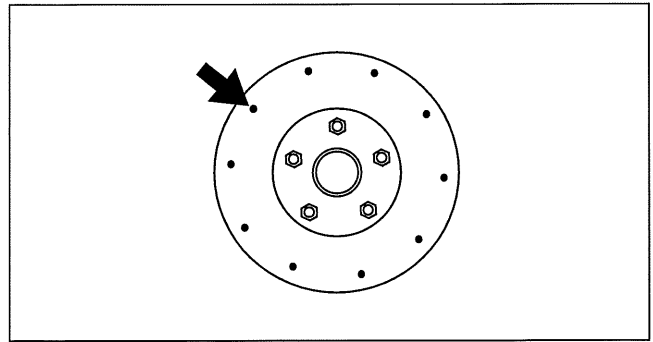
Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in the illustration using a caliper (micrometer).
3. Subtract the minimum value from the maximum, and if the result is not within the specification, machine the disc plate using a lathe.

Thickness variation limit
0.015 mm {0.00059 in}

Warning

- **Do not exceed minimum disc plate thickness.**



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Disc Plate Thickness Inspection

Caution

- **Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.**

1. Measure the thickness of the disc plate.
 - If the thickness is not within the specification, replace the disc plate.

Minimum read disc plate thickness
9 mm {0.35 in}

Minimum rear disc plate thickness after machining using a brake lathe on-vehicle
9.8 mm {0.39 in}

Disc Pad Thickness Inspection

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheels and tires.
3. Verify the remaining thickness of the pads.

Minimum rear disc pad thickness
2.0 mm {0.079 in} min.

CONVENTIONAL BRAKE SYSTEM

3	Clip (See 04-11-38 Clip and Brake Pipe Installation Note.)
4	Retaining clip (See 04-11-37 Retaining Clip Installation Note.)
5	Cap
6	Bolt
7	Caliper, brake hose (See 04-11-36 Caliper and Brake Hose Removal Note.) (See 04-11-36 Caliper and Brake Hose Installation Note.)

8	Boot
9	Brake hose (See 04-11-36 Brake Hose Installation Note.)
10	Caliper
11	Disc pad
12	Bolt
13	Mounting support
14	Disc plate

Caliper and Brake Hose Removal Note

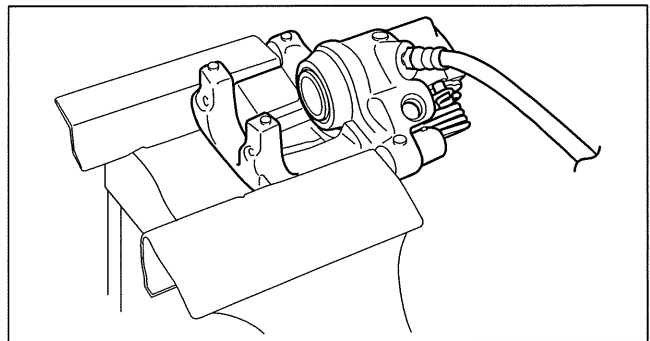
1. Remove the caliper and brake hose from the vehicle as a single unit.

Brake Hose Installation Note

1. Secure the caliper to the vise and install the brake hose to it.

Caution

- Insert a protective plate into the vise opening so as not to damage the caliper.

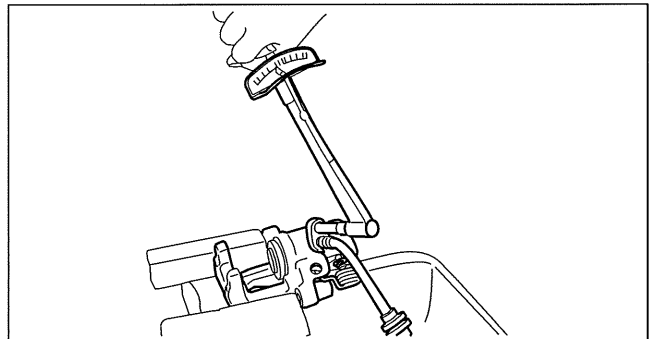


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2. Tighten the brake hose to the specified torque.

Tightening torque

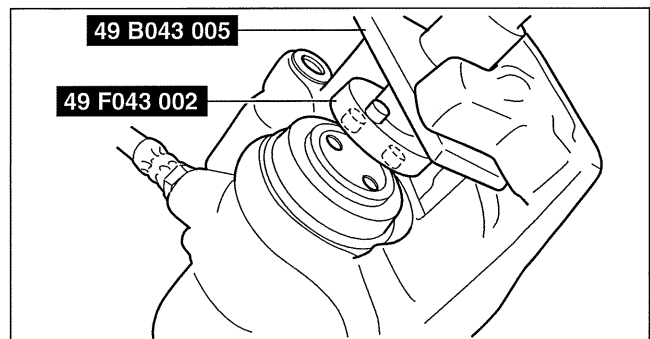
26—30 N·m {2.7—3.0 kgf·m, 20—22 ft·lbf}



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Caliper and Brake Hose Installation Note

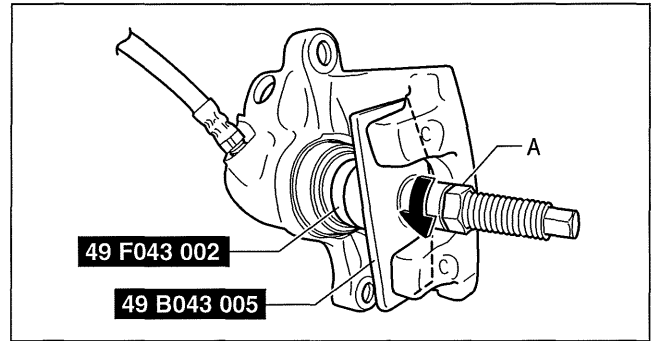
1. Clean the exposed area of the piston.
2. Install the **SST** (49 F043 002) to the **SST** (49 B043 005).
3. Align the **SST** projection to the piston groove.



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CONVENTIONAL BRAKE SYSTEM

4. Rotate part A on the **SST** in the direction of the arrow and secure the **SST** to the caliper.

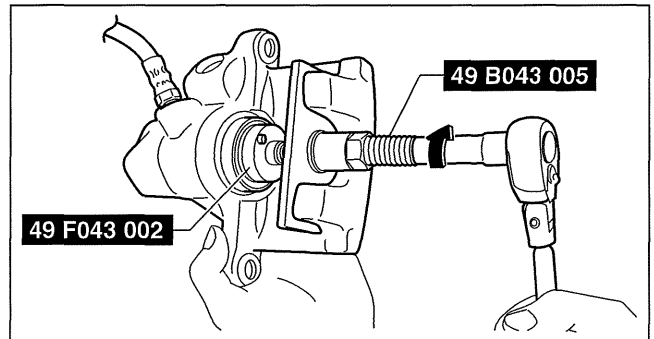


am3uuw0000177

5. Rotate the **SST** in the direction of the arrow and push the piston completely into the caliper.

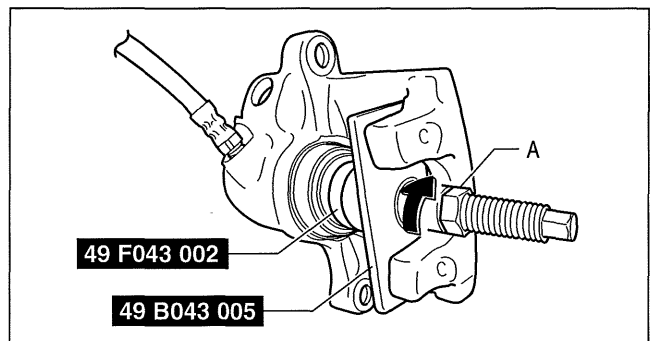
Note

- Even with the piston completely pushed in, the top of the piston projects from the dust seal by approximately 2 mm {0.09 in}.



am3uuw0000177

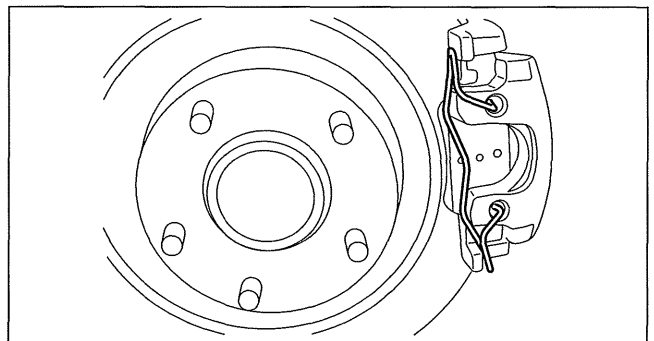
6. Rotate part A on the **SST** in the direction of the arrow using the tool and remove the **SST** from the caliper.
7. Install the caliper and brake hose to the vehicle as a single unit.



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Retaining Clip Installation Note

1. Temporarily install the retaining clip to the caliper and mounting support as shown in the figure.

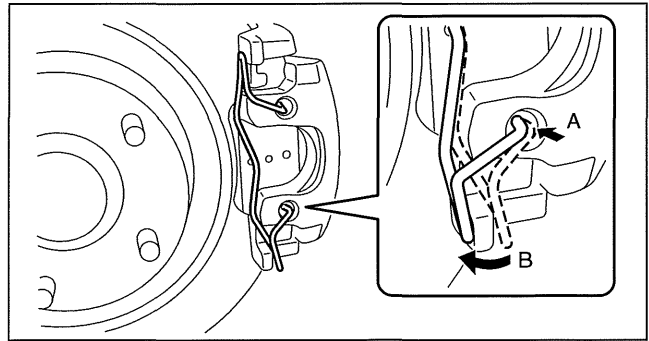


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CONVENTIONAL BRAKE SYSTEM

2. Secure the retaining clip so that part A does not slip off from the caliper while installing part B to the mounting support.
3. Verify that the retaining clip is securely installed to the caliper and the mounting support.



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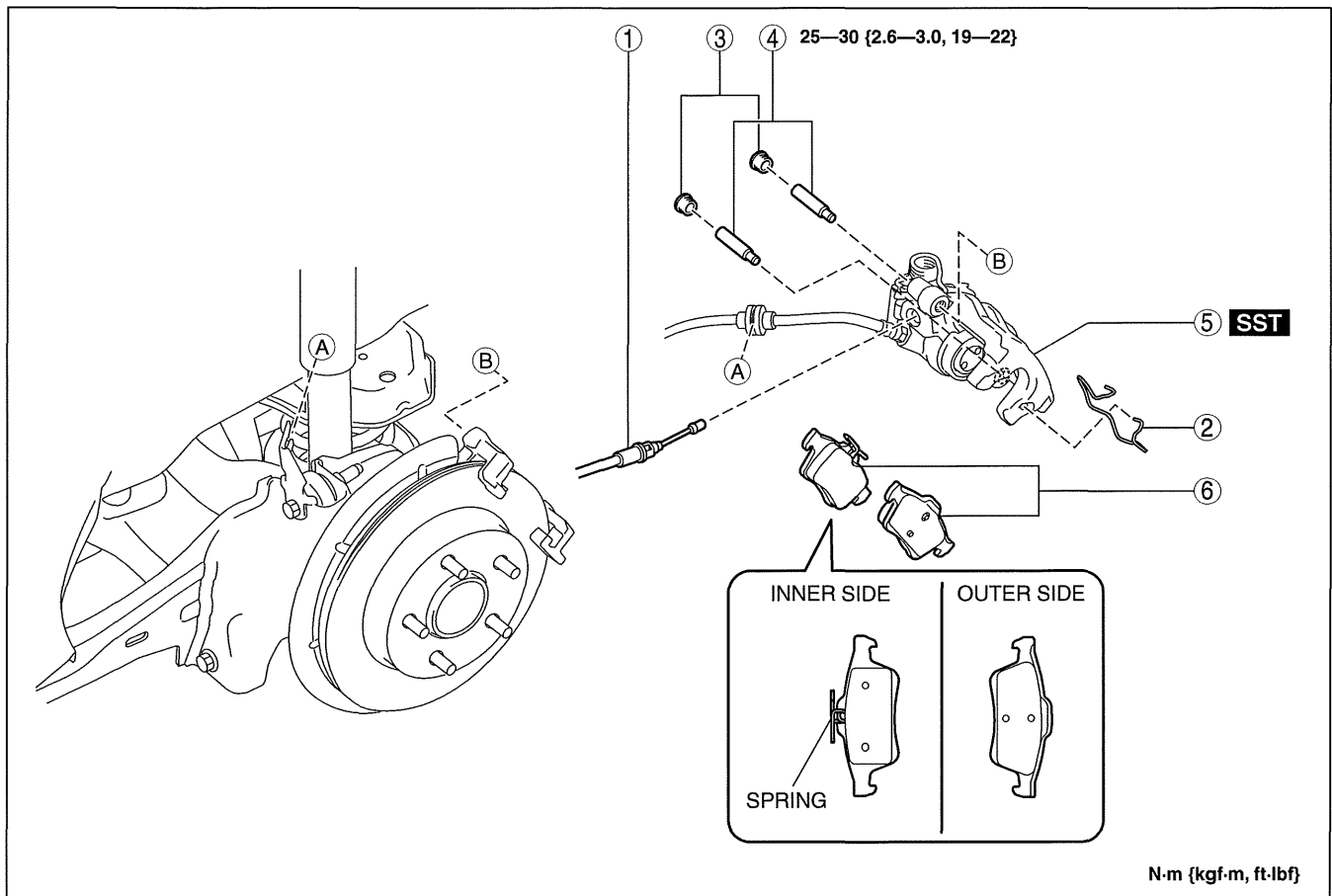
Clip and Brake Pipe Installation Note

1. Install the brake hose to the vehicle-side bracket and secure it using a clip.
2. Verify that the brake hose is not twisted.
3. Tighten the brake pipe to the specified torque using a commercially available flare nut wrench.

DISC PAD (REAR) REPLACEMENT

id041100800300

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and inspect the following:
 - Parking brake lever stroke
 - Brake drag



am3uuw0000313

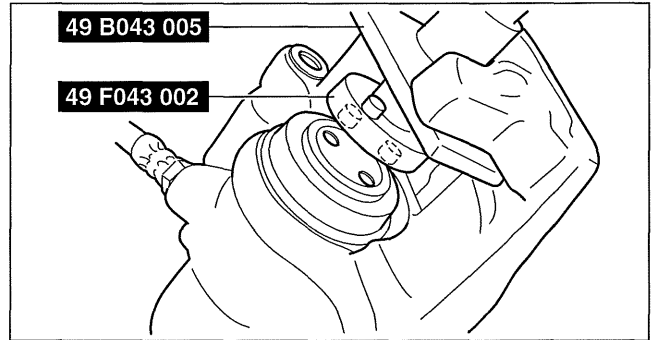
1	Parking brake cable (See 04-12-3 PARKING BRAKE LEVER REMOVAL/ INSTALLATION.)
2	Retaining clip (See 04-11-35 REAR BRAKE (DISC) REMOVAL/ INSTALLATION.)

3	Cap
4	Bolt
5	Caliper (See 04-11-39 Caliper Installation Note.)
6	Disc pad

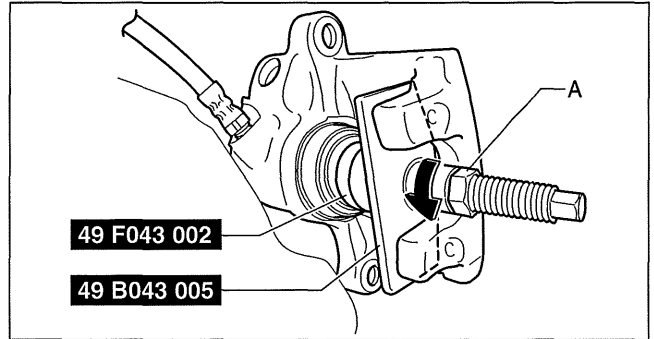
CONVENTIONAL BRAKE SYSTEM

Caliper Installation Note

1. Clean the exposed area of the piston.
2. Install the **SST** (49 F043 002) to the **SST** (49 B043 005).
3. Align the **SST** projection to the piston groove.



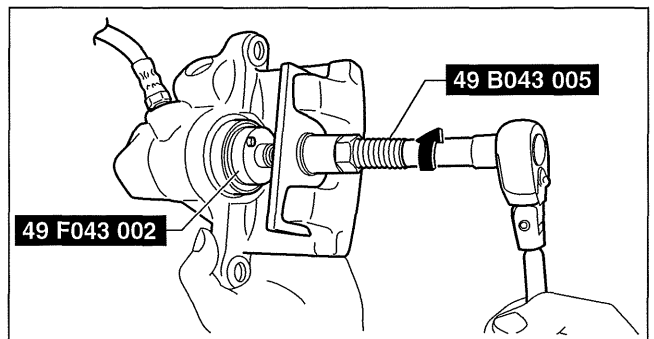
4. Rotate part A on the **SST** in the direction of the arrow and secure the **SST** to the caliper.



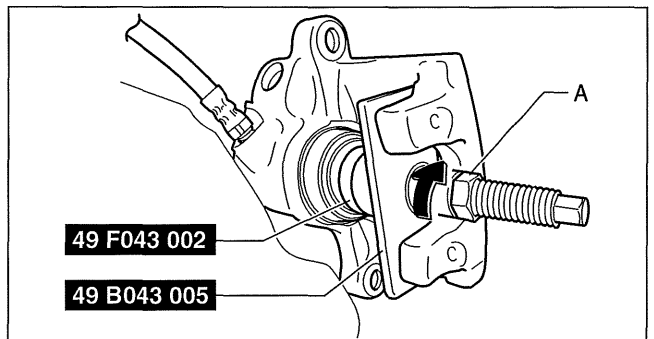
5. Rotate the **SST** in the direction of the arrow and push the piston completely into the caliper.

Note

- Even with the piston completely pushed in, the top of the piston projects from the dust seal by approximately **2 mm {0.09 in}**.



6. Rotate part A on the **SST** in the direction of the arrow using the tool and remove the **SST** from the caliper.
7. Install the caliper to the vehicle.



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CONVENTIONAL BRAKE SYSTEM

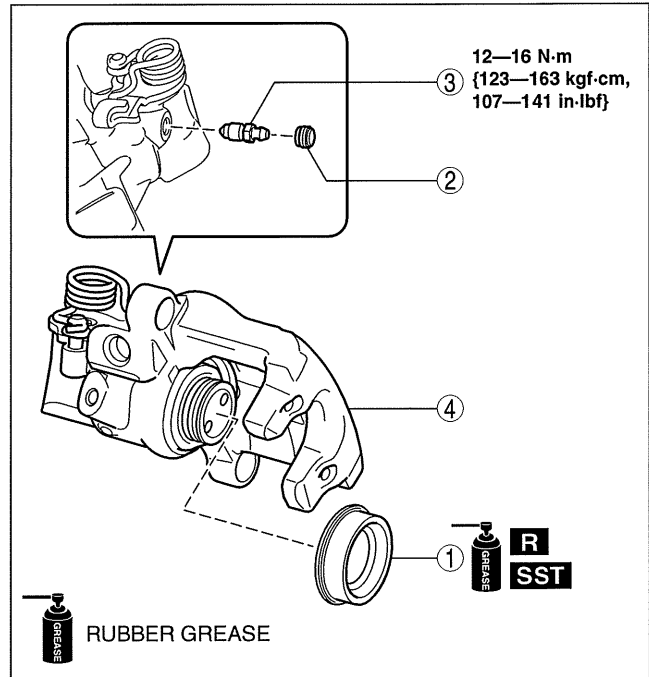
CALIPER (REAR) DISASSEMBLY/ASSEMBLY

id041100800600

1. Disassemble in the order indicated in the table.

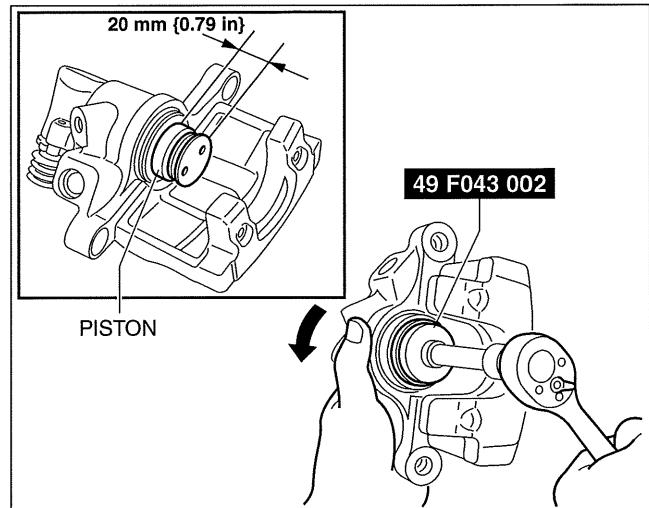
1	Dust seal (See 04-11-40 Dust Seal Assembly Note.)
2	Bleeder cap
3	Bleeder screw
4	Caliper body

2. Assemble in the reverse order of disassembly.

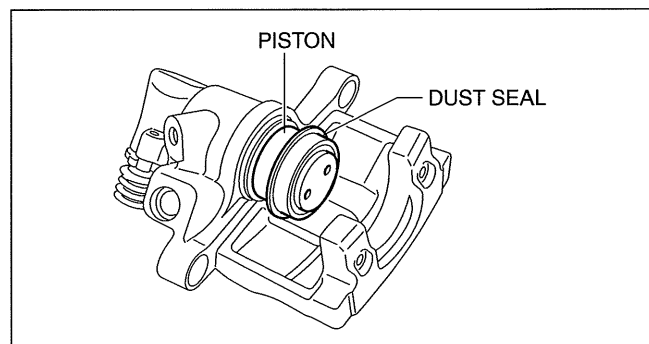


Dust Seal Assembly Note

1. While rotating the piston counterclockwise using the SST, pull it out to the position shown in the figure.

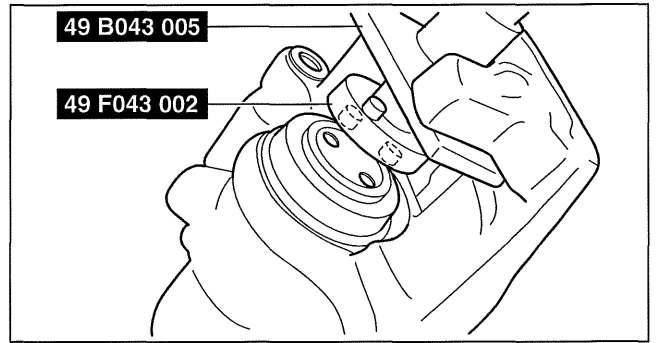


2. As shown in the figure, assemble a new dust seal to the piston.

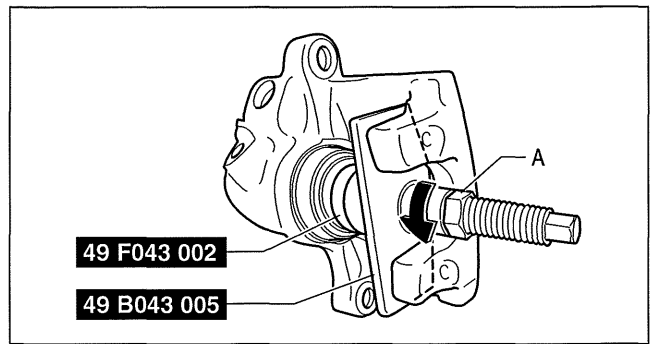


CONVENTIONAL BRAKE SYSTEM

3. Install the **SST** (49 F043 002) to the **SST** (49 B043 005).
4. Align the **SST** projection to the piston groove.



5. Rotate part A on the **SST** in the direction of the arrow and secure the **SST** to the caliper.

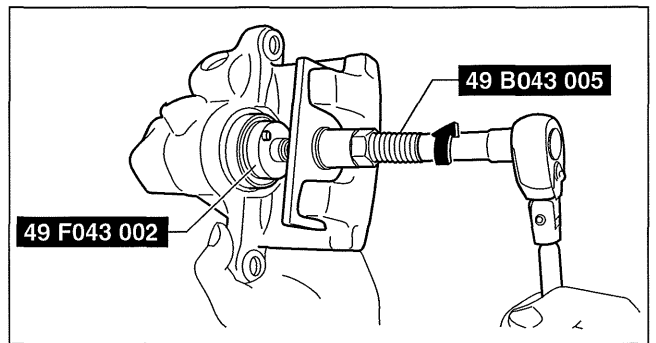


04-11

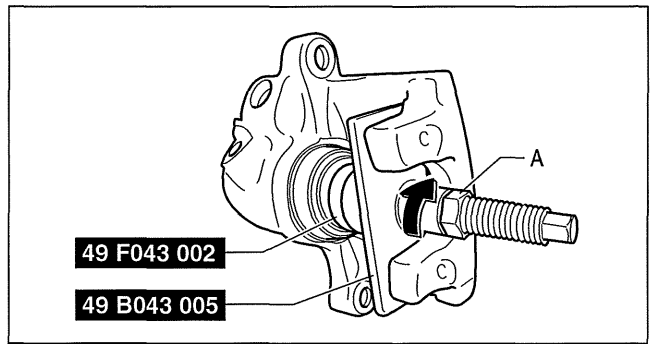
6. Rotate the **SST** (49 B043 005) in the direction of the arrow and push the piston completely into the caliper.

Note

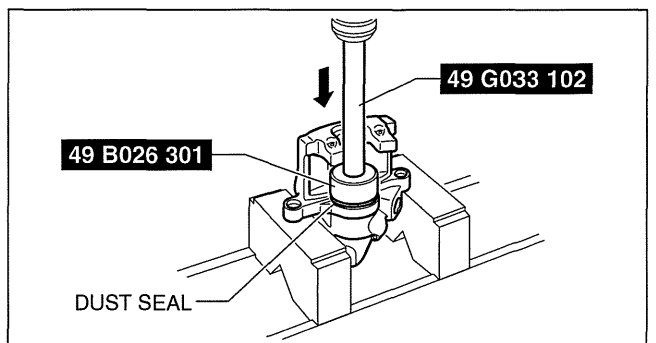
- Even with the piston completely pushed in, the top of the piston projects from the dust seal by approximately **2 mm {0.09 in}**.



7. Rotate part A on the **SST** (49 B043 005) in the direction of the arrow using the tool and remove the **SST** from the caliper.



8. Assemble the dust seal to the caliper body using the **SSTs** and a press with a press-in force of **834 N {85 kgf, 187 lbf}**.
9. Verify that there is no gap between the dust seal and caliper body.



CONVENTIONAL BRAKE SYSTEM

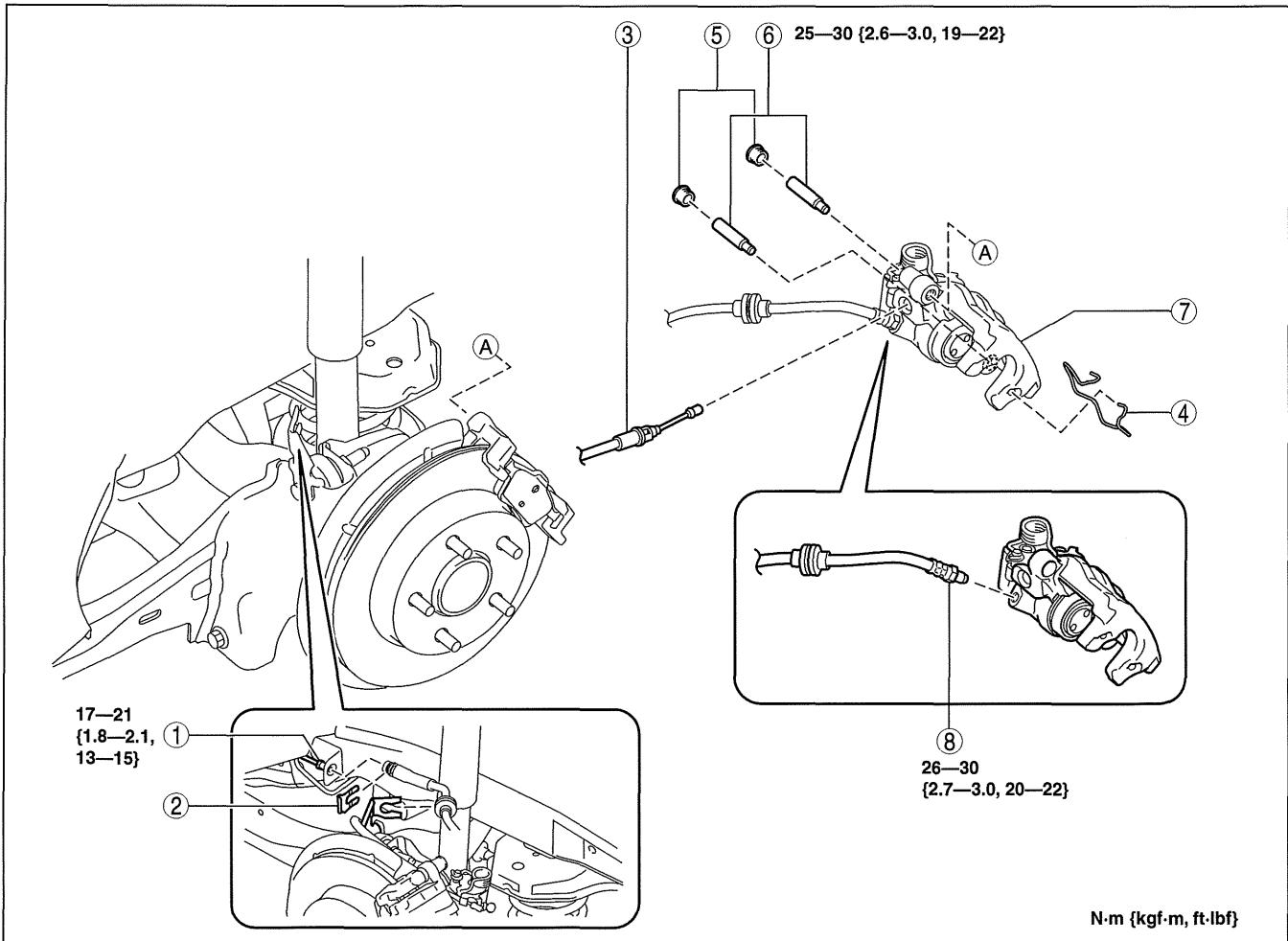
BRAKE HOSE (REAR) REMOVAL/INSTALLATION [LF]

id0411001904b6

Caution

- If the brake hose is installed to the caliper on the vehicle, the tool cannot be installed correctly resulting in brake fluid leakage due to improper installation. Therefore, remove the caliper and brake hose as a single unit when removing the brake hose, and tighten the brake hose to the caliper to the specified torque, then install the caliper and brake hose as a single unit when installing to the vehicle.

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Add brake fluid, bleed the brakes, and inspect for leakage after the installation has been completed. (See 04-11-3 AIR BLEEDING.)



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1	Brake pipe (See 04-11-43 Clip and Brake Pipe Installation Note.)
2	Clip (See 04-11-43 Clip and Brake Pipe Installation Note.)
3	Parking brake cable (See 04-12-3 PARKING BRAKE LEVER REMOVAL/INSTALLATION.)
4	Retaining clip

5	Cap
6	Bolt
7	Caliper, brake hose (See 04-11-42 Caliper and Brake Hose Removal Note.) (See 04-11-43 Caliper and Brake Hose Installation Note.)
8	Brake hose (See 04-11-43 Brake Hose Installation Note.)

Caliper and Brake Hose Removal Note

1. Remove the caliper and brake hose from the vehicle as a single unit.

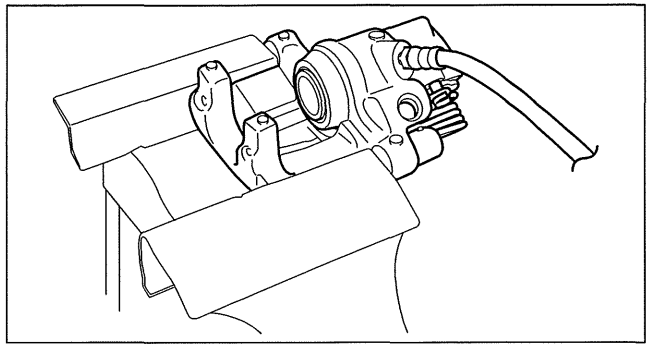
CONVENTIONAL BRAKE SYSTEM

Brake Hose Installation Note

1. Secure the caliper to the vise and install the brake hose to it.

Caution

- Insert a protective plate into the vise opening so as not to damage the caliper.

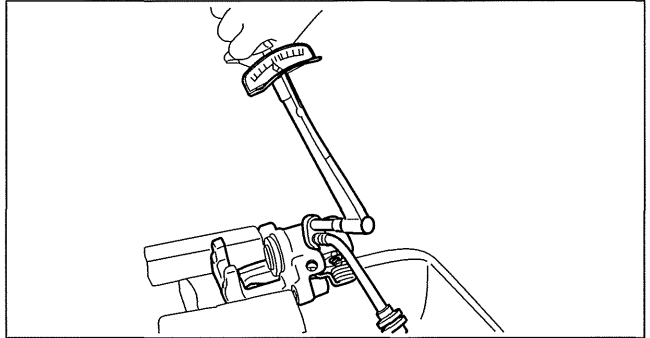


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2. Tighten the brake hose to the specified torque.

Tightening torque

26—30 N·m {2.7—3.0 kgf·m, 20—22 ft·lbf}



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04-11

Caliper and Brake Hose Installation Note

1. Install the caliper and brake hose to the vehicle as a single unit.

Clip and Brake Pipe Installation Note

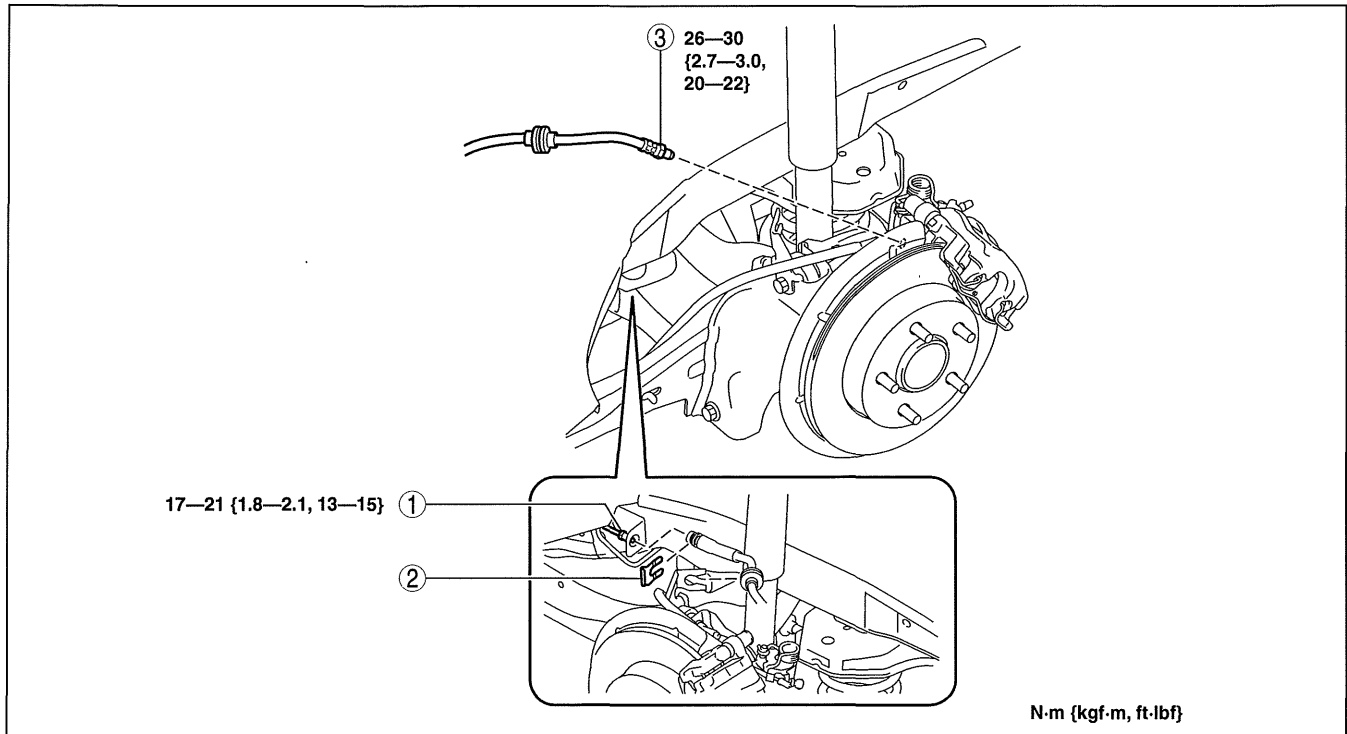
1. Install the brake hose to the vehicle-side bracket and secure it using a clip.
2. Verify that the brake hose is not twisted.
3. Tighten the brake pipe to the specified torque using a commercially available flare nut wrench.

CONVENTIONAL BRAKE SYSTEM

BRAKE HOSE (REAR) REMOVAL/INSTALLATION [L5, L3 WITH TC]

id0411001904j1

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Add brake fluid, bleed the brakes, and inspect for leakage after the installation has been completed. (See 04-11-3 AIR BLEEDING.)



am3uuw0000313

1	Brake pipe (See 04-11-44 Clip and Brake Pipe Installation Note.)
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2	Clip (See 04-11-44 Clip and Brake Pipe Installation Note.)
3	Brake hose

Clip and Brake Pipe Installation Note

1. Install the brake hose to the vehicle-side bracket and secure it using a clip.
2. Verify that the brake hose is not twisted.
3. Tighten the brake pipe to the specified torque using a commercially available flare nut wrench.

PARKING BRAKE SYSTEM

04-12 PARKING BRAKE SYSTEM

PARKING BRAKE SYSTEM

LOCATION INDEX 04-12-1

PARKING BRAKE LEVER

INSPECTION 04-12-2

Stroke Inspection 04-12-2

PARKING BRAKE LEVER

ADJUSTMENT 04-12-2

PARKING BRAKE LEVER

REMOVAL/INSTALLATION 04-12-3

PARKING BRAKE CABLE

REMOVAL/INSTALLATION 04-12-4

Parking Brake Cable

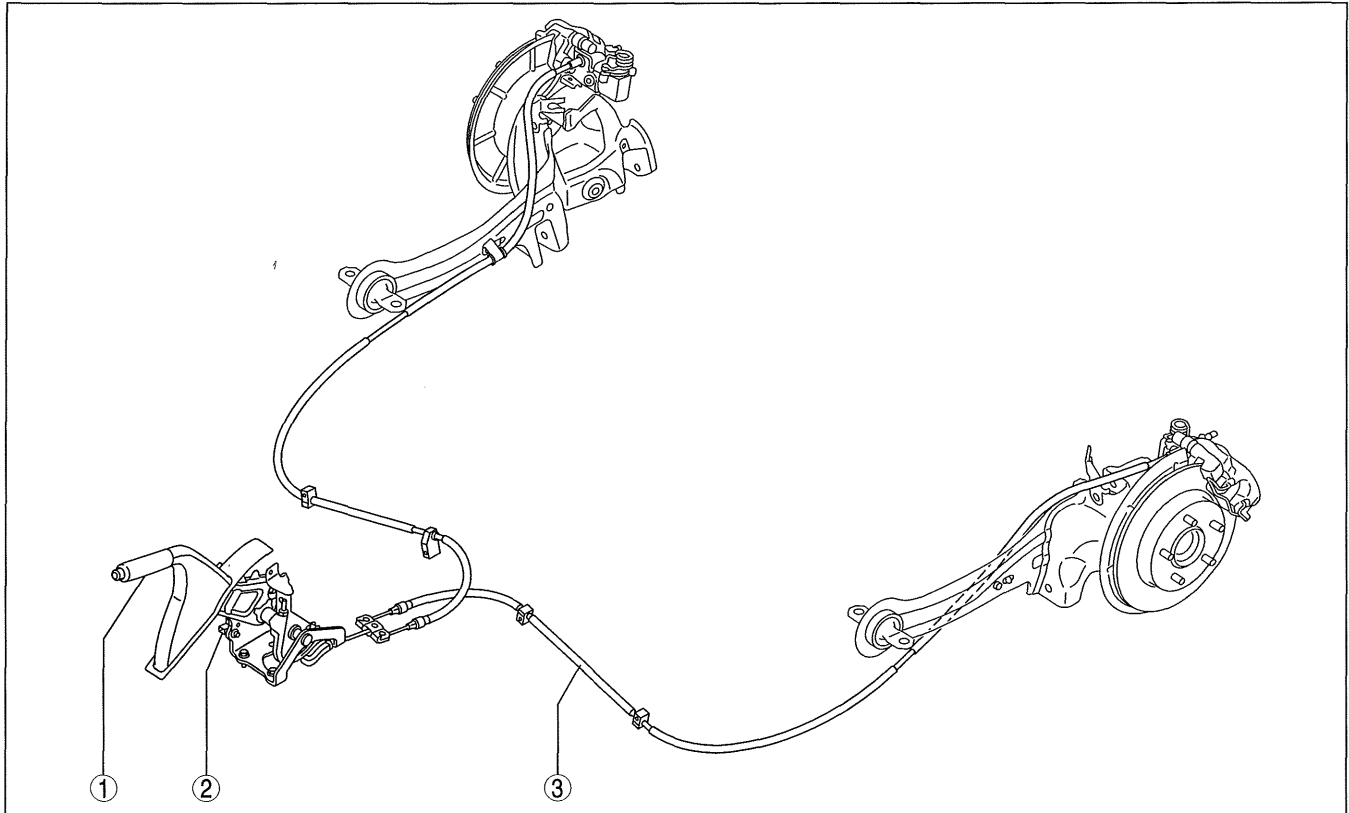
Installation Note 04-12-5

PARKING BRAKE SWITCH

INSPECTION 04-12-5

PARKING BRAKE SYSTEM LOCATION INDEX

id041200800100



04-12

am3uuw0000180

1	<p>Parking brake lever (See 04-12-2 PARKING BRAKE LEVER INSPECTION.) (See 04-12-2 PARKING BRAKE LEVER ADJUSTMENT.) (See 04-12-3 PARKING BRAKE LEVER REMOVAL/INSTALLATION.)</p>
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2	<p>Parking brake switch (See 04-12-5 PARKING BRAKE SWITCH INSPECTION.)</p>
3	<p>Parking brake cable (See 04-12-4 PARKING BRAKE CABLE REMOVAL/INSTALLATION.)</p>

PARKING BRAKE SYSTEM

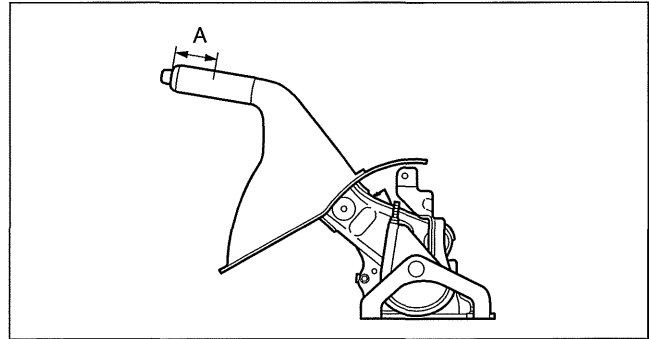
PARKING BRAKE LEVER INSPECTION

id041200800900

Stroke Inspection

1. Pump the brake pedal a few times.
2. Pull the parking brake lever two to three times.
3. Inspect the parking brake stroke by slowly pulling at point A **50 mm {1.97 in}** from the end of the parking brake lever with a force of **98 N {10 kgf, 22 lbf}** and counting the number of notches (clicking sound).
 - If not within the specification, adjust the parking brake lever.

**Parking brake lever stroke when pulled at 98 N
{10 kgf, 22 lbf}
2—6 notches**

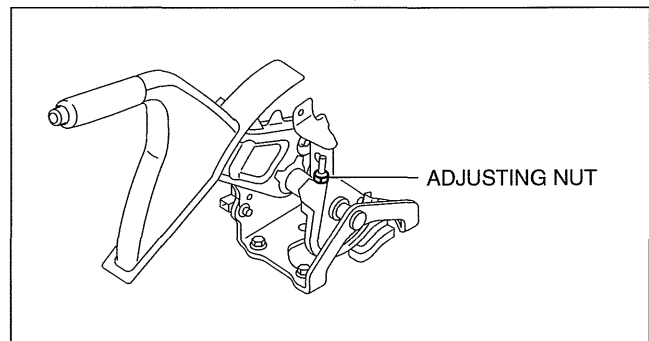


am3uuw0000195

PARKING BRAKE LEVER ADJUSTMENT

id041200801500

1. Pump the brake pedal a few times.
2. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
3. Turn the adjusting nut and adjust the parking brake lever.
4. After adjustment, pull the parking brake lever one notch and verify that the parking brake warning light illuminates.
5. Verify that the rear brakes do not drag.



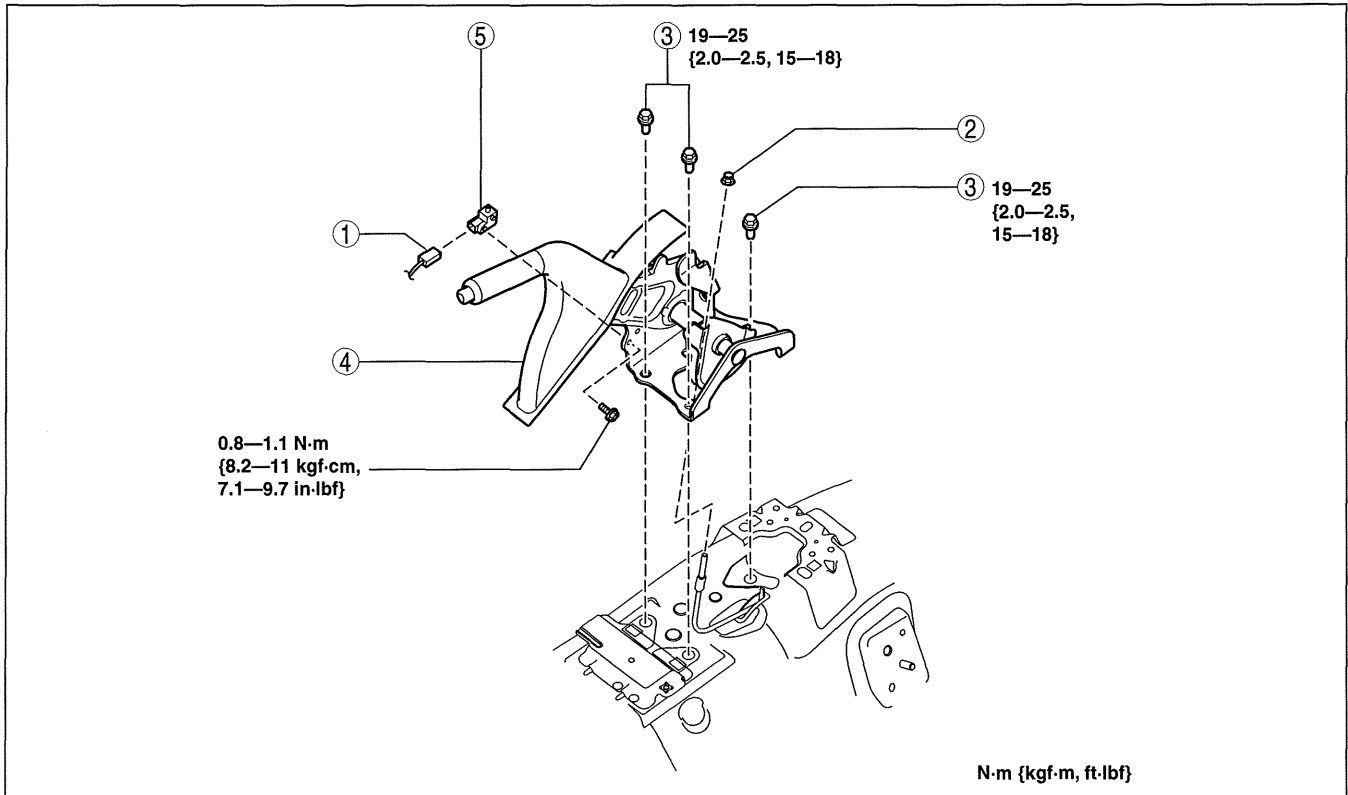
am3uuw0000413

PARKING BRAKE SYSTEM

PARKING BRAKE LEVER REMOVAL/INSTALLATION

id041200801600

1. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. After installation, inspect the parking brake lever stroke. (See 04-12-2 PARKING BRAKE LEVER INSPECTION.)



04-12

am3uuw0000516

1	Parking brake switch connector
2	Adjusting nut
3	Bolt

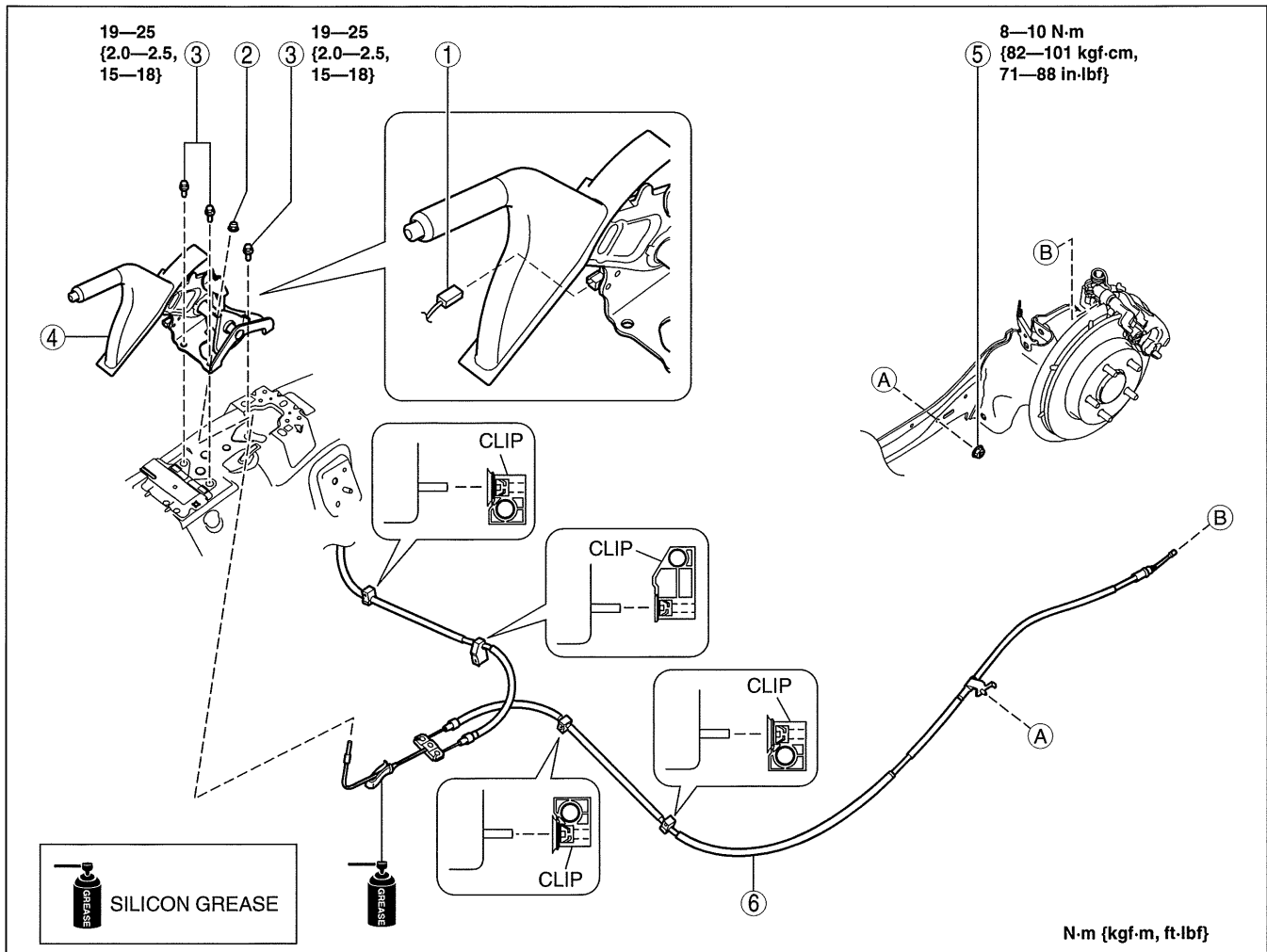
4	Parking brake lever
5	Parking brake switch

PARKING BRAKE SYSTEM

PARKING BRAKE CABLE REMOVAL/INSTALLATION

id041200801700

1. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
2. Remove the under cover. (See 02-14-8 REAR TRAILING LINK REMOVAL/INSTALLATION.)
3. Remove the tunnel member (rear). (LF, L5) (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Remove the tunnel member. (L3 WITH TC) (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the TWC. (LF, L5) (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
6. Remove the preslencer. (L3 WITH TC) (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the insulator (middle No.1) and the insulator (middle No.2). (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. After installation, inspect the parking brake stroke and adjust if necessary. (See 04-12-2 PARKING BRAKE LEVER INSPECTION.)



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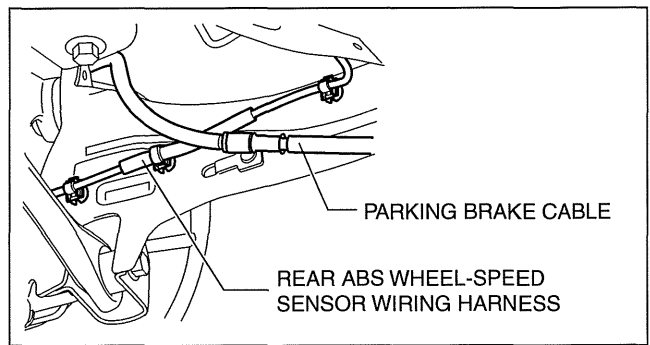
1	Parking brake switch connector
2	Adjusting nut
3	Bolt
4	Parking brake lever

5	Nut
6	Parking brake cable (See 04-12-5 Parking Brake Cable Installation Note.)

PARKING BRAKE SYSTEM

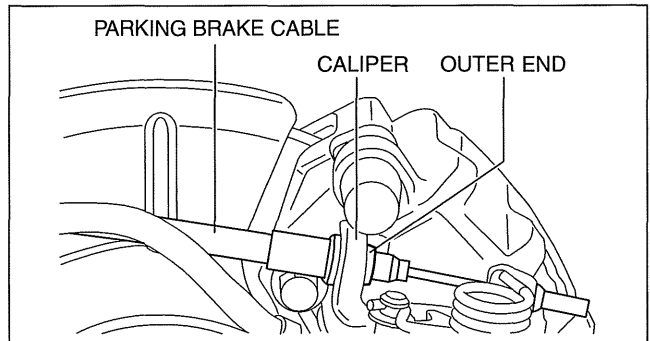
Parking Brake Cable Installation Note

1. Pass the parking brake cable inside the rear ABS wheel-speed sensor wiring harness as shown in the figure.
2. Install the rear parking brake cable.



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3. Verify that the end of the parking brake cable outer end is out of the caliper as shown in the figure.



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04-12

PARKING BRAKE SWITCH INSPECTION

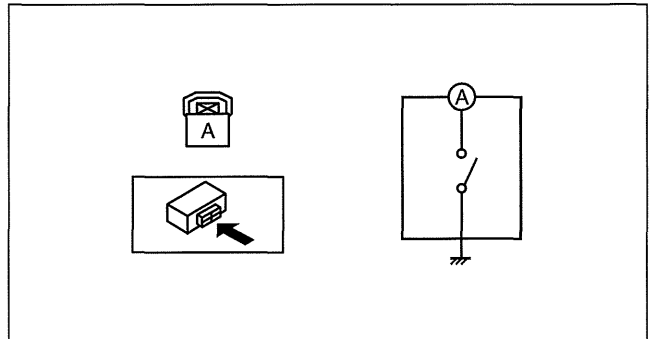
1. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
2. Disconnect the parking brake switch connector.
3. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the parking brake lever.

id041200800700

○—○: Continuity

Condition	Terminal	
	A	Body ground
Parking brake lever pulled	○—○	○—○
Parking brake lever released		

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am3uuw0000184

04-13 ANTILOCK BRAKE SYSTEM

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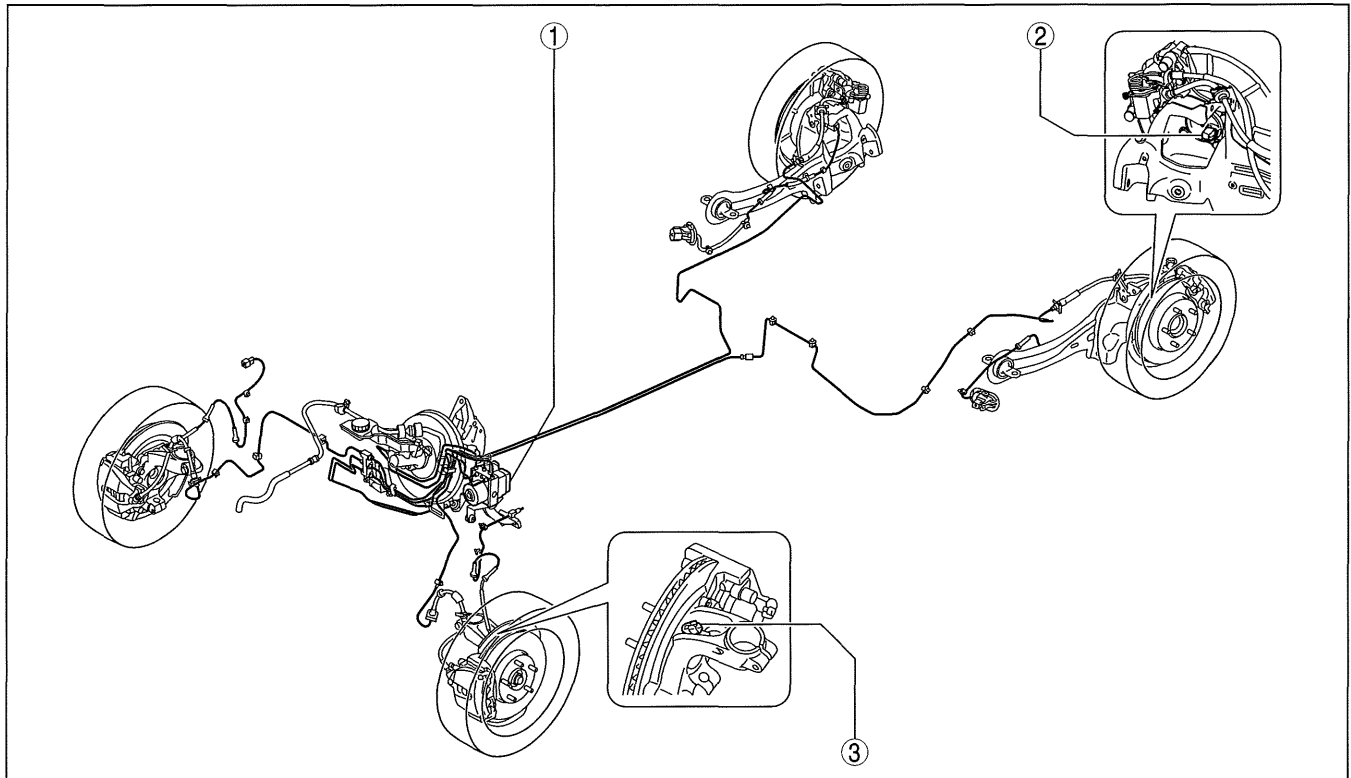
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ABS LOCATION INDEX

id041300801100



am3uuw0000232

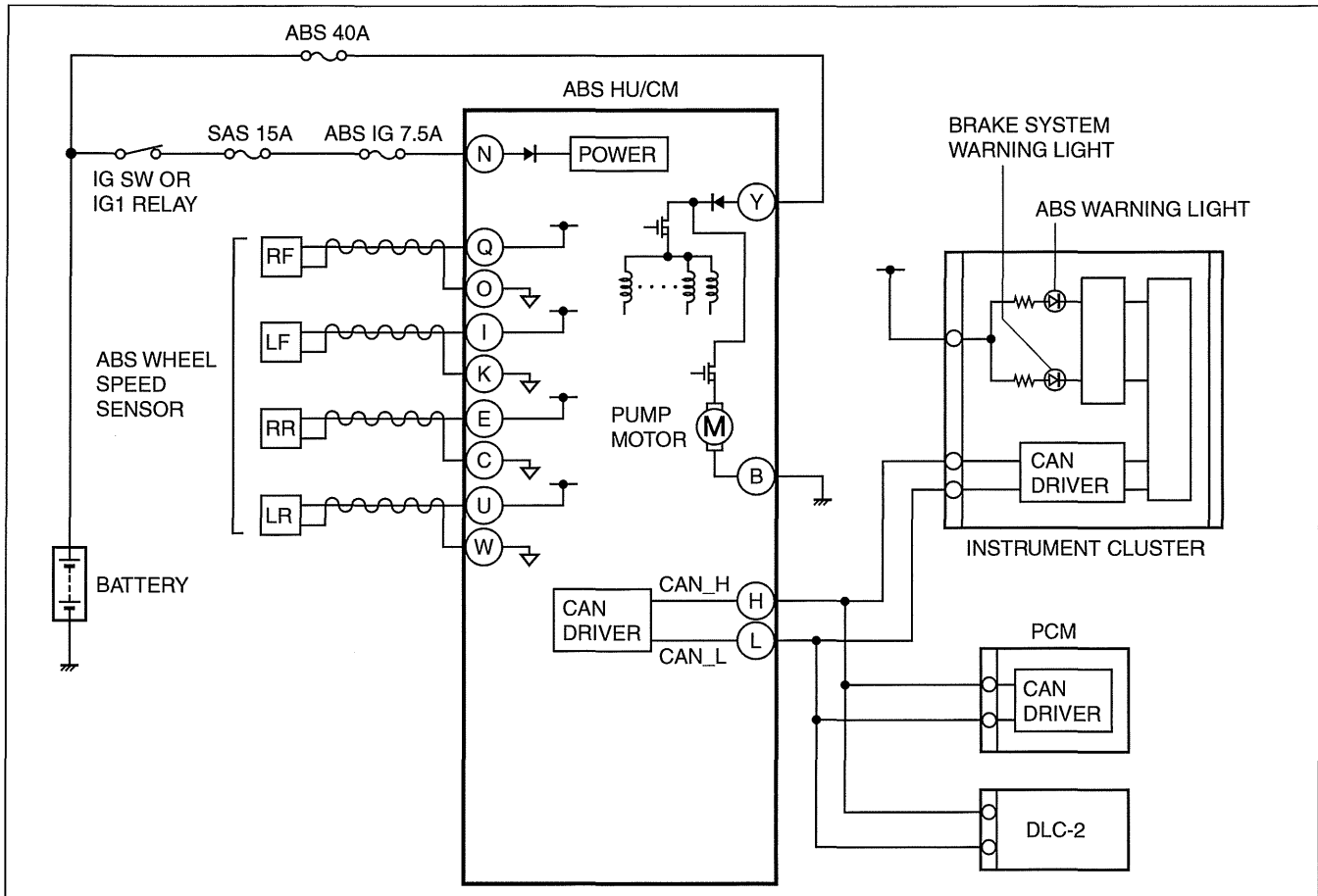
1	ABS HU/CM (See 04-13-2 ABS SYSTEM WIRING DIAGRAM.) (See 04-13-2 ABS HU/CM REMOVAL/ INSTALLATION.) (See 04-13-5 ABS HU/CM INSPECTION.)
2	Rear ABS wheel-speed sensor (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)

3	Front ABS wheel-speed sensor (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)
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ANTILOCK BRAKE SYSTEM

ABS SYSTEM WIRING DIAGRAM

id041300805000



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ABS HU/CM REMOVAL/INSTALLATION

id041300801400

Caution

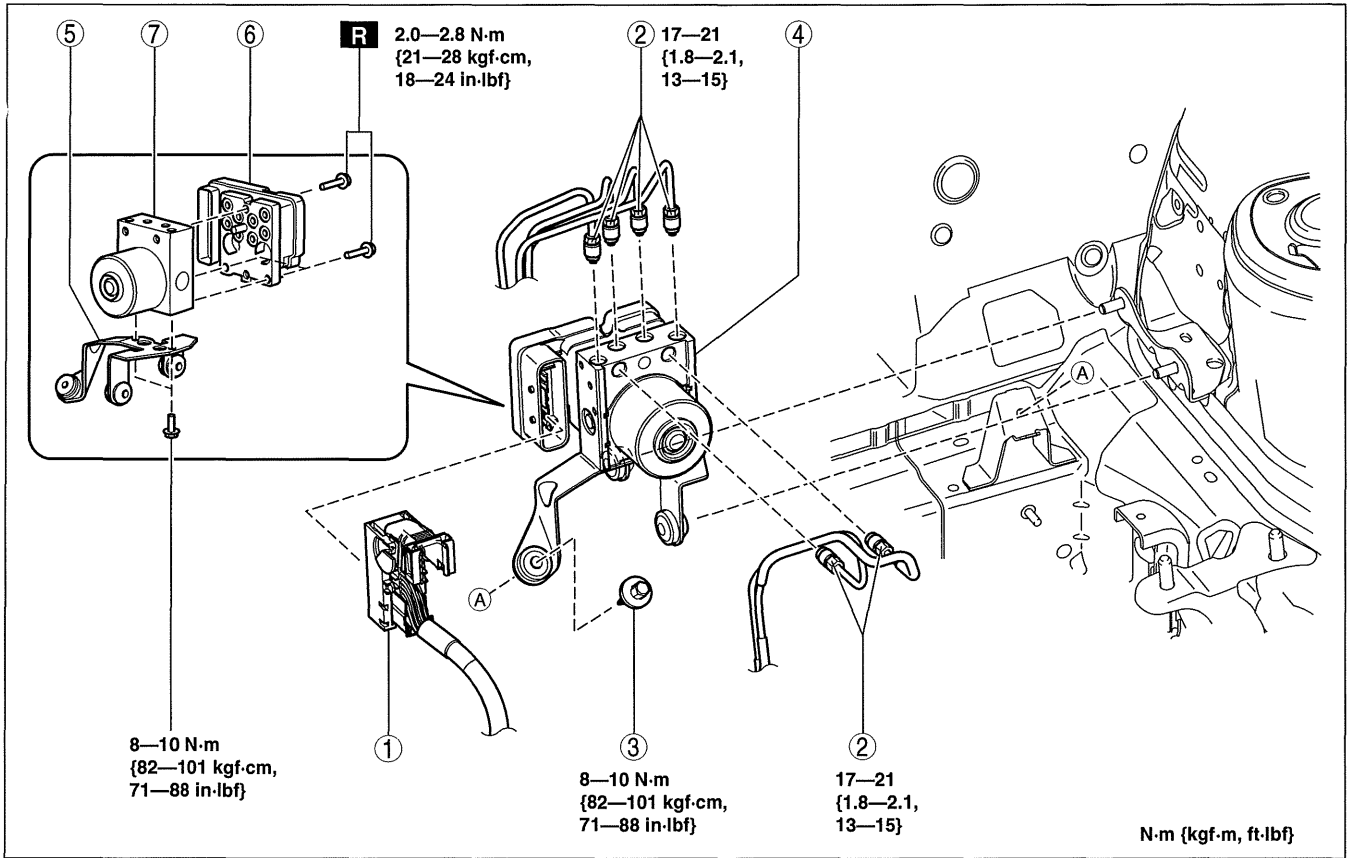
- The internal parts of the ABS HU/CM could be damaged if dropped. Be careful not to drop the ABS HU/CM. Replace the ABS HU/CM if it is subjected to an impact.
- Do not separate the ABS HU and ABS CM unless replacing them, otherwise the ABS HU/CM may not function properly. When replacing them with new ones, always perform procedures according to the instructions included with the new parts.
- If the ABS HU/CM configuration is not completed, it could result in an unexpected accident due to the ABS being inoperative. If the ABS HU/CM or ABS CM is replaced, always use the automatic configuration function so that the ABS operation conditions are correct.

Note

- When the ignition is switched to ON or the engine is started after the ABS HU/CM or ABS CM has been replaced, the ABS CM reads data from the instrument cluster via CAN communication to perform automatic configuration.

1. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Switch the ignition to ON or start the engine, and maintain this condition for **approx. 30 s** to allow the ABS HU/CM automatic configuration to be performed.
5. Clear the DTCs from the memory. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].)

ANTILOCK BRAKE SYSTEM



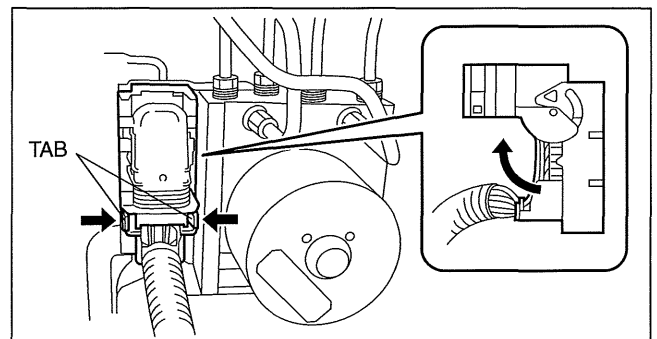
04-13

1	Connector (See 04-13-3 Connector Removal Note.) (See 04-13-5 Connector Installation Note.)
2	Brake pipe (See 04-13-4 Brake Pipe Removal Note.) (See 04-13-4 Brake Pipe Installation Note.)
3	Bolt

4	ABS HU/CM component, bracket (See 04-13-4 ABS HU/CM Component, Bracket Removal Note.)
5	Bracket
6	ABS CM
7	ABS HU

Connector Removal Note

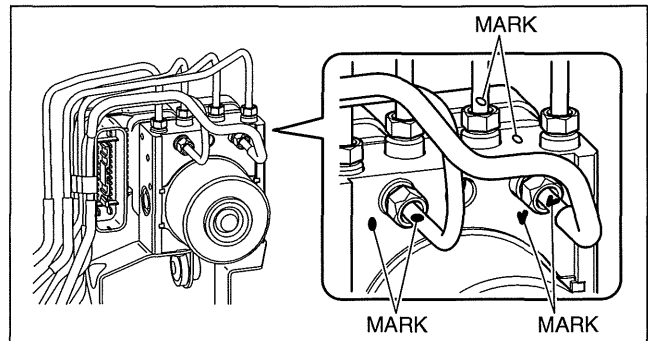
1. Pull the connector cover up in the direction of the arrow while pressing the tab of the connector cover.
2. Pull the connector toward the vehicle front and remove it.



ANTILOCK BRAKE SYSTEM

Brake Pipe Removal Note

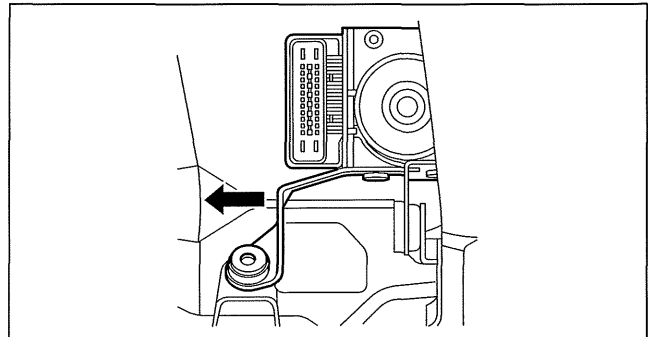
1. Place an alignment mark on the brake pipe and ABS HU/CM.
2. Apply protective tape to the connector to prevent brake fluid from entering.
3. Disconnect the brake pipe.



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ABS HU/CM Component, Bracket Removal Note

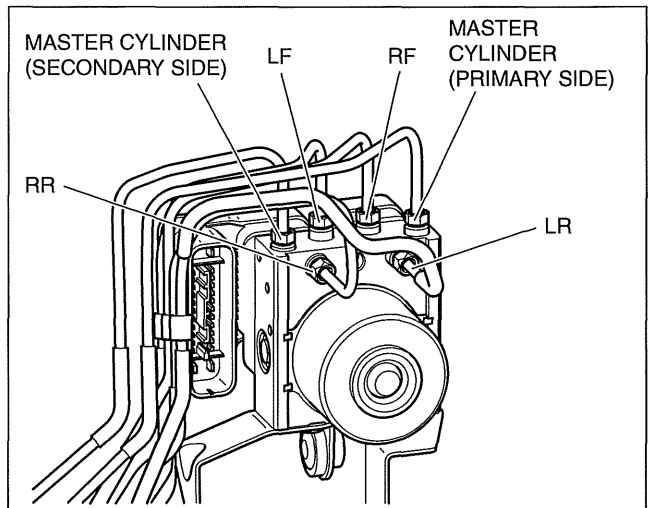
1. As shown in the figure, move the bracket in the direction of the arrow and remove the ABS HU/CM component and bracket from the body.



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Brake Pipe Installation Note

1. Align the marks made before removal and install the brake pipe to the ABS HU/CM referring to the figure.

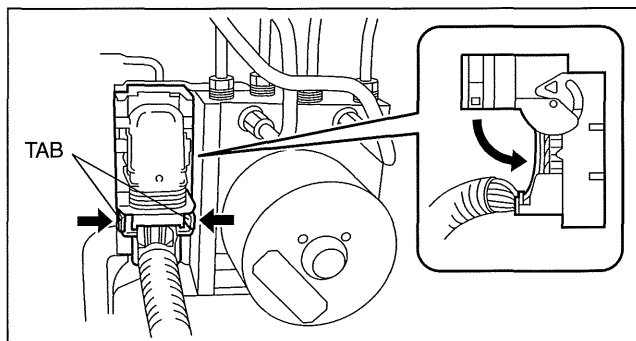


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ANTILOCK BRAKE SYSTEM

Connector Installation Note

1. After connecting the connector, verify that the connector cover is completely pushed in.



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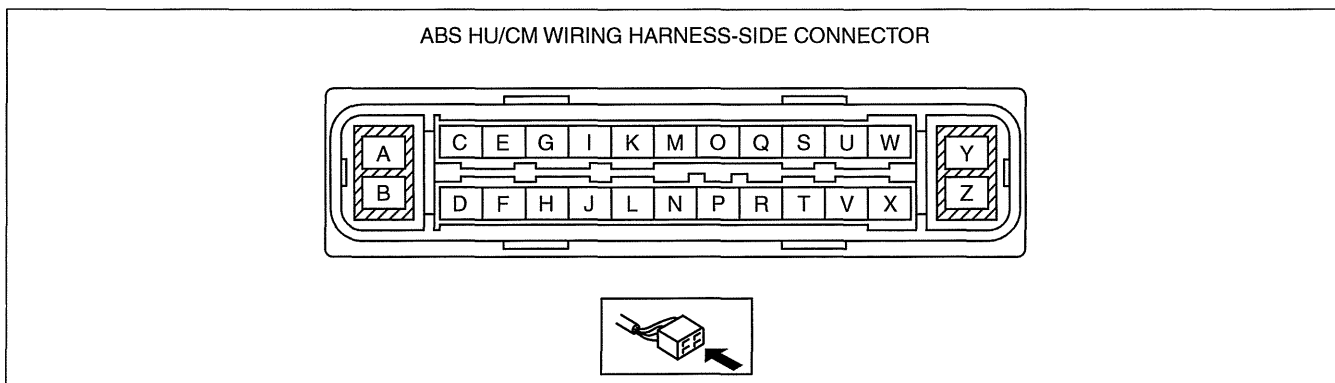
ABS HU/CM INSPECTION

id041300198300

04-13

1. Disconnect the ABS HU/CM connector. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
2. Connect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Attach the tester lead to the ABS HU/CM wiring harness-side connector and inspect the voltage, continuity, or resistance according to the standard (reference value) in the table below.

Standard (reference)



am3uuw000272

Terminal	Signal name	Connected to	Measured item	Measured terminal (measurement condition)	Standard	Inspection item(s)
A	-	-	-	-	-	-
B	Ground	Ground point	Continuity	B—ground point	Continuity detected	<ul style="list-style-type: none"> Wiring harness (B—ground point)
C	RR wheel-speed (-)	RR ABS wheel-speed sensor	Continuity	C—RR ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (C—RR ABS wheel-speed sensor connector terminal B)
D	-	-	-	-	-	-
E	RR wheel-speed (+)	RR ABS wheel-speed sensor	Continuity	E—RR ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (E—RR ABS wheel-speed sensor connector terminal A)
F	-	-	-	-	-	-
G	-	-	-	-	-	-
H	CAN_H	DLC-2 (CAN_H)	This terminal is used for communication and cannot be used for malfunction determination during terminal voltage inspection. Perform a DTC inspection.			
I	LF wheel-speed (+)	LF ABS wheel speed sensor	Continuity	I—LF ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (I—LF ABS wheel-speed sensor connector terminal A)
J	-	-	-	-	-	-
K	LF wheel-speed (-)	ABS wheel-speed sensor (LF)	Continuity	K—LF ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (K—LF ABS wheel-speed sensor connector terminal B)

ANTILOCK BRAKE SYSTEM

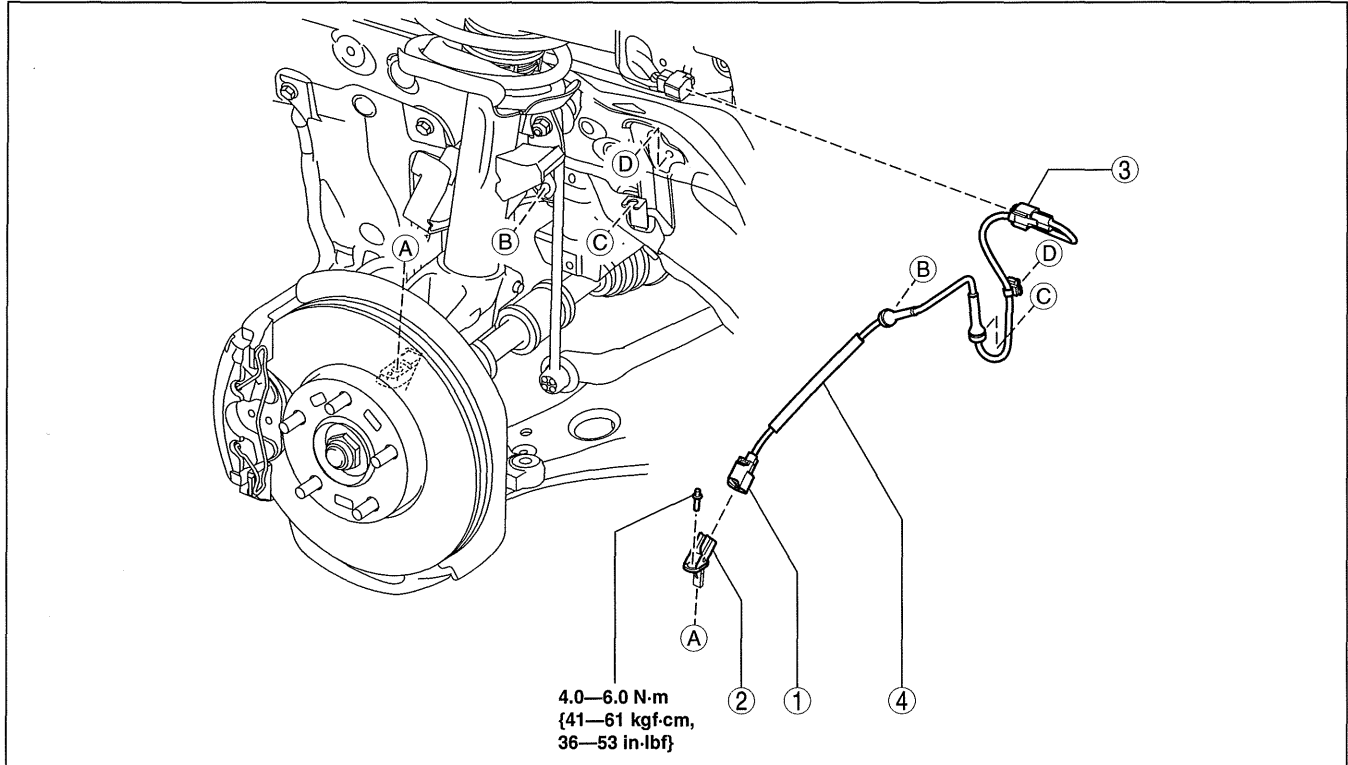
Terminal	Signal name	Connected to	Measured item	Measured terminal (measurement condition)	Standard	Inspection item(s)
L	CAN_L	DLC-2 (CAN_L)	This terminal is used for communication and cannot be used for malfunction determination during terminal voltage inspection. Perform a DTC inspection.			
M	—	—	—	—	—	—
N	Power supply (System)	Ignition switch or IG1 relay	Voltage	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Wiring harness (N—ignition switch or IG1 relay)
				Switch the ignition to off	1 V or less	
O	RF wheel-speed (-)	RF ABS wheel-speed sensor	Continuity	O—RF ABS wheel-speed sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (O—RF ABS wheel-speed sensor connector terminal B)
P	—	—	—	—	—	—
Q	RF wheel-speed (+)	RF ABS wheel-speed sensor	Continuity	Q—RF ABS wheel-speed sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (Q—RF ABS wheel-speed sensor connector terminal A)
R	—	—	—	—	—	—
S	—	—	—	—	—	—
T	—	—	—	—	—	—
U	LR wheel-speed (+)	LR ABS wheel-speed sensor	Continuity	U—LR ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (U—LR ABS wheel-speed sensor connector terminal A)
V	—	—	—	—	—	—
W	LR wheel-speed (-)	LR ABS wheel-speed sensor	Continuity	W—LR ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (W—LR ABS wheel-speed sensor connector terminal B)
X	—	—	—	—	—	—
Y	Power supply (Solenoid operation, ABS motor operation)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none"> Wiring harness (Y—battery)
Z	—	—	—	—	—	—

ANTILOCK BRAKE SYSTEM

FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

id041300800700

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, verify that there is no twisting in the front ABS wheel-speed sensor.



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1	Connector
2	Front ABS wheel-speed sensor

3	Connector (See 04-13-7 Connector Removal Note.)
4	Front ABS wheel-speed sensor wiring harness

Connector Removal Note

1. Pull aside the mudguard and disconnect the connector.

FRONT ABS WHEEL-SPEED SENSOR INSPECTION

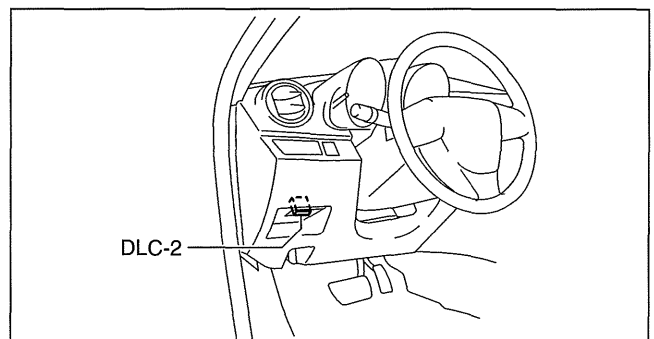
id041300801300

Sensor Output Value Inspection

Caution

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the M-MDS to inspect the ABS wheel-speed sensor.

1. Switch the ignition to off.
2. Connect the M-MDS to the DLC-2.
3. Select the following PIDs using the M-MDS:
 - WSPD_LF
(LF wheel-speed sensor)
 - WSPD_RF
(RF wheel-speed sensor)
4. Start the engine and drive the vehicle.
5. Verify that the display of the M-MDS shows the same value as the speedometer.
 - If there is any malfunction, replace the front ABS wheel-speed sensor.



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04-13

ANTILOCK BRAKE SYSTEM

Installation Visual Inspection

1. Inspect for the following:
 - If there is any malfunction, replace the part.
 - (1) Excessive play of the front ABS wheel-speed sensor
 - (2) Deformation of the front ABS wheel-speed sensor

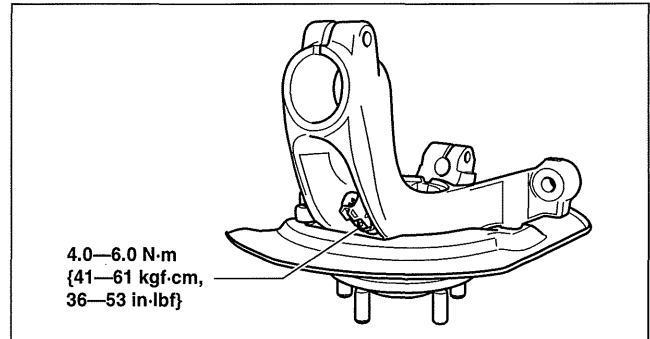
Clearance Inspection

Preparation prior to inspection

1. Remove the front ABS wheel-speed sensor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
2. Remove the wheel hub, steering knuckle component. (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.)
3. Install the front ABS wheel-speed sensor to the removed the wheel hub, steering knuckle component, and tighten to the specified torque.

Tightening torque

4.0—6.0 N·m {41—61 kgf·cm, 36—53 in·lbf}

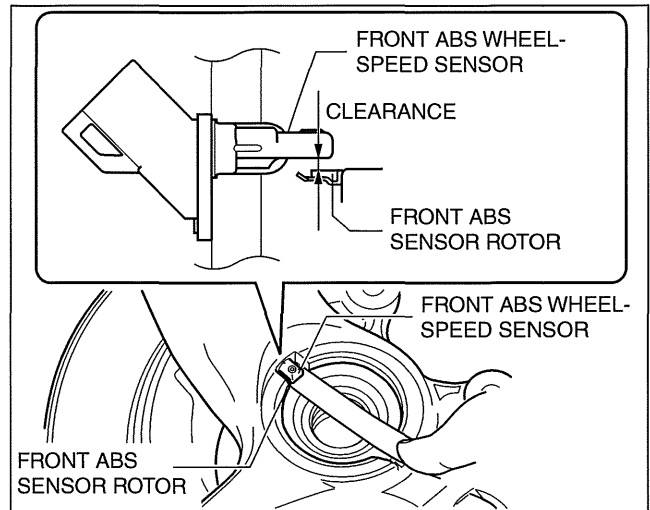


Clearance Inspection

1. Measure the gap between the front ABS sensor rotor and the front ABS wheel-speed sensor using a feeler gauge.
 - If not within the specification, verify the following items and repair or replace if necessary.
 - Is there deformation or damage to the front ABS sensor rotor?
 - Is there deformation or damage to the front ABS wheel speed sensor?
 - Is there foreign material adhering?

Clearance

2.1 mm {0.082 in} or less



Servicing after inspection

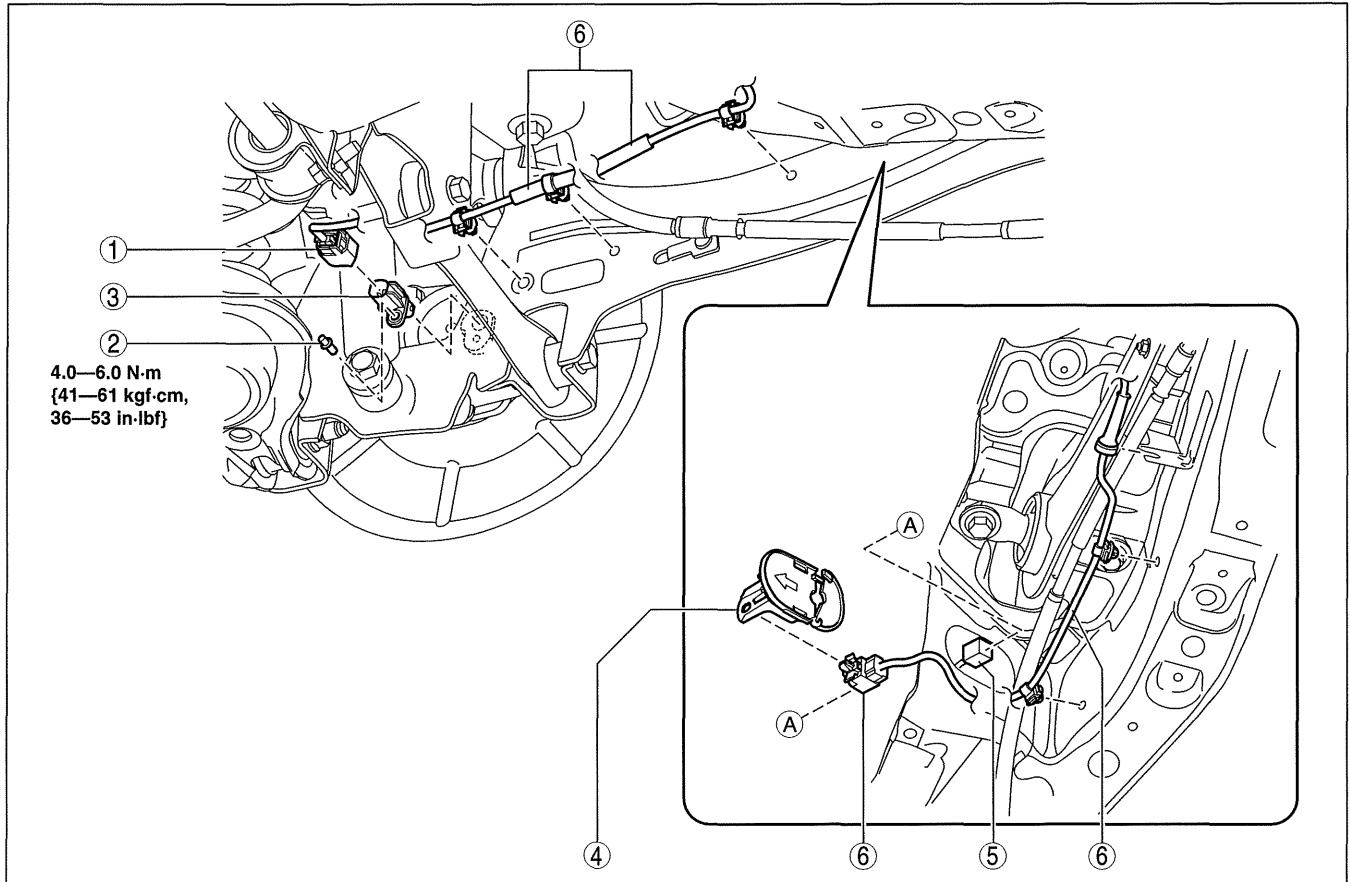
1. Remove the front ABS wheel-speed sensor from the wheel hub, steering knuckle component.
2. Install the wheel hub, steering knuckle component. (See 03-11-2 WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.)
3. Install the front ABS wheel-speed sensor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4. Inspect the front wheel alignment. (See 02-11-1 FRONT WHEEL ALIGNMENT.)

ANTILOCK BRAKE SYSTEM

REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

id041300800500

1. Remove the under cover. (See 02-14-8 REAR TRAILING LINK REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



04-13

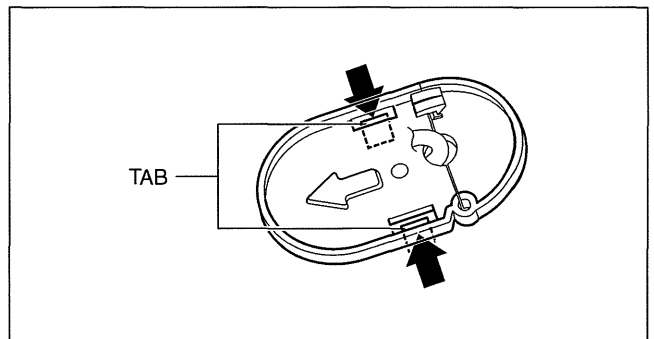
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1	Connector
2	Bolt
3	Rear ABS wheel-speed sensor
4	ABS hole cover (See 04-13-9 ABS Hole Cover Removal Note.) (See 04-13-10 ABS Hole Cover Installation Note.)

5	Connector
6	Rear ABS wheel-speed sensor wiring harness (See 04-13-10 Rear ABS Wheel-speed Sensor Wiring Harness Installation Note.)

ABS Hole Cover Removal Note

1. Press the tab of the ABS hole cover to separate the ABS hole cover from the body.
2. Remove the ABS hole cover from the body.

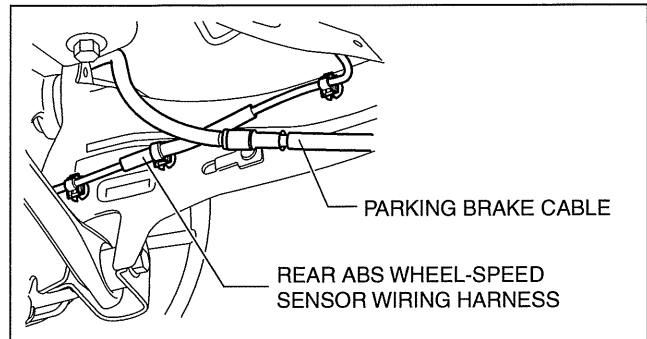


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ANTILOCK BRAKE SYSTEM

Rear ABS Wheel-speed Sensor Wiring Harness Installation Note

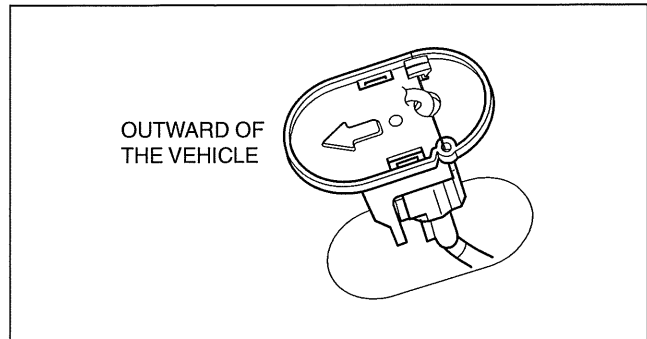
1. Pass the rear ABS wheel-speed sensor wiring harness outside the rear parking brake cable as shown in the figure.
2. Install the rear ABS wheel-speed sensor wiring harness.



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ABS Hole Cover Installation Note

1. Install the ABS hole cover into the body so that the arrow on it is facing toward the outer side of the vehicle.



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REAR ABS WHEEL-SPEED SENSOR INSPECTION

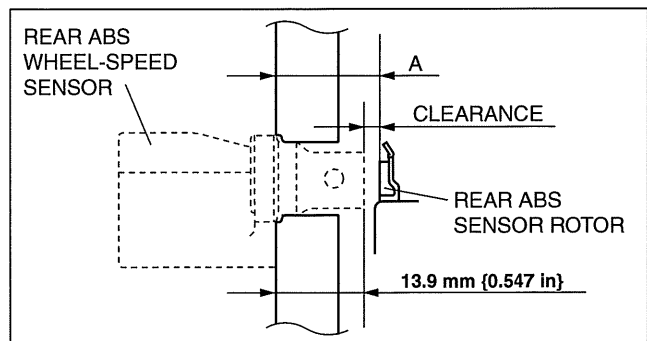
id041300801200

Installation Visual Inspection

1. Inspect for the following:
 - If there is any malfunction, replace the part.
 - (1) Excessive looseness or play of the rear ABS wheel-speed sensor
 - (2) Deformation of the rear ABS wheel-speed sensor
 - (3) Deformation or damage of the rear ABS sensor rotor

Clearance Inspection

1. Remove the rear ABS wheel-speed sensor.
2. Measure the distance between the rear ABS wheel-speed sensor installation surface and the rear ABS sensor rotor. This is dimension A.
3. Calculate the clearance between the rear ABS wheel-speed sensor and the rear ABS sensor rotor using the following formula:
Clearance (mm {in}) = A - 13.9 {0.547}
4. Verify that the clearance between the rear ABS sensor rotor and the rear ABS wheel-speed sensor is as indicated below.
 - If there is any malfunction, replace it.



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Clearance

1.46 mm {0.057 in} or less

Sensor Output Value Inspection

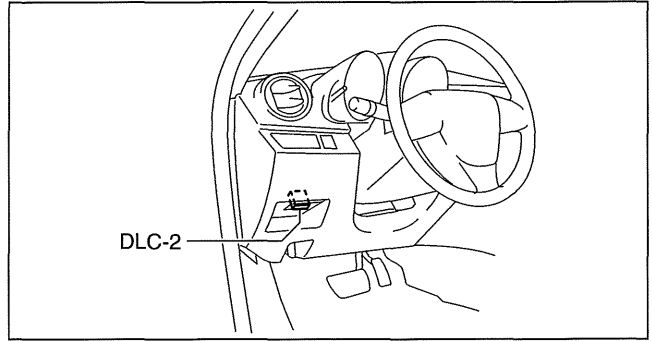
Caution

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the M-MDS to inspect the ABS wheel-speed sensor.

1. Switch the ignition to off.

ANTILOCK BRAKE SYSTEM

2. Connect the M-MDS to the DLC-2.
3. Select the following PIDs using the M-MDS:
 - WSPD_LR
(LR wheel-speed sensor)
 - WSPD_RR
(RR wheel-speed sensor)
4. Start the engine and drive the vehicle.
5. Verify that the display of the M-MDS shows the same value as the speedometer.
 - If there is any malfunction, replace the rear ABS wheel-speed sensor.



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04-15 DYNAMIC STABILITY CONTROL

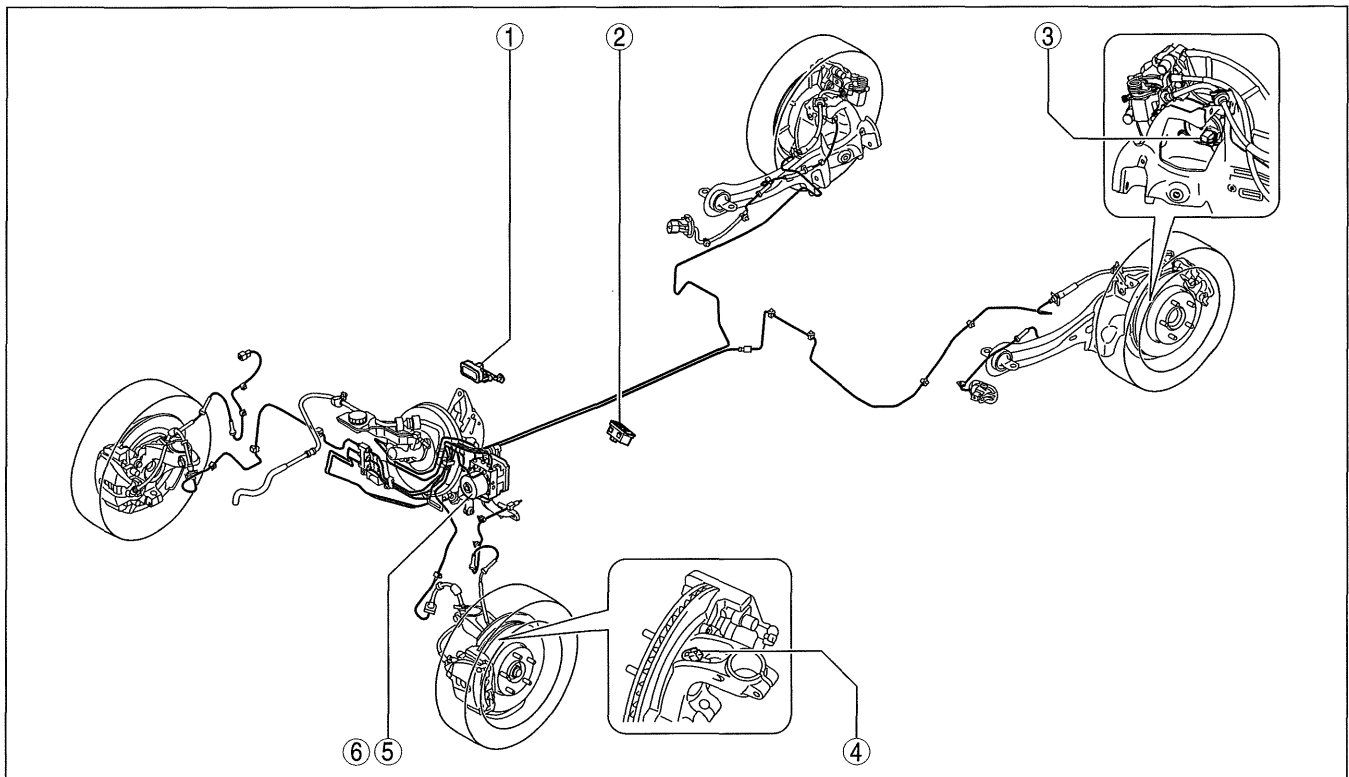
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DSC LOCATION INDEX

id041500802100



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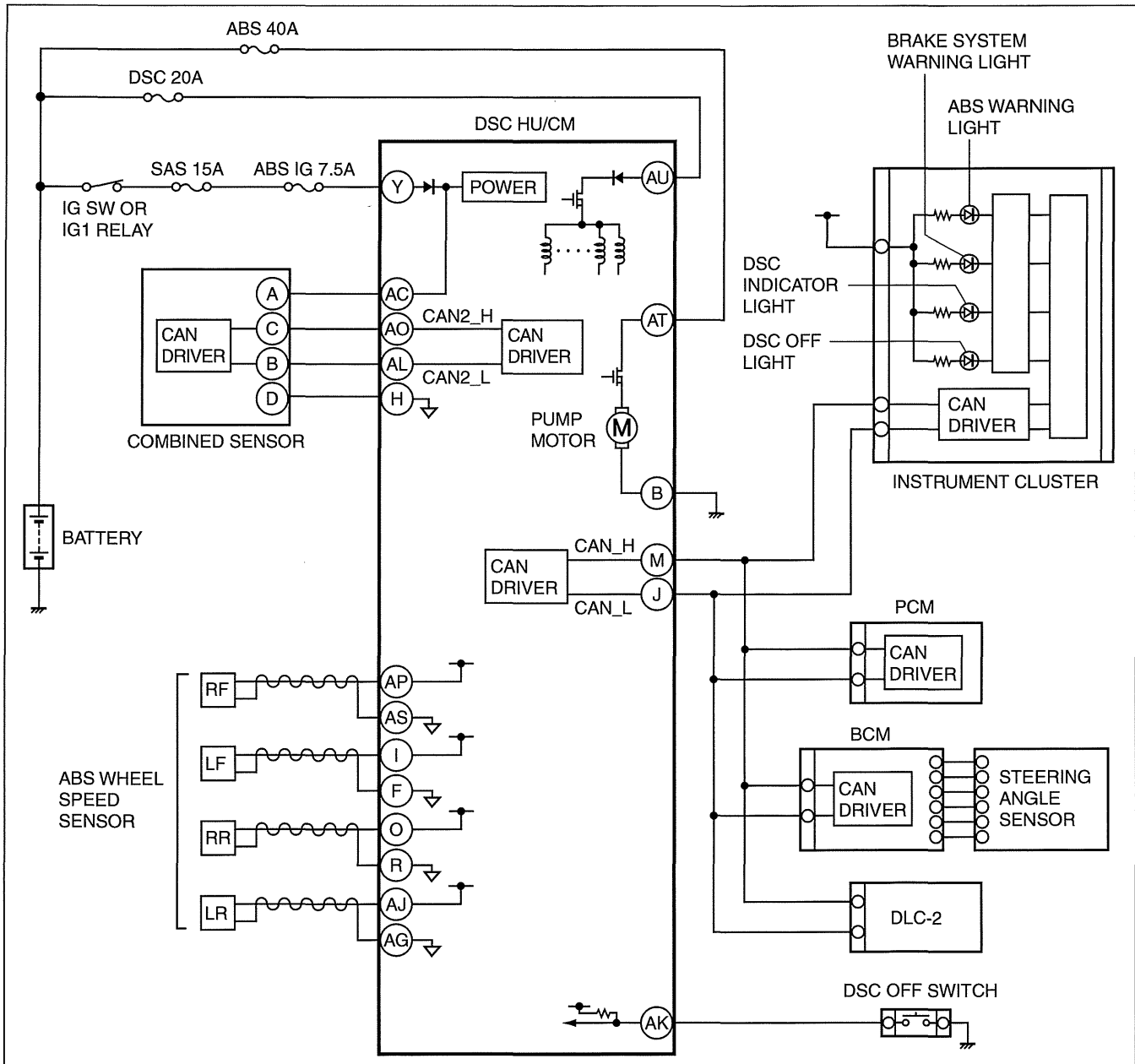
1	Combined sensor (See 04-15-7 COMBINED SENSOR REMOVAL/ INSTALLATION.) (See 04-15-8 COMBINED SENSOR INSPECTION.) (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)
2	DSC OFF switch (See 04-15-10 DSC OFF SWITCH REMOVAL/ INSTALLATION.) (See 04-15-10 DSC OFF SWITCH INSPECTION.)
3	Rear ABS wheel-speed sensor (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)

4	Front ABS wheel-speed sensor (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)
5	DSC HU/CM (See 04-15-2 DSC SYSTEM WIRING DIAGRAM.) (See 04-15-2 DSC HU/CM REMOVAL/ INSTALLATION.) (See 04-15-5 DSC HU/CM INSPECTION.)
6	Brake fluid pressure sensor (Built into DSC HU/CM) (See 04-15-9 BRAKE FLUID PRESSURE SENSOR INSPECTION.) (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)

DYNAMIC STABILITY CONTROL

DSC SYSTEM WIRING DIAGRAM

id041500800600



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DSC HU/CM REMOVAL/INSTALLATION

id041500801000

Caution

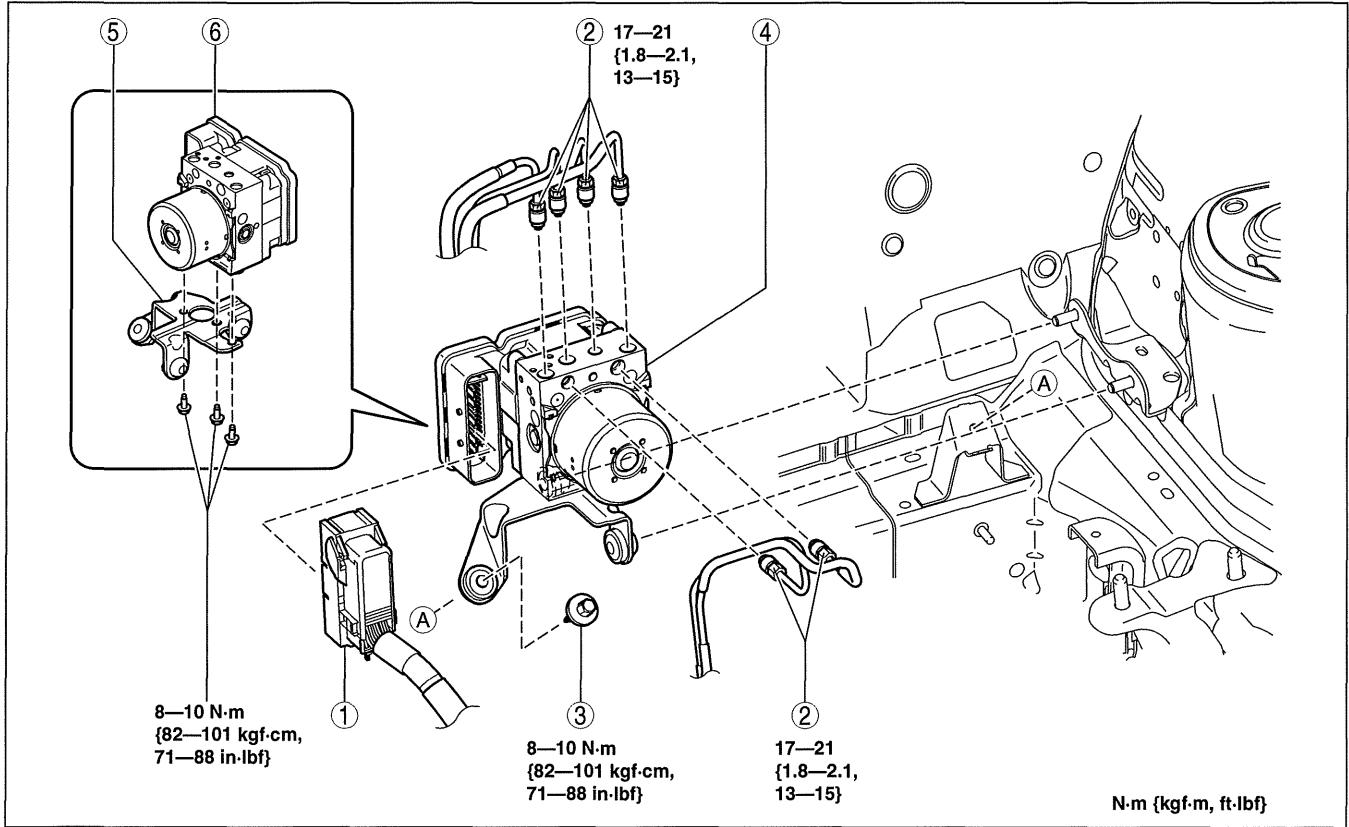
- The internal parts of the DSC HU/CM could be damaged if dropped. Be careful not to drop the DSC HU/CM. Replace the DSC HU/CM if it is subjected to an impact.
- If the DSC HU/CM configuration is not completed, it could result in an unexpected accident due to the DSC being inoperative. If the DSC HU/CM is replaced, always use the automatic configuration function so that the DSC operation conditions are correct.
- The DSC may not function normally immediately after the DSC HU/CM is replaced. After installation, always perform the initialization procedures for the combined sensor, brake fluid pressure sensor.

Note

- When the ignition is switched to ON or the engine is started after the DSC HU/CM have been replaced, the DSC CM reads data from the instrument cluster via CAN communication to perform automatic configuration.

DYNAMIC STABILITY CONTROL

1. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Switch the ignition to ON or start the engine, and maintain this condition for **approx. 30 s** to allow the DSC HU/CM automatic configuration to be performed.
5. Perform the initialization procedures for the combined sensor, brake fluid pressure sensor. (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)
6. Clear the DTCs from the memory. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)



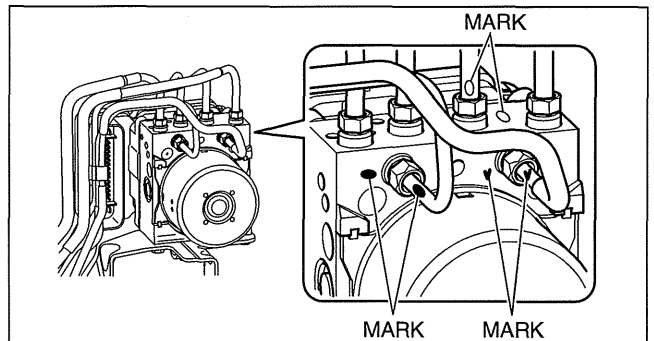
am3zzw0000723

1	Connector (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.)
2	Brake pipe (See 04-15-3 Brake Pipe Removal Note.) (See 04-15-4 Brake Pipe Installation Note.)
3	Bolt

4	DSC HU/CM, bracket (See 04-15-4 DSC HU/CM, Bracket Removal Note.)
5	Bracket
6	DSC HU/CM

Brake Pipe Removal Note

1. Place an alignment mark on the brake pipe and DSC HU/CM.
2. Apply protective tape to the connector to prevent brake fluid from entering.
3. Remove the brake pipe.



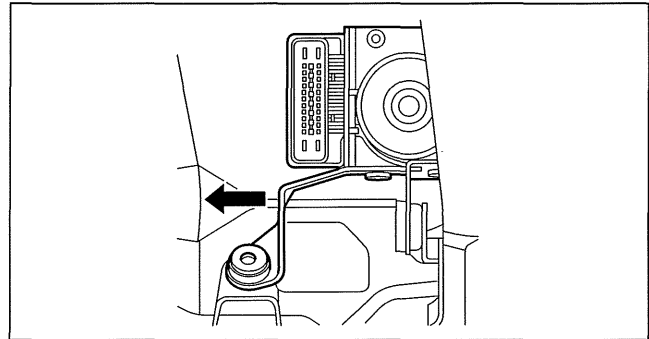
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04-15

DYNAMIC STABILITY CONTROL

DSC HU/CM, Bracket Removal Note

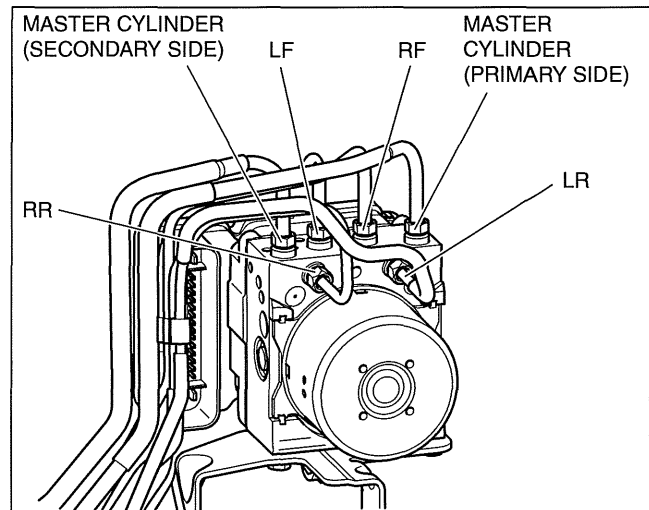
1. As shown in the figure, move the bracket in the direction of the arrow and remove the DSC HU/CM and bracket from the body.



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Brake Pipe Installation Note

1. Align the marks made before removal and install the brake pipe into the DSC HU/CM referring to the figure.



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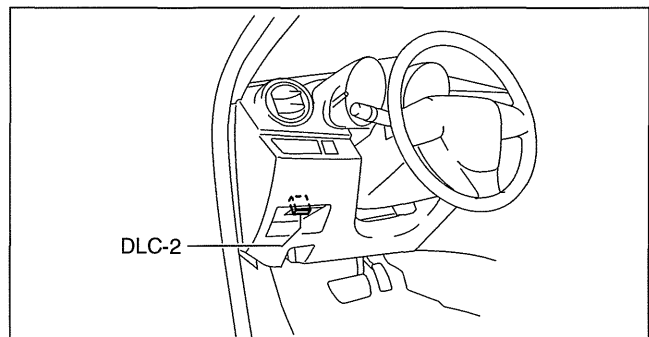
DSC SENSOR INITIALIZATION PROCEDURE

id041500870000

Warning

- If the initialization procedure is not completed, the DSC will not operate properly and it might cause an unexpected accident. Therefore, after replacing or removing the combined sensor or DSC HU/CM, make sure to perform the initialization procedure to insure proper DSC operation.

1. Inspect the wheel alignment and the tire pressure.
 - If there is any malfunction, adjust the applicable part.
2. Position the vehicle on level ground.
3. Switch the ignition to off.
4. Connect the M-MDS to DLC-2.
5. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Chassis".
 2. Select "ABS/DSC".
 3. Select "Sensor Initialization".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
 2. Select "Sensor Initialization".
6. Perform the procedure according to the directions on the screen.
7. Drive the vehicle.
8. After **5 min or more** of driving, verify that the DSC system is normal.



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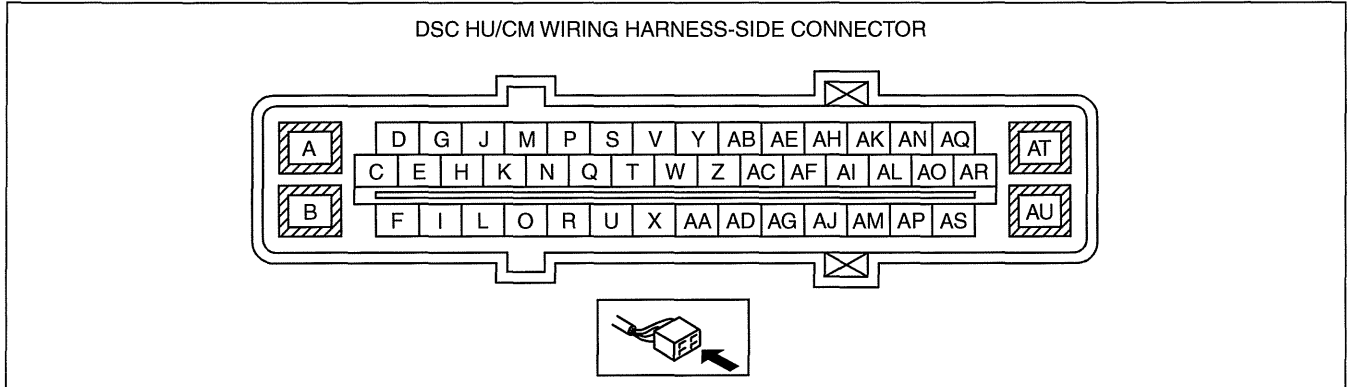
DYNAMIC STABILITY CONTROL

DSC HU/CM INSPECTION

id041500801100

1. Disconnect the DSC HU/CM connector. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
2. Connect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Attach the tester lead to the DSC HU/CM wiring harness-side connector and inspect voltage, continuity, or resistance according to the standard (reference) on the table.

Standard (Reference)



04-15

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Terminal	Signal name	Connected to	Measured item	Measured terminal (measurement condition)	Standard	Inspection item(s)
A	—	—	—	—	—	—
B	Ground	Ground point	Continuity	B—ground point	Continuity detected	<ul style="list-style-type: none"> Wiring harness (B—ground point)
C	—	—	—	—	—	—
D	—	—	—	—	—	—
E	—	—	—	—	—	—
F	LF wheel-speed sensor (-)	LF wheel-speed sensor	Continuity	F—LF ABS wheel-speed sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (F—LF ABS wheel-speed sensor terminal B)
G	—	—	—	—	—	—
H	Sensor ground	Combined sensor	Continuity	H—combined sensor terminal D	Continuity detected	<ul style="list-style-type: none"> Wiring harness (H—combined sensor terminal D)
I	LF wheel-speed sensor (+)	LF ABS wheel-speed sensor	Continuity	I—LF ABS wheel-speed sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (I—LF ABS wheel-speed sensor terminal A)
J	CAN_L	DLC-2 (CAN_L)	This terminal is used for communication and cannot be used for malfunction determination during terminal voltage inspection. Perform a DTC inspection.			
K	—	—	—	—	—	—
L	—	—	—	—	—	—
M	CAN_H	DLC-2 (CAN_H)	This terminal is used for communication and cannot be used for malfunction determination during terminal voltage inspection. Perform a DTC inspection.			
N	—	—	—	—	—	—
O	RR wheel-speed (+)	RR ABS wheel-speed sensor	Continuity	O—RR ABS wheel-speed sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (O—RR ABS wheel-speed sensor terminal A)
P	—	—	—	—	—	—
Q	—	—	—	—	—	—
R	RR wheel-speed (-)	RR ABS wheel-speed sensor	Continuity	R—RR ABS wheel-speed sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (R—RR ABS wheel-speed sensor terminal B)
S	—	—	—	—	—	—
T	—	—	—	—	—	—
U	—	—	—	—	—	—
V	—	—	—	—	—	—

DYNAMIC STABILITY CONTROL

Terminal	Signal name	Connected to	Measured item	Measured terminal (measurement condition)	Standard	Inspection item(s)
W	—	—	—	—	—	—
X	—	—	—	—	—	—
Y	Power supply (system)	Ignition switch or IG1 relay	Voltage	Switch the ignition to ON. Switch the ignition to off.	B+ 1 V or less	<ul style="list-style-type: none"> Wiring harness (Y—ignition switch or IG1 relay)
Z	—	—	—	—	—	—
AA	—	—	—	—	—	—
AB	—	—	—	—	—	—
AC	Sensor power supply	Combined sensor	Continuity	AC—combined sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AC—combined sensor terminal A)
AD	—	—	—	—	—	—
AE	—	—	—	—	—	—
AF	—	—	—	—	—	—
AG	LR wheel-speed (-)	LR wheel-speed sensor	Continuity	AG—LR ABS wheel-speed sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AG—LR ABS wheel-speed sensor terminal B)
AH	—	—	—	—	—	—
AI	—	—	—	—	—	—
AJ	LR wheel-speed (+)	LR ABS wheel-speed sensor	Continuity	AJ—LR ABS wheel-speed sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AJ—LR ABS wheel-speed sensor terminal A)
AK	DSC OFF switch	DSC OFF switch	Continuity	AK—DSC OFF switch terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AK—DSC OFF switch terminal B)
AL	CAN2_L	Combined sensor	Continuity	AL—combined sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AL—combined sensor terminal B)
AM	—	—	—	—	—	—
AN	—	—	—	—	—	—
AO	CAN2_H	Combined sensor	Continuity	AO—combined sensor terminal C	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AO—combined sensor terminal C)
AP	RF wheel-speed (+)	RF ABS wheel-speed sensor	Continuity	AP—RF ABS wheel-speed sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AP—RF ABS wheel-speed sensor terminal A)
AQ	—	—	—	—	—	—
AR	—	—	—	—	—	—
AS	RF wheel-speed (-)	RF ABS wheel-speed sensor	Continuity	AS—RF ABS wheel-speed sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AS—RF ABS wheel-speed sensor terminal B)
AT	Power supply (ABS motor operation)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none"> Wiring harness (AT—battery)
AU	Power supply (solenoid operation)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none"> Wiring harness (AU—battery)

FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

id041500800300

1. Remove or install the front ABS wheel-speed sensor in the same order of vehicles with ABS. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)

FRONT ABS WHEEL-SPEED SENSOR INSPECTION

id041500800400

1. Inspect the front ABS wheel-speed sensor in the same order of vehicles with ABS. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)

DYNAMIC STABILITY CONTROL

REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

id041500800100

1. Remove or install the rear ABS wheel-speed sensor in the same order of vehicles with ABS. (See 04-13-9 REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)

REAR ABS WHEEL-SPEED SENSOR INSPECTION

id041500800200

1. Inspect the rear ABS wheel-speed sensor in the same order of vehicles with ABS. (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)

COMBINED SENSOR REMOVAL/INSTALLATION

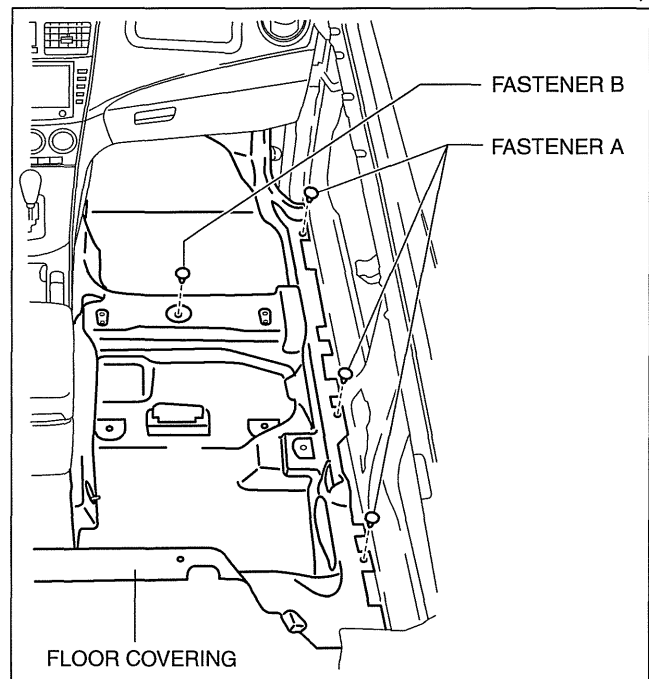
id041500801200

Caution

- The DSC may not function normally immediately after the combined sensor is replaced. After installation, always perform the initialization procedures for the combined sensor.
- The internal parts of the combined sensor could be damaged if dropped. Be careful not to drop the combined sensor. Replace the combined sensor if it is subjected to an impact. Also, do not use an impact wrench or other similar air tools when removing/installing the sensor.

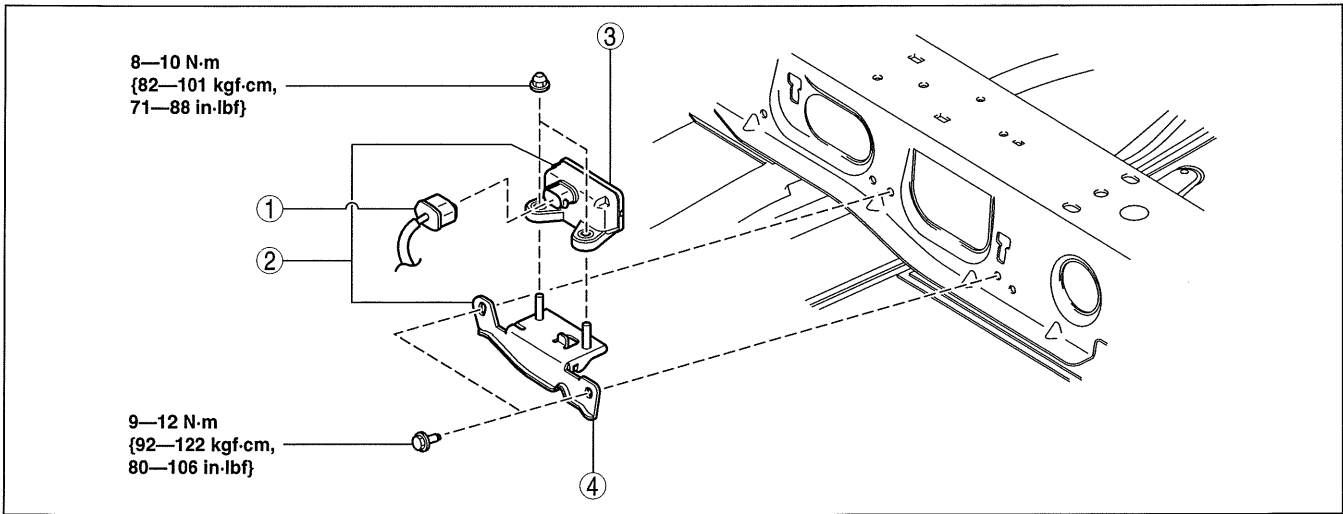
04-15

1. Perform the following procedures:
 - (1) Remove the front seat (RH). (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
 - (2) Remove the audio amplifier. (With Bose®) (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.)
 - (3) Remove the front scuff plate (RH). (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Remove the front side trim (RH). (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (5) Remove the rear scuff plate (RH). (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (6) Remove the B-pillar lower trim (RH). (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (7) Remove the fastener A and fastener B.
2. Partially peel back the floor covering.
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. After installation, perform the combined sensor initialization procedure. (See 04-15-4 DSC SENSOR INITIALIZATION PROCEDURE.)



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DYNAMIC STABILITY CONTROL



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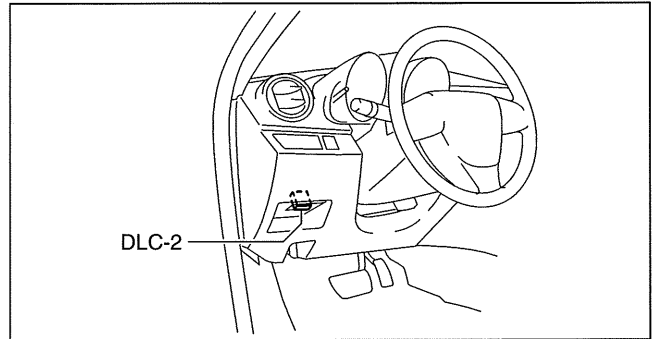
1	Combined sensor connector
2	Combined sensor, bracket

3	Combined sensor
4	Bracket

COMBINED SENSOR INSPECTION

id041500801300

1. Switch the ignition to off.
 2. Connect the M-MDS to the DLC-2.
 3. Select the following PIDs and inspect the lateral acceleration and yaw rate. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
 - LAT_ACCL (lateral acceleration)
 - YAW_RATE (yaw rate)
- (1) Lateral acceleration inspection



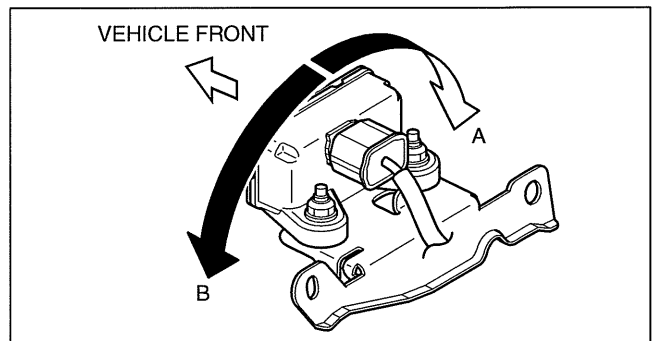
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- 1) Verify the LAT_ACCL change when the combined sensor is tilted to the left and right.
 - If there is any malfunction, replace the combined sensor. (See 04-15-7 COMBINED SENSOR REMOVAL/INSTALLATION.)

Standard

When the sensor is tilted to the right (A):
LAT_ACCL changes positively.

When the sensor is tilted to the left (B):
LAT_ACCL changes negatively.



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DYNAMIC STABILITY CONTROL

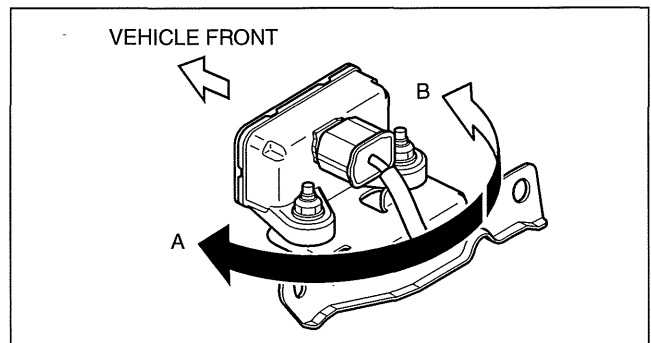
(2) Yaw rate inspection

- 1) Verify the YAW_RATE change when the combined sensor is rotated to the left and right.
 - If there is any malfunction, replace the combined sensor. (See 04-15-7 COMBINED SENSOR REMOVAL/INSTALLATION.)

Standard

When the sensor is rotated to the right (A):
YAW_RATE changes negatively.

When the sensor is rotated to the left (B):
YAW_RATE changes positively.



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04-15

BRAKE FLUID PRESSURE SENSOR INSPECTION

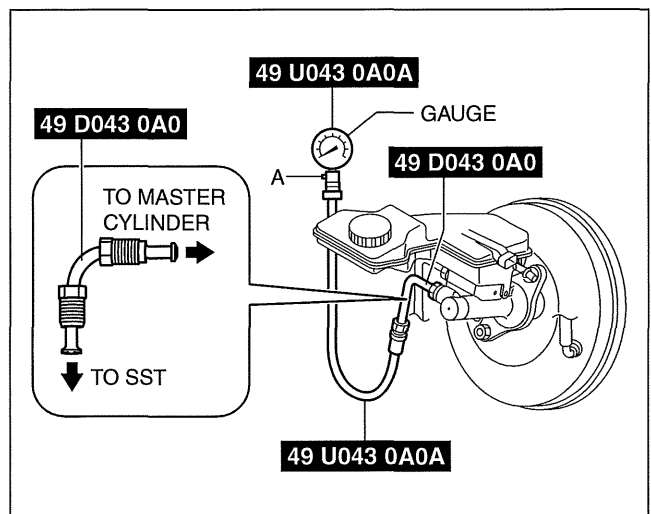
id041500801500

1. Switch the ignition to off.
2. Install the **SSTs** to the master cylinder (secondary side) as shown in the figure.

Note

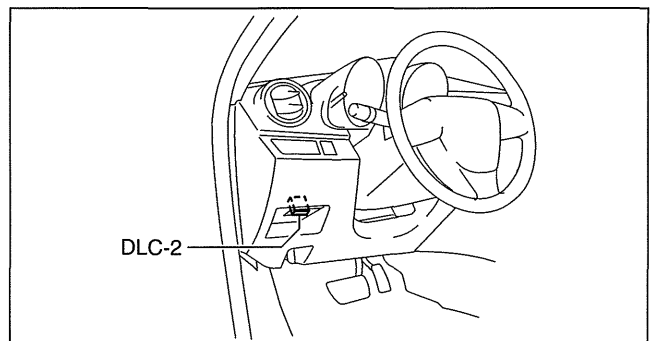
- When installing the **SST** (49 D043 0A0) to the master cylinder, use a commercially available flare nut wrench (flare nut across flat 12 mm {0.47 in}).

3. Bleed the brake line and the **SSTs** of air. (Bleed the **SSTs** of air using air bleed valve A.)



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4. Connect the M-MDS to the DLC-2.
5. Select the "MCYLI_P" PID. (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
6. Start the engine.
7. Depress the brake pedal, and verify that the fluid pressure value of the **SST** (gauge) and the value shown on the M-MDS are equal.
 - If the fluid pressure values are different, replace the DSC HU/CM. (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)



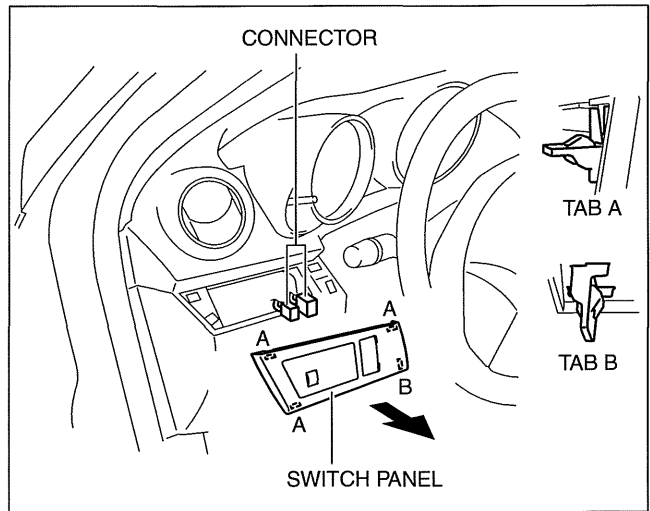
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DYNAMIC STABILITY CONTROL

DSC OFF SWITCH REMOVAL/INSTALLATION

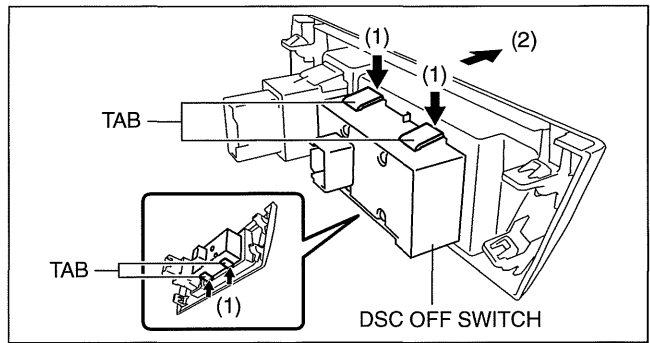
id041500801900

1. Remove the switch panel in the direction of the arrow shown in the figure.
2. Disconnect the connector.



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3. Remove the DSC OFF switch in the direction of the arrow (2) shown in the figure while pressing the tabs in the direction of the arrow (1).
4. Remove the DSC OFF switch.
5. Install in the reverse order of removal.



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DSC OFF SWITCH INSPECTION

id041500802000

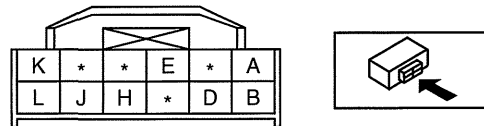
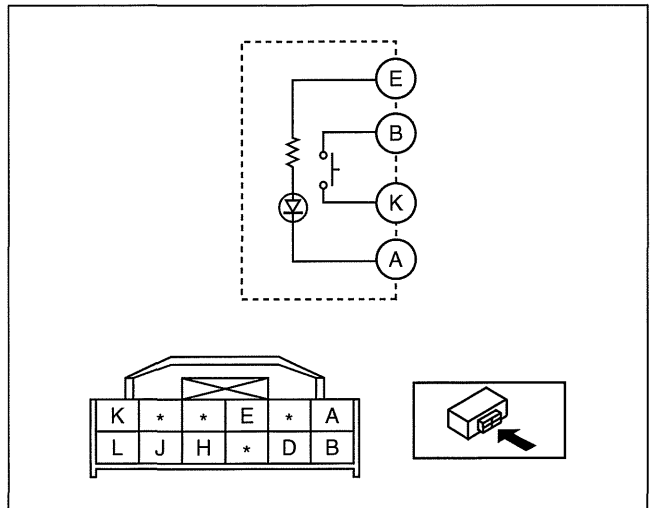
1. Remove the DSC OFF switch. (See 04-15-10 DSC OFF SWITCH REMOVAL/INSTALLATION.)
2. Verify that the continuity between the DSC OFF switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the DSC OFF switch.

○—○: Continuity

Condition	Terminal	
	B	K
Switch pressed	○—○	○—○
Switch released		

am6xuw0000014

3. Apply battery voltage to DSC OFF switch terminal E, and connect terminal A to ground.
4. Verify that the LED illuminates.
 - If there is any malfunction, replace the DSC OFF switch.



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TECHNICAL DATA

04-50 TECHNICAL DATA

BRAKES TECHNICAL DATA 04-50-1

BRAKES TECHNICAL DATA

id045000800100

Item	Specification
Brake fluid type	SAE J1703, FMVSS 116 DOT-3
Brake pedal height (reference value)	LF, L5: 125.0 mm {4.921 in} L3 WITH TC: 128.9 mm {5.075 in}
Brake pedal play	4.0—8.4 mm {0.16—0.33 in}
Brake pedal-to-floor clearance (Brake pedal when depressed at 147 N {15.0 kgf, 33.0 lbf})	LF, L5: 83.5 mm {3.29 in} or more L3 WITH TC: 88.6 mm {3.49 in} or more
Front disc plate runout limit	0.05 mm {0.002 in}
Minimum front disc plate thickness	23 mm {0.91 in}
Minimum front disc plate thickness after machining using a brake lathe on-vehicle	23.8 mm {0.937 in}
Minimum front disc pad thickness	2.0 mm {0.079 in} min.
Rear disc plate runout limit	0.05 mm {0.002 in}
Minimum rear disc plate thickness	9 mm {0.35 in}
Minimum rear disc plate thickness after machining using a brake lathe on-vehicle	9.8 mm {0.39 in}
Minimum rear disc pad thickness	2.0 mm {0.079 in} min.
Parking brake lever stroke when pulled at 98 N {10 kgf, 22 lbf}	2—6 notches

04-50

Master cylinder fluid pressure

Vacuum amount at 0 kPa {0 mmHg, 0 inHg}	
Pedal force	Fluid pressure
200 N {20.4 kgf, 45.0 lbt}	500 kPa {5.10 kgf/cm ² , 72.5 psi} or more

Master cylinder fluid pressure (LF, L5)

Vacuum amount at 66.7 kPa {500 mmHg, 19.7 inHg}	
Pedal force	Fluid pressure
200 N {20.4 kgf, 45.0 lbt}	6,500 kPa {66.28 kgf/cm ² , 942.7 psi} or more

Master cylinder fluid pressure (L3 WITH TC)

Vacuum amount at 66.7 kPa {500 mmHg, 19.7 inHg}	
Pedal force	Fluid pressure
200 N {20.4 kgf, 45.0 lbt}	7,000 kPa {71.38 kgf/cm ² , 1,015 psi} or more

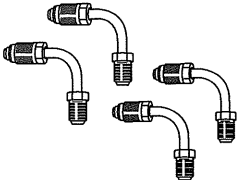
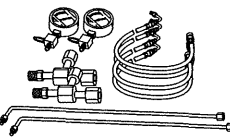

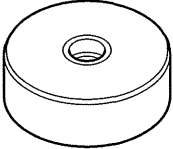
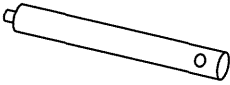
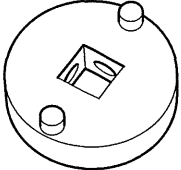
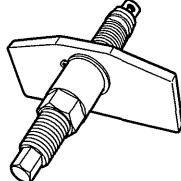
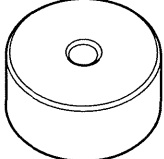
SERVICE TOOLS

04-60 SERVICE TOOLS

BRAKES SST 04-60-1

BRAKES SST

id046000800100

<p>49 D043 0A0 Adapter set</p> 	<p>49 U043 0A0A Oil pressure gauge set</p> 	<p>49 0221 600C Disc brake expand tool</p> 
<p>49 B033 001 Installer</p> 	<p>49 G033 102 Handle</p> 	<p>49 F043 002 Wrench</p> 
<p>49 B043 005 Compressor</p> 	<p>49 B026 301 Installer</p> 	<p>—</p>

04-60

TRANSMISSION/TRANSAXLE

05
SECTION

ON-BOARD DIAGNOSTIC		MANUAL TRANSAXLE	
[FS5A-EL]	05-02	[A26M-R]	05-15C
SYMPTOM		MANUAL TRANSAXLE SHIFT	
TROUBLESHOOTING		MECHANISM	05-16
[FS5A-EL]	05-03	AUTOMATIC TRANSAXLE	
CLUTCH	05-10	[FS5A-EL]	05-17
MANUAL TRANSAXLE		AUTOMATIC	
[G35M-R]	05-15A	TRANSAXLE SHIFT	
MANUAL TRANSAXLE		MECHANISM	05-18
[G66M-R]	05-15B	TECHNICAL DATA	05-50
		SERVICE TOOLS	05-60

05-02

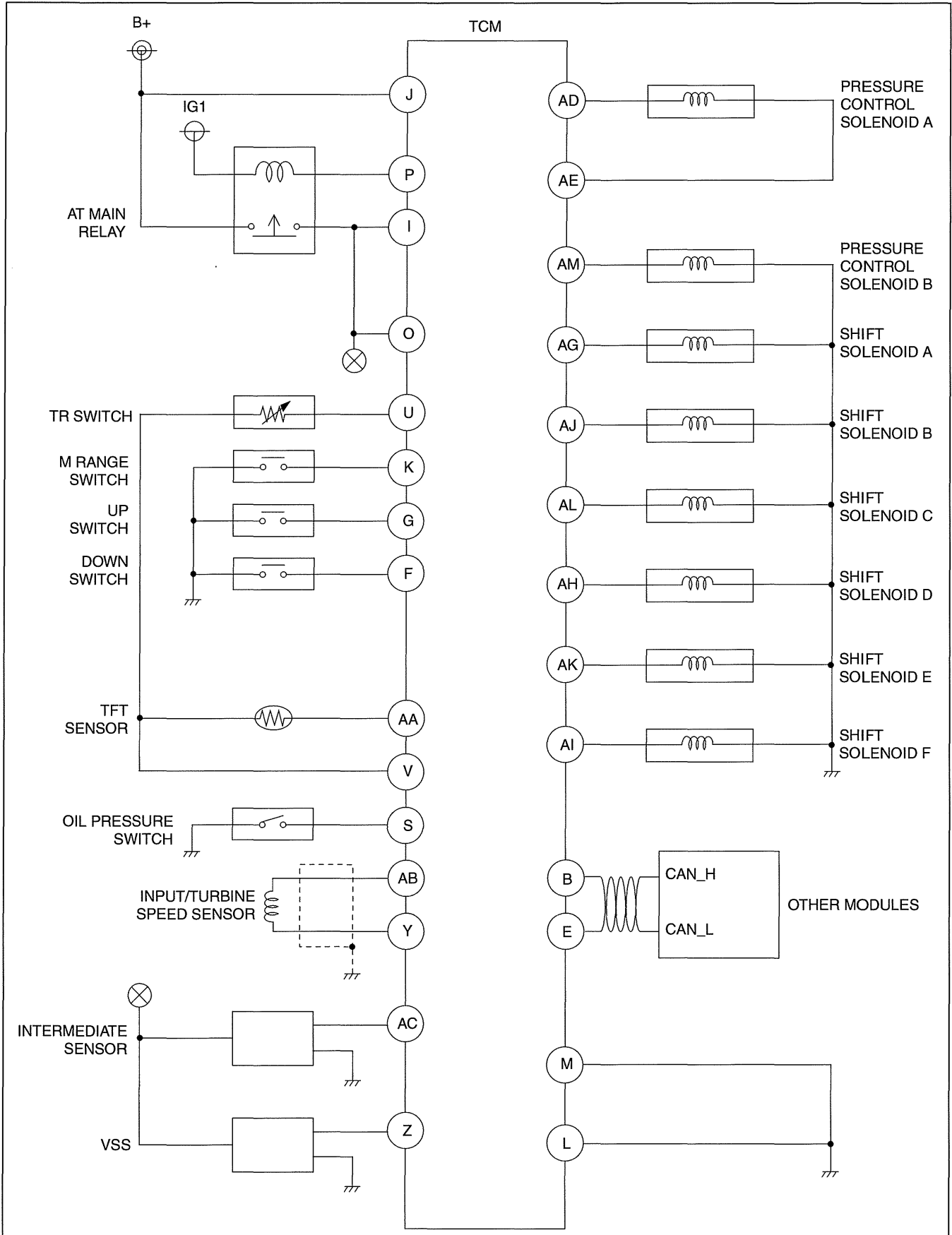
05-02 ON-BOARD DIAGNOSTIC [FS5A-EL]

ON-BOARD DIAGNOSTIC SYSTEM		DTC P0744:00 [FS5A-EL]	05-02-38
WIRING DIAGRAM [FS5A-EL]	05-02-2	DTC P0745:00 [FS5A-EL]	05-02-39
ON-BOARD DIAGNOSTIC SYSTEM DTC		DTC P0751:00 [FS5A-EL]	05-02-42
INSPECTION [FS5A-EL]	05-02-3	DTC P0752:00 [FS5A-EL]	05-02-43
Reading DTCs Procedure	05-02-3	DTC P0753:00 [FS5A-EL]	05-02-45
Clearing DTCs Procedure	05-02-4	DTC P0756:00 [FS5A-EL]	05-02-47
ON-BOARD DIAGNOSTIC SYSTEM		DTC P0757:00 [FS5A-EL]	05-02-48
DTC TABLE [FS5A-EL]	05-02-4	DTC P0758:00 [FS5A-EL]	05-02-50
ON-BOARD DIAGNOSTIC SYSTEM		DTC P0761:00 [FS5A-EL]	05-02-52
PID/DATA MONITOR INSPECTION		DTC P0762:00 [FS5A-EL]	05-02-53
[FS5A-EL]	05-02-5	DTC P0763:00 [FS5A-EL]	05-02-55
ON-BOARD DIAGNOSTIC SYSTEM		DTC P0766:00 [FS5A-EL]	05-02-57
SIMULATION INSPECTION		DTC P0767:00 [FS5A-EL]	05-02-58
[FS5A-EL]	05-02-8	DTC P0768:00 [FS5A-EL]	05-02-60
DTC P06B8:00 [FS5A-EL]	05-02-9	DTC P0771:00 [FS5A-EL]	05-02-62
DTC P0706:00 [FS5A-EL]	05-02-9	DTC P0772:00 [FS5A-EL]	05-02-63
DTC P0707:00 [FS5A-EL]	05-02-11	DTC P0773:00 [FS5A-EL]	05-02-65
DTC P0708:00 [FS5A-EL]	05-02-13	DTC P0777:00 [FS5A-EL]	05-02-67
DTC P0711:00 [FS5A-EL]	05-02-15	DTC P0778:00 [FS5A-EL]	05-02-68
DTC P0712:00 [FS5A-EL]	05-02-17	DTC P0791:00 [FS5A-EL]	05-02-70
DTC P0713:00 [FS5A-EL]	05-02-19	DTC P0841:00 [FS5A-EL]	05-02-72
DTC P0715:00 [FS5A-EL]	05-02-21	DTC P0882:00 [FS5A-EL]	05-02-74
DTC P0720:00 [FS5A-EL]	05-02-23	DTC P0883:00 [FS5A-EL]	05-02-76
DTC P0731:00 [FS5A-EL]	05-02-26	DTC P0884:00 [FS5A-EL]	05-02-77
DTC P0732:00 [FS5A-EL]	05-02-27	DTC P0894:00 [FS5A-EL]	05-02-79
DTC P0733:00 [FS5A-EL]	05-02-29	DTC P1783:00 [FS5A-EL]	05-02-80
DTC P0734:00 [FS5A-EL]	05-02-31	DTC P2707:00 [FS5A-EL]	05-02-81
DTC P0735:00 [FS5A-EL]	05-02-33	DTC P2708:00 [FS5A-EL]	05-02-83
DTC P0741:00 [FS5A-EL]	05-02-35	DTC P2709:00 [FS5A-EL]	05-02-84
DTC P0742:00 [FS5A-EL]	05-02-37		

ON-BOARD DIAGNOSTIC [FS5A-EL]

ON-BOARD DIAGNOSTIC SYSTEM WIRING DIAGRAM [FS5A-EL]

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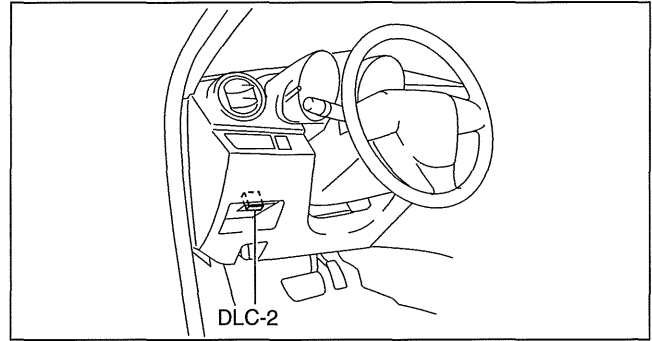
ON-BOARD DIAGNOSTIC [FS5A-EL]

ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL]

id050221290100

Reading DTCs Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "TCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "TCM".
 3. Select "Self Test".



am3uuw0000261

Note

- Freeze frame data/snapshot data appears at the top of the help screen when the displayed DTC is selected.

Freeze frame data

- The freeze frame data consists of data for vehicle and transaxle control system operation conditions when malfunctions in the transaxle control system are detected and stored in the TCM.
- Freeze frame data is stored at the instant the malfunction indicator lamp illuminates, and only a part of the DTC data is stored.
- For the freeze frame data, if there are several malfunctions in the transaxle control system, the data for the malfunction which occurred initially is stored. Thereafter, if a misfire or fuel injection control malfunction occurs, data from the misfire or fuel injection control malfunction is written over the initially stored data. However, if the initially stored freeze frame data is a misfire or fuel injection control malfunction, it is not overwritten.

Snapshot data

- The snap shot data stores the currently detected DTC data.
- The recording timing for the freeze frame data/snap shot data differs depending on the number of DTC drive cycles.
 - For a DTC with a drive cycle number 1, only the malfunction determination data is recorded.
 - For a DTC with a drive cycle number 2, both the malfunction determination and undetermined data is recorded.

3. Verify the DTC according to the directions on the M-MDS screen.

Freeze frame data table

Note

- Refer to PID monitor table for confirm the transaxle control system operation status while the TCM does not store the DTC. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL])
- Freeze frame data items are not displayed, according to detected DTC.

Freeze frame data item	Unit	Description	Corresponding PID data monitor item
LOAD	%	Calculated engine load	—
ECT	°C {°F}	Engine coolant temperature	ECT
RPM	RPM	Engine speed	RPM
VS	KPH {MPH}	Vehicle speed	VSS
SPARKADV	°	Ignition timing	—
IAT	°C {°F}	Intake air temperature	—
TP	%	Throttle valve position No.1	THOP
RUNTM	hh:mm:ss	Time from engine start	—
WARMUPS	—	Number of warm-up cycle after DTC cleared	—
CLRDIST	Km {mile}	Mileage after DTC cleared	—
VPWR	V	Module supply voltage	VPWR
APP_D	%	Accelerator pedal position No.1	—

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Snapshot data table

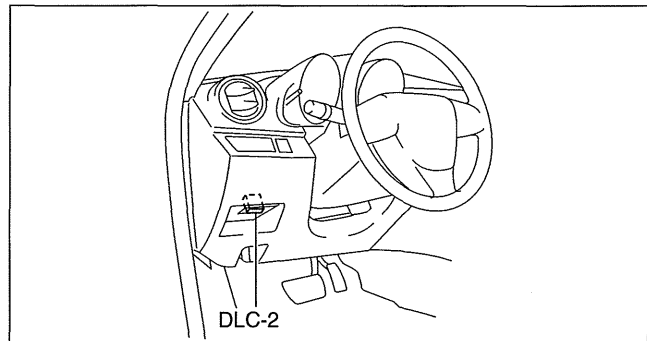
Note

- Refer to PID monitor table for confirm the transaxle control system operation status while the TCM does not store the DTC. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL])
- Snapshot data items are not displayed, according to detected DTC.

Snapshot data item	Unit	Definition	Corresponding PID data monitor item
LOAD	%	Calculated engine load	—
ECT	°C {°F}	Engine coolant temperature	ECT
RPM	RPM	Engine speed	RPM
VSS	KPH {MPH}	Vehicle speed	VSS
SPARKADV	°	Ignition timing	—
IAT	°C {°F}	Intake air temperature	—
TP1	%	Throttle valve position No.1	THOP
EG_RUN_TIME	—	Time from engine start	—
CLR_CNT	—	Number of warm-up cycle after DTC cleared	—
CLR_DIST	Km {mile}	Mileage after DTC cleared	—
VPWR	V	Module supply voltage	VPWR
APP1	%	Accelerator pedal position No.1	—

Clearing DTCs Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "TCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "TCM".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the M-MDS screen.
4. Press the clear button on the DTC screen to clear the DTC.



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ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL]

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DTC No.	Definition	Page
P06B8:00	NVRAM malfunction	(See 05-02-9 DTC P06B8:00 [FS5A-EL].)
P0706:00	TR switch circuit range/performance	(See 05-02-9 DTC P0706:00 [FS5A-EL].)
P0707:00	TR switch circuit low input	(See 05-02-11 DTC P0707:00 [FS5A-EL].)
P0708:00	TR switch circuit high input	(See 05-02-13 DTC P0708:00 [FS5A-EL].)
P0711:00	TFT sensor circuit range/performance	(See 05-02-15 DTC P0711:00 [FS5A-EL].)
P0712:00	TFT sensor circuit low input	(See 05-02-17 DTC P0712:00 [FS5A-EL].)
P0713:00	TFT sensor circuit high input	(See 05-02-19 DTC P0713:00 [FS5A-EL].)
P0715:00	Input/turbine speed sensor circuit malfunction	(See 05-02-21 DTC P0715:00 [FS5A-EL].)
P0720:00	VSS circuit malfunction	(See 05-02-23 DTC P0720:00 [FS5A-EL].)
P0731:00	Gear 1 incorrect ratio	(See 05-02-26 DTC P0731:00 [FS5A-EL].)
P0732:00	Gear 2 incorrect ratio	(See 05-02-27 DTC P0732:00 [FS5A-EL].)
P0733:00	Gear 3 incorrect ratio	(See 05-02-29 DTC P0733:00 [FS5A-EL].)
P0734:00	Gear 4 incorrect ratio	(See 05-02-31 DTC P0734:00 [FS5A-EL].)
P0735:00	Gear 5 incorrect ratio	(See 05-02-33 DTC P0735:00 [FS5A-EL].)
P0741:00	TCC stuck off	(See 05-02-35 DTC P0741:00 [FS5A-EL].)
P0742:00	TCC stuck on	(See 05-02-37 DTC P0742:00 [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC No.	Definition	Page
P0744:00	TCC slip control malfunction	(See 05-02-38 DTC P0744:00 [FS5A-EL].)
P0745:00	Pressure control solenoid A malfunction	(See 05-02-39 DTC P0745:00 [FS5A-EL].)
P0751:00	Shift solenoid A stuck off	(See 05-02-42 DTC P0751:00 [FS5A-EL].)
P0752:00	Shift solenoid A stuck on	(See 05-02-43 DTC P0752:00 [FS5A-EL].)
P0753:00	Shift solenoid A electrical malfunction	(See 05-02-45 DTC P0753:00 [FS5A-EL].)
P0756:00	Shift solenoid B stuck off	(See 05-02-47 DTC P0756:00 [FS5A-EL].)
P0757:00	Shift solenoid B stuck on	(See 05-02-48 DTC P0757:00 [FS5A-EL].)
P0758:00	Shift solenoid B electrical malfunction	(See 05-02-50 DTC P0758:00 [FS5A-EL].)
P0761:00	Shift solenoid C stuck off	(See 05-02-52 DTC P0761:00 [FS5A-EL].)
P0762:00	Shift solenoid C stuck on	(See 05-02-53 DTC P0762:00 [FS5A-EL].)
P0763:00	Shift solenoid C electrical malfunction	(See 05-02-55 DTC P0763:00 [FS5A-EL].)
P0766:00	Shift solenoid D stuck off	(See 05-02-57 DTC P0766:00 [FS5A-EL].)
P0767:00	Shift solenoid D stuck on	(See 05-02-58 DTC P0767:00 [FS5A-EL].)
P0768:00	Shift solenoid D electrical malfunction	(See 05-02-60 DTC P0768:00 [FS5A-EL].)
P0771:00	Shift solenoid E stuck off	(See 05-02-62 DTC P0771:00 [FS5A-EL].)
P0772:00	Shift solenoid E stuck on	(See 05-02-63 DTC P0772:00 [FS5A-EL].)
P0773:00	Shift solenoid E electrical malfunction	(See 05-02-65 DTC P0773:00 [FS5A-EL].)
P0777:00	Pressure control solenoid B stuck on	(See 05-02-67 DTC P0777:00 [FS5A-EL].)
P0778:00	Pressure control solenoid B electrical malfunction	(See 05-02-68 DTC P0778:00 [FS5A-EL].)
P0791:00	Intermediate sensor circuit malfunction	(See 05-02-70 DTC P0791:00 [FS5A-EL].)
P0841:00	Oil pressure switch circuit malfunction	(See 05-02-72 DTC P0841:00 [FS5A-EL].)
P0882:00	Battery back-up voltage low	(See 05-02-74 DTC P0882:00 [FS5A-EL].)
P0883:00	Battery voltage high	(See 05-02-76 DTC P0883:00 [FS5A-EL].)
P0884:00	Battery voltage low	(See 05-02-77 DTC P0884:00 [FS5A-EL].)
P0894:00	Transaxle component slipping	(See 05-02-79 DTC P0894:00 [FS5A-EL].)
P1783:00	ATF high oil temperature malfunction	(See 05-02-80 DTC P1783:00 [FS5A-EL].)
P2707:00	Shift solenoid F stuck off	(See 05-02-81 DTC P2707:00 [FS5A-EL].)
P2708:00	Shift solenoid F stuck on	(See 05-02-83 DTC P2708:00 [FS5A-EL].)
P2709:00	Shift solenoid F electrical malfunction	(See 05-02-84 DTC P2709:00 [FS5A-EL].)
U0073:00	Module communication error (CAN bus)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0100:00	PCM communication error	
U0121:00	Lost communication with ABS HU/CM or DSC HU/CM	

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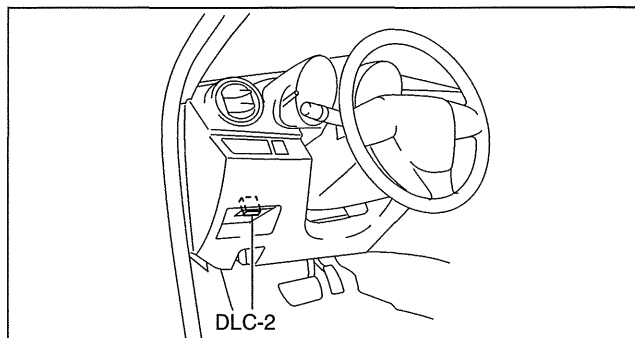
ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL]

Id050221290300

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

- Connect the M-MDS to the DLC-2.
- After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "TCM".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "TCM".
 - Select "DataLogger".
- Select the applicable PID from the PID table.
- Verify the PID data according to the detections on the screen.



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ON-BOARD DIAGNOSTIC [FS5A-EL]

PID/DATA Monitor Table (Reference)

Monitor item	Unit/ Condition	Test condition	Specification	Inspection item
DWN SW	On/Off	Selector lever at shift down position	On	<ul style="list-style-type: none"> Down switch (See 05-17-19 DOWN SWITCH INSPECTION [FS5A-EL].) Related harness
		Except selector lever at shift down position	Off	
ECT	°C {°F}	ECT 20°C {68°F}	Approx.20°C {68°F}	<ul style="list-style-type: none"> PCM (See 01-40A-8 PCM INSPECTION [LF, L5].)
GEAR_RA	—	1GR	Approx.3.620	<ul style="list-style-type: none"> Following PIDs: <ul style="list-style-type: none"> — SSA/SS1 — SSB/SS2 — SSC/SS3 — SSD/SS4 — SSE_SS5 — SSF_SS6
		2GR	Approx.1.925	
		3GR	Approx.1.285	
		4GR	Approx.0.933	
		5GR	Approx.0.692	
GEAR_SEL	1st/2nd/3rd/ 4th/5th	1GR	1st	<ul style="list-style-type: none"> Following PIDs: <ul style="list-style-type: none"> — SSA/SS1 — SSB/SS2 — SSC/SS3 — SSD/SS4 — SSE_SS5 — SSF_SS6
		2GR	2nd	
		3GR	3rd	
		4GR	4th	
		5GR	5th	
HTM_CNT	—	This PID indicates number of high oil temperature mode operations. High oil temperature mode is switched when ATF reaches approx. 130 °C {266 °F} or more.		
HTM_DIS	km {mile}	This PID indicates travel distance after operation of high oil temperature mode. High oil temperature mode is switched when ATF reaches approx. 130 °C {266 °F} or more.		
ISS	RPM	Vehicle stopped	0 RPM	<ul style="list-style-type: none"> Intermediate sensor (See 05-17-25 INTERMEDIATE SENSOR INSPECTION [FS5A-EL].) Related harness
		Vehicle speed 30 km/h {19 mph} in 3GR	Approx.1,300 RPM	
LINEDES	Pa {kgf/cm ² , psi}	Idle at P position after warm-up	Approx.400 kPa {4.08 kgf/cm ² , 58.0 psi}	<ul style="list-style-type: none"> Following PIDs: <ul style="list-style-type: none"> — SSA/SS1 — SSB/SS2 — SSC/SS3 — SSD/SS4 — SSE_SS5 — SSF_SS6
		Engine speed 2,000 rpm at P position	Approx.560 kPa {5.71 kgf/cm ² , 81.2 psi}	
LPS	A	Idle at P position after warm-up	Approx.950 mA	<ul style="list-style-type: none"> Pressure control solenoid A (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		Engine speed 2,000 rpm at P position	Approx.830 mA	
LPSB	%	Gear shifting from 4GR to 5GR	Approx.100 %	<ul style="list-style-type: none"> Pressure control solenoid B (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		Gear shifting from 5GR to 4GR	Approx.50 %	
		Other conditions	0 %	
MNL SW	On/Off	Selector lever at P position	Off	<ul style="list-style-type: none"> M range switch (See 05-17-18 M RANGE SWITCH INSPECTION [FS5A-EL].) Related harness
		Selector lever at R position	Off	
		Selector lever at N position	Off	
		Selector lever at D range	Off	
		Selector lever at M range	On	
OP_SW_B	On/Off	1GR	On	<ul style="list-style-type: none"> Oil pressure switch (See 05-17-22 OIL PRESSURE SWITCH INSPECTION [FS5A-EL].) Related harness
		2GR	On	
		3GR	On	
		4GR	Off	
		5GR	Off	
OSS	RPM	Vehicle stopped	0 RPM	<ul style="list-style-type: none"> VSS (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Related harness
		Vehicle speed 30 km/h {19 mph} in 3GR	Approx.250 RPM	

ON-BOARD DIAGNOSTIC [FS5A-EL]

Monitor item	Unit/ Condition	Test condition	Specification	Inspection item
RPM	RPM	Engine speed 1,000 rpm	Approx.1,000 RPM	<ul style="list-style-type: none"> PCM (See 01-40A-8 PCM INSPECTION [LF, L5].)
SSA/SS1	%	1GR at D range	0 %	<ul style="list-style-type: none"> Shift solenoid A (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		2GR at D range	0 %	
		3GR at D range	0 %	
		4GR at D range	Approx.100 %	
		5GR at D range	Approx.100 %	
SSB/SS2	%	1GR at D range	Approx.100 %	<ul style="list-style-type: none"> Shift solenoid B (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		2GR at D range	0 %	
		3GR at D range	0 %	
		4GR at D range	0 %	
		5GR at D range	0 %	
SSC/SS3	%	1GR at D range	Approx.100 %	<ul style="list-style-type: none"> Shift solenoid C (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		2GR at D range	Approx.100 %	
		3GR at D range	0 %	
		4GR at D range	0 %	
		5GR at D range	0 %	
SSD/SS4	On/Off	1GR at D range	Off	<ul style="list-style-type: none"> Shift solenoid D (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		2GR at D range	Off	
		3GR at D range	Off	
		4GR at D range	On	
		5GR at D range	On	
SSE_SS5	On/Off	TCC released	Off	<ul style="list-style-type: none"> Shift solenoid E (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		TCC engaged	On	
SSF_SS6	On/Off	1GR at D range	Off	<ul style="list-style-type: none"> Shift solenoid E (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		2GR at D range	Off	
		3GR at D range	Off	
		4GR at D range	Off	
		5GR at D range	On	
TFT	°C {°F}	ATF 20 °C {68°F}	Approx.20 °C {68°F}	<ul style="list-style-type: none"> TFT sensor (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) Related harness
		ATF 65 °C {149°F}	Approx.65 °C {149°F}	
TFTV	V	ATF 20 °C {68°F}	Approx.3.3 V	<ul style="list-style-type: none"> TFT sensor (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) Related harness
		ATF 65 °C {149°F}	Approx.1.3 V	
THOP	%	Accelerator pedal fully released	Approx.13 %	<ul style="list-style-type: none"> PCM (See 01-40A-8 PCM INSPECTION [LF, L5].)
		Accelerator pedal fully depressed	Approx.84 %	
TR	P/R/N/D	Selector lever at P position	P	<ul style="list-style-type: none"> TR switch (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) Related harness
		Selector lever at R position	R	
		Selector lever at N position	N	
		Selector lever at D range	D	
		Selector lever at M range	D	
TR_SENS	V	Selector lever at P position	4.3—4.8	<ul style="list-style-type: none"> TR switch (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) Related harness
		Selector lever at R position	3.8—4.2	
		Selector lever at N position	3.0—3.5	
		Selector lever at D range	2.2—2.7	
		Selector lever at M range	2.2—2.7	

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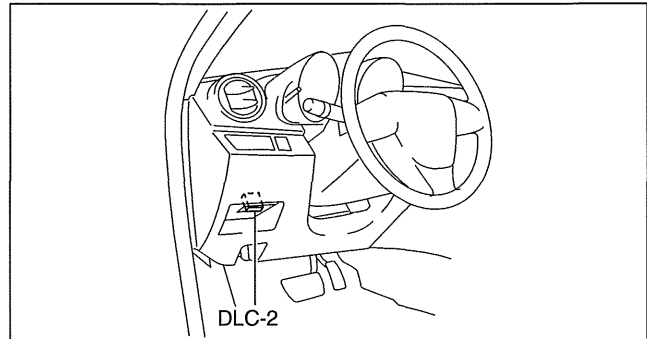
ON-BOARD DIAGNOSTIC [FS5A-EL]

Monitor item	Unit/Condition	Test condition	Specification	Inspection item
TSS	RPM	Engine speed 1,000 rpm at P position	Approx.950 RPM	<ul style="list-style-type: none"> Input/turbine speed sensor (See 05-17-24 INPUT/TURBINE SPEED SENSOR INSPECTION [FS5A-EL].) Related harness
		Vehicle stopped at D range	0 RPM	
UP SW	On/Off	Selector lever at shift up position	On	<ul style="list-style-type: none"> Up switch (See 05-17-18 UP SWITCH INSPECTION [FS5A-EL].) Related harness
		Except selector lever at shift up position	Off	
VPWR	V	Under any condition	B+	<ul style="list-style-type: none"> Battery (See 01-17A-4 BATTERY INSPECTION [LF, L5].) Related harness
VSS	KPH {MPH}	Vehicle stopped	Approx.0 KPH {0 MPH}	<ul style="list-style-type: none"> VSS (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Related harness
		Vehicle speed 30 km/h {19 MPH}	Approx.30 KPH {19 MPH}	

ON-BOARD DIAGNOSTIC SYSTEM SIMULATION INSPECTION [FS5A-EL]

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- Connect the M-MDS to the DLC-2.
- After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "TCM".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "TCM".
 - Select "DataLogger".
- Select the simulation items from the PID table.
- Perform the simulation function, inspect the operations for each parts.



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- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

Simulation table

Item	Related to	Unit/Condition	Test condition
LPS	Pressure control solenoid A	A	Idling at P or N position
LPSB	Pressure control solenoid B	%	Idling at P or N position
SSA/SS1	Shift solenoid A	%	Idling at P or N position
SSB/SS2	Shift solenoid B	%	Idling at P or N position
SSC/SS3	Shift solenoid C	%	Idling at P or N position
SSD/SS4	Shift solenoid D	On/Off	Idling at P or N position
SSE_SS5	Shift solenoid E	On/Off	Idling at P or N position
SSF_SS6	Shift solenoid F	On/Off	Idling at P or N position

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P06B8:00 [FS5A-EL]

id050221325000

DTC P06B8:00	NVRAM malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects NVRAM error. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • NVRAM in TCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
3	VERIFY TROUBLESHOOTING OF DTC P06B8:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Idle the engine. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

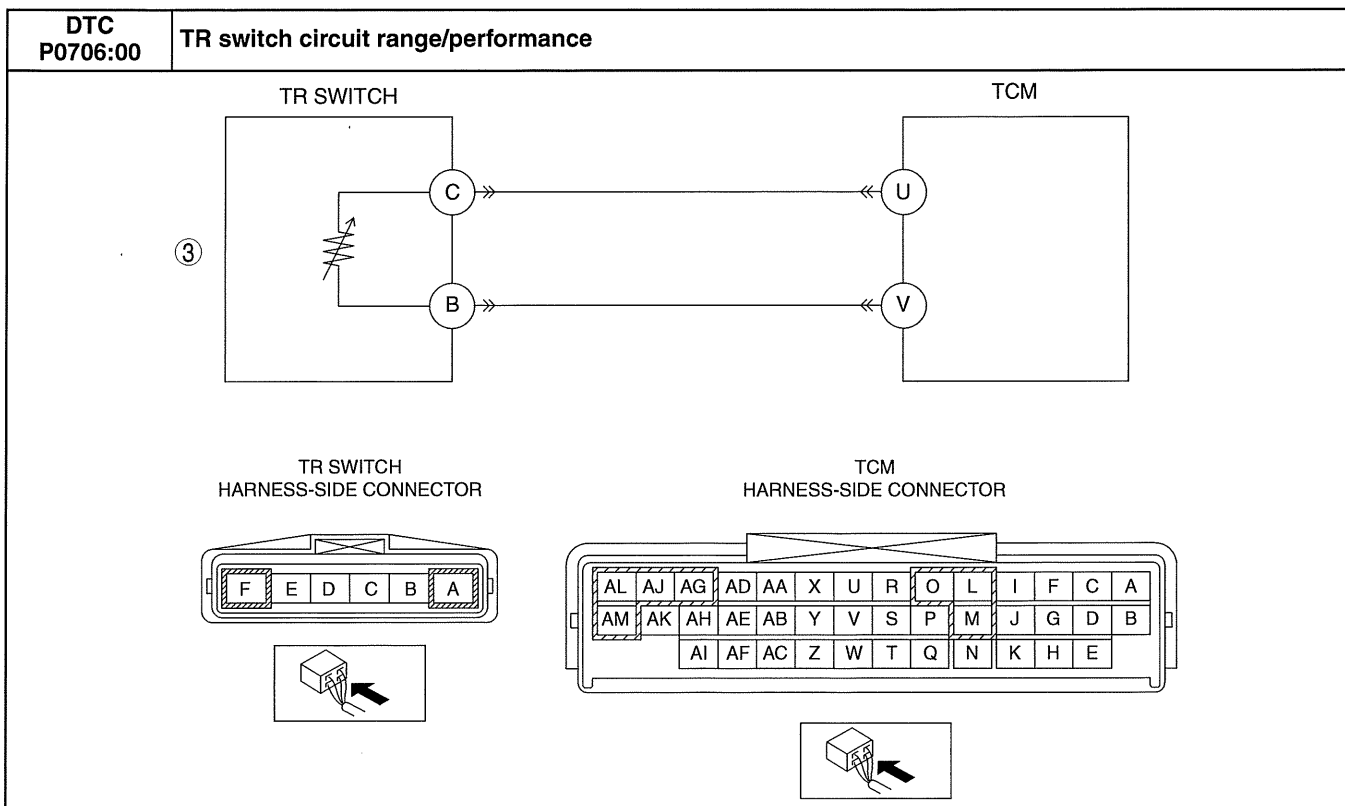
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DTC P0706:00 [FS5A-EL]

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DTC P0706:00	TR switch circuit range/performance
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects no position/range signal for 100 s when the following conditions are met. <ul style="list-style-type: none"> — Vehicle speed: more than 20 km/h {12 mph} — Engine speed: more than 530 rpm — Input voltage from the TR switch: more than 0.49 V <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • TR switch maladjustment • TR switch malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TR SWITCH <ul style="list-style-type: none"> • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Adjust or replace the TR switch, then go to the next step. (See 05-17-15 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT [FS5A-EL].) (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING OF DTC P0706:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 20 km/h {12 mph} for 100 s or more. • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0707:00 [FS5A-EL]

id050221817100

DTC P0707:00	TR switch circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that input voltage from the TR switch is less than 0.49 V for 100 s when the following conditions are met. <ul style="list-style-type: none"> — Vehicle speed: more than 20 km/h {12 mph} — Engine speed: more than 530 rpm <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • TR switch connector or terminal malfunction • Short to GND in wiring harness between TR switch terminal C and TCM terminal U • TR switch malfunction • TCM connector or terminal malfunction • TCM malfunction
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>TR SWITCH</p> </div> <div style="text-align: center;"> <p>TCM</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>TR SWITCH HARNESS-SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>TCM HARNESS-SIDE CONNECTOR</p> </div> </div>	

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TR switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 7.
		No	Go to the next step.
4	INSPECT TR SWITCH SIGNAL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between TR switch terminal C (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 7.
		No	Go to the next step.
5	INSPECT TR SWITCH <ul style="list-style-type: none"> • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the TR switch, then go to Step 7. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0707:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 20 km/h {12 mph} for 100 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
8	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

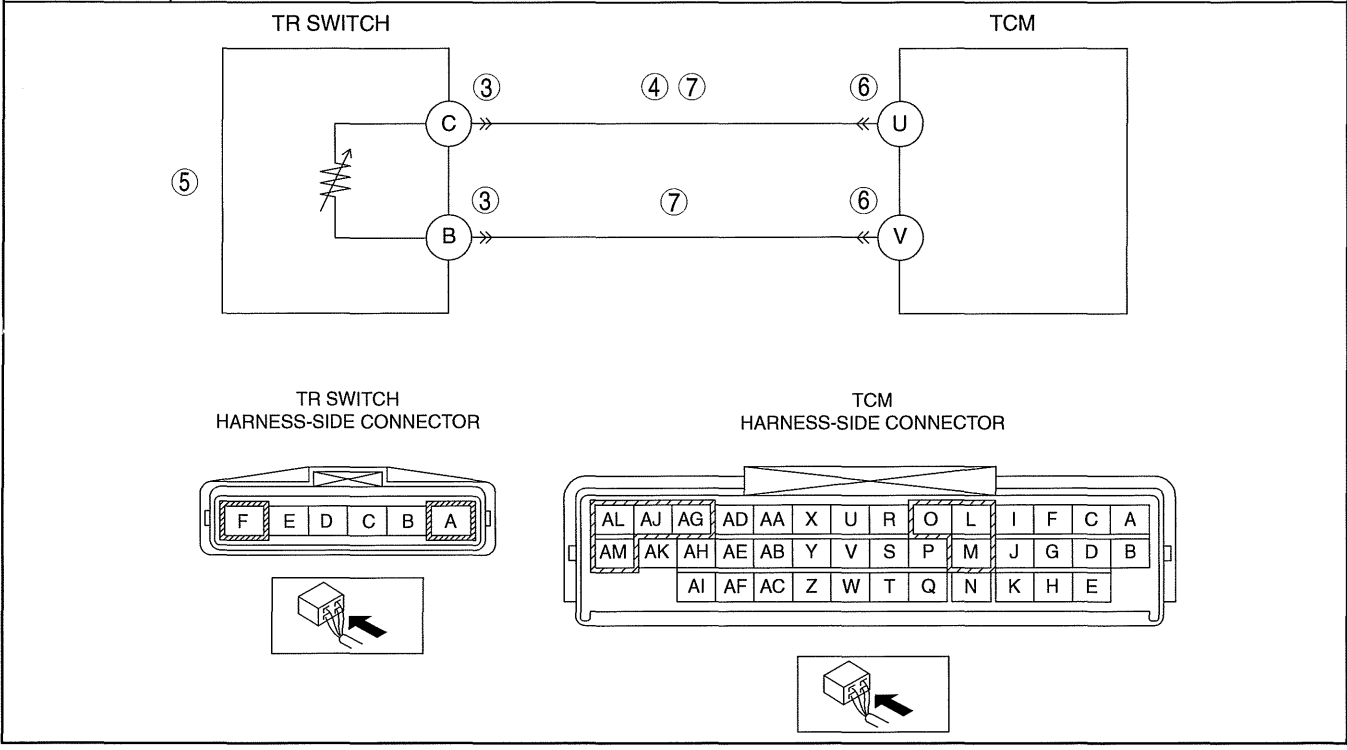
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0708:00 [FS5A-EL]

id050221817200

DTC P0708:00	TR switch circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that input voltage from the TR switch is more than 4.78 V for 100 s when the following conditions are met. <ul style="list-style-type: none"> — Vehicle speed: more than 20 km/h {12 mph} — Engine speed: more than 530 rpm <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • TR switch connector or terminal malfunction • Short to power supply in wiring harness between TR switch terminal C and TCM terminal U • TR switch malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between TR switch terminal C and TCM terminal U • Open circuit in wiring harness between TR switch terminal B and TCM terminal V • TCM malfunction

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TR switch connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 8.
		No	Go to the next step.
4	INSPECT TR SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between TR switch terminal C (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
5	INSPECT TR SWITCH <ul style="list-style-type: none"> • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the TR switch, then go to Step 8. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 8.
		No	Go to the next step.
7	INSPECT TR SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — TR switch terminal C (wiring harness-side) and TCM terminal U (wiring harness-side) — TR switch terminal B (wiring harness-side) and TCM terminal V (wiring harness-side) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0708:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 20 km/h {12 mph} for 100 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

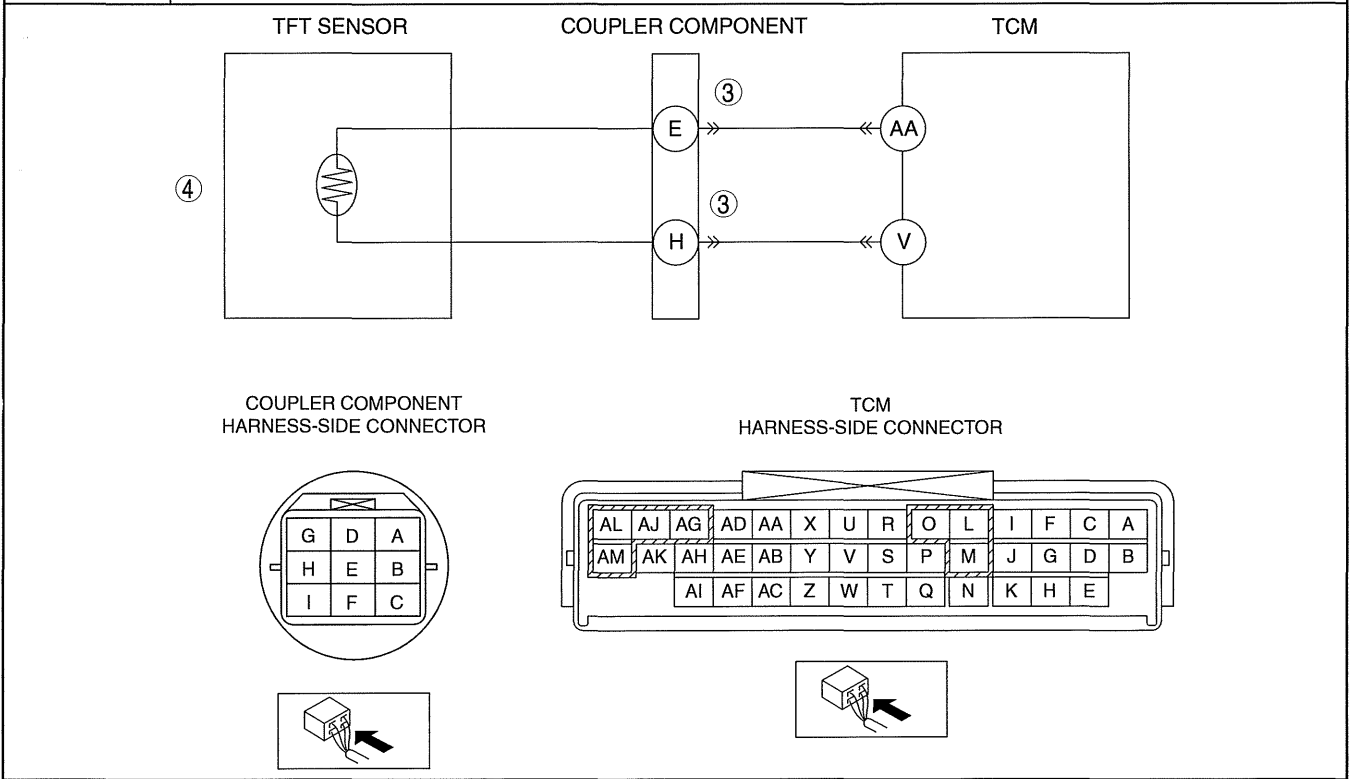
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0711:00 [FS5A-EL]

id050221817300

DTC P0711:00	TFT sensor circuit range/performance
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that input voltage from the TFT sensor is less than 0.03 V when the following conditions are met. <ul style="list-style-type: none"> — Time since engine start: more than 180 s — Vehicle is driven for 90 s or more at vehicle speed between 25—59 km/h {15—36 mph}, and then 60 km/h {37 mph} or more for 60 s or more <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light does not illuminate. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Coupler component connector or terminal malfunction • TFT sensor malfunction • TCM malfunction

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 5.
		No	Go to the next step.
4	INSPECT TFT SENSOR <ul style="list-style-type: none"> • Inspect the TFT sensor. (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the coupler component, then go to next step. (See 05-17-21 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0711:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Idle the engine for 180 s or more. 3. Drive the vehicle at within 25—59 km/h {16—36 mph} for 90 s or more. 4. Drive the vehicle at more than 60 km/h {37 mph} for 60 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the “Reading DTCs Procedure”. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

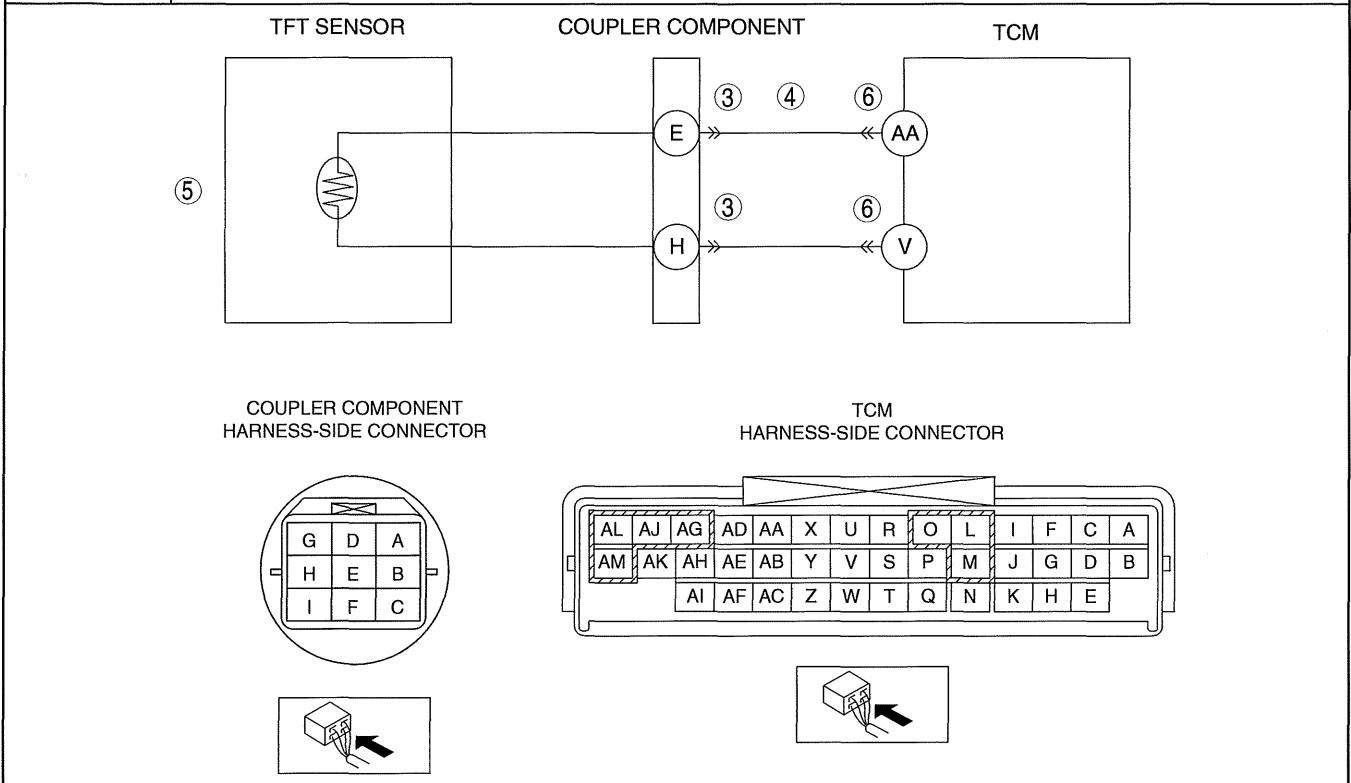
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0712:00 [FS5A-EL]

id050221817400

DTC P0712:00	TFT sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that input voltage from the TFT sensor is less than 0.12 V for 150 s at vehicle speed 20 km/h {12 mph} or more. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to GND in wiring harness between TFT sensor and TCM terminal AA TFT sensor malfunction TCM connector or terminal malfunction TCM malfunction

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 7.
		No	Go to the next step.
4	INSPECT TFT SENSOR SIGNAL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between coupler component terminal E (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 7.
		No	Go to the next step.
5	INSPECT TFT SENSOR <ul style="list-style-type: none"> • Inspect the TFT sensor. (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the coupler component, then go to Step 7. (See 05-17-21 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0712:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 20 km/h {12 mph} for 150 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
8	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

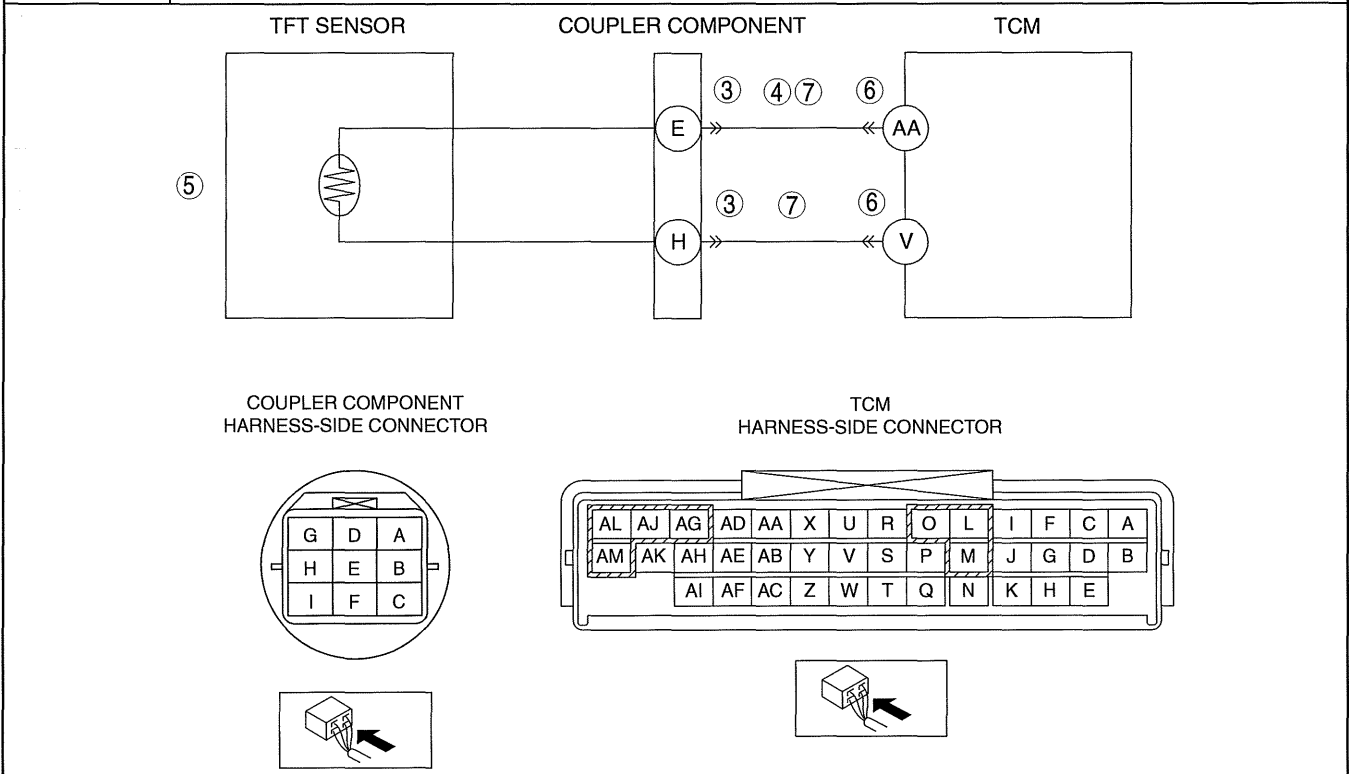
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0713:00 [FS5A-EL]

id050221817500

DTC P0713:00	TFT sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that input voltage from the TFT sensor is more than 4.66 V for 150 s at vehicle speed 20 km/h {12 mph} or more. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to power supply in wiring harness between TFT sensor and TCM terminal AA TFT sensor malfunction TCM connector or terminal malfunction Open circuit in wiring harness between TFT sensor and TCM terminal AA Open circuit in wiring harness between TFT sensor and TCM terminal V TCM malfunction

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 8.
		No	Go to the next step.
4	INSPECT TFT SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between coupler component terminal E (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
5	INSPECT TFT SENSOR <ul style="list-style-type: none"> • Inspect the TFT sensor. (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the coupler component, then go to Step 8. (See 05-17-21 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 8.
		No	Go to the next step.
7	INSPECT TFT SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — Coupler component terminal E (wiring harness-side) and TCM terminal AA (wiring harness-side) — Coupler component terminal H (wiring harness-side) and TCM terminal V (wiring harness-side) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0713:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 20 km/h {12 mph} for 150 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

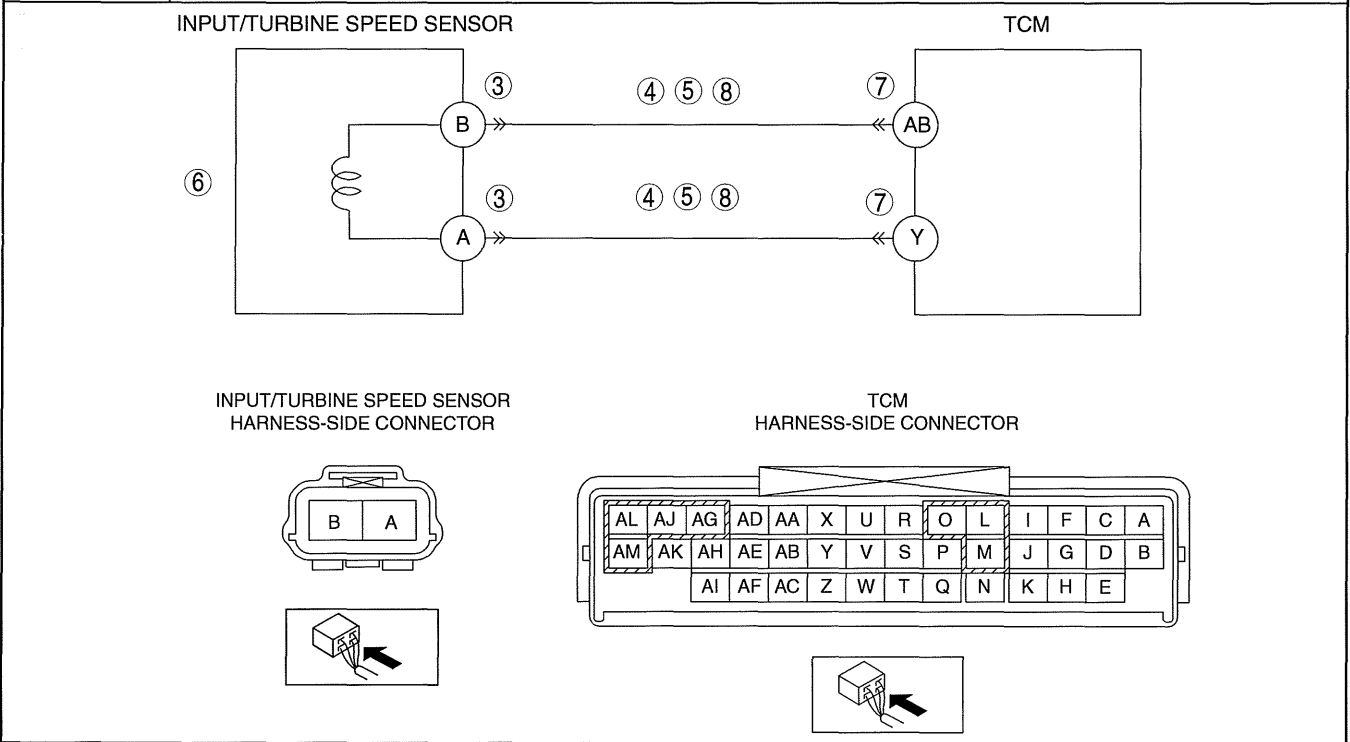
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0715:00 [FS5A-EL]

id050221817600

DTC P0715:00	Input/turbine speed sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects no signal from the input/turbine speed sensor at vehicle speed 41 km/h {25 mph} or more. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Input/turbine speed sensor connector or terminal malfunction • Short to GND in wiring harness between input/turbine speed sensor terminal B and TCM terminal AB • Short to GND in wiring harness between input/turbine speed sensor terminal A and TCM terminal Y • Short to power supply in wiring harness between input/turbine speed sensor terminal B and TCM terminal AB • Short to power supply in wiring harness between input/turbine speed sensor terminal A and TCM terminal Y • Input/turbine speed sensor malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between input/turbine speed sensor terminal B and TCM terminal AB • Open circuit in wiring harness between input/turbine speed sensor terminal A and TCM terminal Y • TCM malfunction

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ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT INPUT/TURBINE SPEED SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the input/turbine speed sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT INPUT/TURBINE SPEED SENSOR CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — Input/turbine speed sensor terminal B (wiring harness-side) and body GND — Input/turbine speed sensor terminal A (wiring harness-side) and body GND • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
5	INSPECT INPUT/TURBINE SPEED SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> — Input/turbine speed sensor terminal B (wiring harness-side) and body GND — Input/turbine speed sensor terminal A (wiring harness-side) and body GND • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
6	INSPECT INPUT/TURBINE SPEED SENSOR <ul style="list-style-type: none"> • Inspect the input/turbine speed sensor. (See 05-17-24 INPUT/TURBINE SPEED SENSOR INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the input/turbine speed sensor, then go to Step 9. (See 05-17-25 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT INPUT/TURBINE SPEED SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — Input/turbine speed sensor terminal B (wiring harness-side) and TCM terminal AB (wiring harness-side) — Input/turbine speed sensor terminal A (wiring harness-side) and TCM terminal Y (wiring harness-side) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
9	VERIFY TROUBLESHOOTING OF DTC P0715:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 41 km/h {25 mph} for 1 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

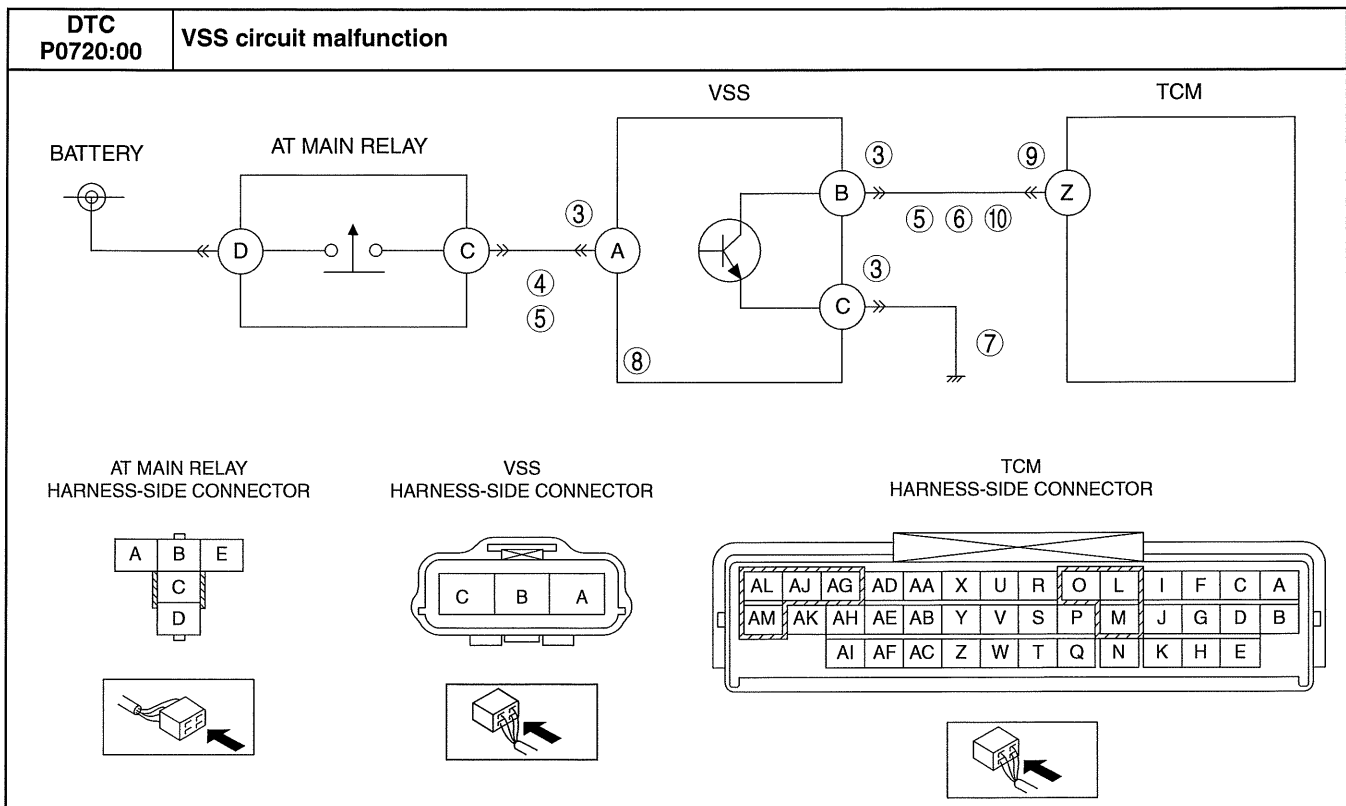
DTC P0720:00 [FS5A-EL]

id050221817700

05-02

DTC P0720:00	VSS circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects no signal from the VSS when the following conditions are met. <ul style="list-style-type: none"> — Engine coolant temperature: more than 60 °C {140 °F} — D or M range — Intermediate speed: more than 1,500 rpm Diagnostic support note <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • VSS connector or terminal malfunction • Open circuit in wiring harness between VSS terminal A and AT main relay terminal C • Short to GND in wiring harness between VSS terminal A and AT main relay terminal C • Short to GND in wiring harness between VSS terminal B and TCM terminal Z • Short to power supply in wiring harness between VSS terminal B and TCM terminal Z • Open circuit in wiring harness between VSS terminal C and body GND • VSS malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between VSS terminal B and TCM terminal Z • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VSS CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the VSS connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 11.
		No	Go to the next step.
4	INSPECT VSS POWER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between VSS terminal A (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
5	INSPECT VSS CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — VSS terminal A (wiring harness-side) and body GND — VSS terminal B (wiring harness-side) and body GND • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 11.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
6	INSPECT VSS SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between VSS terminal B (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
7	INSPECT VSS GND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between VSS terminal C (wiring harness-side) and body GND • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
8	INSPECT VSS <ul style="list-style-type: none"> • Inspect the VSS. (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the VSS, then go to Step 11. (See 05-17-28 VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 11.
		No	Go to the next step.
10	INSPECT VSS CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the VSS terminal B (wiring harness-side) and TCM terminal Z (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0720:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Warm-up the engine until the engine coolant temperature reaches 60 °C {140 °C} or more. 3. Select the selector lever to D or M range. 4. Drive the vehicle with turbine speed at more than 1,500 rpm for 5 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
12	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0731:00 [FS5A-EL]

id050221817800

DTC P0731:00	Gear 1 incorrect ratio
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is less than 2.157 four times when the following conditions are met. <ul style="list-style-type: none"> — 1GR — Accelerator opening angle: 3.17% or more (LF) / 3.68% or more (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A • Line pressure malfunction • Stall speed malfunction • Forward clutch slipping • One-way clutch No.1 slipping • Primary control valve body malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) — Pressure control solenoid A — Shift solenoid A • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
6	INSPECT STALL SPEED <ul style="list-style-type: none"> • Perform the "Stall Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
7	INSPECT TURBINE SPEED WHILE DRIVING VEHICLE <ul style="list-style-type: none"> • Connect the M-MDS. • Start the engine. • Measure the PID "TSS" while driving vehicle under the following conditions: <ul style="list-style-type: none"> — Selector lever position: D range — Gear position: 1GR — Vehicle speed: 20 km/h {12 mph} • Is the PID "TSS" approx.2,200 RPM (LF) / approx.2,300 RPM (L5)? 	Yes	Go to Step 9.
		No	Go to the next step.
8	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
9	VERIFY TROUBLESHOOTING OF DTC P0731:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 1 s or more. <ul style="list-style-type: none"> — 1GR — Accelerator opening angle: 3.17% or more (LF) / 3.68% or more (L5) 2. Stop the vehicle. 3. Repeat Step 1—2 three times. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0732:00 [FS5A-EL]

id050221817900

DTC P0732:00	Gear 2 incorrect ratio
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution in 2GR is more than 2.157 or less than 1.249 three times. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0732:00	Gear 2 incorrect ratio
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C • Line pressure malfunction • Stall speed malfunction • Forward clutch slipping • 2-4 brake band slipping • Primary control valve body malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
6	INSPECT STALL SPEED <ul style="list-style-type: none"> • Perform the "Stall Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
7	INSPECT TURBINE SPEED WHILE DRIVING VEHICLE <ul style="list-style-type: none"> • Connect the M-MDS. • Start the engine. • Measure the PID "TSS" while driving vehicle under the following conditions: <ul style="list-style-type: none"> — Selector lever position: D range — Gear position: 2GR — Vehicle speed: 40 km/h {25 mph} • Is the PID "TSS" approx.2,300 RPM (LF) / approx.2,450 RPM (L5)? 	Yes	Go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
8	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
9	VERIFY TROUBLESHOOTING OF DTC P0732:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle in 2GR for 1 s or more. 2. Stop the vehicle. 3. Repeat Step 1—2 two times. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0733:00 [FS5A-EL]

id050221818000

DTC P0733:00	Gear 3 incorrect ratio
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution in 3GR is more than 2.157. • The TCM detects that revolution ratio of the input revolution to output revolution is between 1.345—1.644 when the following conditions are met. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 28 km/h {17 mph} (LF) / more than 27 km/h {17 mph} (L5) — TCC operation: Off • The TCM detects that revolution ratio of the input revolution to output revolution is less than 0.863 when the following conditions are met. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 43 km/h {27 mph} (LF) / more than 41 km/h {25 mph} (L5) — TCC operation: Off <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid C • Line pressure malfunction • Stall speed malfunction • Forward clutch slipping • 3-4 clutch slipping • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid C • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
6	INSPECT STALL SPEED <ul style="list-style-type: none"> • Perform the "Stall Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
7	INSPECT TURBINE SPEED WHILE DRIVING VEHICLE <ul style="list-style-type: none"> • Connect the M-MDS. • Start the engine. • Measure the PID "TSS" while driving vehicle under the following conditions: <ul style="list-style-type: none"> — Selector lever position: D range — Gear position: 3GR — Vehicle speed: 60 km/h {37 mph} • Is the PID "TSS" approx.2,300 RPM (LF) / approx.2,450 RPM (L5)? 	Yes	Go to Step 9.
		No	Go to the next step.
8	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION		ACTION
9	VERIFY TROUBLESHOOTING OF DTC P0733:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 2 s or more. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 28 km/h {17 mph} (LF) / more than 27 km/h {17 mph} (L5) — TCC operation: Off 2. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 43 km/h {27 mph} (LF) / more than 41 km/h {25 mph} (L5) — TCC operation: Off • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0734:00 [FS5A-EL]

id050221818100

DTC P0734:00	Gear 4 incorrect ratio
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is more than 1.249 or less than 0.6 when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 31 km/h {19 mph} (LF) / more than 28 km/h {17 mph} (L5) • The TCM detects that revolution ratio of the input revolution to output revolution is between 1.09—0.91 when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 46 km/h {29 mph} — TCC operation: Off <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C • Line pressure malfunction • Stall speed malfunction • Forward clutch slipping • 2-4 brake band slipping • 3-4 clutch slipping • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
6	INSPECT STALL SPEED <ul style="list-style-type: none"> • Perform the "Stall Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
7	INSPECT TURBINE SPEED WHILE DRIVING VEHICLE <ul style="list-style-type: none"> • Connect the M-MDS. • Start the engine. • Measure the PID "TSS" while driving vehicle under the following conditions: <ul style="list-style-type: none"> — Selector lever position: D range — Gear position: 4GR — Vehicle speed: 80 km/h {50 mph} • Is the PID "TSS" approx.2,250 RPM (LF) / approx.2,350 RPM (L5)? 	Yes	Go to Step 9.
		No	Go to the next step.
8	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
9	VERIFY TROUBLESHOOTING OF DTC P0734:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 1 s or more. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 31 km/h {19 mph} (LF) / more than 28 km/h {17 mph} (L5) 2. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 46 km/h {29 mph} — TCC operation: Off • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0735:00 [FS5A-EL]

id050221825100

DTC P0735:00	Gear 5 incorrect ratio
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the intermediate revolution to output revolution is less than 1.11 when the following conditions are met. <ul style="list-style-type: none"> — 3GR or 4GR — Accelerator opening angle: 3.17% or more (LF) / 3.67% or more (L5) • The TCM detects that revolution ratio of the intermediate revolution to output revolution is more than 1.11 when the following conditions are met. <ul style="list-style-type: none"> — 5GR — Accelerator opening angle: 3.17% or more (LF) / 3.67% or more (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid B — Shift solenoid F • Line pressure malfunction • Stall speed malfunction • Direct clutch slipping • Reduction brake slipping • Secondary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 10. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 10. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> — Pressure control solenoid B — Shift solenoid F • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 10. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 10.
		No	Go to the next step.
6	INSPECT STALL SPEED <ul style="list-style-type: none"> • Perform the "Stall Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 10.
		No	Go to the next step.
7	INSPECT INTERMEDIATE SPEED WHILE DRIVING VEHICLE <ul style="list-style-type: none"> • Connect the M-MDS. • Start the engine. • Measure the PID "ISS" while driving vehicle under the following conditions: <ul style="list-style-type: none"> — Selector lever position: D range — Gear position: 4GR — Vehicle speed: 80 km/h {50 mph} • Is the PID "ISS" approx.3,250 RPM (LF) / approx.3,450 RPM (L5)? 	Yes	Go to Step 10.
		No	Go to the next step.
8	INSPECT INTERMEDIATE SPEED WHILE DRIVING VEHICLE <ul style="list-style-type: none"> • Connect the M-MDS. • Start the engine. • Measure the PID "ISS" while driving vehicle under the following conditions: <ul style="list-style-type: none"> — Selector lever position: D range — Gear position: 5GR — Vehicle speed: 90 km/h {56 mph} • Is the PID "ISS" approx.2,700 RPM (LF) / approx.2,850 RPM (L5)? 	Yes	Go to Step 10.
		No	Go to the next step.
9	INSPECT SECONDARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the secondary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the secondary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
10	VERIFY TROUBLESHOOTING OF DTC P0735:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 3GR or 4GR — Accelerator opening angle: 3.17% or more (LF) / 3.67% or more (L5) 2. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 5GR — Accelerator opening angle: 3.17% or more (LF) / 3.67% or more (L5) • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
11	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0741:00 [FS5A-EL]

id050221818200

DTC P0741:00	TCC stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that difference between the input revolution and output revolution is more than 100 rpm when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Vehicle speed: 60—100 km/h {38.0—62.1 mph} — TCC operation: On — Shift solenoid A duty ratio: more than 99.2% • Diagnostic support note <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C — Shift solenoid D — Shift solenoid E • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 7. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 7. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C — Shift solenoid D — Shift solenoid E • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 7. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 7.
		No	Go to the next step.
6	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
7	VERIFY TROUBLESHOOTING OF DTC P0741:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 4GR — Vehicle speed: 60—100 km/h {38.0—62.1 mph} — TCC operation: On • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
8	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0742:00 [FS5A-EL]

id050221818300

DTC P0742:00	TCC stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that difference between the input revolution and output revolution is less than 50 rpm when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Accelerator opening angle: 6.25—3.125%, more than 6.25% or less than 0.78% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation: Off <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Solenoid valve malfunction <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C — Shift solenoid D — Shift solenoid E • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 7. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 7. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the following solenoid valves: (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> — Pressure control solenoid A — Shift solenoid A — Shift solenoid B — Shift solenoid C — Shift solenoid D — Shift solenoid E • Is there any malfunction? 	Yes	Replace the solenoid valve, then go to Step 7. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION		ACTION
6	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
7	VERIFY TROUBLESHOOTING OF DTC P0742:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 3 s or more. <ul style="list-style-type: none"> — 4GR — Accelerator opening angle: 6.25—3.125% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation: Off 2. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 4GR — Accelerator opening angle: more than 6.25% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation: Off 3. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 4GR — Accelerator opening angle: less than 0.78% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation: Off • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
8	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the “Reading DTCs Procedure”. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0744:00 [FS5A-EL]

id050221818400

DTC P0744:00	TCC slip control malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution in 3GR is more than 1.09 or less than 0.91. • The TCM detects that revolution ratio of the input revolution to output revolution in 4GR is more than 0.817 or less than 0.636. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0744:00	TCC slip control malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Solenoid valve malfunction <ul style="list-style-type: none"> — Shift solenoid A — Shift solenoid D — Shift solenoid E • Forward clutch not engaged or slipped • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY DTC HAVE BEEN PRESENTED <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are the following DTCs output? <ul style="list-style-type: none"> — P0752:00 (Shift solenoid A stuck on) — P0753:00 (Shift solenoid A electrical malfunction) — P0767:00 (Shift solenoid D stuck on) — P0768:00 (Shift solenoid D electrical malfunction) — P0771:00 (Shift solenoid E stuck off) — P0773:00 (Shift solenoid E electrical malfunction) 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	Replace the forward clutch, then go to the next step.
3	VERIFY TROUBLESHOOTING OF DTC P0744:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle in 3GR for 1 s or more. 2. Drive the vehicle in 4GR for 1 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

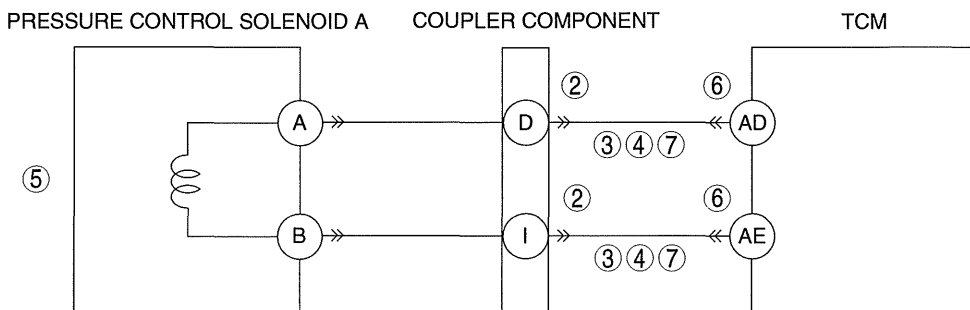
DTC P0745:00 [FS5A-EL]

id050221818500

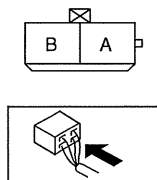
DTC P0745:00	Pressure control solenoid A malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that output voltage to the pressure control solenoid A is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.

ON-BOARD DIAGNOSTIC [FS5A-EL]

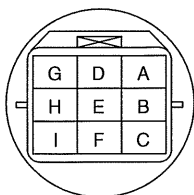
DTC P0745:00	Pressure control solenoid A malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Coupler component connector or terminal malfunction • Short to power supply in wiring harness between pressure control solenoid A terminal A and TCM terminal AD • Short to power supply in wiring harness between pressure control solenoid A terminal B and TCM terminal AE • Short to GND in wiring harness between pressure control solenoid A terminal A and TCM terminal AD • Short to GND in wiring harness between pressure control solenoid A terminal B and TCM terminal AE • Pressure control solenoid A malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between pressure control solenoid A terminal A and TCM terminal AD • Open circuit in wiring harness between pressure control solenoid A terminal B and TCM terminal AE • TCM malfunction



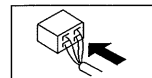
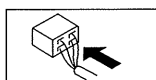
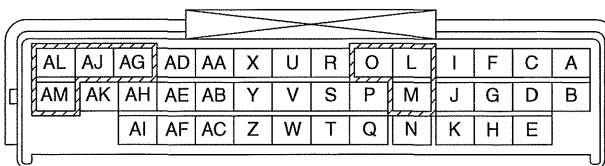
PRESSURE CONTROL SOLENOID A
HARNESS-SIDE CONNECTOR



COUPLER COMPONENT
HARNESS-SIDE CONNECTOR



TCM
HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 8.
		No	Go to the next step.
3	INSPECT PRESSURE CONTROL SOLENOID A CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition off. • Measure the voltage between the following circuits: <ul style="list-style-type: none"> — Coupler component terminal D (wiring harness-side) and body GND — Coupler component terminal I (wiring harness-side) and body GND • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
4	INSPECT PRESSURE CONTROL SOLENOID A CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — Coupler component terminal D (wiring harness-side) and body GND — Coupler component terminal I (wiring harness-side) and body GND • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 8.
		No	Go to the next step.
5	INSPECT PRESSURE CONTROL SOLENOID A <ul style="list-style-type: none"> • Inspect pressure control solenoid A. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the pressure control solenoid A, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRESSURE CONTROL SOLENOID A CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — Coupler component terminal D (wiring harness-side) and TCM terminal AD (wiring harness-side) — Coupler component terminal I (wiring harness-side) and TCM terminal AE (wiring harness-side) • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0745:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Make sure that the gears shift smoothly from 1GR to 5GR. 2. Make sure that TCC operates smoothly. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0751:00 [FS5A-EL]

id050221818600

DTC P0751:00	Shift solenoid A stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is between 1.09—0.91 when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 46 km/h {29 mph} — TCC operation: Off <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid A malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	INSPECT SHIFT SOLENOID A <ul style="list-style-type: none"> • Inspect the shift solenoid A. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid A, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0751:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 46 km/h {29 mph} — TCC operation: Off • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0752:00 [FS5A-EL]

id050221818700

DTC P0752:00	Shift solenoid A stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that turbine revolution is more than 187.5 rpm with the vehicle stopped in D range. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid A malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT SHIFT SOLENOID A <ul style="list-style-type: none"> • Inspect the shift solenoid A. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid A, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
8	VERIFY TROUBLESHOOTING OF DTC P0752:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Select the selector lever to D range. 3. Stop the vehicle for 3 s or more. • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

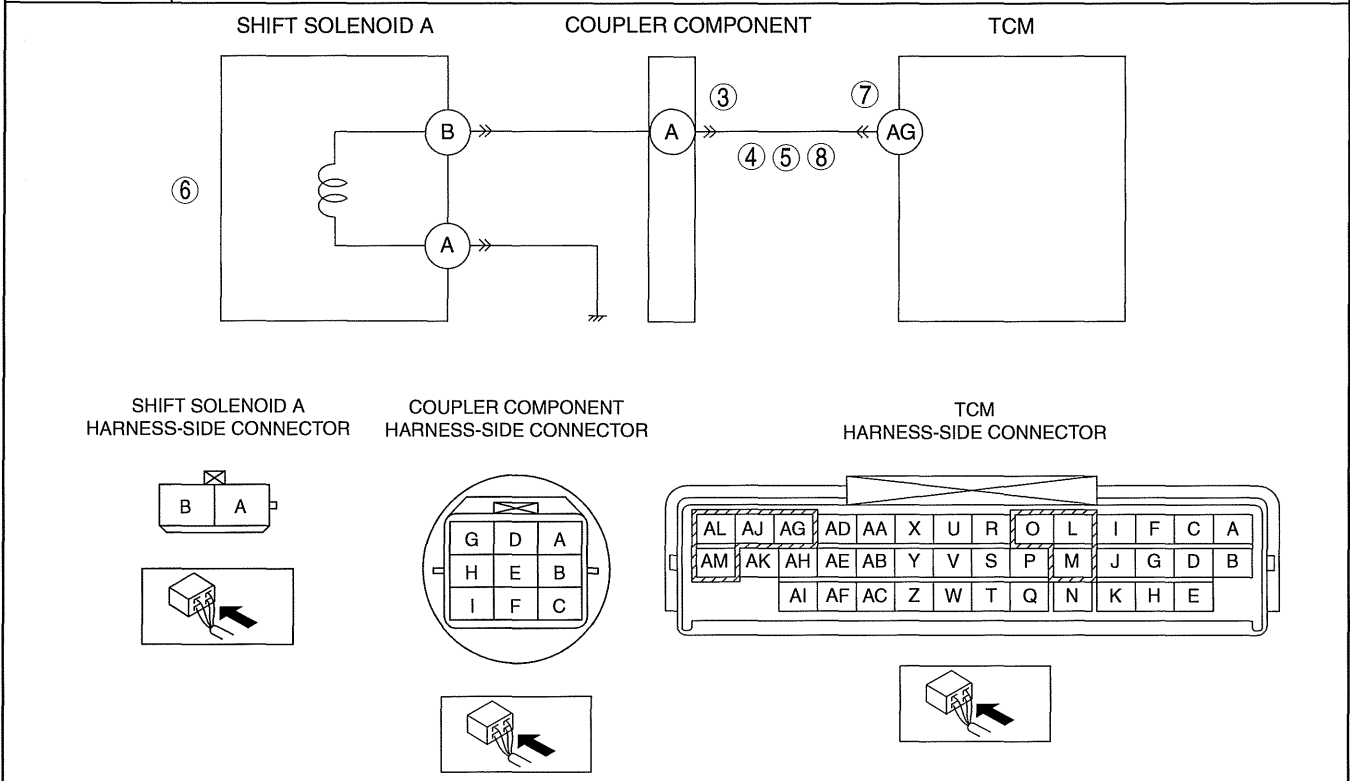
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0753:00 [FS5A-EL]

id050221818800

DTC P0753:00	Shift solenoid A electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that output voltage to the shift solenoid A is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to power supply in wiring harness between shift solenoid A terminal B and TCM terminal AG Short to GND in wiring harness between shift solenoid A terminal B and TCM terminal AG Shift solenoid A malfunction TCM connector or terminal malfunction Open circuit in wiring harness between shift solenoid A terminal B and TCM terminal AG TCM malfunction

05-02



ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT SHIFT SOLENOID A CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition off. • Measure the voltage between the coupler component terminal A (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID A CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal A (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
6	INSPECT SHIFT SOLENOID A <ul style="list-style-type: none"> • Inspect the shift solenoid A. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid A, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT SHIFT SOLENOID A CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal A (wiring harness-side) and TCM terminal AG (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0753:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Make sure that the gears shift smoothly from 1GR to 5GR. 2. Make sure that TCC operates smoothly. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0756:00 [FS5A-EL]

id050221818900

DTC P0756:00	Shift solenoid B stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is less than 2.157 four times when the following conditions are met. <ul style="list-style-type: none"> — D range — 1GR — Accelerator opening angle: 3.17% or more (LF) / 3.68% or more (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid B malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	INSPECT SHIFT SOLENOID B <ul style="list-style-type: none"> • Inspect the shift solenoid B. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid B, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0756:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 1 s or more. <ul style="list-style-type: none"> — D range — 1GR — Accelerator opening angle: 3.17% or more (LF) / 3.68% or more (L5) 2. Stop the vehicle. 3. Repeat Step 1—2 three times. • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0757:00 [FS5A-EL]

id050221819000

DTC P0757:00	Shift solenoid B stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution in 2GR is more than 2.157 or less than 1.249 three times. • The TCM detects that revolution ratio of the input revolution to output revolution is more than 1.249 or less than 0.6 when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 31 km/h {19 mph} (LF) / more than 28km/h {17 mph} (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid B malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT SHIFT SOLENOID B <ul style="list-style-type: none"> Inspect the shift solenoid B. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid B, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) Disassemble the primary control valve body. Inspect the following parts: <ul style="list-style-type: none"> Shift valve Return spring Hydraulic passage Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
8	VERIFY TROUBLESHOOTING OF DTC P0757:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Drive the vehicle in 2GR for 1 s or more. Stop the vehicle. Repeat Step 1—2 two times. Drive the vehicle under the following conditions for 1 s or more. <ul style="list-style-type: none"> 4GR Vehicle speed: more than 31 km/h {19 mph} (LF) / more than 28 km/h {17 mph} (L5) Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

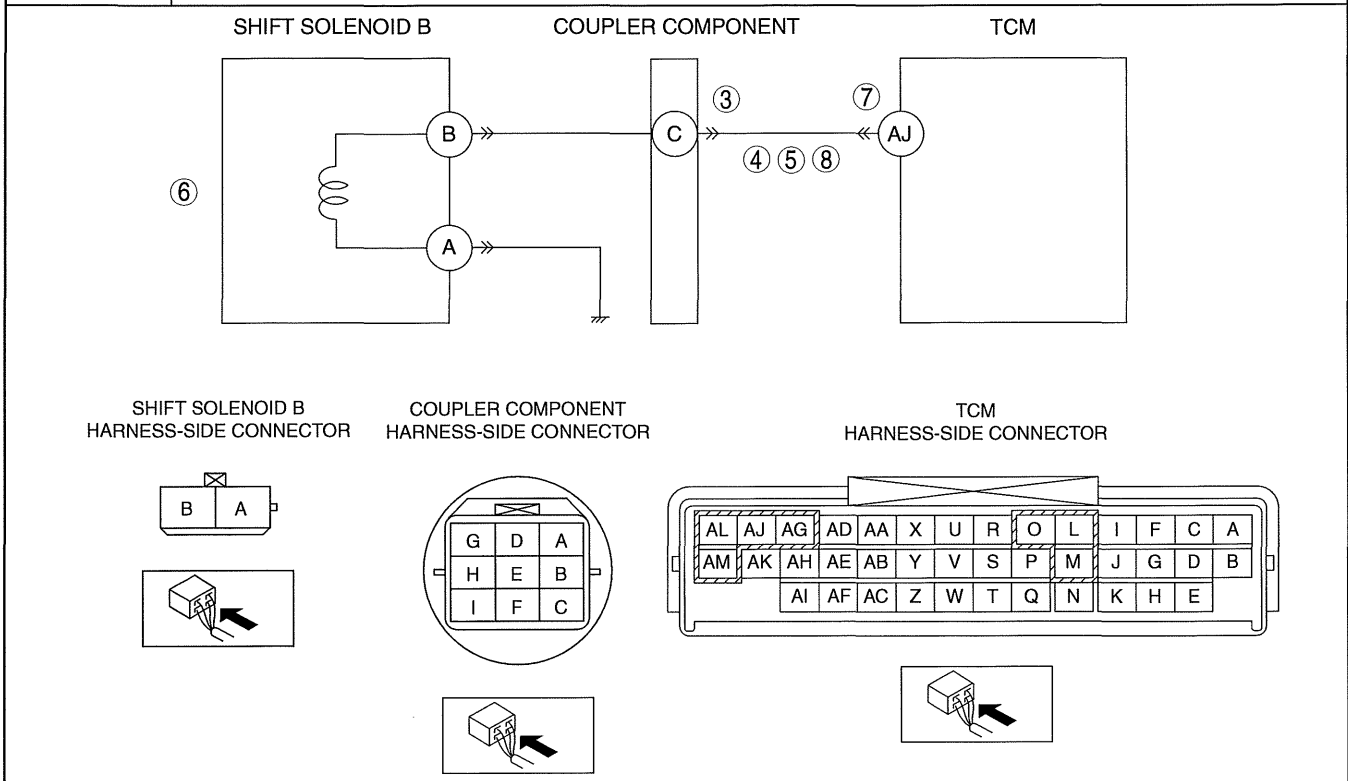
05-02

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0758:00 [FS5A-EL]

id050221819100

DTC P0758:00	Shift solenoid B electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that output voltage to the shift solenoid B is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to power supply in wiring harness between shift solenoid B terminal B and TCM terminal AJ Short to GND in wiring harness between shift solenoid B terminal B and TCM terminal AJ Shift solenoid B malfunction TCM connector or terminal malfunction Open circuit in wiring harness between shift solenoid B terminal B and TCM terminal AJ TCM malfunction



ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the coupler component connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT SHIFT SOLENOID B CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Switch the ignition off. Measure the voltage between the coupler component terminal C (wiring harness-side) and body GND. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID B CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal C (wiring harness-side) and body GND. Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
6	INSPECT SHIFT SOLENOID B <ul style="list-style-type: none"> Inspect the shift solenoid B. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid B, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT SHIFT SOLENOID B CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal C (wiring harness-side) and TCM terminal AJ (wiring harness-side). Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0758:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Make sure that the gears shift smoothly from 1GR to 5GR. Make sure that TCC operates smoothly. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0761:00 [FS5A-EL]

id050221819200

DTC P0761:00	Shift solenoid C stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is less than 2.157 when the following conditions are met. <ul style="list-style-type: none"> — 1GR — Accelerator opening angle: 3.17% or more (LF) / 3.67% or more (L5) • The TCM detects that revolution ratio of the input revolution to output revolution in 2GR is more than 2.157 or less than 1.249. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid C malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	INSPECT SHIFT SOLENOID C <ul style="list-style-type: none"> • Inspect the shift solenoid C. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid C, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0761:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 1 s or more. <ul style="list-style-type: none"> — 1GR — Accelerator opening angle: 3.17% or more (LF) / 3.67% or more (L5) 2. Drive the vehicle in 2GR for 1 s or more. • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0762:00 [FS5A-EL]

id050221819300

DTC P0762:00	Shift solenoid C stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is between 1.345?1.644 when the following conditions are met. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 28 km/h {17 mph} (LF) / more than 27 km/h {17 mph} (L5) — TCC operation: Off <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid C malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT SHIFT SOLENOID C <ul style="list-style-type: none"> • Inspect the shift solenoid C. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid C, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
8	VERIFY TROUBLESHOOTING OF DTC P0762:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 2 s or more. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 28 km/h {17 mph} (LF) / more than 27 km/h {17 mph} (L5) — TCC operation Off • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

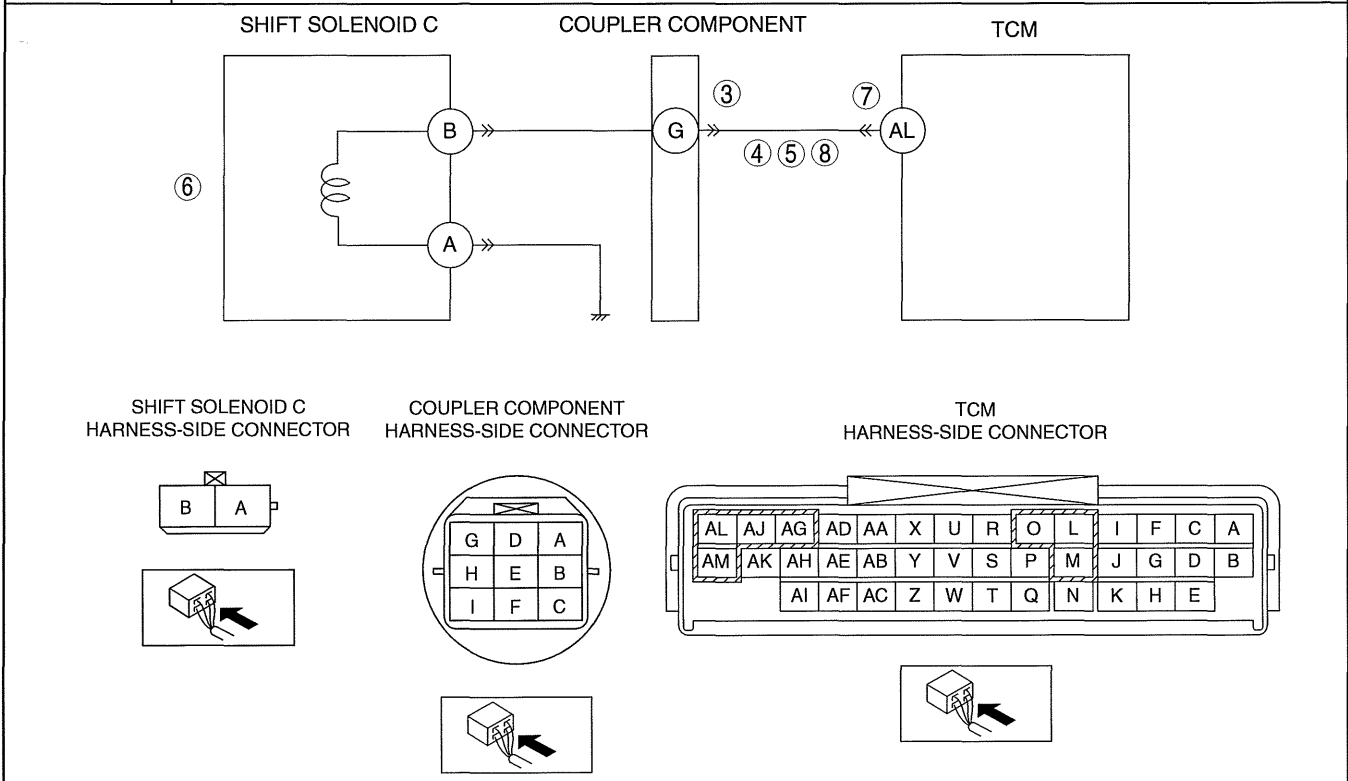
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0763:00 [FS5A-EL]

id050221819400

DTC P0763:00	Shift solenoid C electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that output voltage to the shift solenoid C is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to power supply in wiring harness between shift solenoid C terminal B and TCM terminal AL Short to GND in wiring harness between shift solenoid C terminal B and TCM terminal AL Shift solenoid C malfunction TCM connector or terminal malfunction Open circuit in wiring harness between shift solenoid C terminal B and TCM terminal AL TCM malfunction

05-02



ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT SHIFT SOLENOID C CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition off. • Measure the voltage between the coupler component terminal G (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID C CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal G (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
6	INSPECT SHIFT SOLENOID C <ul style="list-style-type: none"> • Inspect the shift solenoid C. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid C, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT SHIFT SOLENOID C CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal G (wiring harness-side) and TCM terminal AL (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0763:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Make sure that the gears shift smoothly from 1GR to 5GR. 2. Make sure that TCC operates smoothly. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0766:00 [FS5A-EL]

id050221819500

DTC P0766:00	Shift solenoid D stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that revolution ratio of the input revolution to output revolution is more than 1.249 or less than 0.6 when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 31 km/h {19 mph} (LF) / more than 28 km/h {17mph} (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Shift solenoid D malfunction Line pressure malfunction Primary control valve body malfunction TCM malfunction

05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT SHIFT SOLENOID D <ul style="list-style-type: none"> Inspect the shift solenoid D. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid D, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) Disassemble the primary control valve body. Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0766:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 1 s or more. <ul style="list-style-type: none"> — 4GR — Vehicle speed: more than 31 km/h {19 mph} (LF) / more than 28 km/h {17 mph} (L5) • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0767:00 [FS5A-EL]

id050221819600

DTC P0767:00	Shift solenoid D stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the input revolution to output revolution is less than 0.863 when the following conditions are met. <ul style="list-style-type: none"> — 3GR — Vehicle speed: more than 43 km/h {27 mph} (LF) / more than 41 km/h {25 mph} (L5) — TCC operation: Off Diagnostic support note <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid D malfunction • Line pressure malfunction • Primary control valve body malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT SHIFT SOLENOID D <ul style="list-style-type: none"> Inspect the shift solenoid D. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid D, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) Disassemble the primary control valve body. Inspect the following parts: <ul style="list-style-type: none"> Shift valve Return spring Hydraulic passage Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
8	VERIFY TROUBLESHOOTING OF DTC P0767:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> 3GR <ul style="list-style-type: none"> Vehicle speed: more than 43 km/h {27 mph} (LF) / more than 41 km/h {25 mph} (L5) TCC operation: Off Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

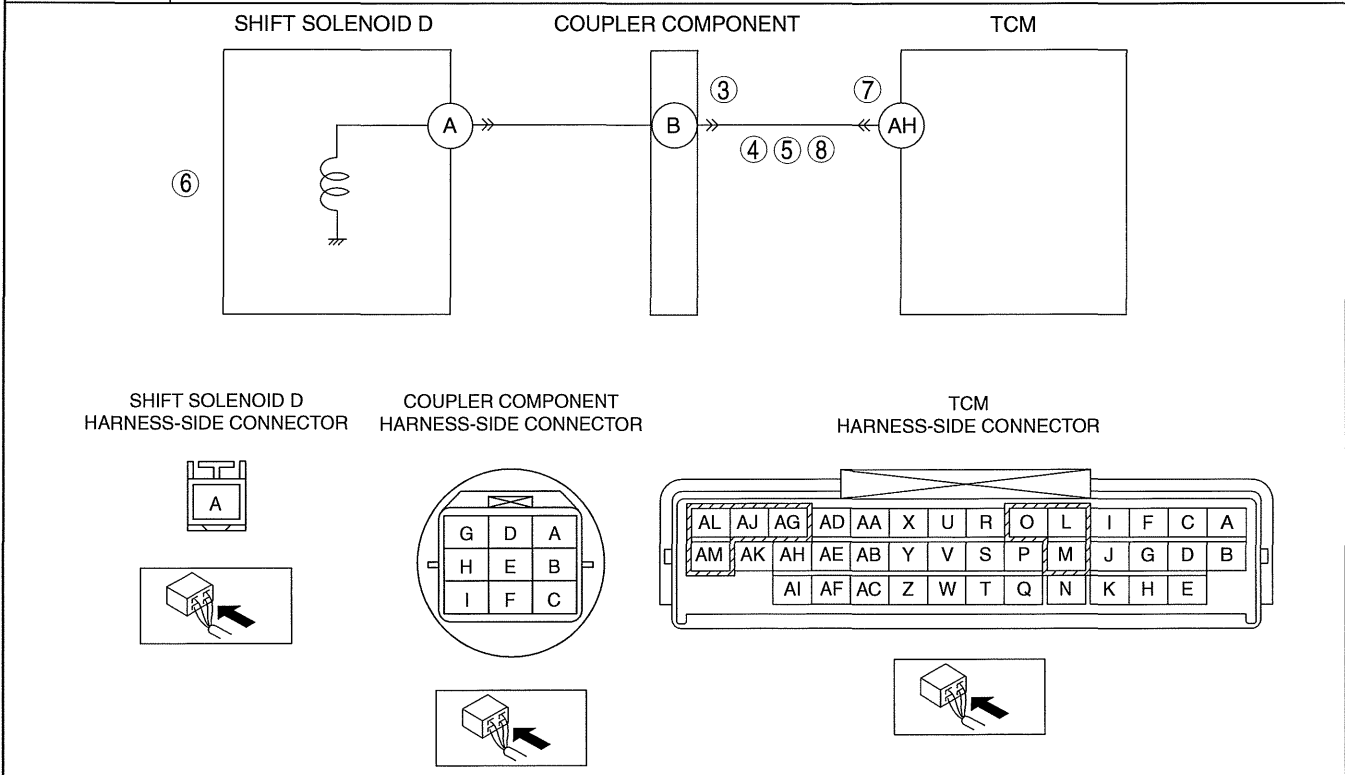
05-02

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0768:00 [FS5A-EL]

id050221819700

DTC P0768:00	Shift solenoid D electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that output voltage to the shift solenoid D is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to power supply in wiring harness between shift solenoid D terminal A and TCM terminal AH Short to GND in wiring harness between shift solenoid D terminal A and TCM terminal AH Shift solenoid D malfunction TCM connector or terminal malfunction Open circuit in wiring harness between shift solenoid D terminal A and TCM terminal AH TCM malfunction



ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the coupler component connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT SHIFT SOLENOID D CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Switch the ignition off. Measure the voltage between the coupler component terminal B (wiring harness-side) and body GND. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID D CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal B (wiring harness-side) and body GND. Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
6	INSPECT SHIFT SOLENOID D <ul style="list-style-type: none"> Inspect the shift solenoid D. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid D, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT SHIFT SOLENOID D CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal B (wiring harness-side) and PCM terminal AH (wiring harness-side). Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0768:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Make sure that the gears shift smoothly from 1GR to 5GR. Make sure that TCC operates smoothly. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0771:00 [FS5A-EL]

id050221819800

DTC P0771:00	Shift solenoid E stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that difference between the engine revolution and turbine revolution is more than 100 rpm when the following conditions are met. <ul style="list-style-type: none"> — D range — 4GR — Vehicle speed: 60—100 km/h {38.0—62.1 mph} — TCC operation: On <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Shift solenoid E malfunction Line pressure malfunction Primary control valve body malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	INSPECT SHIFT SOLENOID E <ul style="list-style-type: none"> Inspect the shift solenoid E. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid E, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) Disassemble the primary control valve body. Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0771:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> D range 4GR Vehicle speed: 60—100 km/h {38.0—62.1 mph} TCC operation: On Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0772:00 [FS5A-EL]

id050221819900

DTC P0772:00	Shift solenoid E stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that difference between the engine revolution and turbine revolution is less than 50 rpm when the following conditions are met. <ul style="list-style-type: none"> D range 4GR Accelerator opening angle: 6.25—3.125%, more than 6.25% or less than 0.78% Vehicle speed: more than 66 km/h {41 mph} TCC operation: Off Diagnostic support note <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Shift solenoid E malfunction Line pressure malfunction Primary control valve body malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT SHIFT SOLENOID E <ul style="list-style-type: none"> • Inspect the shift solenoid E. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid E, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT PRIMARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the primary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
8	VERIFY TROUBLESHOOTING OF DTC P0772:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 3 s or more. <ul style="list-style-type: none"> — D range — 4GR — Accelerator opening angle: 6.25—3.125% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation Off 2. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — D range — 4GR — Accelerator opening angle: more than 6.25% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation Off 3. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — D range — 4GR — Accelerator opening angle: less than 0.78% — Vehicle speed: more than 66 km/h {41 mph} — TCC operation Off • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

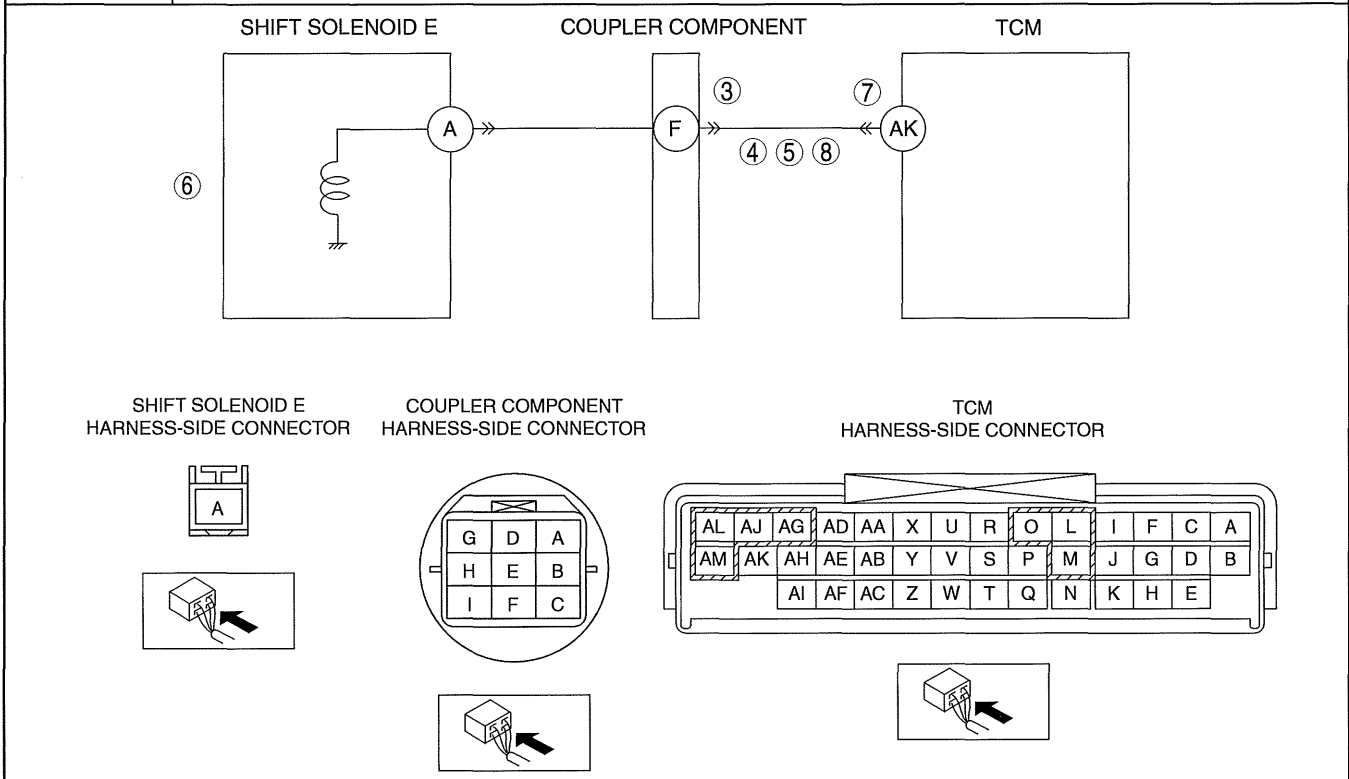
ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0773:00 [FS5A-EL]

id050221820000

DTC P0773:00	Shift solenoid E electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that output voltage to the shift solenoid E is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Coupler component connector or terminal malfunction Short to power supply in wiring harness between shift solenoid E terminal A and TCM terminal AK Short to GND in wiring harness between shift solenoid E terminal A and TCM terminal AK Shift solenoid E malfunction TCM connector or terminal malfunction Open circuit in wiring harness between shift solenoid E terminal A and TCM terminal AK TCM malfunction

05-02



ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the coupler component connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes Repair or replace the terminal, then go to Step 9.
		No Go to the next step.
4	INSPECT SHIFT SOLENOID E CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Switch the ignition off. Measure the voltage between the coupler component terminal F (wiring harness-side) and body GND. Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No Go to the next step.
5	INSPECT SHIFT SOLENOID E CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal F (wiring harness-side) and body GND. Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No Go to the next step.
6	INSPECT SHIFT SOLENOID E <ul style="list-style-type: none"> Inspect the shift solenoid E. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes Replace the shift solenoid E, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes Repair or replace the terminal, then go to Step 9.
		No Go to the next step.
8	INSPECT SHIFT SOLENOID E CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal F (wiring harness-side) and TCM terminal AK (wiring harness-side). Is there continuity? 	Yes Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0773:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Make sure that the gears shift smoothly from 1GR to 5GR. Make sure that TCC operates smoothly. Is the same DTC present? 	Yes Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P0777:00 [FS5A-EL]

id050221825200

DTC P0777:00	Pressure control solenoid B stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the intermediate revolution to output revolution is more than 1.11 when the following conditions are met. <ul style="list-style-type: none"> — 5GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Pressure control solenoid B malfunction • Line pressure malfunction • Secondary control valve body malfunction • TCM malfunction

05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5	INSPECT PRESSURE CONTROL SOLENOID B <ul style="list-style-type: none"> • Inspect the pressure control solenoid B. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the pressure control solenoid B, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT SECONDARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the secondary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the secondary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

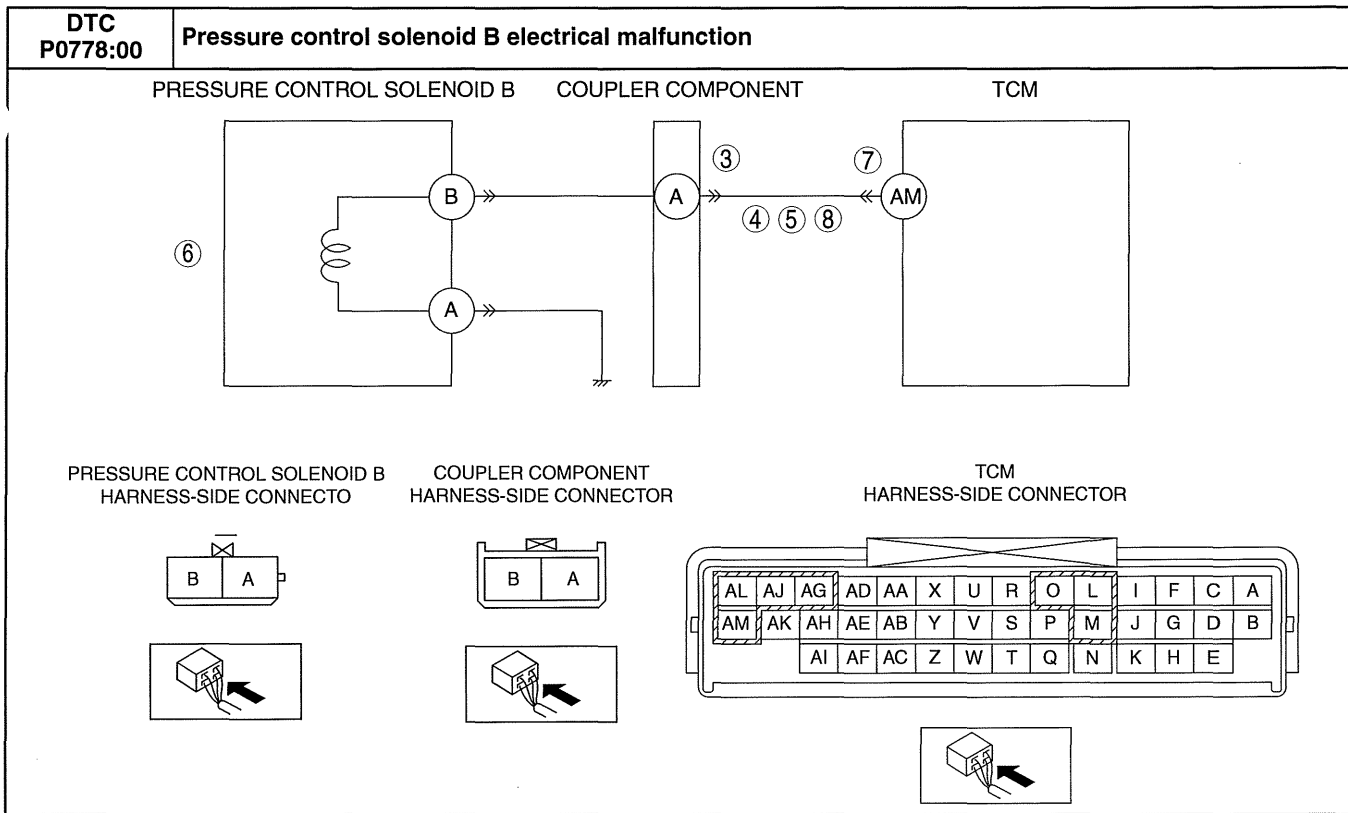
STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P0777:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 5GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0778:00 [FS5A-EL]

id050221825300

DTC P0778:00	Pressure control solenoid B electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that output voltage to the pressure control solenoid B is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Coupler component connector or terminal malfunction • Short to power supply in wiring harness between pressure control solenoid B terminal B and TCM terminal AM • Short to GND in wiring harness between pressure control solenoid B terminal B and TCM terminal AM • Pressure control solenoid B malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between pressure control solenoid B terminal B and TCM terminal AM • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the coupler component connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT PRESSURE CONTROL SOLENOID B CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Switch the ignition off. Measure the voltage between the coupler component terminal A (wiring harness-side) and body GND. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
5	INSPECT PRESSURE CONTROL SOLENOID B CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> Switch the ignition off. Inspect for continuity between the coupler component terminal A (wiring harness-side) and body GND. Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

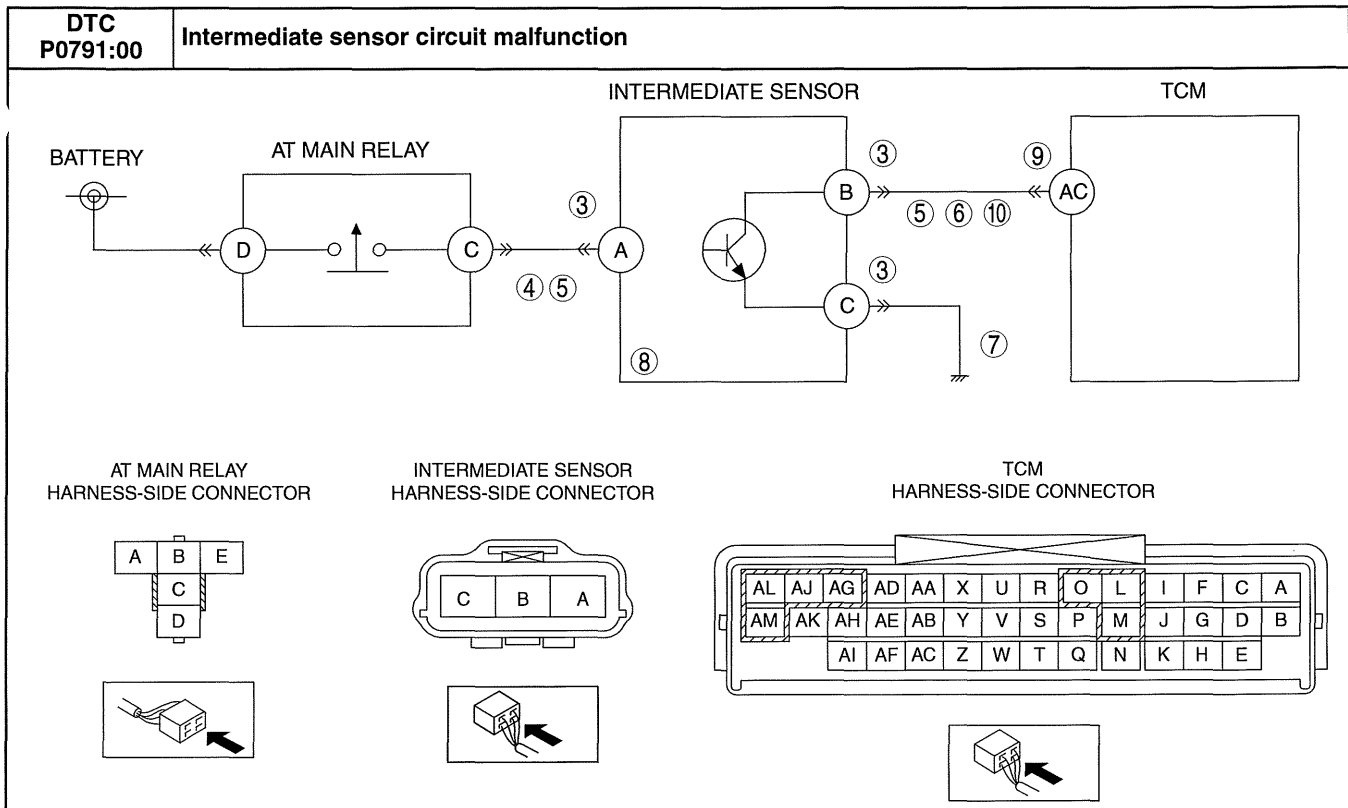
STEP	INSPECTION	ACTION	
6	INSPECT PRESSURE CONTROL SOLENOID B <ul style="list-style-type: none"> • Inspect the pressure control solenoid B. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the pressure control solenoid B, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT PRESSURE CONTROL SOLENOID B CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal A (wiring harness-side) and TCM terminal AM (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0778:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Make sure that the gears shift smoothly from 1GR to 5GR. 2. Make sure that TCC operates smoothly. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0791:00 [FS5A-EL]

id050221825400

DTC P0791:00	Intermediate sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects no signal from the intermediate sensor at vehicle speed 40 km/h {25 mph} or more. Diagnostic support note <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Intermediate sensor connector or terminal malfunction • Open circuit in wiring harness between intermediate sensor terminal A and AT main relay terminal C • Short to GND in wiring harness between intermediate sensor terminal A and AT main relay terminal C • Short to GND in wiring harness between intermediate sensor terminal B and TCM terminal AC • Short to power supply in wiring harness between intermediate sensor terminal B and TCM terminal AC • Open circuit in wiring harness between intermediate sensor terminal C and body GND • Intermediate sensor malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between intermediate sensor terminal B and TCM terminal AC • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT INTERMEDIATE SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the intermediate sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 11.
		No	Go to the next step.
4	INSPECT INTERMEDIATE SENSOR POWER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between intermediate sensor terminal A (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
5	INSPECT INTERMEDIATE SENSOR CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — Intermediate sensor terminal A (wiring harness-side) and body GND — Intermediate sensor terminal B (wiring harness-side) and body GND • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 11.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

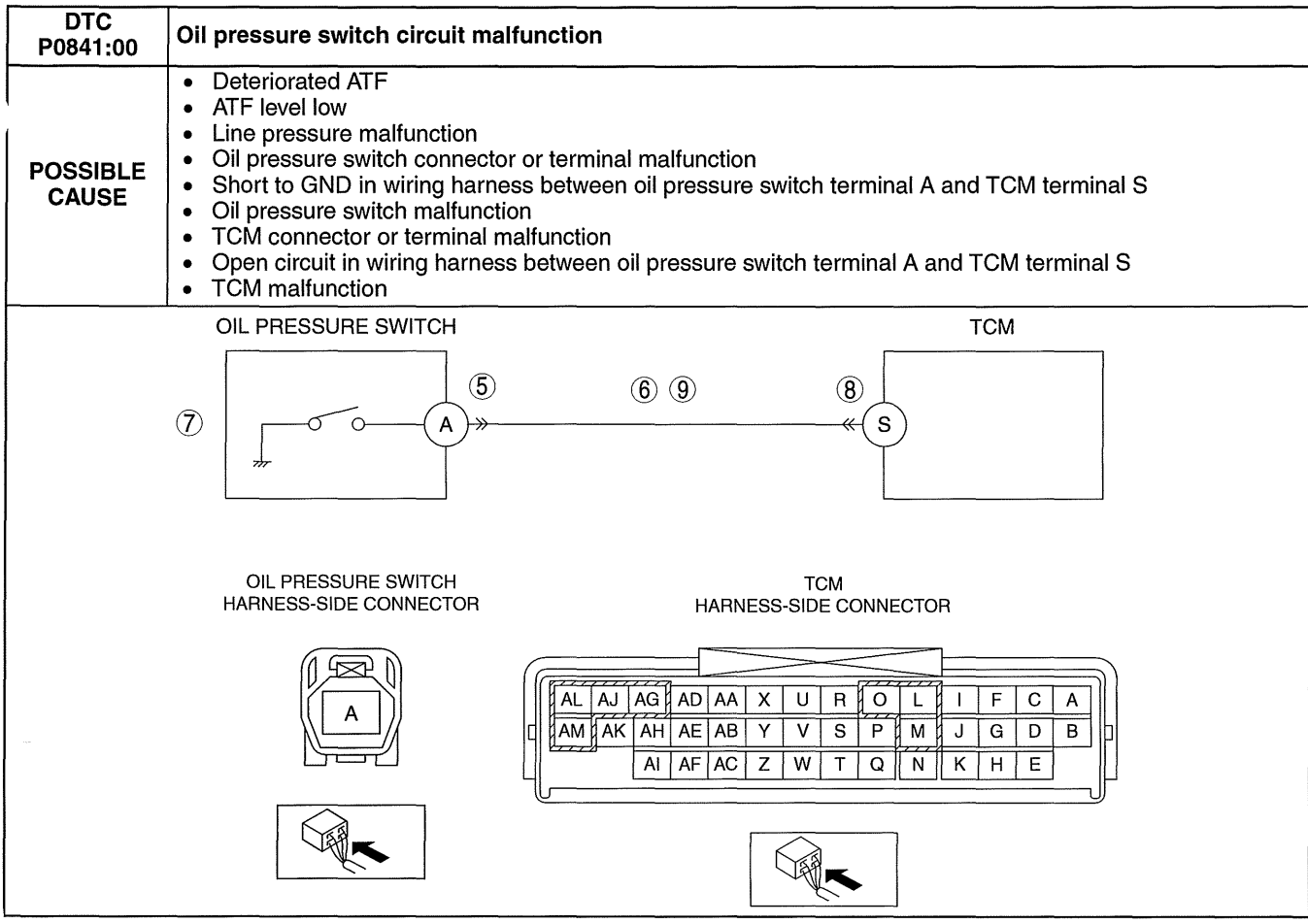
STEP	INSPECTION	ACTION	
6	INSPECT INTERMEDIATE SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between intermediate sensor terminal B (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
7	INSPECT INTERMEDIATE SENSOR GND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between intermediate sensor terminal C (wiring harness-side) and body GND • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
8	INSPECT INTERMEDIATE SENSOR <ul style="list-style-type: none"> • Inspect the intermediate sensor. (See 05-17-25 INTERMEDIATE SENSOR INSPECTION [FS5A-EL]) • Is there any malfunction? 	Yes	Replace the intermediate sensor, then go to Step 11. (See 05-17-26 INTERMEDIATE SENSOR REMOVAL/INSTALLATION [FS5A-EL])
		No	Go to the next step.
9	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 11.
		No	Go to the next step.
10	INSPECT INTERMEDIATE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the intermediate sensor terminal B (wiring harness-side) and TCM terminal AC (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0791:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle at more than 40 km/h {25 mph} for 5 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
12	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0841:00 [FS5A-EL]

id050221822500

DTC P0841:00	Oil pressure switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects no signal from the oil pressure switch when the following conditions are met. <ul style="list-style-type: none"> — 1GR, 2GR or 3GR — Revolution ratio of the input revolution to output revolution: 0.91—3.07 • The TCM detects input signal from the oil pressure switch when the following conditions are met. <ul style="list-style-type: none"> — 4GR or 5GR — Revolution ratio of the input revolution to output revolution: 0.64—0.81 <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light does not illuminate. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.

ON-BOARD DIAGNOSTIC [FS5A-EL]



05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 10. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
3	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 10. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 10.
		No	Go to the next step.
5	INSPECT OIL PRESSURE SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Switch the ignition off. Disconnect the oil pressure switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion) Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 10.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

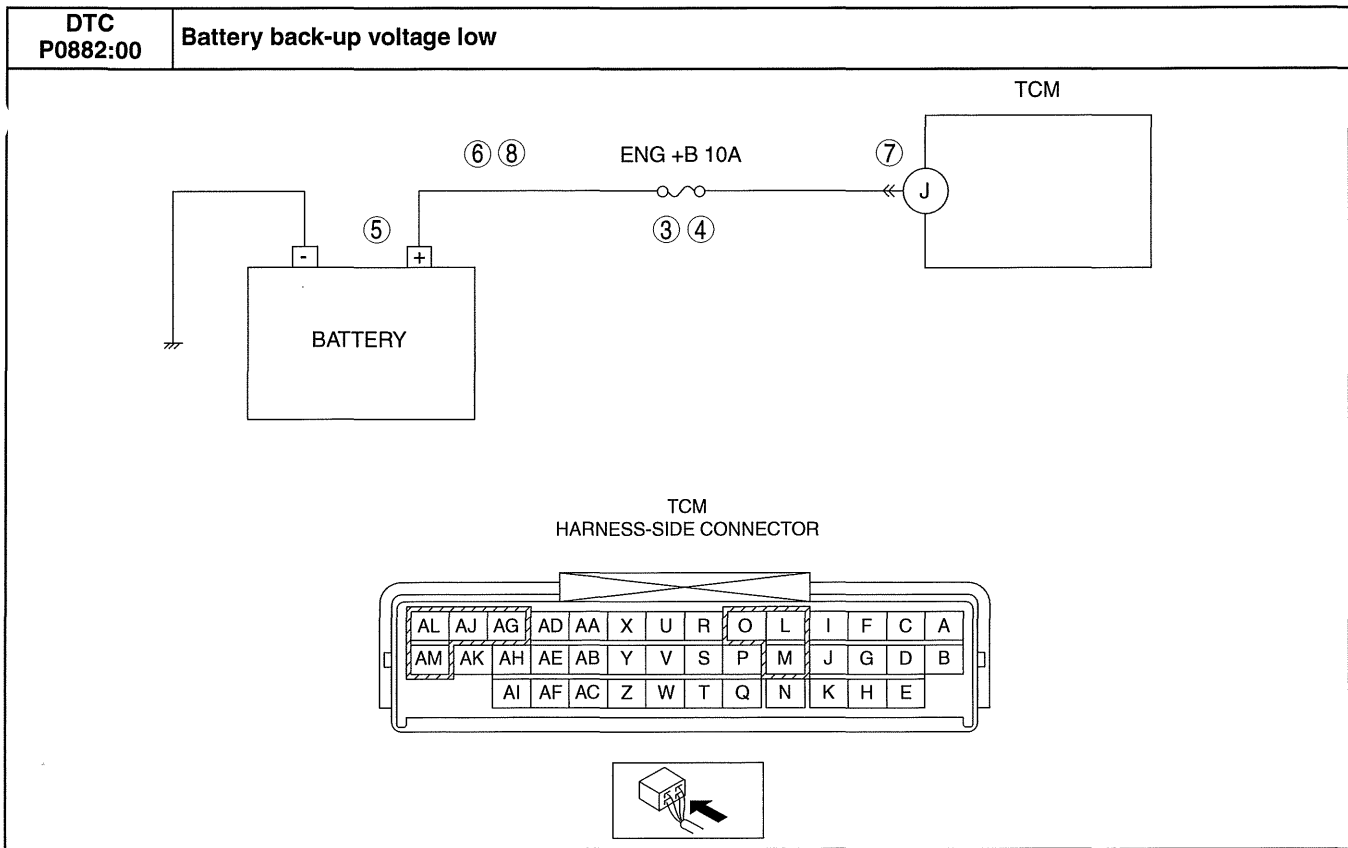
STEP	INSPECTION	ACTION	
6	INSPECT OIL PRESSURE SWITCH CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between oil pressure switch terminal A (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 10.
		No	Go to the next step.
7	INSPECT OIL PRESSURE SWITCH <ul style="list-style-type: none"> • Inspect the oil pressure switch. (See 05-17-22 OIL PRESSURE SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the oil pressure switch, then go to Step 10. (See 05-17-24 OIL PRESSURE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
8	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 10.
		No	Go to the next step.
9	INSPECT OIL PRESSURE SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between oil pressure switch terminal A (wiring harness-side) and TCM terminal S (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P0841:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle in 1GR for 1 s or more. 2. Drive the vehicle in 2GR for 1 s or more. 3. Drive the vehicle in 3GR for 1 s or more. 4. Drive the vehicle in 4GR for 1 s or more. 5. Drive the vehicle in 5GR for 1 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
11	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0882:00 [FS5A-EL]

id050221823100

DTC P0882:00	Battery back-up voltage low
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that battery back-up voltage is less than 2.5 V. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light does not illuminate. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Melt down ENG +B 10A fuse • ENG +B 10A fuse connector or terminal malfunction • Battery positive terminal malfunction • Battery malfunction • Short to GND in wiring harness between battery positive terminal and TCM terminal J • TCM connector or terminal malfunction • Open circuit in wiring harness between battery positive terminal and TCM terminal J • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ENG +B 10A FUSE <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the negative battery cable. • Inspect the ENG +B 10A fuse for proper installation and failure. • Is it normal? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • If the fuse is not installed correctly, install it correctly, then go to Step 9. • If fuse has been melted, replace it, then go to Step 9.
4	INSPECT ENG +B 10A FUSE TERMINAL FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for poor connection (such as damaged, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
5	INSPECT BATTERY POSITIVE TERMINAL FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for poor connection (such as damaged, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
6	INSPECT BATTERY POSITIVE CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the battery positive terminal. • Inspect for continuity between the battery positive terminal (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT BATTERY POSITIVE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the battery positive terminal. • Inspect for continuity between battery positive terminal (wiring harness-side) and TCM terminal J (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0882:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Idle the engine for 2 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P0883:00 [FS5A-EL]

id050221820100

DTC P0883:00	Battery voltage high
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that battery voltage is more than 16.02 V. Diagnostic support note <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Generator malfunction • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY DTC HAVE BEEN PRESENTED <ul style="list-style-type: none"> Switch the ignition to ON (Engine off). Read the DTC in the PCM. Is the DTC P2504:00 output? 	Yes	Perform the "DTC P2504:00 Troubleshooting". (See 01-02A-275 DTC P2504:00 [LF, L5].)
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING OF DTC P0883:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Start the engine. Idle the engine for 5 s or more. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
5	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

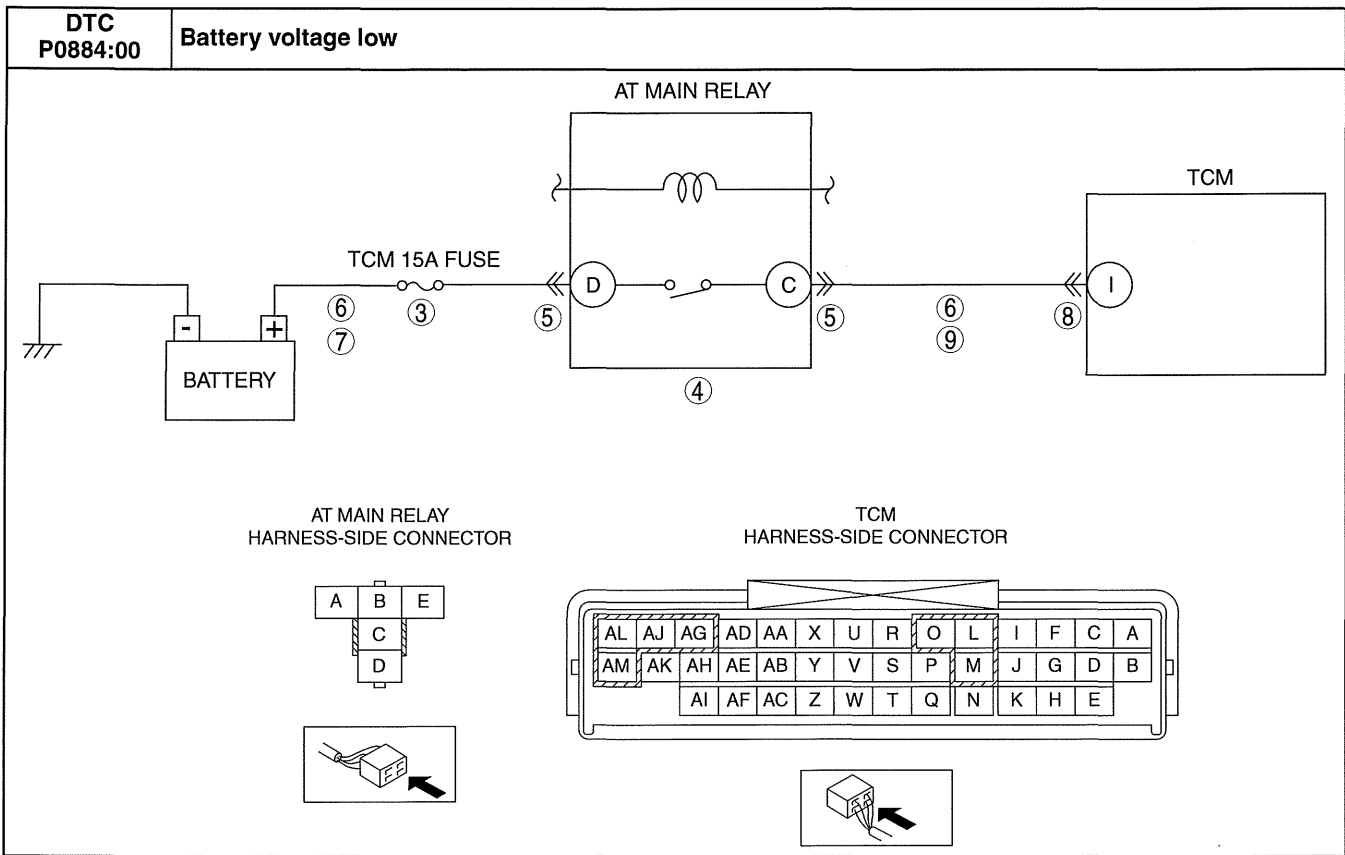
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DTC P0884:00 [FS5A-EL]

id050221824700

DTC P0884:00	Battery voltage low
DETECTION CONDITION	<ul style="list-style-type: none"> Battery voltage is less than 9.78 V when ATF temperature is 90 °C {194 °F} or less at engine speed 500 rpm or more. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction conditions during the first drive cycle. PENDING CODE is available. FREEZE FRAME DATA is available. The AT warning light illuminates if the TCM detects the above malfunction conditions during the first drive cycle. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Melt down TCM 15A fuse AT main relay malfunction AT main relay connector or terminal malfunction Short to GND in wiring harness between battery positive terminal and TCM terminal I Open circuit in wiring harness between battery positive terminal and TCM terminal I TCM connector or terminal malfunction TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TCM 15A FUSE <ul style="list-style-type: none"> Switch the ignition off. Disconnect the battery negative cable. Inspect the TCM 15A fuse for proper installation and failure. Is the TCM 15A fuse normal? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> If the TCM 15A fuse is not installed correctly, install it correctly. Then go to Step 10. If the TCM 15A fuse has melted down, replace it. Then go to Step 10.
4	INSPECT AT MAIN RELAY <ul style="list-style-type: none"> Remove the AT main relay. Inspect the AT main relay. (See 09-21-17 RELAY INSPECTION.) Is the AT main relay normal? 	Yes	Go to the next step.
		No	Replace the AT main relay, then go to Step 10.
5	INSPECT AT MAIN RELAY CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 10.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
6	INSPECT POWER SUPPLY CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Disconnect the battery positive cable. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> — AT main relay terminal D (wiring harness-side) and body GND — AT main relay terminal C (wiring harness-side) and body GND • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 10.
		No	Go to the next step.
7	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between AT main relay terminal D (wiring harness-side) and battery positive terminal (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
8	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 10.
		No	Go to the next step.
9	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between AT main relay terminal C (wiring harness-side) and TCM terminal I (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to next step.
10	VERIFY TROUBLESHOOTING OF DTC P0884:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the TCM memory using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Idle the engine for 10 s or more. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
11	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-02

DTC P0894:00 [FS5A-EL]

id050221820200

DTC P0894:00	Transaxle component slipping
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that turbine revolution is more than 187 rpm when the following conditions are met. <ul style="list-style-type: none"> — Vehicle stopped (brake pedal is depressed) — Accelerator pedal is fully released — Engine running at idle — Selector lever position moved to D range from N position • Diagnostic support note • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Shift solenoid A malfunction • Forward clutch not engaged or slipped • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY DTC HAVE BEEN PRESENTED <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are the following DTCs output? <ul style="list-style-type: none"> — P0720:00 (VSS circuit malfunction) — P0752:00 (Shift solenoid A stuck on) — P0753:00 (Shift solenoid A electrical malfunction) 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	Replace the forward clutch, then go to the next step.
3	VERIFY TROUBLESHOOTING OF DTC P0894:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Start the engine. 2. Release the accelerator pedal and depress the brake pedal. 3. Select the selector lever from N position to D range. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P1783:00 [FS5A-EL]

id050221820700

DTC P1783:00	ATF high oil temperature malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that ATF temperature is more than 149.5 °C {301.1 °F} when the following conditions are met. <ul style="list-style-type: none"> — TFT sensor circuit malfunction: not stored — Input voltage from the TFT sensor is more than 0.12 V Diagnostic support note <ul style="list-style-type: none"> • The MIL does not illuminate. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • High engine load drive (Driving a steep gradient at a low speed.) • Deteriorated ATF • Insufficient or excess level of ATF • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	VERIFY VEHICLE DRIVING CONDITIONS <ul style="list-style-type: none"> Verify each PID of "HTM_CNT" and "HTM_DIS". Verify vehicle driving conditions when a DTC P1783:00 is output. Has the vehicle been driven at a high engine load? 	Yes Go to Step 5. Inform the customer that the transaxle temperature is high due to high engine load driving.
		No Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes Go to the next step.
		No Replace the ATF, then go to Step 5. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes Go to the next step.
		No Add ATF to the specified level, then go to Step 5. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	VERIFY TROUBLESHOOTING OF DTC P1783:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Start the engine. Idle the engine for 1 s or more. Is the same DTC present? 	Yes Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No Go to the next step.
6	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No DTC troubleshooting completed.

05-02

DTC P2707:00 [FS5A-EL]

id050221825600

DTC P2707:00	Shift solenoid F stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> The TCM detects that revolution ratio of the intermediate revolution to output revolution is less than 1.11 when the following conditions are met. <ul style="list-style-type: none"> — 3GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) The TCM detects that revolution ratio of the intermediate revolution to output revolution is less than 1.11 when the following conditions are met. <ul style="list-style-type: none"> — 4GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. PENDING CODE is available. FREEZE FRAME DATA is available. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Shift solenoid F stuck off Line pressure malfunction Secondary control valve body malfunction TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	INSPECT SHIFT SOLENOID F <ul style="list-style-type: none"> Inspect the shift solenoid F. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is there any malfunction? 	Yes	Replace the shift solenoid F, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT SECONDARY CONTROL VALVE BODY <ul style="list-style-type: none"> Remove the secondary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) Disassemble the secondary control valve body. Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
8	VERIFY TROUBLESHOOTING OF DTC P2707:00 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC using the M-MDS. Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 3GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 4GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [FS5A-EL]

DTC P2708:00 [FS5A-EL]

id050221825700

DTC P2708:00	Shift solenoid F stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that revolution ratio of the intermediate revolution to output revolution is more than 1.11 when the following conditions are met. <ul style="list-style-type: none"> — 5GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • The AT warning light illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the TCM. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Shift solenoid F stuck off • Line pressure malfunction • Secondary control valve body malfunction • TCM malfunction

05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Inspect the ATF condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) • Is it normal? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 8. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL])
5	INSPECT SHIFT SOLENOID F <ul style="list-style-type: none"> • Inspect the shift solenoid F. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid F, then go to Step 8. (See 05-17-33 SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Perform the "Line Pressures Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to test result, then go to Step 8.
		No	Go to the next step.
7	INSPECT SECONDARY CONTROL VALVE BODY <ul style="list-style-type: none"> • Remove the secondary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].) • Disassemble the secondary control valve body. • Inspect the following parts: <ul style="list-style-type: none"> — Shift valve — Return spring — Hydraulic passage • Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
		No	Replace the transaxle, then go to the next step. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL].)

ON-BOARD DIAGNOSTIC [FS5A-EL]

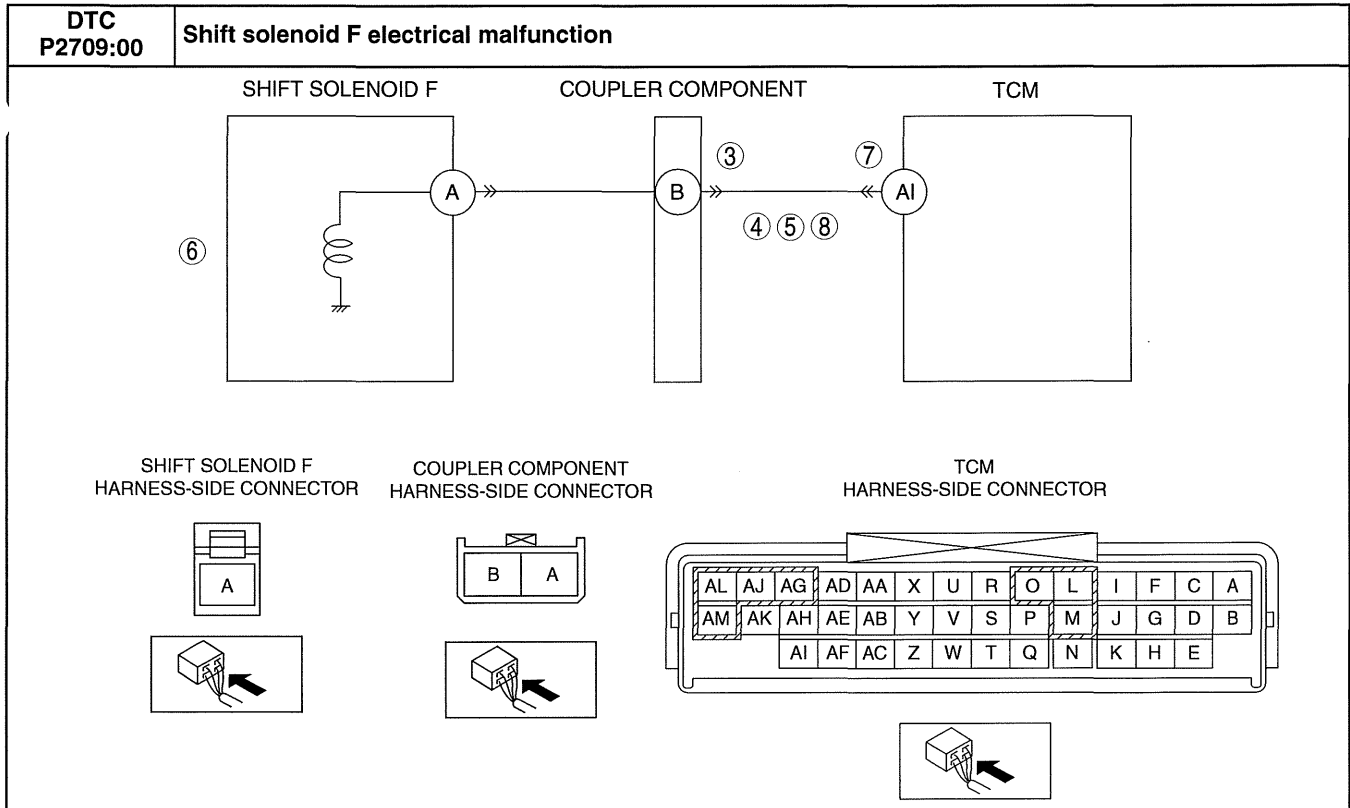
STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING OF DTC P2708:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Drive the vehicle under the following conditions for 5 s or more. <ul style="list-style-type: none"> — 5GR — Accelerator opening angle: 3.67% or more (LF) / 3.17% or more (L5) • Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
9	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the “Reading DTCs Procedure”. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

DTC P2709:00 [FS5A-EL]

id050221825800

DTC P2709:00	Shift solenoid F electrical malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • The TCM detects that output voltage to the shift solenoid F is stuck at 0 V or B+ when the solenoid valve operates according to TCM calculation. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Coupler component connector or terminal malfunction • Short to power supply in wiring harness between shift solenoid F terminal A and TCM terminal AI • Short to GND in wiring harness between shift solenoid F terminal A and TCM terminal AI • Shift solenoid F malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between shift solenoid F terminal A and TCM terminal AI • TCM malfunction

ON-BOARD DIAGNOSTIC [FS5A-EL]



05-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the coupler component connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT SHIFT SOLENOID F CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Switch the ignition to ON (Engine off). • Measure the voltage between the coupler component terminal B (wiring harness-side) and body GND. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID F CONTROL CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal B (wiring harness-side) and body GND. • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 9.
		No	Go to the next step.
6	INSPECT SHIFT SOLENOID F <ul style="list-style-type: none"> • Inspect the shift solenoid F. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the shift solenoid F, then go to Step 9. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [FS5A-EL]

STEP	INSPECTION	ACTION	
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion) • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
8	INSPECT SHIFT SOLENOID F CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition off. • Inspect for continuity between the coupler component terminal B (wiring harness-side) and TCM terminal A1 (wiring harness-side). • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P2709:00 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: <ol style="list-style-type: none"> 1. Make sure that the gears shift smoothly from 1GR to 5GR. 2. Make sure that TCC operates smoothly. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
10	VERIFY NO DTC HAS BEEN PRESENTED <ul style="list-style-type: none"> • Perform the "Reading DTCs Procedure". (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	DTC troubleshooting completed.

05-03 SYMPTOM TROUBLESHOOTING [FS5A-EL]

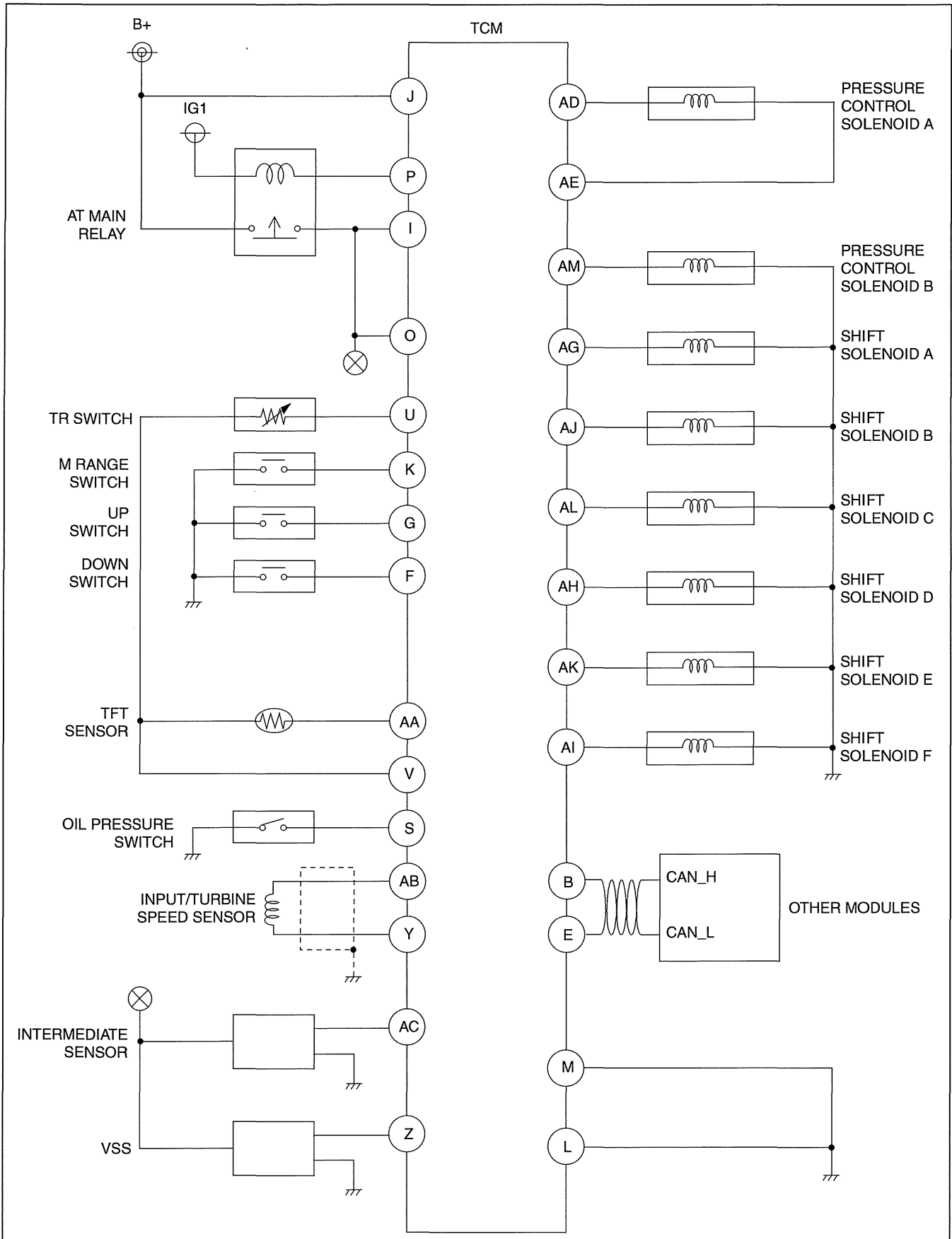
AUTOMATIC TRANSAXLE CONTROL SYSTEM WIRING DIAGRAM [FS5A-EL]	05-03-2	NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE [FS5A-EL].	05-03-24
FOREWORD [FS5A-EL]	05-03-3	NO.18 EXCESSIVE SHIFT SHOCK IS FELT WHEN UPSHIFTING AND DOWNSHIFTING [FS5A-EL]	05-03-25
BASIC INSPECTION [FS5A-EL].	05-03-3	NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC) [FS5A-EL]	05-03-26
SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL].	05-03-4	NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES [FS5A-EL].	05-03-26
QUICK DIAGNOSIS CHART [FS5A-EL]	05-03-7	NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D, M RANGES, OR IN R POSITION [FS5A-EL].	05-03-27
NO.1 VEHICLE DOES NOT MOVE IN D, M RANGES, OR IN R POSITION [FS5A-EL]	05-03-10	NO.22 NO ENGINE BRAKING IN 1GR POSITION OF M RANGE [FS5A-EL].	05-03-28
NO.2 VEHICLE MOVES IN N POSITION [FS5A-EL]	05-03-11	NO.23 TRANSAXLE OVERHEATS [FS5A-EL].	05-03-29
NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED [FS5A-EL].	05-03-11	NO.24 ENGINE STALLS WHEN SHIFTED TO D, M RANGES, OR IN R POSITION [FS5A-EL].	05-03-30
NO.4 EXCESSIVE CREEP [FS5A-EL]	05-03-11	NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEEDS OR STOPPING [FS5A-EL]	05-03-30
NO.5 NO CREEP AT ALL [FS5A-EL]	05-03-12	NO.26 STARTER DOES NOT WORK [FS5A-EL].	05-03-30
NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION [FS5A-EL].	05-03-13	NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [FS5A-EL].	05-03-31
NO.7 NO SHIFTING [FS5A-EL]	05-03-15	NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE [FS5A-EL].	05-03-31
NO.8 DOES NOT SHIFT TO 5GR [FS5A-EL]	05-03-16	NO.29 DOES NOT UPSHIFT IN M RANGE [FS5A-EL].	05-03-32
NO.9 ABNORMAL SHIFTING [FS5A-EL]	05-03-17	NO.30 DOES NOT DOWNSHIFT IN M RANGE [FS5A-EL].	05-03-33
NO.10 FREQUENT SHIFTING [FS5A-EL]	05-03-18	NO.31 M RANGE POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE/M RANGE POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE [FS5A-EL].	05-03-33
NO.11 SHIFT POINT IS HIGH OR LOW [FS5A-EL]	05-03-18		
NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION [FS5A-EL]	05-03-19		
NO.13 NO KICKDOWN [FS5A-EL].	05-03-20		
NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [FS5A-EL].	05-03-21		
NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE [FS5A-EL]	05-03-22		
NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION [FS5A-EL]	05-03-22		

05-03

SYMPTOM TROUBLESHOOTING [FS5A-EL]

AUTOMATIC TRANSAXLE CONTROL SYSTEM WIRING DIAGRAM [FS5A-EL]

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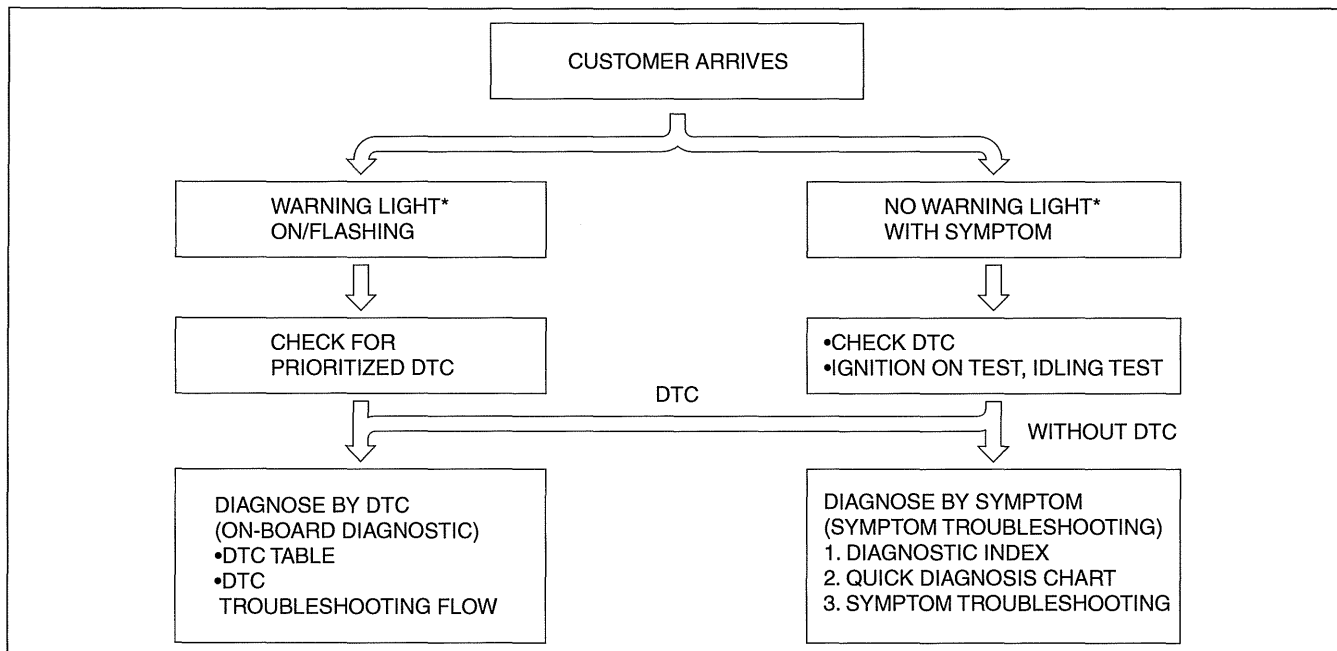
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SYMPTOM TROUBLESHOOTING [FS5A-EL]

FOREWORD [FS5A-EL]

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- When the customer reports a vehicle malfunction, inspect the malfunction indicator lamp (MIL) indication, AT warning indicator light flash, and diagnostic trouble code (DTC), then diagnose the malfunction according to following flowchart.
 - If a DTC exists, diagnose the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
 - If a DTC does not exist, the MIL does not illuminate and the AT warning indicator light illuminate, diagnose the applicable symptom troubleshooting. (See 05-03-4 SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL].)



05-03

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*: Malfunction Indicator Lamp (MIL), AT warning light.

BASIC INSPECTION [FS5A-EL]

id050308800300

STEP	INSPECTION		ACTION
1	Perform the mechanical system test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the mechanical system normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.
2	Switch the ignition to ON. When the selector lever is moved, does the gear position indicator light indication correspond to the selector lever position? Also, when other ranges are selected from N or P during idling, does the vehicle move within 1—2 s ?	Yes	Go to the next step.
		No	Inspect the selector lever and TR switch. (See 05-18-11 SELECTOR LEVER INSPECTION.) (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) If the selector lever and TR switch have a malfunction: • Repair or replace malfunctioning parts. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].) If the selector lever and TR switch are normal: • Go to the next step.
3	Inspect the ATF color and condition. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) Are the ATF color and odor normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result. Flush the ATX and cooler line if necessary.
4	Perform the line pressure test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the line pressure normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.

SYMPTOM TROUBLESHOOTING [FS5A-EL]

STEP	INSPECTION	ACTION	
5	Perform the stall test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the stall speed normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.
6	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL • ECT • RPM • VPWR TCM PIDs: <ul style="list-style-type: none"> • TFT • TFTV • TR • TR_SENS • MNL SW • DWN SW • UP SW • THOP • TSS • OSS • VPWR Are the PID values normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Perform the symptom troubleshooting and follow the procedures.
		No	Repair or replace any malfunctioning parts according to the inspection result.

SYMPTOM TROUBLESHOOTING ITEM TABLE [FS5A-EL]

id050308800400

- Use the chart below to verify the symptoms of the trouble in order to diagnose the appropriate area.

No.	Troubleshooting Item	Description	Reference
1	Vehicle does not move in D, M ranges, or in R position	<ul style="list-style-type: none"> • Vehicle does not move when accelerator pedal is depressed. 	(See 05-03-10 NO.1 VEHICLE DOES NOT MOVE IN D, M RANGES, OR IN R POSITION [FS5A-EL].)
2	Vehicle moves in N position	<ul style="list-style-type: none"> • Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position. 	(See 05-03-11 NO.2 VEHICLE MOVES IN N POSITION [FS5A-EL].)
3	Vehicle moves in P position, or parking gear does not disengage when P position is disengaged	<ul style="list-style-type: none"> • Vehicle rolls when on a downward slope and tires do not lock in P position. • Tires locked when P position is disengaged, vehicle does not move in D, M ranges, and R position when accelerator pedal is depressed, and engine remains in stalled condition. 	(See 05-03-11 NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED [FS5A-EL].)
4	Excessive creep	<ul style="list-style-type: none"> • Vehicle accelerates in D, M ranges and R position when accelerator pedal is not depressed. 	(See 05-03-11 NO.4 EXCESSIVE CREEP [FS5A-EL].)
5	No creep at all	<ul style="list-style-type: none"> • Vehicle does not move in D, M ranges, or R position when idling on flat paved road. 	(See 05-03-12 NO.5 NO CREEP AT ALL [FS5A-EL].)
6	Low maximum speed and poor acceleration	<ul style="list-style-type: none"> • Vehicle acceleration is poor at start. • Delayed acceleration when accelerator pedal is depressed while driving. 	(See 05-03-13 NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION [FS5A-EL].)
7	No shifting	<ul style="list-style-type: none"> • Single shift range only. • Sometimes shifts correctly. 	(See 05-03-15 NO.7 NO SHIFTING [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

No.	Troubleshooting Item	Description	Reference
8	Does not shift to 5GR	<ul style="list-style-type: none"> Vehicle does not upshift from 4GR to 5GR even though vehicle speed is increased. Vehicle does not shift to 5GR even though accelerator pedal is released in D range at 60 km/h {37 mph}. 	(See 05-03-16 NO.8 DOES NOT SHIFT TO 5GR [FS5A-EL].)
9	Abnormal shifting	<ul style="list-style-type: none"> Shifts incorrectly (incorrect shift pattern). 	(See 05-03-17 NO.9 ABNORMAL SHIFTING [FS5A-EL].)
10	Frequent shifting	<ul style="list-style-type: none"> Downshifting occurs suddenly even when accelerator pedal is depressed slightly in D range. 	(See 05-03-18 NO.10 FREQUENT SHIFTING [FS5A-EL].)
11	Shift point is high or low	<ul style="list-style-type: none"> Shift point considerably different from automatic shift diagram. Shift delays when accelerating. Shift occurs suddenly when accelerating and engine speed does not increase. 	(See 05-03-18 NO.11 SHIFT POINT IS HIGH OR LOW [FS5A-EL].)
12	Torque converter clutch (TCC) non-operation	<ul style="list-style-type: none"> TCC does not operate when vehicle reaches TCC operation range. 	(See 05-03-19 NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION [FS5A-EL].)
13	No kickdown	<ul style="list-style-type: none"> Does not downshift when accelerator pedal is fully depressed within kickdown range. 	(See 05-03-20 NO.13 NO KICKDOWN [FS5A-EL].)
14	Engine flares up or slips when upshifting or downshifting	<ul style="list-style-type: none"> When accelerator pedal is depressed, engine speed increases normally but vehicle speed increases slowly. When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not. 	(See 05-03-21 NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [FS5A-EL].)
15	Engine flares up or slips when accelerating vehicle	<ul style="list-style-type: none"> Engine flares up when accelerator pedal is depressed for upshifting. Engine flares up suddenly when accelerator pedal is depressed for downshifting. 	(See 05-03-22 NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE [FS5A-EL].)
16	Judder upon torque converter clutch (TCC) operation	<ul style="list-style-type: none"> Vehicle jolts when TCC is engaged. 	(See 05-03-22 NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION [FS5A-EL].)
17	Excessive shift shock from N to D or N to R position/range	<ul style="list-style-type: none"> Strong shock is felt when shifting from N to D or N to R position/range at idle. 	(See 05-03-24 NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE [FS5A-EL].)
18	Excessive shift shock is felt when upshifting and downshifting	<ul style="list-style-type: none"> Excessive shift shock is felt when depressing accelerator pedal to accelerate at upshifting. During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting. 	(See 05-03-25 NO.18 EXCESSIVE SHIFT SHOCK IS FELT WHEN UPSHIFTING AND DOWNSHIFTING [FS5A-EL].)
19	Excessive shift shock on torque converter clutch (TCC)	<ul style="list-style-type: none"> Strong shock is felt when TCC is engaged. 	(See 05-03-26 NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC) [FS5A-EL].)
20	Noise occurs at idle when vehicle is stopped in all positions/ranges	<ul style="list-style-type: none"> Transaxle is noisy in all positions and ranges when vehicle idling. 	(See 05-03-26 NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES [FS5A-EL].)
21	Noise occurs at idle when vehicle is stopped in D, M ranges, or in R position	<ul style="list-style-type: none"> Transaxle is noisy in driving ranges when vehicle is idling. 	(See 05-03-27 NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D, M RANGES, OR IN R POSITION [FS5A-EL].)

05-03

SYMPTOM TROUBLESHOOTING [FS5A-EL]

No.	Troubleshooting Item	Description	Reference
22	No engine braking in 1GR position of M range	<ul style="list-style-type: none"> Engine speed drops to idle but vehicle coasts when accelerator pedal is released when in M range (1GR) at low vehicle speed. 	(See 05-03-28 NO.22 NO ENGINE BRAKING IN 1GR POSITION OF M RANGE [FS5A-EL].)
23	Transaxle overheats	<ul style="list-style-type: none"> Burnt smell emitted from the transaxle. Smoke is emitted from the transaxle. 	(See 05-03-29 NO.23 TRANSAXLE OVERHEATS [FS5A-EL].)
24	Engine stalls when shifted to D, M ranges, or in R position	<ul style="list-style-type: none"> Engine stalls when shifting from N or P position to D, M ranges or R position at idle. 	(See 05-03-30 NO.24 ENGINE STALLS WHEN SHIFTED TO D, M RANGES, OR IN R POSITION [FS5A-EL].)
25	Engine stalls when driving at slow speeds or stopping	<ul style="list-style-type: none"> Engine stalls when brake pedal is depressed while driving at low speed or stopping. 	(See 05-03-30 NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEEDS OR STOPPING [FS5A-EL].)
26	Starter does not work	<ul style="list-style-type: none"> Starter does not work even when in P or N position. 	(See 05-03-30 NO.26 STARTER DOES NOT WORK [FS5A-EL].)
27	Gear position indicator light does not illuminate in M range	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster does not illuminate in M range with the ignition is ON. 	(See 05-03-31 NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [FS5A-EL].)
28	Gear position indicator light illuminates in P, R, N position and D range	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates in P, R and N position and D range with the ignition is ON. 	(See 05-03-31 NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE [FS5A-EL].)
29	Does not upshift in M range	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates but vehicle does not upshift when selector lever is pushed to "+" side. 	(See 05-03-32 NO.29 DOES NOT UPSHIFT IN M RANGE [FS5A-EL].)
30	Does not downshift in M range	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates but vehicle does not downshift when selector lever is pushed to "-" side. 	(See 05-03-33 NO.30 DOES NOT DOWNSHIFT IN M RANGE [FS5A-EL].)
31	M range position indicator light dose not illuminate in M range/ M range position indicator light illuminates in D range	<ul style="list-style-type: none"> M range position indicator light in instrument cluster dose not illuminate in M range or M range position indicator light in instrument cluster in D range with the ignition is ON. 	(See 05-03-33 NO.31 M RANGE POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE/M RANGE POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

X : Applied

1	Vehicle does not move in D, M ranges, or in R position																	X			X
2	Vehicle moves in N position																				
3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged																				
4	Excessive creep																				
5	No creep at all																	X			X
6	Low maximum speed and poor acceleration	X	X	X	X													X	X	X	X
7	No shifting			X	X													X			X
8	Does not shift to 5GR	X	X	X	X													X	X	X	X
9	Abnormal shifting	X	X															X			X
10	Frequent shifting																	X			
11	Shift point is high or low																	X			
12	Torque converter clutch (TCC) non-operation																	X	X	X	X
13	No kickdown																				
14	Engine flares up or slips when upshifting or downshifting	X	X															X			X
15	Engine flares up or slips when accelerating vehicle	X	X															X			X
16	Judder upon torque converter clutch (TCC) operation																	X		X	
17	Excessive shift shock from N to D or N to R position/range																	X			X
18	Excessive shift shock is felt when upshifting and downshifting																	X		X	X
19	Excessive shift shock on torque converter clutch (TCC)																	X		X	
20	Noise occurs at idle when vehicle is stopped in all positions/ranges																				
21	Noise occurs at idle when vehicle is stopped in D, M ranges, or in R position	X	X																		
22	No engine braking in 1GR position of M range				X	X												X			X
23	Transaxle overheats																				X
24	Engine stalls when shifted to D, M ranges, or in R position																				
25	Engine stalls when driving at slow speeds or stopping																				
26	Starter does not work	X	X																		
27	Gear position indicator light does not illuminate in M range				X																
28	Gear position indicator light illuminates in P, R, N position and D range					X															
29	Does not upshift in M range				X		X	X													
30	Does not downshift in M range				X				X	X											
31	M range position indicator light dose not illuminate in M range/ M range position indicator light illuminates in D range				X	X															
No.	Item	Electrical system components																			
Symptom		ATX outer parts																			
		TR switch	M range switch	Up switch	Down switch	Brake switch						TFT sensor									
Cause of trouble		Mis-adjusted	Not operating properly	No signal input	Abnormal signal input	No signal input	Abnormal signal input	No signal input	Abnormal signal input	Always ON	Poor GND	No signal input	Malfunction signal input	Shift solenoid D malfunction							

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SYMPTOM TROUBLESHOOTING [FS5A-EL]

X : Applied

1	Vehicle does not move in D, M ranges, or in R position			X	X		X	X	X							X	X	X																																																																																																																																																																																																																																																																																																																																																																									
2	Vehicle moves in N position								X								X																																																																																																																																																																																																																																																																																																																																																																										
3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged																																																																																																																																																																																																																																																																																																																																																																																										
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6	Low maximum speed and poor acceleration		X	X	X	X		X	X							X	X	X	X																																																																																																																																																																																																																																																																																																																																																																								
7	No shifting		X	X	X	X	X	X	X							X	X																																																																																																																																																																																																																																																																																																																																																																										
8	Does not shift to 5GR		X	X	X				X							X	X																																																																																																																																																																																																																																																																																																																																																																										
9	Abnormal shifting	X	X	X	X	X	X	X	X	X						X	X																																																																																																																																																																																																																																																																																																																																																																										
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11	Shift point is high or low															X																																																																																																																																																																																																																																																																																																																																																																											
12	Torque converter clutch (TCC) non-operation	X		X					X									X	X																																																																																																																																																																																																																																																																																																																																																																								
13	No kickdown																																																																																																																																																																																																																																																																																																																																																																																										
14	Engine flares up or slips when upshifting or downshifting	X	X	X	X	X		X	X							X	X																																																																																																																																																																																																																																																																																																																																																																										
15	Engine flares up or slips when accelerating vehicle	X	X	X	X	X		X	X							X	X																																																																																																																																																																																																																																																																																																																																																																										
16	Judder upon torque converter clutch (TCC) operation	X		X					X									X	X																																																																																																																																																																																																																																																																																																																																																																								
17	Excessive shift shock from N to D or N to R position/range			X	X	X		X	X	X	X	X				X																																																																																																																																																																																																																																																																																																																																																																											
18	Excessive shift shock is felt when upshifting and downshifting	X		X	X	X	X	X	X	X	X	X				X	X																																																																																																																																																																																																																																																																																																																																																																										
19	Excessive shift shock on torque converter clutch (TCC)	X		X					X									X	X																																																																																																																																																																																																																																																																																																																																																																								
20	Noise occurs at idle when vehicle is stopped in all positions/ranges																																																																																																																																																																																																																																																																																																																																																																																										
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22	No engine braking in 1GR position of M range	X				X	X		X							X	X																																																																																																																																																																																																																																																																																																																																																																										
23	Transaxle overheats								X					X				X	X																																																																																																																																																																																																																																																																																																																																																																								
24	Engine stalls when shifted to D, M ranges, or in R position																	X	X																																																																																																																																																																																																																																																																																																																																																																								
25	Engine stalls when driving at slow speeds or stopping	X							X									X	X																																																																																																																																																																																																																																																																																																																																																																								
26	Starter does not work																																																																																																																																																																																																																																																																																																																																																																																										
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05-03

am3uuw000231

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.1 VEHICLE DOES NOT MOVE IN D, M RANGES, OR IN R POSITION [FS5A-EL]

id050308808500

1	Vehicle does not move in D, M ranges, or in R position
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not move when the accelerator pedal is depressed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If the vehicle does not move in D, M ranges or R position, basically, the malfunction is in the ATX. (Vehicle will move even with a malfunction in the TCM.) Since a malfunction is in the sensor circuit or output circuit is the cause of the malfunction in the ATX, inspect the sensors, output circuit, and the related wiring harnesses. <ol style="list-style-type: none"> 1. Clutch slippage, worn (D, M ranges-Forward clutch, R position-Reverse clutch, Low and reverse brake) <ul style="list-style-type: none"> • Line pressure low • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid D malfunction • Pressure control solenoid A malfunction • Pressure control solenoid B malfunction • Body ground malfunction • Control valve body malfunction 2. Selector lever malfunction 3. Improper operation of parking mechanism 4. Torque converter malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	When the vehicle is stopped on a flat, level road and the engine is off, does the vehicle move when pushed (in D range or N, R positions with the brake pedal released)?	Yes	Go to the next step.
		No	Inspect for parking mechanism. (See Automatic Transaxle Workshop Manual FS5A-EL.)
2	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
3	Verify the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
4	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.2 VEHICLE MOVES IN N POSITION [FS5A-EL]

id050308800700

2	Vehicle moves in N position
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If the vehicle moves in N position, basically, the malfunction is in the ATX. Since a malfunction in the sensor circuit or output circuit is the cause of the malfunction in the ATX, inspect the sensors, output circuit, and the related wiring harnesses. <ol style="list-style-type: none"> 1. Clutch burnt (Forward clutch) <ul style="list-style-type: none"> • Control valve body malfunction 2. Selector lever position disparity (Although the selector indicator shows N position, the hydraulic circuit shows D range or R position) <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle On-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Does the vehicle creep when the selector lever is moved slightly in N position?	Yes Go to the next step.
		No Adjust the selector cable. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
2	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit.
3	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No Repair or replace any malfunctioning parts.
4	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 	

NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED [FS5A-EL]

id050308800800

3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle rolls when on a downward slope and tires do not lock in P position. • Tires locked when P position is disengaged, vehicle does not move in D, M ranges, and R position when accelerator pedal is depressed, and engine remains in stalled condition.
POSSIBLE CAUSE	<ol style="list-style-type: none"> 1. Parking mechanism malfunction (May have effect on noise or shock from transaxle) 2. Improper adjustment of selector lever 3. If vehicle moves in N position, perform the symptom troubleshooting "NO.2 VEHICLE MOVES IN N POSITION" (See 05-03-11 NO.2 VEHICLE MOVES IN N POSITION [FS5A-EL].)

NO.4 EXCESSIVE CREEP [FS5A-EL]

id050308800900

4	Excessive creep
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle accelerates in D, M ranges and R position when accelerator pedal is not depressed.
POSSIBLE CAUSE	<ol style="list-style-type: none"> 1. Engine idle speed is high (Transaxle system is not cause of problem) 2. Perform the symptom troubleshooting "NO.9 FAST IDLE/RUNS ON" (See 01-03A-47 NO.9 FAST IDLE/RUNS ON [LF, L5].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.5 NO CREEP AT ALL [FS5A-EL]

id050308801000

5	No creep at all
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not move in D, M ranges, or R position when idling on flat paved road.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Either transaxle is stuck in 3GR or 4GR position, or there is clutch circuit slippage due to a stuck 3—4 clutch. <ol style="list-style-type: none"> 1. Clutch burnt <ul style="list-style-type: none"> • Line pressure low • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Pressure control solenoid A malfunction • Body ground malfunction • Control valve body malfunction 2. Transaxle fixed in 3GR (Operation of fail-safe function) <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Malfunction of electronic parts of output and input system 3. There is no engine torque <ul style="list-style-type: none"> • Torque converter malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle On-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Does the vehicle creep in any range/position?	Yes	Go to the next step.
		No	Inspect or adjust the selector lever. (See 05-18-11 SELECTOR LEVER INSPECTION.) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
2	Inspect the THOP PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
4	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
5	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION [FS5A-EL]

id050308801100

6	Low maximum speed and poor acceleration
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle acceleration is poor at start. • Delayed acceleration when accelerator pedal is depressed while driving.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If the clutch is stuck or does not stay in 3GR, the malfunction is in the engine circuit. <ol style="list-style-type: none"> 1. Clutch slippage, burnt <ul style="list-style-type: none"> • Line pressure low • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid F malfunction • Pressure control solenoid A malfunction • Body ground malfunction • Control valve body malfunction 2. Signal malfunction <ul style="list-style-type: none"> • VSS malfunction • Sensor ground malfunction • TP sensor malfunction • APP sensor malfunction • Input/turbine speed sensor malfunction 3. Transaxle fixed in 3GR (Operation of fail-safe function) <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Malfunction of electronic parts of output and input system 4. Transaxle fixed in 4GR (Operation of fail-safe function) <ul style="list-style-type: none"> • Forward clutch slippage • VSS malfunction • Shift solenoid A malfunction (Stuck on) • Poor connection of connector 5. Insufficient starting torque (Suspected when in-gear condition, shift control and engine circuit are normal) <ul style="list-style-type: none"> • Torque converter malfunction (Poor operation, stuck) 6. Engagement of TCC operation range (Operation of fail-safe function) <ul style="list-style-type: none"> • TFT sensor malfunction (Short or open circuit) 7. Transaxle fixed in M range <ul style="list-style-type: none"> • M range switch (built-in selector lever component) malfunction 8. TR switch adjustment incorrect <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle On-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	Does the gear position indicator light indication correspond to the selector lever position with the ignition at the ON?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting "NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE" or "NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE". (See 05-03-31 NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [FS5A-EL].) (See 05-03-31 NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE [FS5A-EL].)
2	Perform the symptom troubleshooting "NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE". (See 01-03A-55 NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE [LF, L5].) Is the CIS system normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.

SYMPTOM TROUBLESHOOTING [FS5A-EL]

STEP	INSPECTION	ACTION	
3	Disconnect the solenoid connector. Does the vehicle operate as follows? <ul style="list-style-type: none"> • D range: 3GR (fixed) • R position: Reverse 	Yes	Go to the next step.
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
4	Drive the vehicle in D range. Does the vehicle start from stop in first gear?	Yes	Go to the next step.
		No	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL TCM PIDs: <ul style="list-style-type: none"> • THOP • OSS • TSS • TR Repair or replace any malfunctioning parts. (See 01-40A-8 PCM INSPECTION [LF, L5].)
5	Inspect the following TCM PID values using the M-MDS: (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) <ul style="list-style-type: none"> • SSA/SS1 • SSB/SS2 • SSC/SS3 • SSF_SS6 Are the PID values normal?	Yes	Go to the next step.
		No	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL TCM PIDs: <ul style="list-style-type: none"> • THOP • OSS • TSS Repair or replace any malfunctioning parts. (See 01-40A-8 PCM INSPECTION [LF, L5].)
6	Perform the stall test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the stall speed normal?	Yes	Reverify symptoms of malfunction.
		No	Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
7	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.7 NO SHIFTING [FS5A-EL]

id050308801200

7	No shifting
DESCRIPTION	<ul style="list-style-type: none"> • Single shift range only. • Sometimes it shifts correctly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • When the gear position is fixed in 3GR due to the fail-safe operation, the malfunction is in the ATX. • Perform the malfunction diagnosis according to the symptom troubleshooting "NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION". (See 05-03-13 NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION [FS5A-EL].) <ol style="list-style-type: none"> 1. Clutch slippage, burnt <ul style="list-style-type: none"> • Line pressure low • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid F malfunction • Pressure control solenoid A malfunction • Pressure control solenoid B malfunction • Body ground malfunction • Control valve body malfunction 2. Signal malfunction <ul style="list-style-type: none"> • VSS malfunction • Sensor ground malfunction • APP sensor malfunction • TP sensor malfunction • Input/turbine speed sensor malfunction 3. Transaxle fixed in 3GR (Operation of fail-safe function) <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Disconnected shift solenoid connector • Poor ground of shift solenoid 4. Transaxle fixed in 4GR (Operation of fail-safe function) <ul style="list-style-type: none"> • Forward clutch slippage • VSS malfunction • Shift solenoid A malfunction (Stuck on) • Poor connection of connector 5. Transaxle fixed in M range <ul style="list-style-type: none"> • M range switch (built-in selector lever component) malfunction

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SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.8 DOES NOT SHIFT TO 5GR [FS5A-EL]

id050308809300

8	Does not shift to 5GR
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not upshift from 4GR to 5GR even though vehicle speed is increased. • Vehicle does not shift to 5GR even though accelerator pedal is released in D range at 60 km/h {37 mph}.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Basically, TCC does not operate when the fail-safe is operating. Verify the DTCs first. If the TCC operates when driving at high speeds only, the malfunction (improper adjustment) is in the TR switch circuit. <ul style="list-style-type: none"> Caution • If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF. 1. TCC piston slippage, burned <ul style="list-style-type: none"> • Line pressure low • TP sensor malfunction • APP sensor malfunction • ECT sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • Sensor ground malfunction 2. TFT sensor malfunction <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Sensor malfunction 3. TR switch malfunction <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Sensor malfunction • TR switch adjustment incorrect 4. Shift solenoid A, shift solenoid B, shift solenoid D, Shift solenoid F valve malfunction <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Solenoid valve stuck 5. M range switch (built-in selector lever component) malfunction 6. Control valve body malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Does the gear position indicator light indication correspond to the selector lever position with the ignition at the ON?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting "NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE" or "NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE". (See 05-03-31 NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [FS5A-EL].) (See 05-03-31 NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE [FS5A-EL].)
2	Inspect the following TCM PID values using the M-MDS: (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) • TFT • TFTV Are the PID values normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.

SYMPTOM TROUBLESHOOTING [FS5A-EL]

STEP	INSPECTION	ACTION	
3	Inspect the following TCM PID values using the M-MDS: (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) • SSA/SS1 • SSB/SS2 • SSD/SS4 • SSF_SS6 Are the PID values normal?	Yes	Go to the next step.
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
4	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Inspect the following TCM PID values using the M-MDS: (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) • TR • TSS • OSS Repair or replace any malfunctioning parts.
		No	Repair or replace the wiring harness for a possible open circuit.
5	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

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NO.9 ABNORMAL SHIFTING [FS5A-EL]

id050308801400

9	Abnormal shifting
DESCRIPTION	<ul style="list-style-type: none"> • Shifts incorrectly (incorrect shift pattern).
POSSIBLE CAUSE	<ul style="list-style-type: none"> • There is a malfunction in the signal circuit which controls shifting (TP sensor, input/turbine speed sensor, VSS), the control valve is stuck, the accumulator (forward or servo apply) is stuck, or the clutch circuit is stuck. <ol style="list-style-type: none"> 1. Clutch slippage, burnt <ul style="list-style-type: none"> • Line pressure low • Control valve body malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid F malfunction • Pressure control solenoid B malfunction • Body ground malfunction 2. Signal malfunction <ul style="list-style-type: none"> • VSS malfunction • Sensor ground malfunction • APP sensor malfunction • TP sensor malfunction • Input/turbine speed sensor malfunction 3. TR switch malfunction <ul style="list-style-type: none"> • Selector lever adjustment incorrect • TR switch adjustment incorrect Note <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle On-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
2	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL TCM PIDs: <ul style="list-style-type: none"> • THOP • TSS • OSS • VSS Are the PID values normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
3	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

NO.10 FREQUENT SHIFTING [FS5A-EL]

id050308801500

10	Frequent shifting
DESCRIPTION	<ul style="list-style-type: none"> • Downshifting occurs suddenly even when accelerator pedal is depressed slightly in D range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The malfunctioning circuit is basically the same as the symptom troubleshooting "NO.9 ABNORMAL SHIFTING [FS5A-EL]". (See 05-03-17 NO.9 ABNORMAL SHIFTING [FS5A-EL].) However, a malfunction of the input signal to the TP sensor, APP sensor, input/turbine speed sensor, VSS (including the sensor ground, sensor wiring harness and connector), or clutch slippage (clutch stuck, low pressure in line) may also be the cause.

NO.11 SHIFT POINT IS HIGH OR LOW [FS5A-EL]

id050308801600

11	Shift point is high or low
DESCRIPTION	<ul style="list-style-type: none"> • Shift point considerably different from automatic shift diagram. • Shift delays when accelerating. • Shift occurs quickly when accelerating and engine speed does not increase.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If the transaxle does not shift abnormally, there is a malfunction of the input signal to the TP sensor, APP sensor, input/turbine speed sensor, or VSS (including sensor ground). • If the engine speed is high or low, regardless of normal shifting, inspect the tachometer. • Verify that the output signal of the TP sensor and APP sensor changes linearly. • Clutch or brake slippage.

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION [FS5A-EL]

id050308801700

12	Torque converter clutch (TCC) non-operation
DESCRIPTION	<ul style="list-style-type: none"> • TCC does not operate when vehicle reaches TCC operation range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Basically, the TCC does not operate when the fail-safe is operating. Verify the DTC first. <ul style="list-style-type: none"> Caution • If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF. 1. TCC burnt <ul style="list-style-type: none"> (1) Input sensor system malfunction <ul style="list-style-type: none"> • TFT sensor • VSS • Input/turbine speed sensor • Sensor ground (2) Output solenoid valve system malfunction (Sticking) <ul style="list-style-type: none"> • Shift solenoid A malfunction • Shift solenoid E malfunction (3) Control valve body malfunction system (Poor operation, stuck) <ul style="list-style-type: none"> • TCC hydraulic pressure system 2. TP sensor malfunction (Not operating linear) 3. APP sensor malfunction (Not operating linear) 4. Input/turbine speed sensor or VSS malfunction 5. Brake switch malfunction (Always ON) 6. ECT sensor malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle On-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	Does the gear position indicator light indication correspond to the selector lever position with the ignition at the ON?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting "NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE" or "NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE". (See 05-03-31 NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [FS5A-EL].) (See 05-03-31 NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE [FS5A-EL].)
2	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL TCM PIDs: <ul style="list-style-type: none"> • THOP • OSS • TSS Are the PID values normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.

SYMPTOM TROUBLESHOOTING [FS5A-EL]

STEP	INSPECTION	ACTION	
4	Measure the resistance between shift solenoid A and E control circuit at the TCM connector and control valve body connector. Measure the resistance between shift solenoid A and E circuit at the TCM connector and control valve body connector. Are the resistances less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the shift solenoid A or E control circuit.
5	Inspect the shift solenoid A and E. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Are the shift solenoids operating properly?	Yes	Replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
6	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

NO.13 NO KICKDOWN [FS5A-EL]

id050308801800

13	No kickdown
DESCRIPTION	<ul style="list-style-type: none"> • Does not downshift when accelerator pedal is fully depressed within kickdown range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If transaxle does not downshift though shifting is normal, the malfunction is in the TP sensor and APP sensor circuit (including sensor ground, sensor wiring harness and connector).

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [FS5A-EL]

id050308801900

14	Engine flares up or slips when upshifting or downshifting
DESCRIPTION	<ul style="list-style-type: none"> • When accelerator pedal is depressed, engine speed increases normally but vehicle speed increases slowly. • When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • There is clutch slippage because the clutch is stuck or the line pressure is low. <ol style="list-style-type: none"> 1. Clutch stuck, slippage (Forward clutch, 3–4 clutch, 2–4 brake band, one-way clutch) <ul style="list-style-type: none"> • Line pressure low • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid F malfunction • Pressure control solenoid A malfunction • Body ground malfunction • Control valve body malfunction 2. Signal malfunction <ul style="list-style-type: none"> • VSS malfunction • Sensor ground malfunction • APP sensor malfunction • TP sensor malfunction • Input/turbine speed sensor malfunction 3. Poor operation of mechanical pressure <ul style="list-style-type: none"> • Selector lever position disparity • TR switch position disparity <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	Is the shift point normal?	Yes	Go to the next step.
		No	Perform the symptom troubleshooting “NO.9 ABNORMAL SHIFTING”. (See 05-03-17 NO.9 ABNORMAL SHIFTING [FS5A-EL].)
2	Inspect the THOP PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
4	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
5	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE [FS5A-EL]

id050308802000

15	Engine flares up or slips when accelerating vehicle
DESCRIPTION	<ul style="list-style-type: none"> • Engine flares up when the accelerator pedal is depressed for upshifting. • Engine flares up suddenly when the accelerator pedal is depressed for downshifting.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The malfunction is basically the same as the symptom troubleshooting "NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING". (See 05-03-21 NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [FS5A-EL].) If conditions for No.14 worsen, the malfunction will develop to No.15.

NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION [FS5A-EL]

id050308802100

16	Judder upon torque converter clutch (TCC) operation
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle jolts when TCC is engaged.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor TCC engagement due to either slippage because the TCC is stuck or the line pressure is low. <ul style="list-style-type: none"> Caution • If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF. 1. TCC piston slippage, burnt <ul style="list-style-type: none"> • Line pressure high • Shift solenoid A malfunction • Shift solenoid E malfunction • Control valve body malfunction • Body ground malfunction • Pressure control solenoid A malfunction 2. Signal malfunction <ul style="list-style-type: none"> • VSS malfunction • Sensor ground malfunction • TFT sensor malfunction • APP sensor malfunction • TP sensor malfunction • Input/turbine speed sensor malfunction 3. Torque converter malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the TSS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
2	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
3	Measure the resistance between shift solenoid A and E control circuit at the TCM connector and control valve body connector. Measure the resistance between shift solenoid A/E circuit at the TCM connector and control valve body connector. Are the resistances less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the shift solenoid A and/or E circuit.
4	Inspect the shift solenoid. (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Is the solenoid valve operating properly?	Yes	Go to the next step.
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
5	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
6	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

05-03

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE [FS5A-EL]

id050308802200

17	Excessive shift shock from N to D or N to R position/range
DESCRIPTION	<ul style="list-style-type: none"> • Strong shock felt when shifting from N to D or N to R position/range at idle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Shift shock may worsen when the fail-safe is operating. If no DTC is output, the shift shock may worsen due to poor operation of the control valve body or sticking of the clutch. 1. Clutch burnt (N→D: Forward clutch, N→R: Reverse clutch or low and reverse brake) <ul style="list-style-type: none"> • Line pressure low, high • APP sensor malfunction • TP sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Pressure control solenoid A malfunction • Control valve body malfunction • Sensor ground malfunction • Body ground malfunction 2. Poor hydraulic operation (Malfunction in range change) <ul style="list-style-type: none"> • Forward accumulator malfunction • Servo apply accumulator malfunction • Oil pressure switch malfunction 3. Idle speed high 4. Poor tightening torque of engine mount, exhaust mount 5. Poor operation of mechanical pressure <ul style="list-style-type: none"> • Selector lever position disparity <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Does the shift shock occur only when the engine is cold?	Yes	Go to the next step.
		No	Go to Step 3.
2	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL TCM PIDs: <ul style="list-style-type: none"> • THOP • TFT • TFTV Repair or replace any malfunctioning parts. (See 01-40A-8 PCM INSPECTION [LF, L5].)
		No	Repair or replace the wiring harness for a possible open circuit.
3	Perform the stall test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the stall speed normal?	Yes	Go to the next step.
		No	Go to Step 5.
4	Inspect the TR PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.

SYMPTOM TROUBLESHOOTING [FS5A-EL]

STEP	INSPECTION	ACTION	
5	Inspect the THOP PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
6	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
7	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
8	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

05-03

NO.18 EXCESSIVE SHIFT SHOCK IS FELT WHEN UPSHIFTING AND DOWNSHIFTING [FS5A-EL]

id050308804600

18	Excessive shift shock is felt when upshifting and downshifting
DESCRIPTION	<ul style="list-style-type: none"> • Excessive shift shock is felt when depressing the accelerator pedal at upshifting. • During cruising, excessive shift shock is felt when depressing the accelerator pedal at downshifting.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Shift shock may worsen when the fail-safe is operating. The shift shock has worsened if the TP sensor, input/turbine speed sensor, or VSS signal malfunctions. 1. Clutch slippage, burnt (Forward clutch, 2—4 brake band, 3—4 clutch) <ul style="list-style-type: none"> • Line pressure low, high • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Pressure control solenoid A malfunction • Pressure control solenoid B malfunction • Control valve body malfunction • Body ground malfunction 2. Signal malfunction <ul style="list-style-type: none"> • TFT sensor malfunction • VSS malfunction • Sensor ground malfunction • TP sensor malfunction • APP sensor malfunction • Input/turbine speed sensor malfunction 3. Poor hydraulic operation (Malfunction in range change) <ul style="list-style-type: none"> • Oil pressure switch malfunction • Forward accumulator malfunction • Servo apply accumulator malfunction 4. Engine mounts installation <ul style="list-style-type: none"> • Loose attaching bolts • Worn parts <p style="margin-top: 10px;">Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the engine mounts for loose tightening bolts or worn parts. Are all engine mounts normal?	Yes	Go to the next step.
		No	Readjust, retighten or replace the engine mounts.
2	Perform the stall test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the stall speed normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3	Inspect the following PCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • APP • TP REL Are the PID values normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
4	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
5	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
6	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC) [FS5A-EL]

id050308802400

19	Excessive shift shock on torque converter clutch (TCC)
DESCRIPTION	<ul style="list-style-type: none"> • Strong shock is felt when TCC is engaged.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The troubleshooting flow is the same as the symptom troubleshooting "NO.16 Judder upon Torque Converter Clutch (TCC) Operation". (See 05-03-22 NO.16 Judder upon Torque Converter Clutch (TCC) Operation [FS5A-EL].)

NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES [FS5A-EL]

id050308802500

20	Noise occurs at idle when vehicle is stopped in all positions/ranges
DESCRIPTION	<ul style="list-style-type: none"> • Transaxle is noisy in all positions and ranges when vehicle is idling.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The malfunction is in the oil pump which causes a high-pitched noise to be emitted from the transaxle at idle. <p>Note</p> <ul style="list-style-type: none"> • If a noise is emitted during shifting only, the malfunction is in shift solenoid D, E or shift solenoid A, B, C. If a noise is emitted during shifting at certain gears only or during deceleration only, it is gear noise. • Before following the troubleshooting steps, make sure that the Automatic Transaxle On-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the engine condition. Is there any engine concern (i. e. rough idle)?	Yes	Go to the appropriate symptom troubleshooting. (See 01-03A-4 SYMPTOM DIAGNOSTIC INDEX [LF, L5].)
		No	Go to the next step.
2	Does the noise stop when the solenoid connector is disconnected?	Yes	Go to the next step.
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
3	Inspect the following PCM and TCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) PCM PIDs: <ul style="list-style-type: none"> • APP • TP REL TCM PIDs: <ul style="list-style-type: none"> • THOP • OSS • TSS Are the PID values normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
4	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
5	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
6	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

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NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D, M RANGES, OR IN R POSITION [FS5A-EL]

id050308808600

21	Noise occurs at idle when vehicle is stopped in D, M ranges, or in R position
DESCRIPTION	<ul style="list-style-type: none"> • Transaxle is noisy in driving ranges when vehicle is idling.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Although the malfunction is basically the same as the symptom troubleshooting "NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES", other causes may include selector lever position disparity or TR switch position disparity. (See 05-03-26 NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.22 NO ENGINE BRAKING IN 1GR POSITION OF M RANGE [FS5A-EL]

id050308802700

22	No engine braking in 1GR position of M range
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed drops to idle but the vehicle coasts when accelerator pedal is released when in M range (1GR) at low vehicle speed.
POSSIBLE CAUSE	<ol style="list-style-type: none"> 1. Clutch slippage, burnt (low and reverse brake) <ul style="list-style-type: none"> • Line pressure low • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Pressure control solenoid B malfunction • Control valve body malfunction • Body ground malfunction 2. Signal malfunction <ul style="list-style-type: none"> • TP sensor malfunction • APP sensor malfunction • VSS malfunction • Sensor ground malfunction • Input/turbine speed sensor malfunction 3. TCM does not determine that the M range switch is ON (short, or open circuit, poor operation) <ul style="list-style-type: none"> • M range switch (built-in selector lever component) signal malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Do the following symptoms occur concurrently? <ul style="list-style-type: none"> • Engine flares up or slips during acceleration. • Engine flares up or slips when shifting.s 	Yes	Perform the symptom troubleshooting “NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING” or “NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE”. (See 05-03-21 NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [FS5A-EL].) (See 05-03-22 NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE [FS5A-EL].)
		No	Repeat the basic inspection and repair or replace any malfunctioning parts according to the inspection result. (See 05-03-3 BASIC INSPECTION [FS5A-EL].)
2	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.23 TRANSAXLE OVERHEATS [FS5A-EL]

id050308802800

23	Transaxle overheats
DESCRIPTION	<ul style="list-style-type: none"> • Burnt smell emitted from the transaxle. • Smoke emitted from the transaxle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The malfunction is restricted to the hindrance of coolant at the oil cooler. In addition, overheating of the transaxle may be caused by a malfunction of the TFT sensor. <ol style="list-style-type: none"> 1. Burnt (TCC) <ul style="list-style-type: none"> • Line pressure low • Control valve body malfunction 2. Oil cooler malfunction (Foreign material mixed in ATF) 3. TFT sensor malfunction 4. Excessive amount of ATF 5. Torque converter malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

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Diagnostic procedure

STEP	INSPECTION		ACTION
1	Inspect for bending, damage, corrosion or kinks of the oil cooler pipes. Are the oil cooler pipes normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
2	Perform the stall test. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) Is the stall speed normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3	Inspect the following PCM PID values using the M-MDS: (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) • APP • TP REL Are the PID values normal? (See 01-40A-8 PCM INSPECTION [LF, L5].)	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
4	Disconnect the TCM connector. Measure the resistance between ground terminal at the TCM connector and body ground. Is the resistance less than 5.0 ohms ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit.
5	Inspect the LPS PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.) If any problem remains: <ul style="list-style-type: none"> • Overhaul the transaxle and repair or replace any malfunctioning parts. (See Automatic Transaxle Workshop Manual FS5A-EL.)
		No	Repair or replace any malfunctioning parts.
6	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.24 ENGINE STALLS WHEN SHIFTED TO D, M RANGES, OR IN R POSITION [FS5A-EL]

id050308808700

24	Engine stalls when shifted to D, M ranges, or in R position
DESCRIPTION	<ul style="list-style-type: none"> Engine stalls when shifting from N or P position to D, M ranges or R position at idle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> The malfunction is on the engine control side (i.e. electronic throttle control system). Otherwise, the malfunction is in the input/turbine speed sensor (engine sometimes starts) or the TCC circuit (engine always stalls).

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Perform the symptom troubleshooting "NO.10 LOW IDLE/STALLS DURING DECELERATION". (See 01-03A-49 NO.10 LOW IDLE/STALLS DURING DECELERATION [LF, L5].) Is the engine control system normal?	Yes	Repeat the basic inspection and repair or replace any malfunctioning parts according to the inspection result. (See 05-03-3 BASIC INSPECTION [FS5A-EL].)
		No	Repair or replace any malfunctioning parts.
2	<ul style="list-style-type: none"> Verify the test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEEDS OR STOPPING [FS5A-EL]

id050308805800

25	Engine stalls when driving at slow speeds or stopping
DESCRIPTION	<ul style="list-style-type: none"> Engine stalls when the brake pedal is depressed while driving at low speed or stopping.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction is in engine control system (e.g. Fuel injection control, electronic throttle control system). Otherwise, the malfunction is in the control valve body, shift solenoid E or TCC.

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Perform the symptom troubleshooting "NO.10 LOW IDLE/STALLS DURING DECELERATION". (See 01-03A-49 NO.10 LOW IDLE/STALLS DURING DECELERATION [LF, L5].) Is the engine control system normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
2	Perform the symptom troubleshooting "NO.5 ENGINE STALLS-AFTER START/AT IDLE". (See 01-03A-33 NO.5 ENGINE STALLS-AFTER START/AT IDLE [LF, L5].) Is the engine control system normal?	Yes	Repeat the basic inspection and repair or replace any malfunctioning parts according to the inspection result. (See 05-03-3 BASIC INSPECTION [FS5A-EL].)
		No	Repair or replace any malfunctioning parts.
3	<ul style="list-style-type: none"> Verify the test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

NO.26 STARTER DOES NOT WORK [FS5A-EL]

id050308803100

26	Starter does not work
DESCRIPTION	<ul style="list-style-type: none"> Starter does not work even when in P or N position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Selector lever mis-adjustment TR switch mis-adjustment Open or short circuit in TR switch terminal

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [FS5A-EL]

id050308803200

27	Gear position indicator light does not illuminate in M range
DESCRIPTION	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster does not illuminate in M range with the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • M range switch (built-in selector lever component), instrument cluster, or related wiring harness malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].) • If the ATF temperature reaches 130 °C {266 °F} or more while driving in manual shift mode, the gear position indicator light turns off and the TCM switches to automatic shift mode to reduce load on the ATX. After the ATF temperature decreases to 120 °C {248 °F} or less and a period of time has passed, the gear position indicator light turns back on and driving in manual shift mode is restored.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Inspect the MNL SW PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to Step 3.
		No	Go to the next step.
2	Inspect the M range switch. (See 05-17-18 M RANGE SWITCH INSPECTION [FS5A-EL]05-18-11 SELECTOR LEVER INSPECTION.) Is the M range switch normal?	Yes	Inspect the wiring harness between TCM terminal K and selector lever component terminal A. Repair or replace the any malfunctioning parts.
		No	Replace the M range switch. (See 05-17-18 M RANGE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
3	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Is the instrument cluster normal?	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
4	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

05-03

NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATE IN P, R, N POSITION AND D RANGE [FS5A-EL]

id050308815700

28	Gear position indicator light illuminate in P, R, N position and D range
DESCRIPTION	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates in P, R and N position and D range with the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • M range switch (built-in selector lever component), instrument cluster, or related wiring harness malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the MNL SW PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to Step 3.
		No	Go to the next step.
2	Inspect the M range switch. (See 05-17-18 M RANGE SWITCH INSPECTION [FS5A-EL].) Is the M range switch normal?	Yes	Inspect the wiring harness between TCM terminal K and selector lever component terminal A. Repair or replace the any malfunctioning parts.
		No	Replace the M range switch. (See 05-17-18 M RANGE SWITCH REMOVAL/ INSTALLATION [FS5A-EL].)
3	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Is the instrument cluster normal?	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
4	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

NO.29 DOES NOT UPSHIFT IN M RANGE [FS5A-EL]

id050308803400

29	Does not upshift in M range
DESCRIPTION	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates but vehicle does not upshift when selector lever is pushed to "+" side.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Up switch or related wiring harness malfunction <p>Note</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the UP SW PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)
		No	Inspect the up switch. (See 05-17-18 UP SWITCH INSPECTION [FS5A-EL].) If the up switch is normal: <ul style="list-style-type: none"> • Inspect for continuity between TCM terminal G and selector lever component terminal B.
2	<ul style="list-style-type: none"> • Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

SYMPTOM TROUBLESHOOTING [FS5A-EL]

NO.30 DOES NOT DOWNSHIFT IN M RANGE [FS5A-EL]

id050308803500

30	Does not downshift in M range
DESCRIPTION	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates but vehicle does not downshift when selector lever is pushed to “–” side.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Down switch or related wiring harness malfunction <p>Note</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Inspect the DWN SW PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)
		No	Inspect the down switch. (See 05-17-19 DOWN SWITCH INSPECTION [FS5A-EL].) If the down switch is normal: <ul style="list-style-type: none"> Inspect for continuity between TCM terminal F and selector lever component terminal C.
2	<ul style="list-style-type: none"> Verify the test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting is completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

05-03

NO.31 M RANGE POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE/M RANGE POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE [FS5A-EL]

id050308932000

31	M range position indicator light dose not illuminate in M range/ M range position indicator light illuminates in D range
DESCRIPTION	<ul style="list-style-type: none"> M range position indicator light in instrument cluster dose not illuminate in M range or M range position indicator light in instrument cluster in D range with the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> M range switch (built-in selector lever component) or related wiring harness malfunction Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transaxle ON-Board Diagnostic and Automatic Transaxle Basic Inspection are conducted. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) (See 05-03-3 BASIC INSPECTION [FS5A-EL].)

SYMPTOM TROUBLESHOOTING [FS5A-EL]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the MNL SW PID value using the M-MDS. (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].) Is the PID value normal?	Yes	Go to Step 3.
		No	Go to the next step.
2	Inspect the M range switch. (See 05-17-18 M RANGE SWITCH INSPECTION [FS5A-EL].) Is the M range switch normal?	Yes	Inspect the wiring harness between TCM terminal K and selector lever component terminal A. Repair or replace the any malfunctioning parts.
		No	Replace the M range switch. (See 05-17-18 M RANGE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
3	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Is the instrument cluster normal?	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
4	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> — If normal, return to the diagnostic index to service any additional symptoms. — If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting is completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].) 		

05-10 CLUTCH

CLUTCH LOCATION INDEX 05-10-2

CLUTCH FLUID INSPECTION 05-10-4

**CLUTCH FLUID AIR BLEEDING/
REPLACEMENT** 05-10-4

**CLUTCH PEDAL INSPECTION/
ADJUSTMENT** 05-10-5

 Clutch Pedal Height Inspection 05-10-5

 Clutch Pedal Free Play Inspection 05-10-5

 Clutch Pedal Disengagement Point 05-10-5

**CLUTCH PEDAL REMOVAL/
INSTALLATION** 05-10-6

 Clutch Master Cylinder Removal
 Note 05-10-7

 Clutch Master Cylinder Installation
 Note 05-10-8

 Starter Interlock Switch Installation
 Note 05-10-9

 Clutch Pedal Position Switch
 Installation Note 05-10-10

**CLUTCH MASTER CYLINDER
REMOVAL/INSTALLATION** 05-10-10

 Clutch Pipe and Clutch Reserve Hose
 Removal Note 05-10-11

 Clutch Master Cylinder Removal
 Note 05-10-12

 Clutch Master Cylinder Installation
 Note 05-10-12

 Clutch Pipe and Clutch Reserve Hose
 Installation Note 05-10-13

**CLUTCH RELEASE CYLINDER
REMOVAL/INSTALLATION**
[G35M-R, G66M-R] 05-10-13

 Clutch Pipe Removal Note 05-10-14

 Clutch Pipe Installation Note 05-10-14

**CLUTCH RELEASE CYLINDER
REMOVAL/INSTALLATION**
[A26M-R] 05-10-14

 Clutch Pipe Removal Note 05-10-15

 Clutch Pipe Installation Note 05-10-15

**CLUTCH UNIT REMOVAL/
INSTALLATION [G35M-R, G66M-R]** . . . 05-10-16

 Clutch Release Fork Removal Note . . . 05-10-18

 Clutch Cover and Disc Removal
 Note 05-10-18

 Pilot Bearing Removal Note 05-10-18

 Flywheel Removal Note 05-10-18

 Flywheel Installation Note 05-10-19

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 Clutch Disc Installation Note 05-10-20

 Clutch Cover Installation Note 05-10-20

**CLUTCH UNIT REMOVAL/
INSTALLATION [A26M-R]** 05-10-20

 Clutch Cover and Disc Removal
 Note 05-10-22

 Pilot Bearing Removal Note 05-10-22

 Flywheel Removal Note 05-10-22

 Flywheel Installation Note 05-10-22

 Pilot Bearing Installation Note 05-10-23

 Clutch Disc Installation Note 05-10-23

 Clutch Cover Installation Note 05-10-24

**CLUTCH COVER INSPECTION
[G35M-R, G66M-R]** 05-10-24

**CLUTCH COVER INSPECTION
[A26M-R]** 05-10-25

**CLUTCH DISC INSPECTION
[G35M-R, G66M-R]** 05-10-26

**CLUTCH DISC INSPECTION
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**CLUTCH RELEASE COLLAR
INSPECTION [A26M-R]** 05-10-29

**PILOT BEARING INSPECTION
[G35M-R, G66M-R]** 05-10-29

**PILOT BEARING INSPECTION
[A26M-R]** 05-10-30

**FLYWHEEL INSPECTION
[G35M-R, G66M-R]** 05-10-31

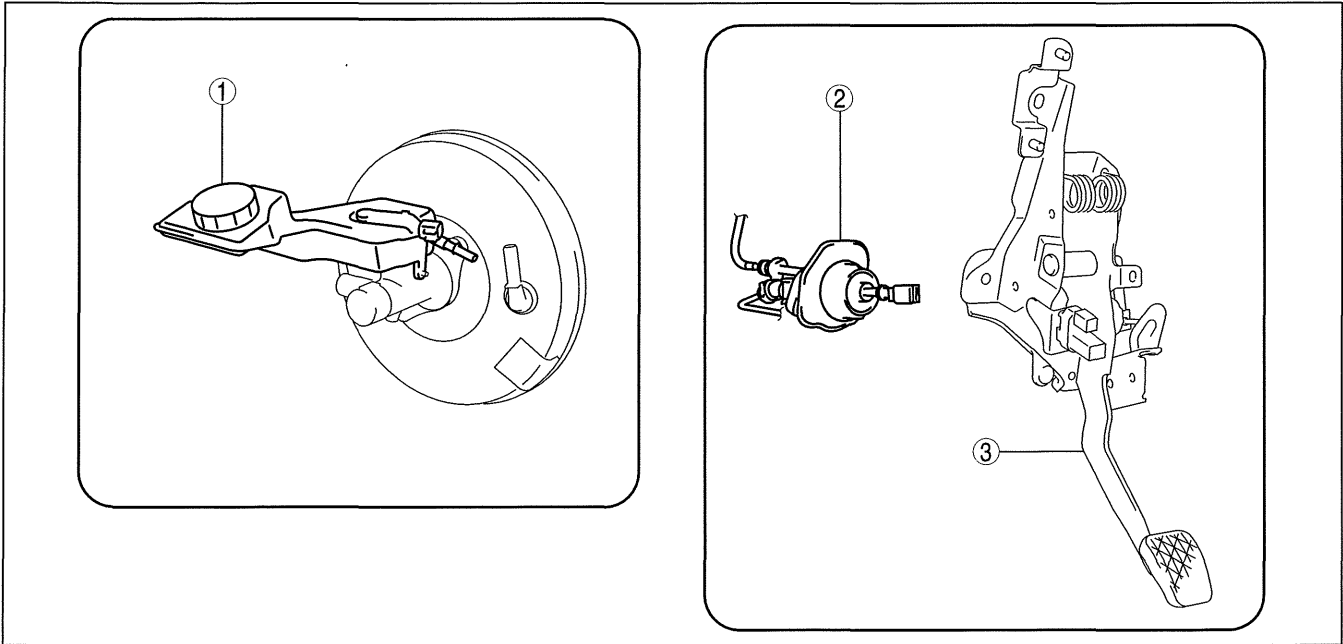
FLYWHEEL INSPECTION [A26M-R] 05-10-32

05-10

CLUTCH

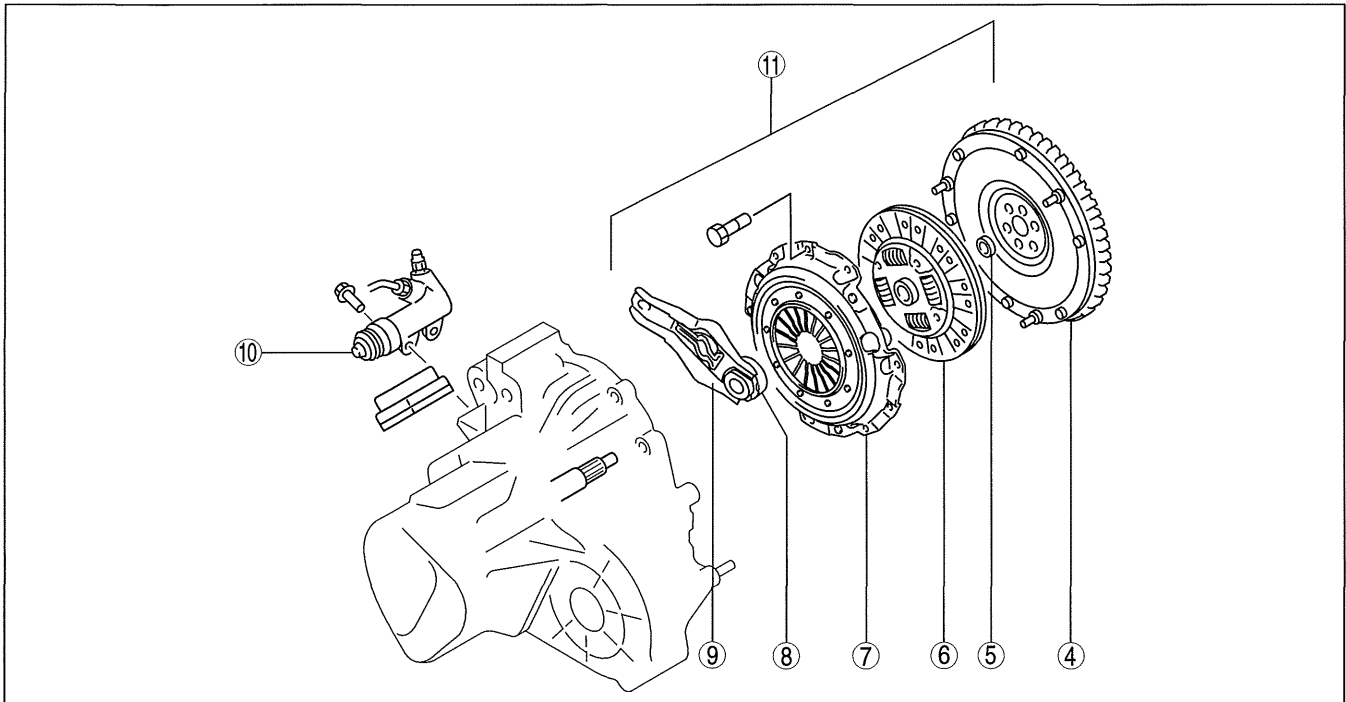
CLUTCH LOCATION INDEX

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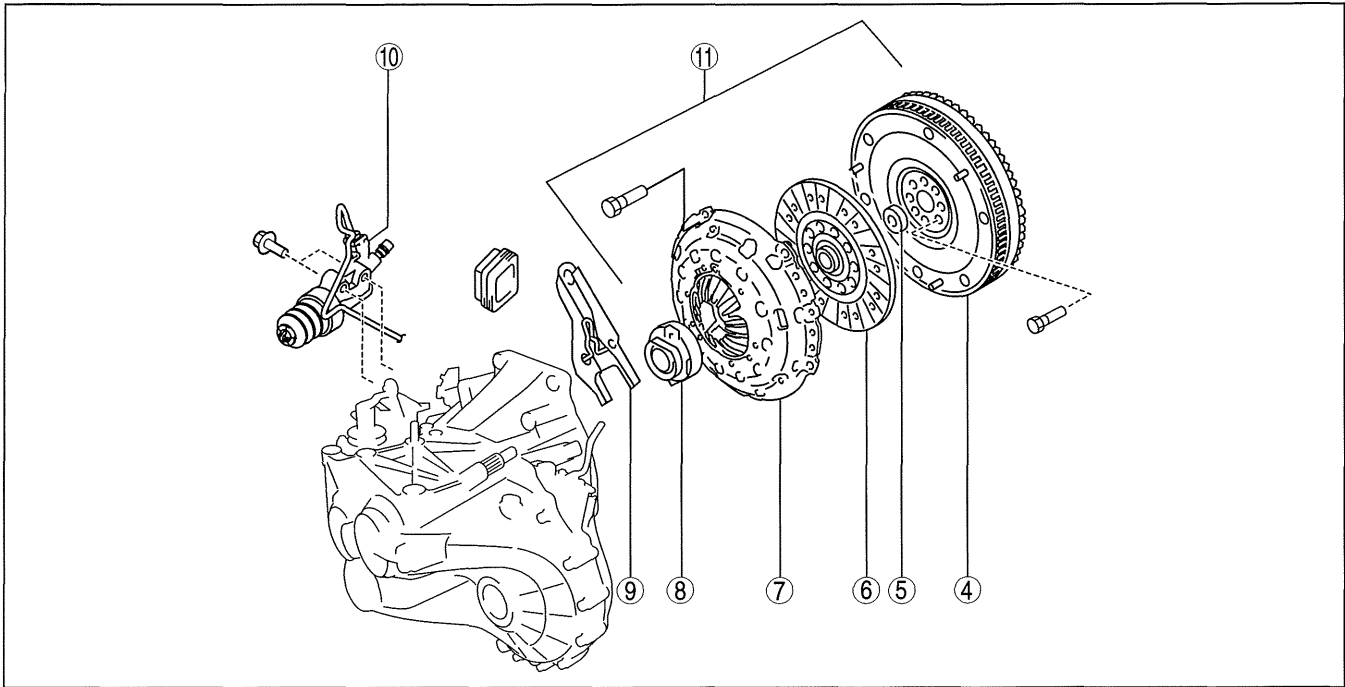
G35M-R, G66M-R



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CLUTCH

A26M-R



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05-10

1	Reserve tank (See 05-10-4 CLUTCH FLUID INSPECTION.) (See 05-10-4 CLUTCH FLUID AIR BLEEDING/ REPLACEMENT.)
2	Clutch master cylinder (See 05-10-10 CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION.)
3	Clutch pedal (See 05-10-5 CLUTCH PEDAL INSPECTION/ ADJUSTMENT.) (See 05-10-6 CLUTCH PEDAL REMOVAL/ INSTALLATION.)
4	Flywheel (See 05-10-31 FLYWHEEL INSPECTION [G35M-R, G66M-R].) (See 05-10-32 FLYWHEEL INSPECTION [A26M- R].)
5	Pilot bearing (See 05-10-29 PILOT BEARING INSPECTION [G35M-R, G66M-R].) (See 05-10-30 PILOT BEARING INSPECTION [A26M-R].)
6	Clutch disc (See 05-10-26 CLUTCH DISC INSPECTION [G35M-R, G66M-R].) (See 05-10-27 CLUTCH DISC INSPECTION [A26M-R].)

7	Clutch cover (See 05-10-24 CLUTCH COVER INSPECTION [G35M-R, G66M-R].) (See 05-10-25 CLUTCH COVER INSPECTION [A26M-R].)
8	Clutch release collar (See 05-10-28 CLUTCH RELEASE COLLAR INSPECTION [G35M-R, G66M-R].) (See 05-10-29 CLUTCH RELEASE COLLAR INSPECTION [A26M-R].)
9	Clutch release fork (See 05-10-16 CLUTCH UNIT REMOVAL/ INSTALLATION [G35M-R, G66M-R].) (See 05-10-20 CLUTCH UNIT REMOVAL/ INSTALLATION [A26M-R].)
10	Clutch release cylinder (See 05-10-13 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [G35M-R, G66M-R].) (See 05-10-14 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [A26M-R].)
11	Clutch unit (See 05-10-16 CLUTCH UNIT REMOVAL/ INSTALLATION [G35M-R, G66M-R].) (See 05-10-20 CLUTCH UNIT REMOVAL/ INSTALLATION [A26M-R].)

CLUTCH

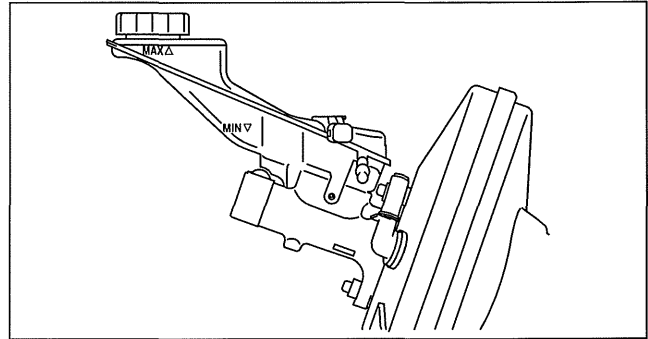
CLUTCH FLUID INSPECTION

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Note

- A common reservoir is used for the clutch and brake system fluid.

1. The fluid in the reservoir must be maintained between the MIN/MAX level during replacement.



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CLUTCH FLUID AIR BLEEDING/REPLACEMENT

id051000800700

Caution

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.
- Keep the fluid level in the reserve tank at 3/4 full or more during the air bleeding.
- Do not mix different types of fluid, otherwise the clutch may not operate normally.
- Do not reuse old fluid, otherwise the clutch may not operate normally.

Clutch fluid

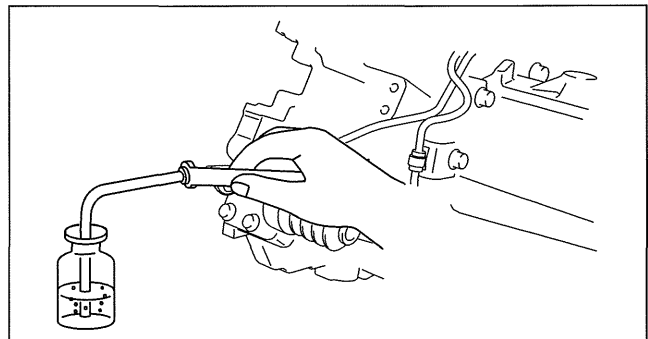
SAE J1703 or FMVSS116 DOT-3

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Draw the fluid from the reserve tank with a suction pump.
3. Remove the bleeder cap from the bleeder plug and attach a vinyl hose to the bleeder plug.
4. Place the other end of the vinyl hose into a container.
5. Slowly pump the clutch pedal several times.
6. With the clutch pedal depressed, loosen the bleeder screw to let fluid escape.
7. Tighten the bleeder screw to stop the fluid.
8. Repeat Steps 5, 6 and 7 until only clean fluid without air is seen.
9. Tighten the bleeder screw.

Tightening torque

5—10 N·m {51—101 kgf·cm, 45—88 in·lbf}

10. Add fluid to the MAX mark.
11. After air bleeding, inspect the following:
 - Clutch operation
 - Fluid leakage
 - Fluid level
12. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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CLUTCH

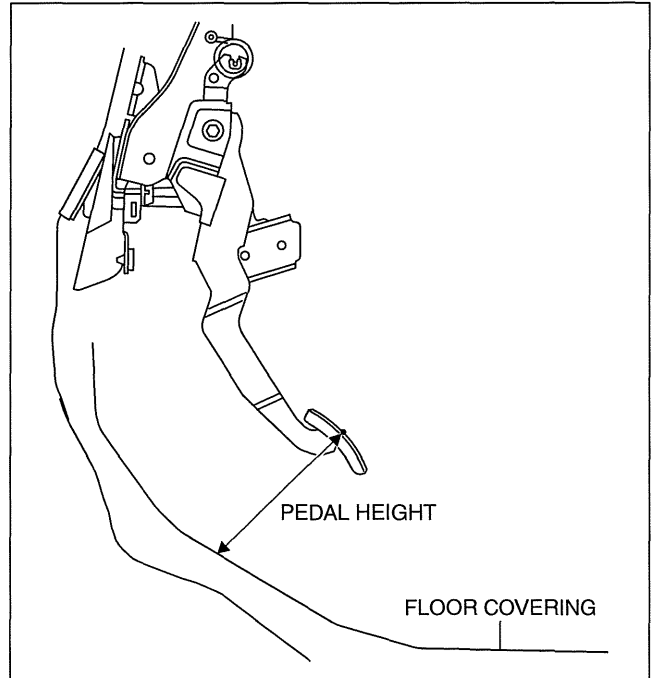
CLUTCH PEDAL INSPECTION/ADJUSTMENT

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Clutch Pedal Height Inspection

1. Measure the distance from the center of the upper surface of the pedal pad to the floor covering.
 - If the clutch pedal height is not with the specification, replace the clutch pedal.

Clutch pedal height (Reference value)
142.8 mm {5.622 in}



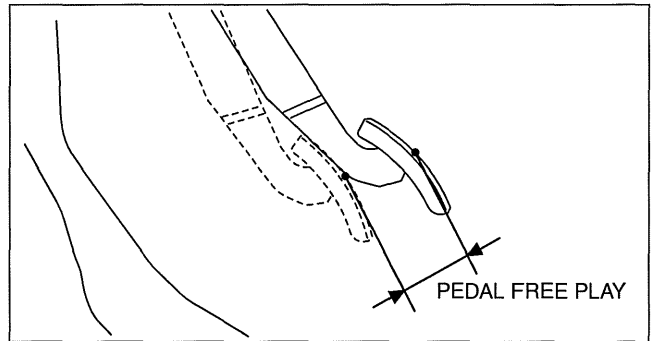
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05-10

Clutch Pedal Free Play Inspection

1. Depress the clutch pedal by hand until clutch resistance is felt.
 - If the clutch pedal free play is not within the specification, replace the clutch pedal.

Clutch pedal free play (Reference value)
15 mm {0.59 in} or less



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Clutch Pedal Disengagement Point

Caution

- When performing inspections, always set the wheel blocks, set the parking brake, depress the brake pedal, and then perform the inspection with the brakes in operation. Otherwise, the vehicle could lurch and cause an accident.

1. Apply the parking brake and fix the front and rear of the wheels with the wheel chocks.
2. Start the engine.
3. With the clutch pedal depressed, move the shift lever to the position just before engaging the reverse gear. (Do not shift completely to reverse position)
4. Gradually release the clutch pedal and then hold it at the point where the sound of gear-grinding begins (clutch disengagement point).

CLUTCH

5. Measure the distances indicated as follows from the clutch disengagement point and verify that they are within the specification.
 - If the measurement is not within the specification, inspect the clutch fluid level and the fluid lines for air infiltration.

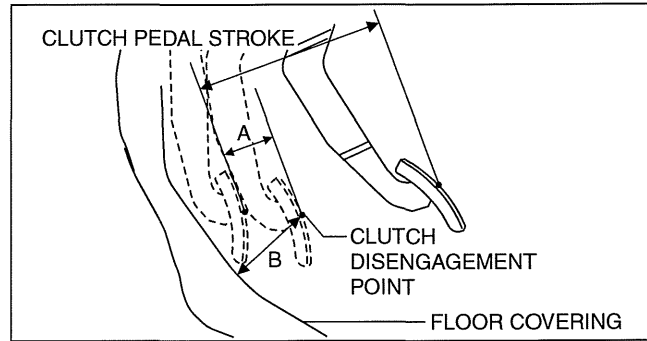
Distance A, from clutch disengagement point to full stroke
23 mm {0.91 in} or more (Reference value)

Distance B, from clutch disengagement point to floor mat
64.9 mm {2.56 in} or more (Reference value)

Clutch pedal stroke

LF, L3 WITH TC: 135 mm {5.31 in} (Reference value)

L5: 126.1 mm {4.965 in} (Reference value)



CLUTCH PEDAL REMOVAL/INSTALLATION

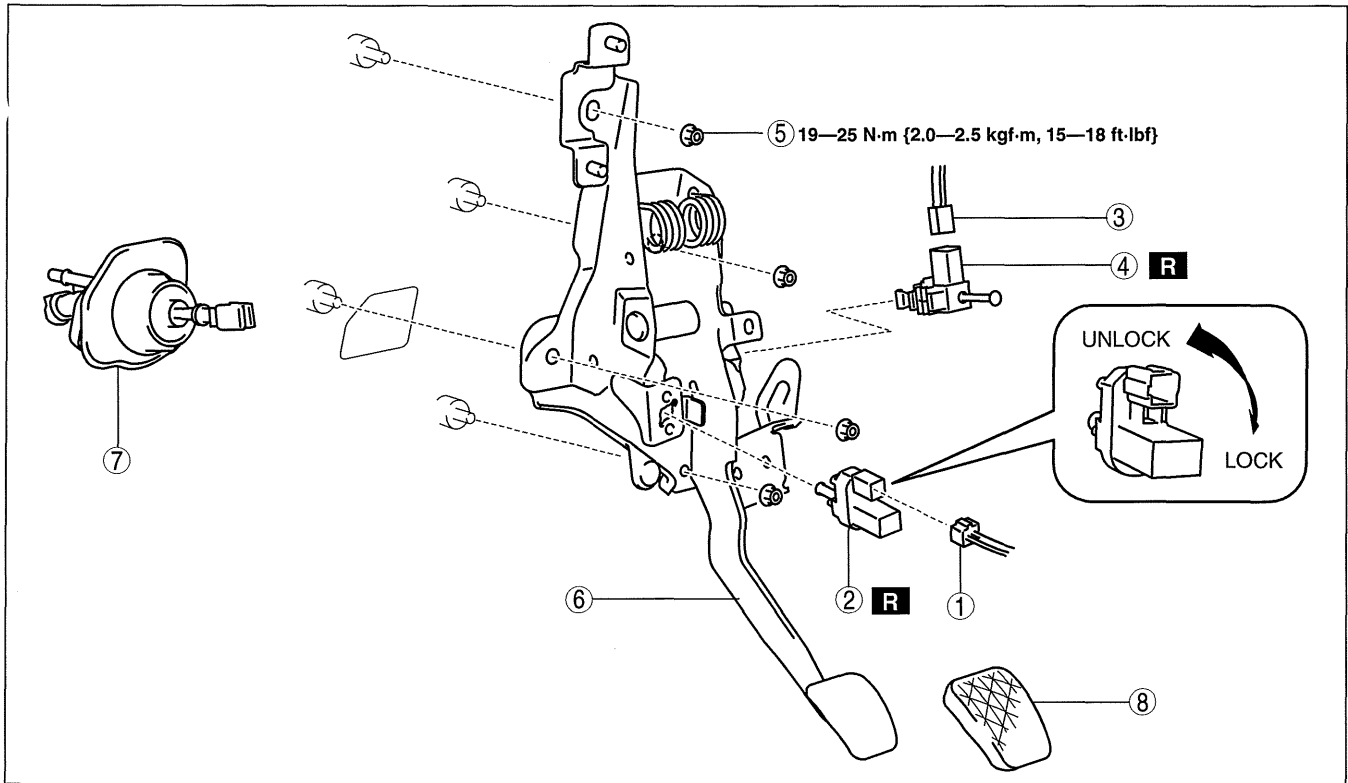
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Caution

- **Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.**

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)(See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)(See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)(See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Separate the steering shaft. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
5. Separate the clutch pipe and reserve hose. (See 05-10-10 CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION.)
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. Bleed the air from the system. (See 05-10-4 CLUTCH FLUID AIR BLEEDING/REPLACEMENT.)
9. After installation, inspect the clutch pedal. (See 05-10-5 CLUTCH PEDAL INSPECTION/ADJUSTMENT.)

CLUTCH



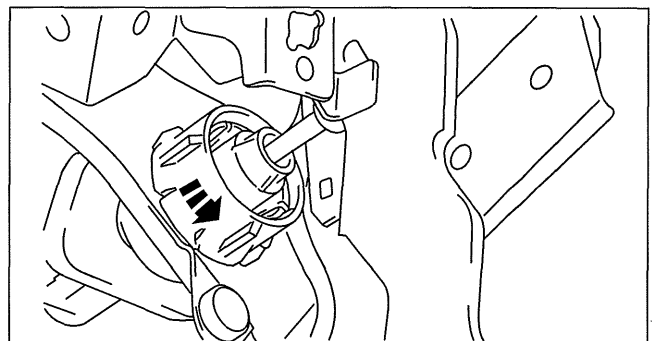
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1	Clutch pedal position switch connector
2	Clutch pedal position switch (See 05-10-10 Clutch Pedal Position Switch Installation Note.)
3	Starter interlock switch connector
4	Starter interlock switch (See 05-10-9 Starter Interlock Switch Installation Note.)

5	Nuts
6	Clutch pedal component
7	Clutch master cylinder (See 05-10-7 Clutch Master Cylinder Removal Note.) (See 05-10-8 Clutch Master Cylinder Installation Note.)
8	Pedal pad

Clutch Master Cylinder Removal Note

1. Rotate the clutch master cylinder in the direction shown and remove.

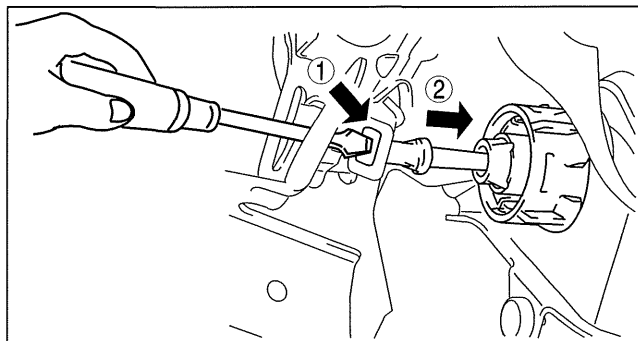


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05-10

CLUTCH

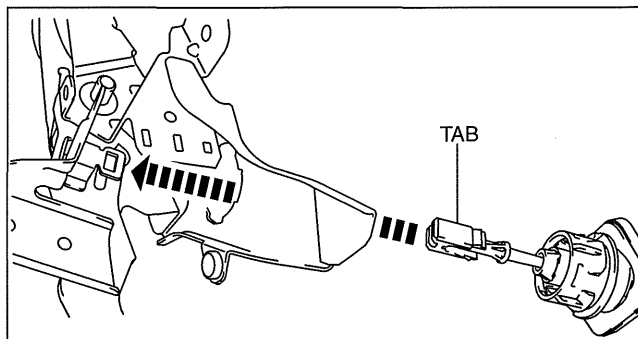
2. Press on the tabs on the left and right sides of the push rod using a flathead screwdriver and remove the rod.



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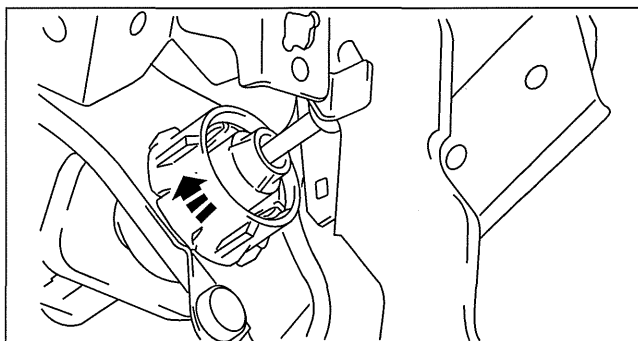
Clutch Master Cylinder Installation Note

1. Push the push rod in until the tabs lock.



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2. Rotate the clutch master cylinder in the direction shown until it stops.

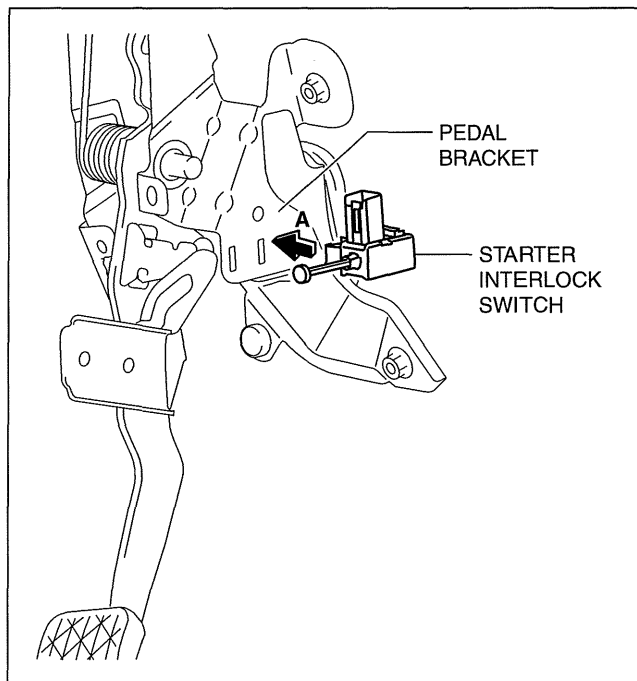


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CLUTCH

Starter Interlock Switch Installation Note

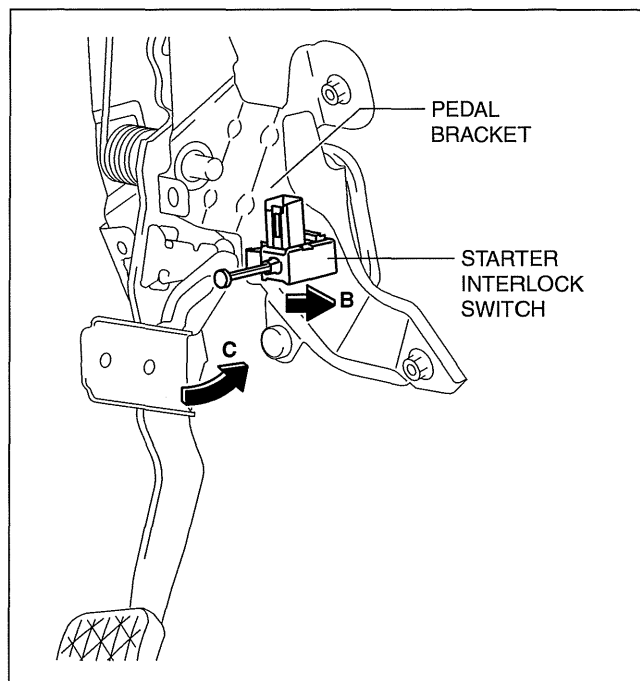
1. Insert the new starter interlock switch into the pedal bracket hole in the direction indicated by arrow A.



05-10

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2. Slide the starter interlock switch pressing it in the direction indicated by arrow B until it is locked.
3. Press the clutch pedal fully in the direction indicated by arrow C and adjust the starter interlock switch terminal.

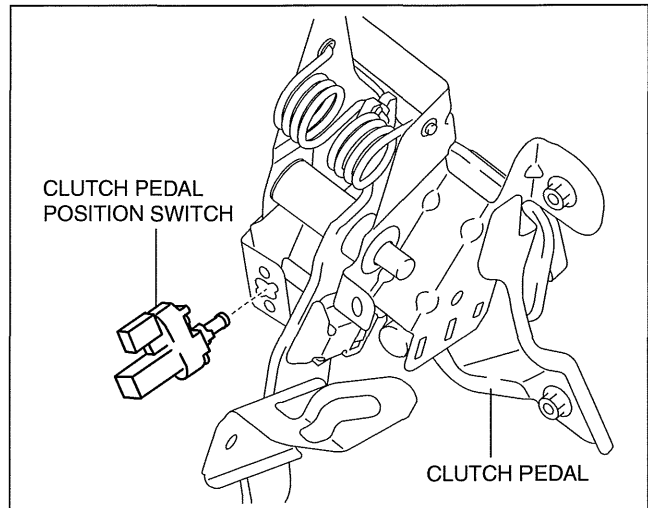


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CLUTCH

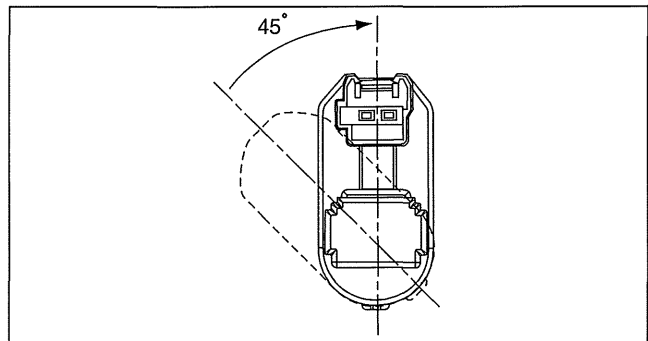
Clutch Pedal Position Switch Installation Note

1. Insert the new clutch pedal position switch into the pedal bracket hole until the switch stops.



am3uuw0000474

2. Rotate the clutch pedal position switch **45°** clockwise.
3. Verify that the clutch pedal position switch is locked securely.



am3uuw0000018

CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION

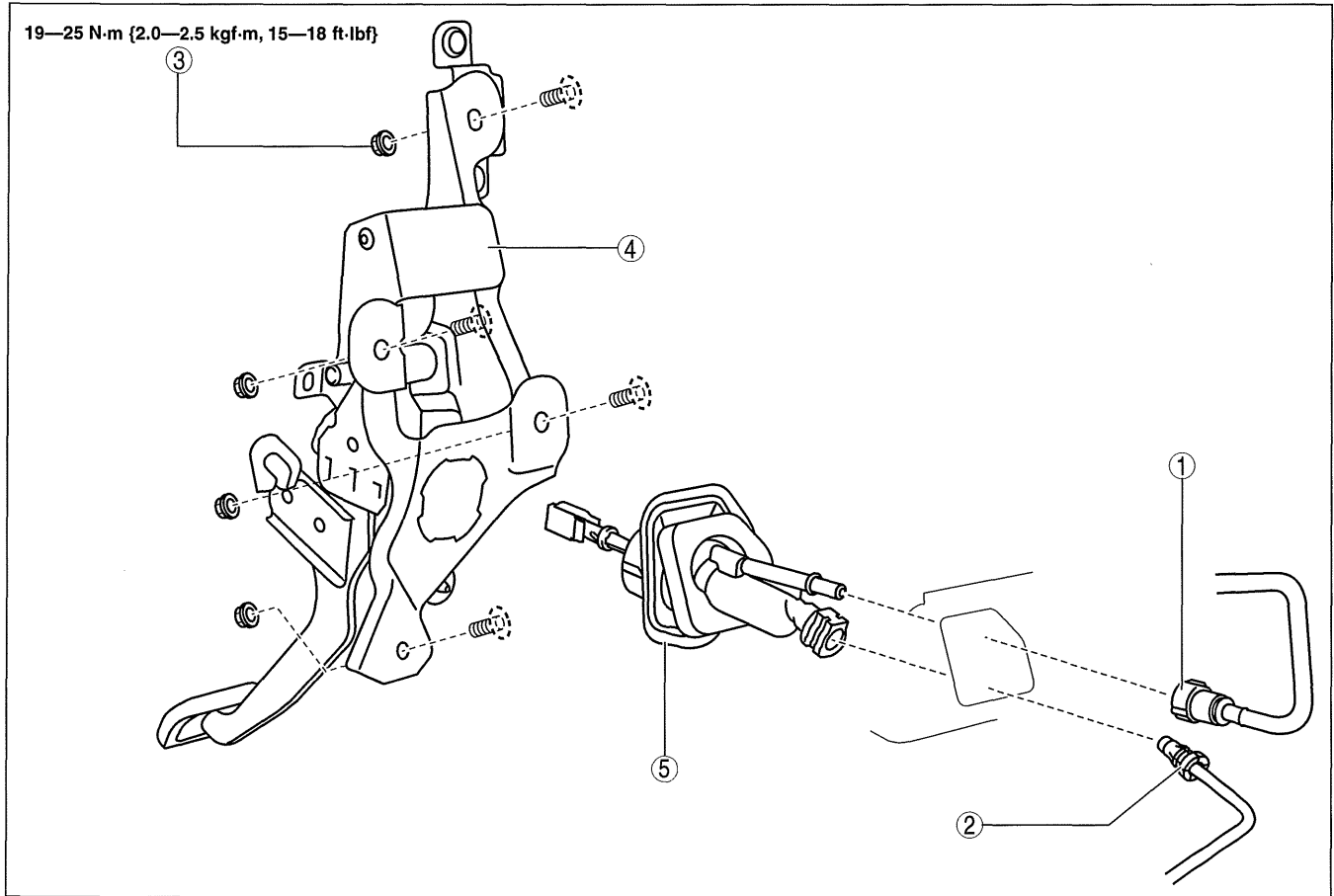
id051000801400

Caution

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)(See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)(See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)(See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Separate the steering shaft. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
5. Remove in the order indicated in the table.
6. Plug the clutch pipe after removing it to avoid leakage.
7. Install in the reverse order of removal.
8. Bleed the air from the system. (See 05-10-4 CLUTCH FLUID AIR BLEEDING/REPLACEMENT.)
9. After installation, inspect the clutch pedal. (See 05-10-5 CLUTCH PEDAL INSPECTION/ADJUSTMENT.)

CLUTCH



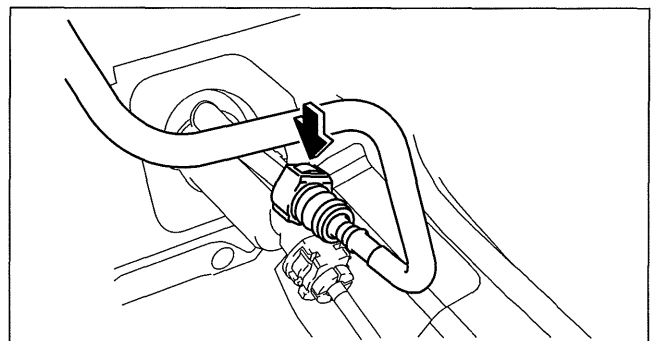
am3uuw0000533

1	Reserve hose (See 05-10-11 Clutch Pipe and Clutch Reserve Hose Removal Note.) (See 05-10-13 Clutch Pipe and Clutch Reserve Hose Installation Note.)
2	Clutch pipe (See 05-10-11 Clutch Pipe and Clutch Reserve Hose Removal Note.) (See 05-10-13 Clutch Pipe and Clutch Reserve Hose Installation Note.)
3	Nuts

4	Clutch pedal component (See 05-10-6 CLUTCH PEDAL REMOVAL/INSTALLATION.)
5	Clutch master cylinder (See 05-10-12 Clutch Master Cylinder Removal Note.) (See 05-10-12 Clutch Master Cylinder Installation Note.)

Clutch Pipe and Clutch Reserve Hose Removal Note

1. Remove the reserve hose from the master cylinder while pressing the point indicated by the arrow in the figure.

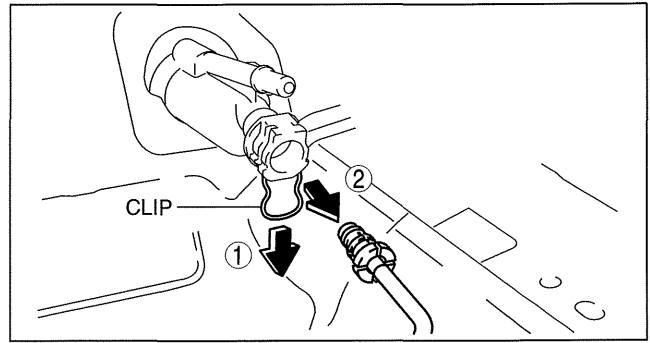


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05-10

CLUTCH

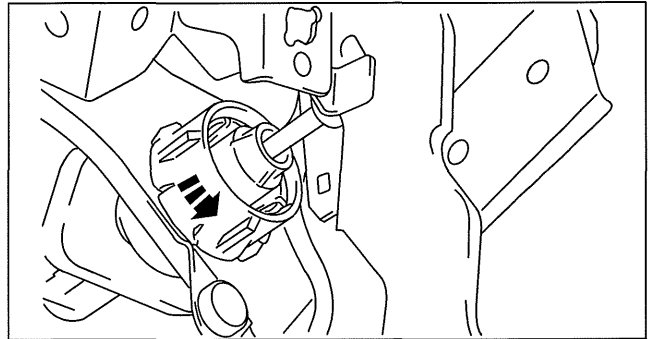
2. Pull the clutch master cylinder clip to the position shown in the figure and pull out the clutch pipe connector straight to detach it.



am3uuw0000210

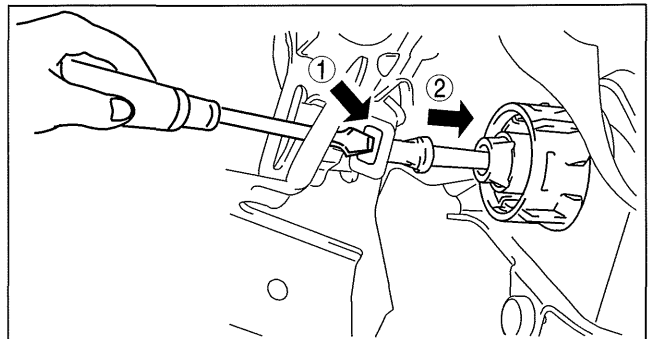
Clutch Master Cylinder Removal Note

1. Rotate the clutch master cylinder in the direction shown and remove.



am3uuw0000210

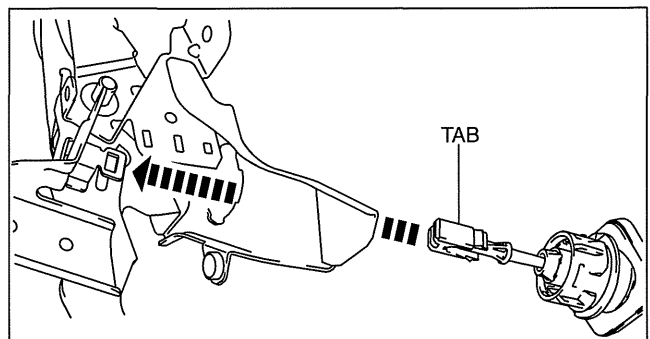
2. Press on the tabs on the left and right sides of the push rod using a flathead screwdriver and remove the rod.



am3uuw0000210

Clutch Master Cylinder Installation Note

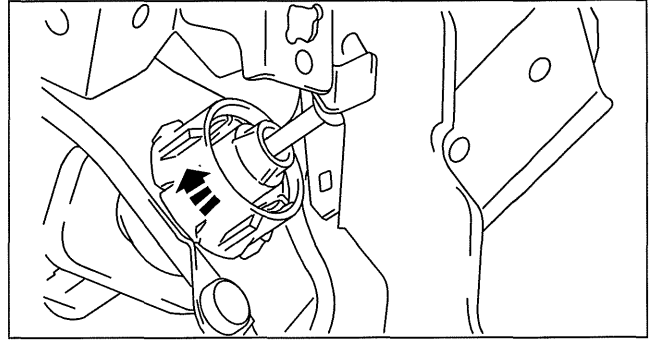
1. Push the push rod in until the tabs lock.



am3uuw0000210

CLUTCH

2. Rotate the clutch master cylinder in the direction shown until it stops.



am3uuw0000210

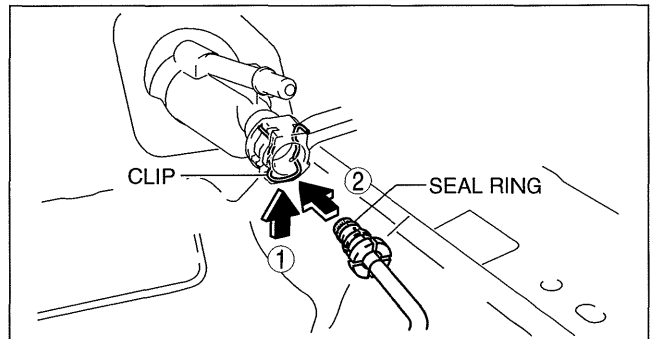
Clutch Pipe and Clutch Reserve Hose Installation Note

1. Return the clutch master cylinder clip to the position shown in the figure.

Caution

- Verify that there is no chipping, damage, or falling off of the seal ring in the clutch pipe connector.

2. Insert the clutch pipe connector straight.
3. Pull the clutch pipe to verify that it does not come off, and reinsert it completely.
4. Insert the reserve hose connector straight until a click is heard.
5. Pull the reserve hose to verify that it does not come off, and reinsert it completely.



am3uuw0000211

05-10

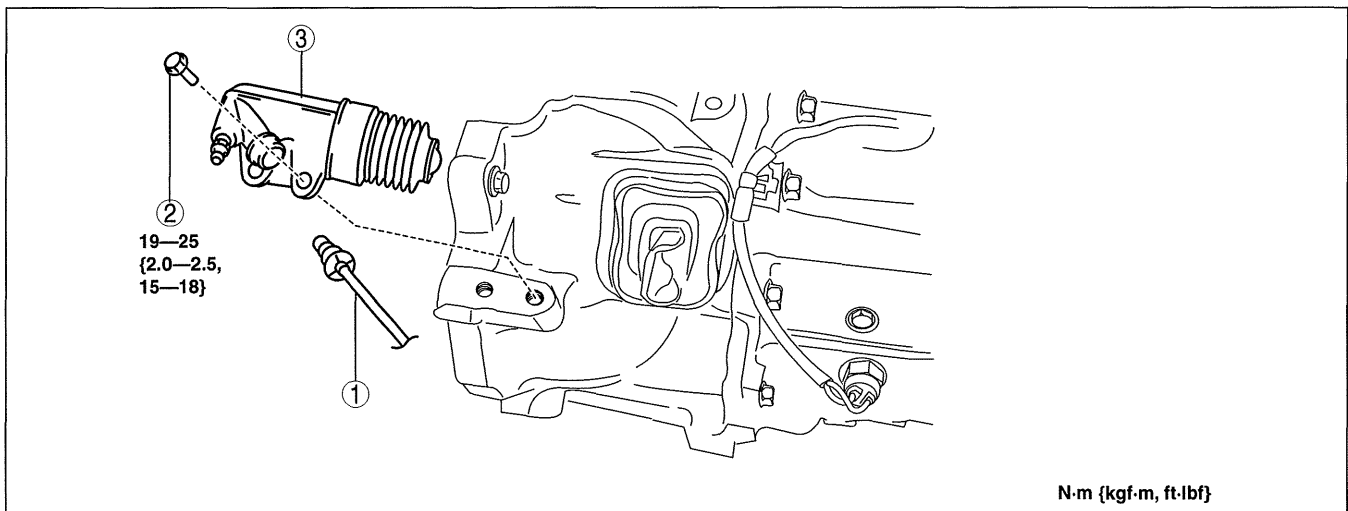
CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [G35M-R, G66M-R]

id0510008013j1

Caution

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Bleed the air from the system. (See 05-10-4 CLUTCH FLUID AIR BLEEDING/REPLACEMENT.)
5. After installation, inspect the clutch pedal. (See 05-10-5 CLUTCH PEDAL INSPECTION/ADJUSTMENT.)



N-m {kgf-m, ft-lbf}

am3uuw0000623

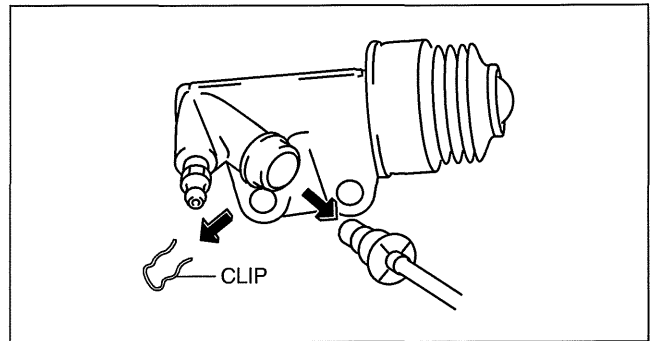
CLUTCH

1	Clutch pipe (See 05-10-14 Clutch Pipe Removal Note.) (See 05-10-14 Clutch Pipe Installation Note.)
---	--

2	Bolt
3	Clutch release cylinder

Clutch Pipe Removal Note

1. Pull out the clip and, then pull out the clutch pipe connector straight to detach it.



am3uuw0000330

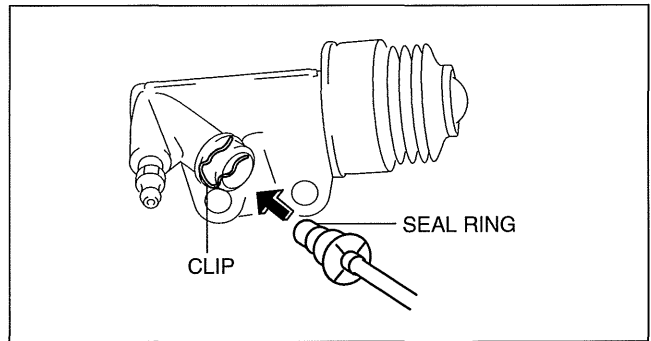
Clutch Pipe Installation Note

1. Return the clip to the position shown in the figure.

Caution

- Verify that there is no chipping, damage, or falling off of the seal ring in the clutch pipe connector.

2. Insert the clutch pipe connector straight.
3. Pull the clutch pipe to verify that it does not come off, and reinsert it completely.



am3uuw0000330

CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [A26M-R]

id0510008013m8

Caution

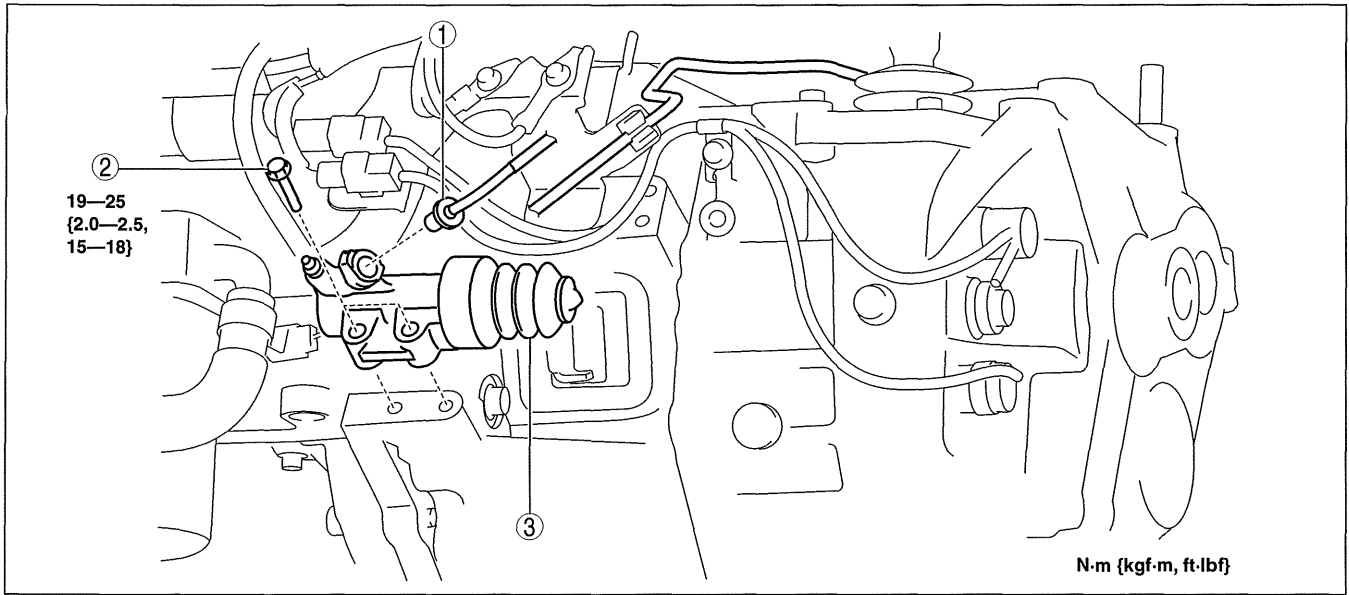
- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

Note

- If clutch system-related hydraulic parts are removed, supply brake fluid, bleed air, and inspect for fluid leakage after the installation.

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Bleed the air from the system. (See 05-10-4 CLUTCH FLUID AIR BLEEDING/REPLACEMENT.)
5. After installation, inspect the clutch pedal. (See 05-10-5 CLUTCH PEDAL INSPECTION/ADJUSTMENT.)

CLUTCH



am3uuw0000622

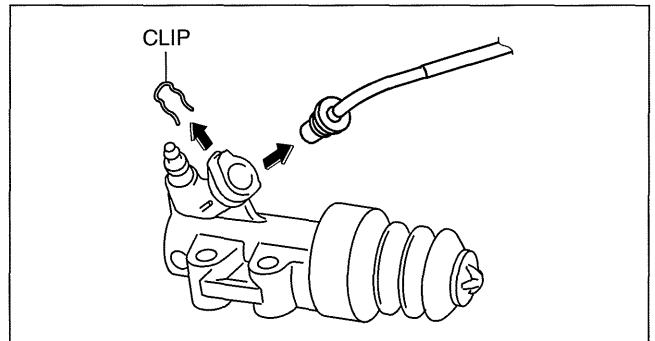
05-10

1	Clutch pipe
2	Bolt

3	Clutch release cylinder
---	-------------------------

Clutch Pipe Removal Note

1. Pull out the clip and, then pull out the clutch pipe connector straight to detach it.



am3uuw0000623

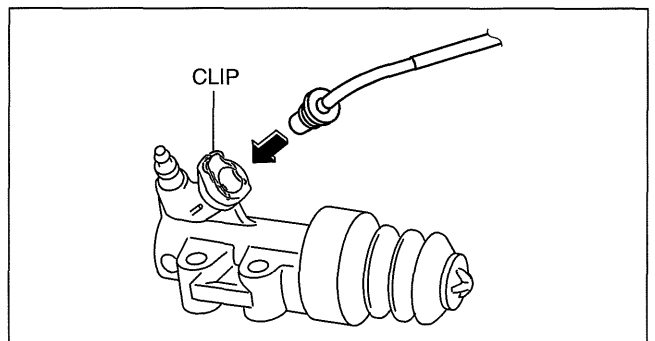
Clutch Pipe Installation Note

1. Return the clip to the position shown in the figure.

Caution

- Verify that there is no chipping, damage, or falling off of the seal ring in the clutch pipe connector.

2. Insert the clutch pipe connector straight.
3. Pull the clutch pipe to verify that it does not come off, and reinsert it completely.



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CLUTCH

CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R]

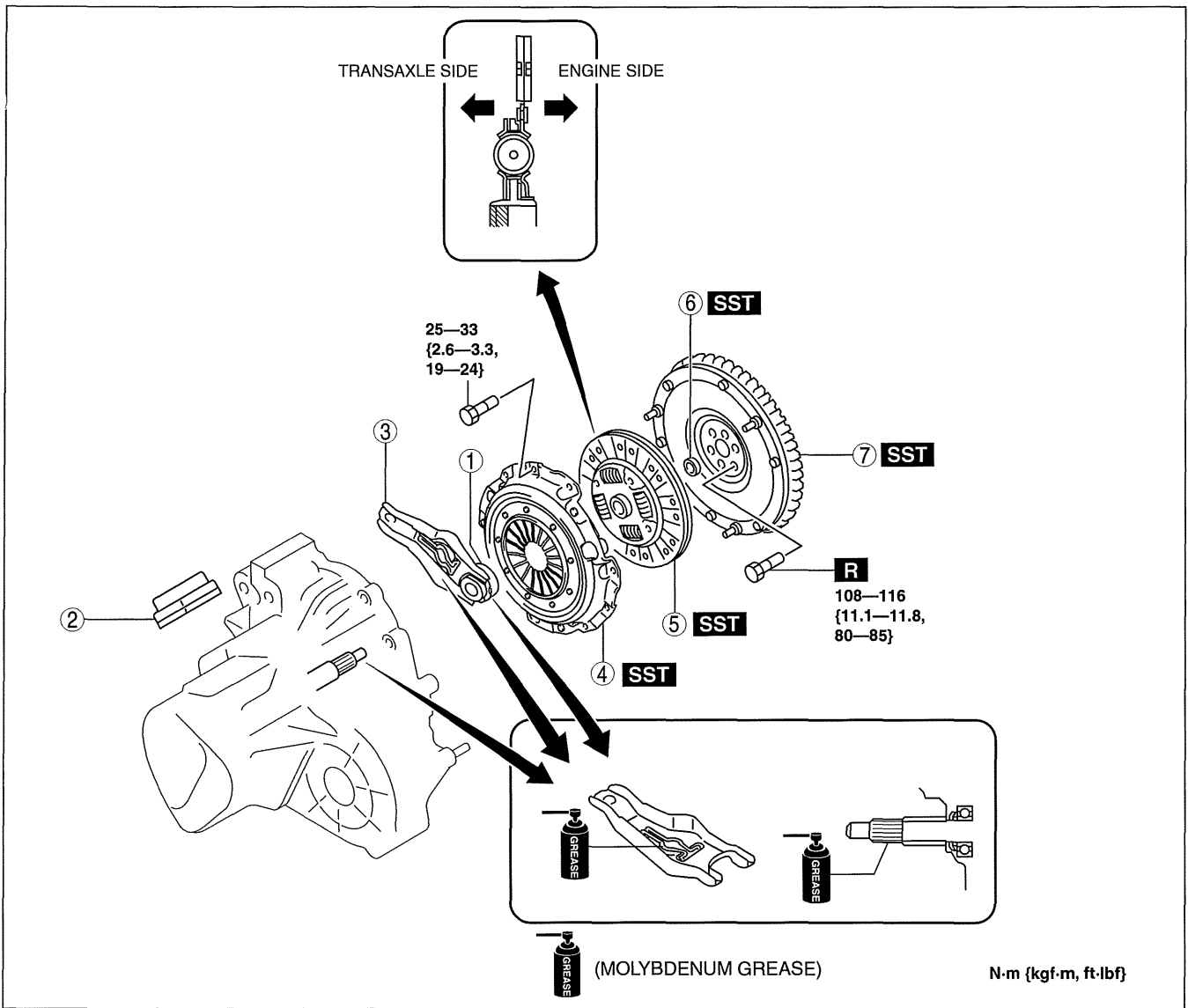
id0510008003j1

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
8. Remove the manual transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R].)(See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R].)
9. Remove in the order indicated in the table.
10. Install in the reverse order of removal.
11. Add the specified amount of specified transaxle oil. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE INSTALLATION' and verify that there is no abnormality. (See 05-15A-10 INSPECTION AFTER TRANSAXLE INSTALLATION [G35M-R].)(See 05-15B-10 INSPECTION AFTER TRANSAXLE INSTALLATION [G66M-R].)

CLUTCH



05-10

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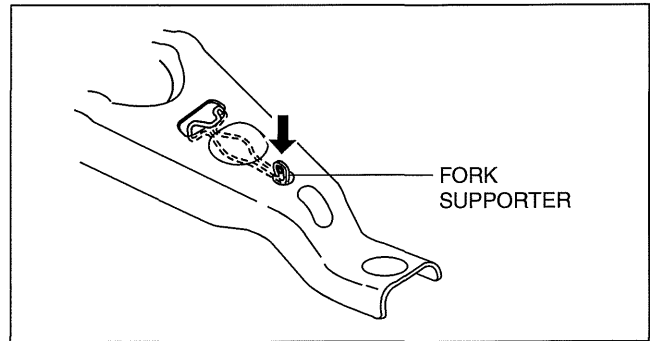
1	Clutch release collar (See 05-10-13 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION [G35M-R, G66M-R].)
2	Boot
3	Clutch release fork (See 05-10-18 Clutch Release Fork Removal Note.)
4	Clutch cover (See 05-10-18 Clutch Cover and Disc Removal Note.) (See 05-10-20 Clutch Cover Installation Note.)

5	Clutch disc (See 05-10-18 Clutch Cover and Disc Removal Note.) (See 05-10-20 Clutch Disc Installation Note.)
6	Pilot bearing (See 05-10-18 Pilot Bearing Removal Note.) (See 05-10-19 Pilot Bearing Installation Note.)
7	Flywheel (See 05-10-18 Flywheel Removal Note.) (See 05-10-19 Flywheel Installation Note.)

CLUTCH

Clutch Release Fork Removal Note

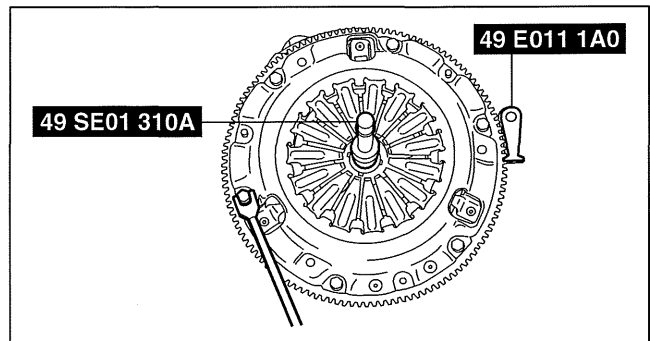
1. Remove the fork supporter before disassembling the release fork.



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Clutch Cover and Disc Removal Note

1. Install the **SSTs**.
2. Loosen each bolt one turn at a time in a crisscross pattern until spring tension is released.
3. Remove the clutch cover and disc.



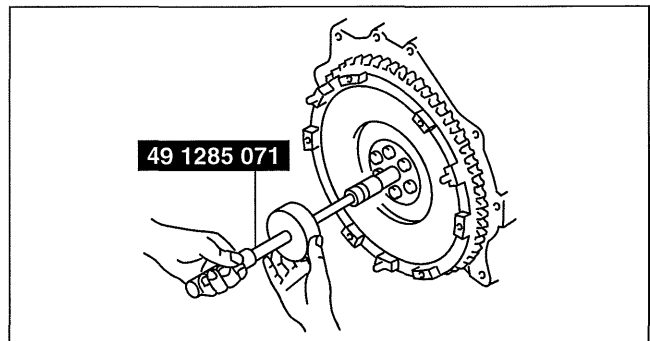
am3uuw0000208

Pilot Bearing Removal Note

Note

- The pilot bearing does not need to be removed unless you are replacing it.

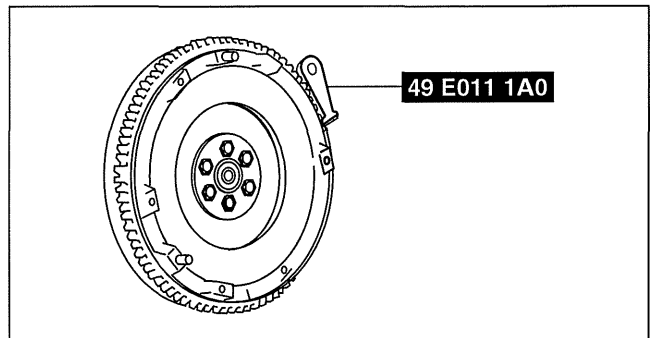
1. Use the **SST** to remove the pilot bearing.



am3uuw0000208

Flywheel Removal Note

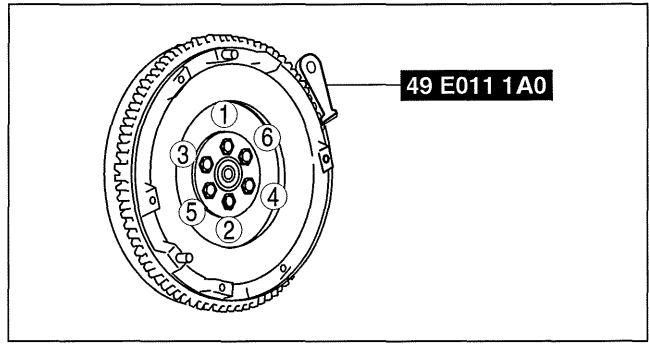
1. Hold the flywheel using the **SST**.
2. Remove the bolts evenly and gradually in a crisscross pattern.



am3uuw0000463

CLUTCH

3. Remove the flywheel.
4. Inspect for oil leakage from the crankshaft rear oil seal.
 - If there is any malfunction, replace the crankshaft rear oil seal. (See 01-10A-38 REAR OIL SEAL REPLACEMENT [LF, L5].)



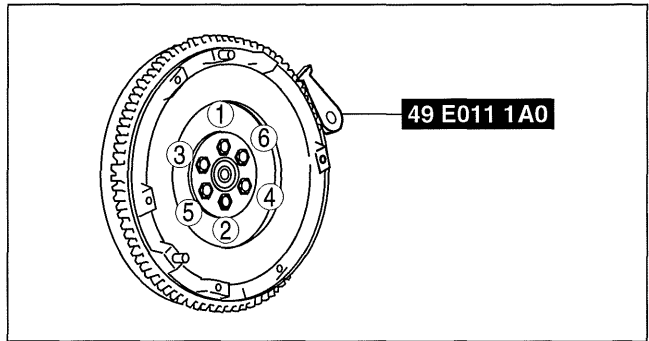
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Flywheel Installation Note

1. Install the flywheel to the crankshaft.
2. Clean the crankshaft thread holes before installing the new lock bolts.
3. Hand-tighten the flywheel lock bolts.
4. Install the **SST** to the flywheel.
5. Gradually tighten the flywheel lock bolts in a crisscross pattern.

Tightening torque

108—116 N·m {11.1—11.8 kgf·m, 80—85 ft·lbf}



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05-10

Pilot Bearing Installation Note

1. Install the pilot bearing using the Snap-on brand millimeter size bushing driver set (A160M) adapter A160M7 (20—22 mm).

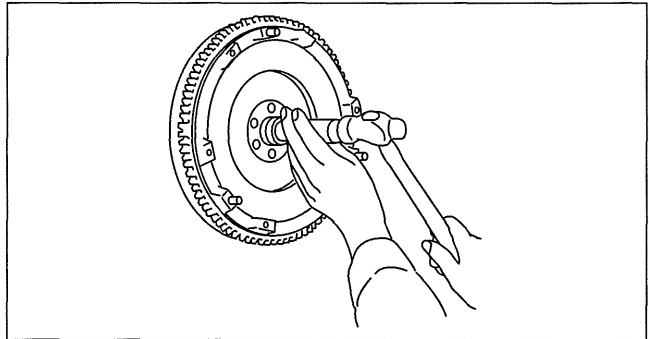
Caution

- Use the adapter with the 20 mm side of the A160M7 (20—22 mm) facing the pilot bearing side.

Substitution tool

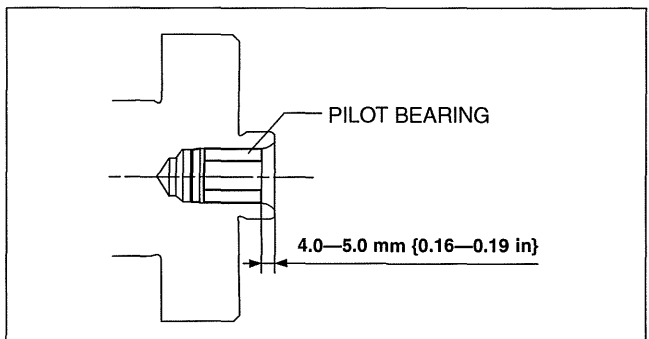
Outer diameter: 21 mm {0.83 in}

Inner diameter: 19 mm {0.75 in}



am3uuw0000208

2. As shown in the figure, press-fit the pilot bearing to the position which is 4.0—5.0 mm {0.16—0.19 in} from the crankshaft end.

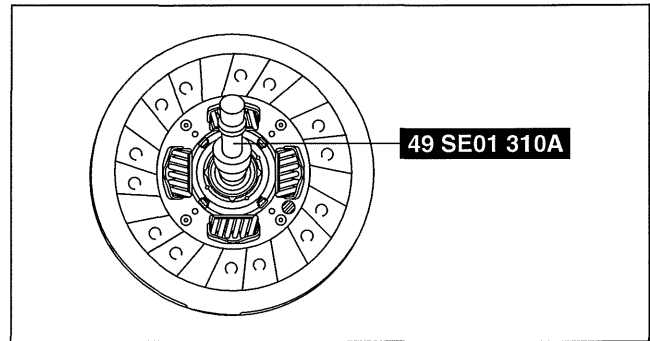


am3uuw0000208

CLUTCH

Clutch Disc Installation Note

1. Hold the clutch disc position using the **SST**.



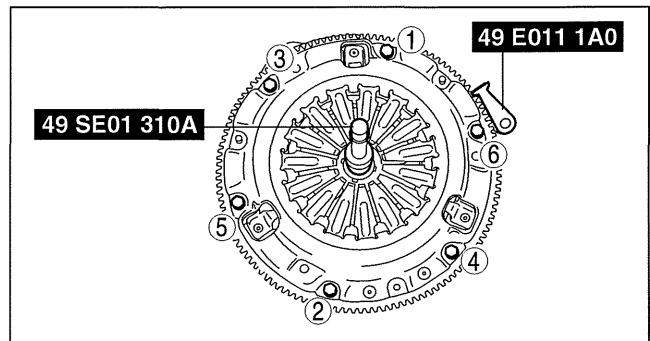
am3uuw000208

Clutch Cover Installation Note

1. Install the **SSTs**.
2. Tighten the bolts in Min. 2 stages.
 - (1) Tighten partially with a crisscross pattern.
 - (2) Fully tighten to specified torque with a crisscross pattern.

Tightening torque

25—33 N·m {2.6—3.3 kgf·m, 19—24 ft·lbf}



am3uuw000208

CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R]

id051008003m8

Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**
- **When newly replacing the clutch cover or the clutch disc, replace the clutch cover and the clutch disc as a set.**
- **Due to the automatic adjustment function of clutch cover, if the old cover assembly is reused, it must be reinstalled together with its original clutch disc.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove the manual transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)

CLUTCH

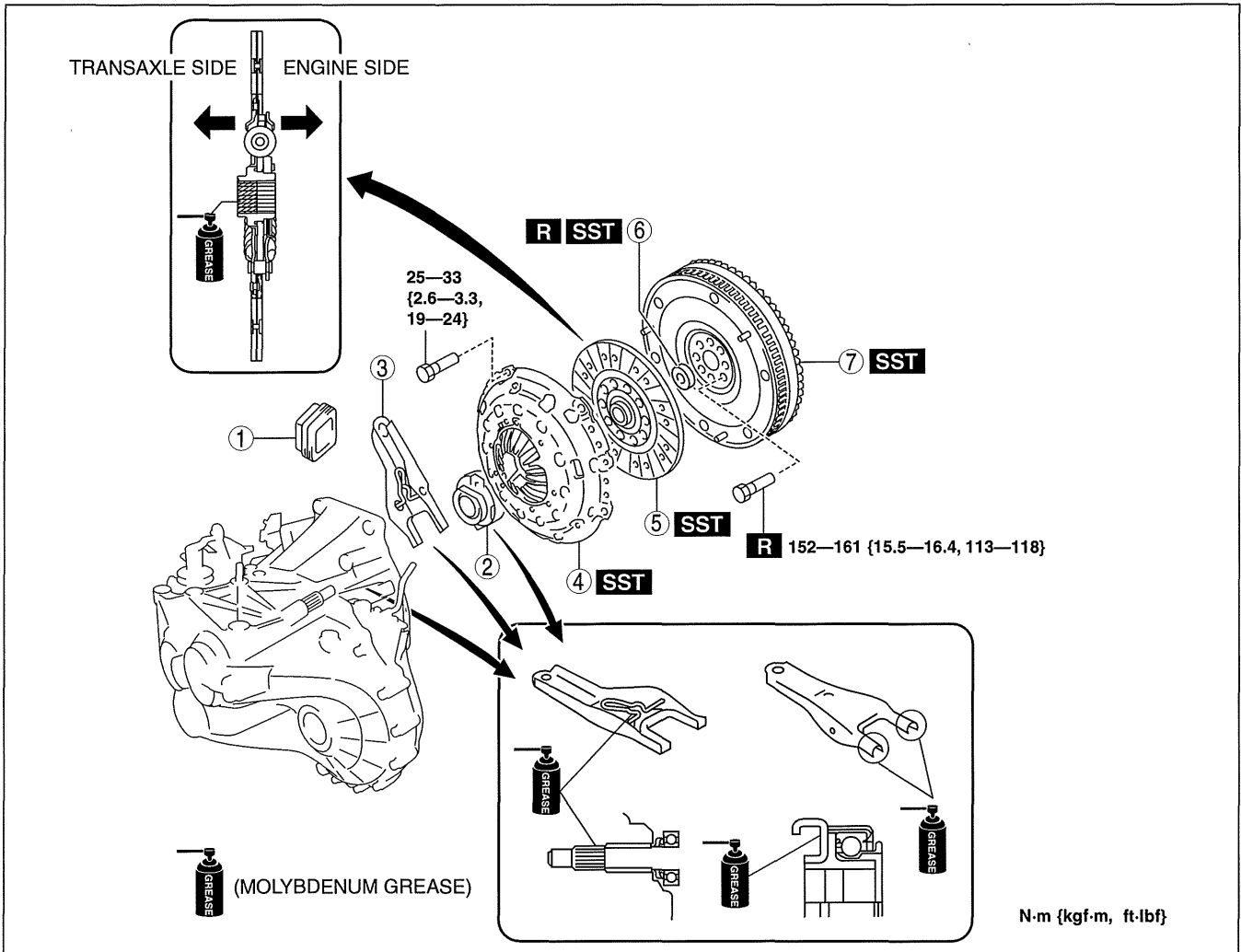
11. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
12. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.

Warning

- Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE OVERHAUL' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)



am3uuw0000621

1	Boot
2	Clutch release collar
3	Clutch release fork
4	Clutch cover (See 05-10-22 Clutch Cover and Disc Removal Note.) (See 05-10-24 Clutch Cover Installation Note.)

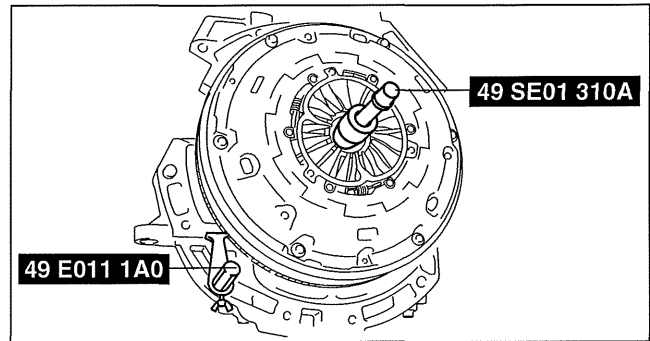
5	Clutch disc (See 05-10-22 Clutch Cover and Disc Removal Note.) (See 05-10-23 Clutch Disc Installation Note.)
6	Pilot bearing (See 05-10-22 Pilot Bearing Removal Note.) (See 05-10-23 Pilot Bearing Installation Note.)
7	Flywheel (See 05-10-22 Flywheel Removal Note.) (See 05-10-22 Flywheel Installation Note.)

05-10

CLUTCH

Clutch Cover and Disc Removal Note

1. Install the **SSTs**.
2. Loosen each bolt one turn at a time in a crisscross pattern until spring tension is released.
3. Remove the clutch cover and disc.



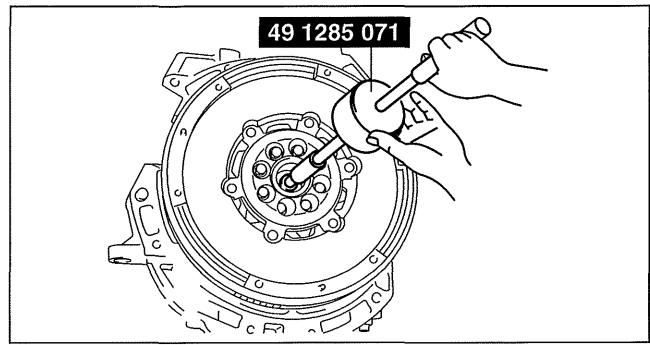
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Pilot Bearing Removal Note

Note

- The pilot bearing does not need to be removed unless you are replacing it.

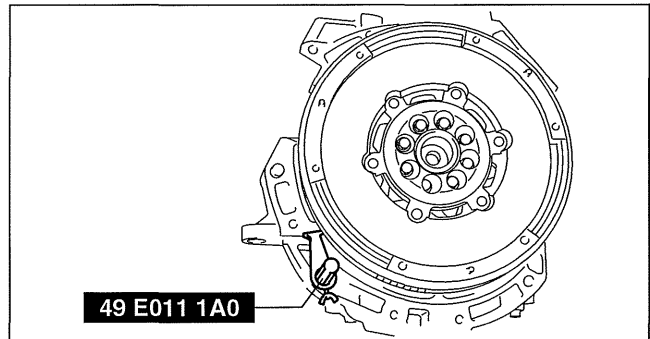
1. Use the **SST** to remove the pilot bearing.



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Flywheel Removal Note

1. Hold the flywheel using the **SST**.
2. Remove the bolts evenly and gradually in a crisscross pattern.
3. Remove the flywheel.



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Flywheel Installation Note

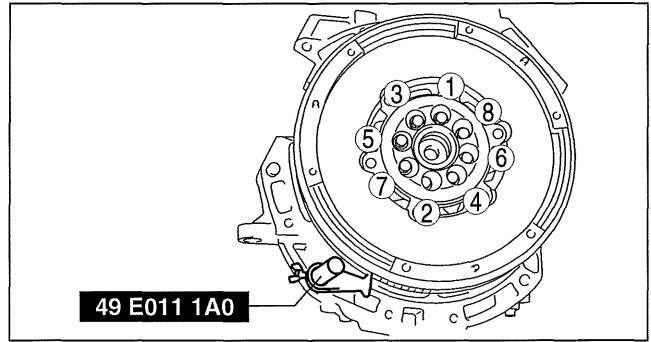
1. Clean the crankshaft thread holes.
2. Install the flywheel to the crankshaft.
3. Hand-tighten the new flywheel lock bolts.

CLUTCH

4. Install the **SST** to the flywheel.
5. Gradually tighten the flywheel lock bolts in a crisscross pattern.

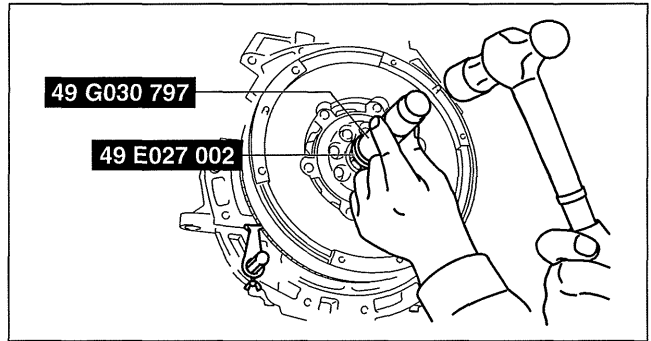
Tightening torque

152—161 N·m {15.5—16.4 kgf·m, 113—118 ft·lbf}

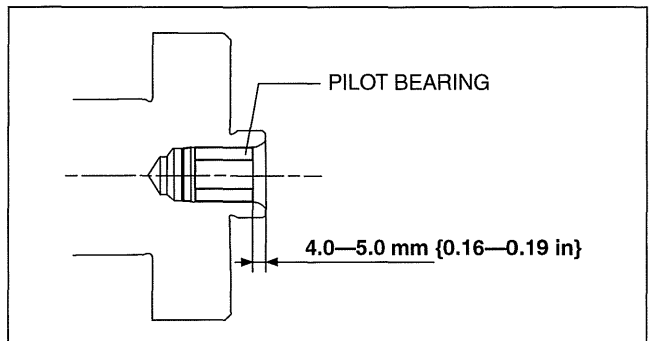


Pilot Bearing Installation Note

1. Use the **SSTs** to install the pilot bearing.

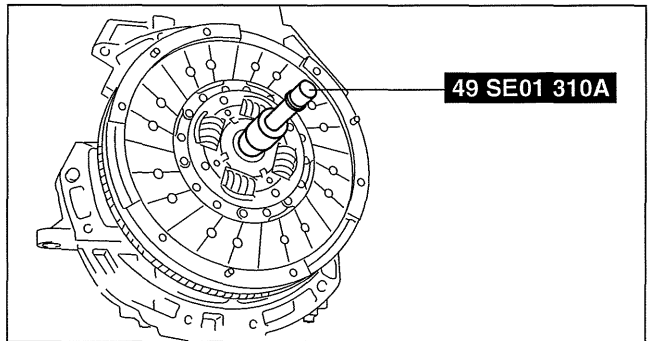


2. As shown in the figure, press-fit the pilot bearing to the position which is **4.0—5.0 mm {0.16—0.19 in}** from the crankshaft end.



Clutch Disc Installation Note

1. Clean the splines of the clutch disc and the main drive gear with a brush.
2. Spread a thin layer of clutch grease on the splines.
3. Hold the clutch disc position using the **SST**.



05-10

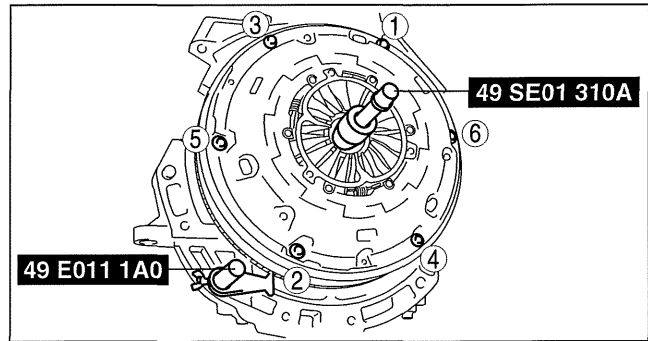
CLUTCH

Clutch Cover Installation Note

1. Install the SSTs.
2. Tighten the bolts in Min. 2 stages.
3. Tighten partially with a crisscross pattern.
4. Fully tighten to specified torque with a crisscross pattern.

Tightening torque

25—33 N·m {2.6—3.3 kgf·m, 19—24 ft·lbf}



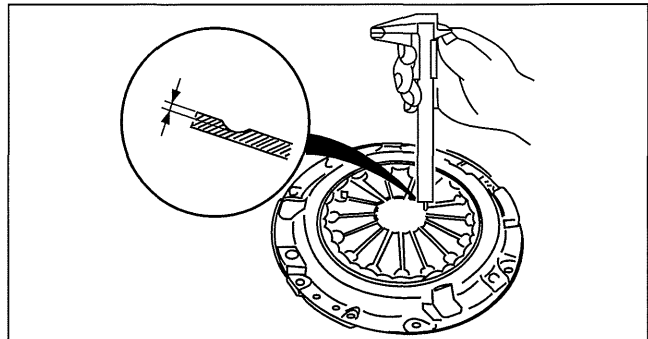
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id051000808j1

CLUTCH COVER INSPECTION [G35M-R, G66M-R]

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
8. Remove the manual transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R].)(See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R].)
9. Remove the clutch cover. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)
10. Measure the wear of the diaphragm spring fingers.
 - If it exceeds the maximum specification, replace the clutch cover.

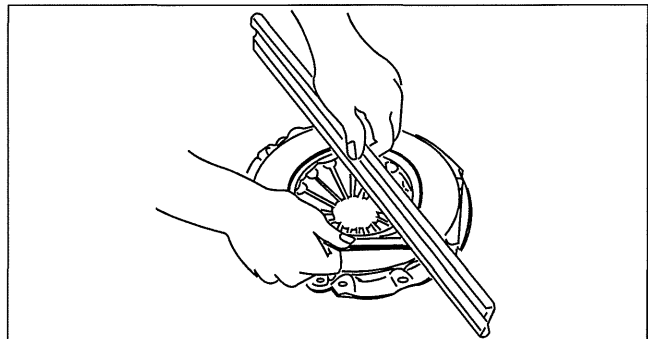
**Clutch cover diaphragm spring fingers
maximum depth
0.6 mm {0.02 in}**



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11. Measure the flatness of the pressure plate with a straight edge and a feeler gauge.
 - If it exceeds the maximum specification, replace the clutch cover. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)

**Maximum clearance of flatness of the
pressure plate
0.5 mm {0.02 in}**

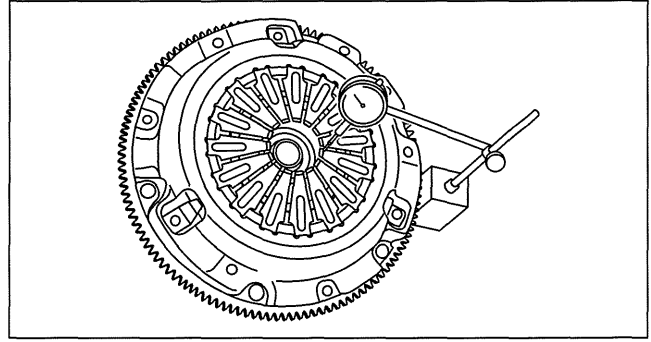


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CLUTCH

12. When checking the diaphragm spring fingers, mount a dial gauge on the cylinder block.
13. Rotate the flywheel and check for misaligned diaphragm spring fingers.
 - If it exceeds the maximum specification, replace the clutch cover. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)

**Clutch cover diaphragm spring fingers
maximum height difference
1.0 mm {0.039 in}**



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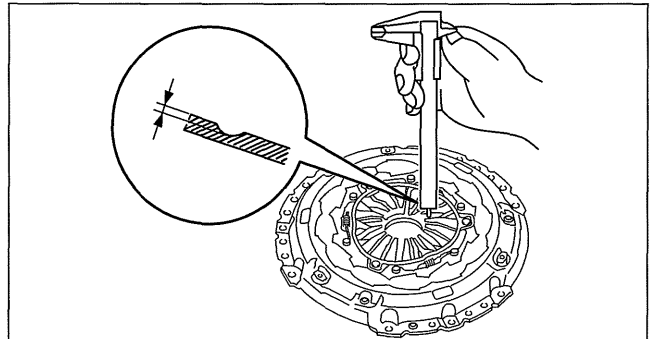
CLUTCH COVER INSPECTION [A26M-R]

id0510008008m8

05-10

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove the manual transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
8. Remove the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
9. Measure the wear of the diaphragm spring fingers.
 - If it exceeds the maximum specification, replace the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

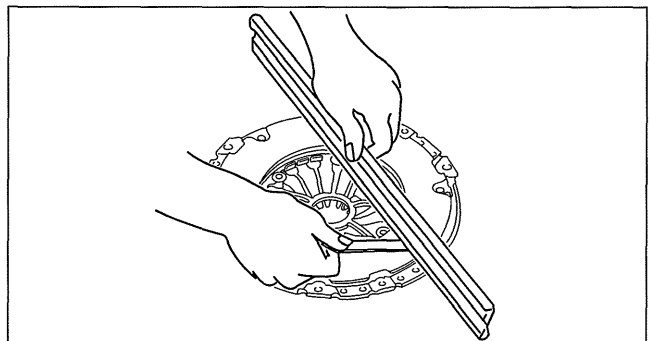
**Clutch cover diaphragm spring fingers
maximum depth
0.6 mm {0.02 in} max.**



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10. Measure the flatness of the pressure plate with a straight edge and a feeler gauge.
 - If it exceeds the maximum specification, replace the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

**Maximum clearance of flatness of the
pressure plate
0.3 mm {0.01 in} max.**

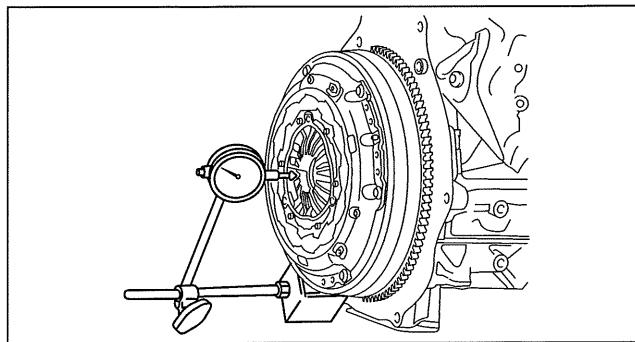


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CLUTCH

11. When checking the diaphragm spring fingers, mount a dial gauge on the cylinder block.
12. Rotate the flywheel and check for misaligned diaphragm spring fingers.
 - If it exceeds the maximum specification, replace the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

**Clutch cover diaphragm spring fingers
maximum misalignment
1.0 mm {0.039 in} max.**



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13. Install in the reverse order of removal.
14. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
15. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
16. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.

Warning

- **Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.**

Note

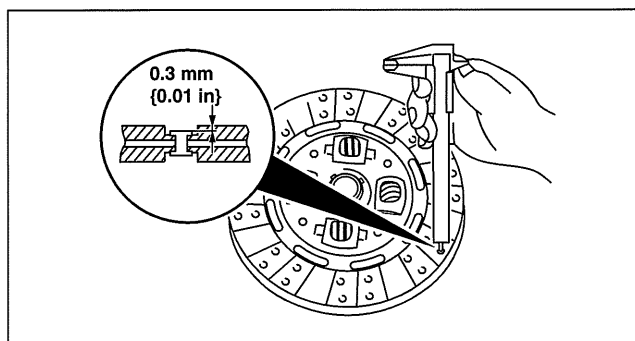
- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE OVERHAUL' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)

CLUTCH DISC INSPECTION [G35M-R, G66M-R]

id0510008009j1

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
8. Remove the manual transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R].)(See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R].)
9. Remove the clutch disc. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)
10. Inspect the lining surface for discoloration and grease adhesion.
11. Inspect the torsion spring for weakness and the rivet for looseness.
12. Using a vernier caliper, measure the depth between the lining surface and the rivet head.
 - If it is less than the minimum specification, replace the clutch disc.

**Clutch disc minimum depth
0.3 mm {0.01 in}**



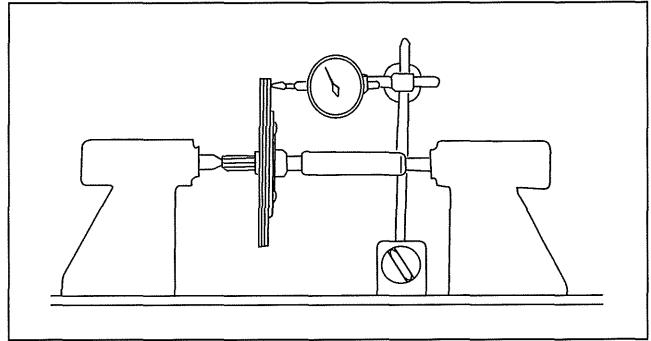
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CLUTCH

13. Measure the clutch disc runout using a dial gauge.
 - If it exceeds the maximum specification, replace the clutch disc.

Clutch disc maximum runout
0.7 mm {0.03 in}

14. Install the clutch disc.



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CLUTCH DISC INSPECTION [A26M-R]

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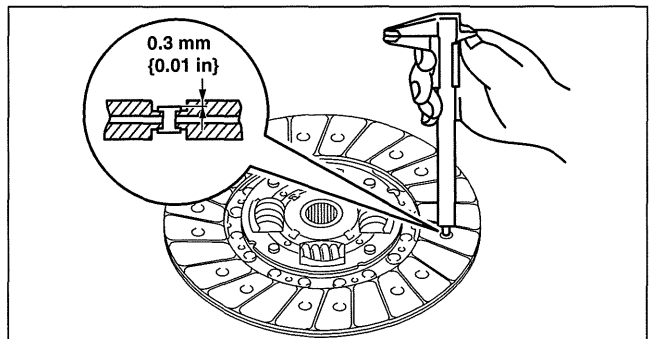
Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

05-10

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove the manual transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
8. Remove the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
9. Remove the clutch disk. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
10. Using vernier calipers, measure the thickness of the lining at a rivet head on both sides.
 - If it less than the minimum specification, replace the clutch disc. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

Minimum clutch disc thickness
0.3 mm {0.01 in}

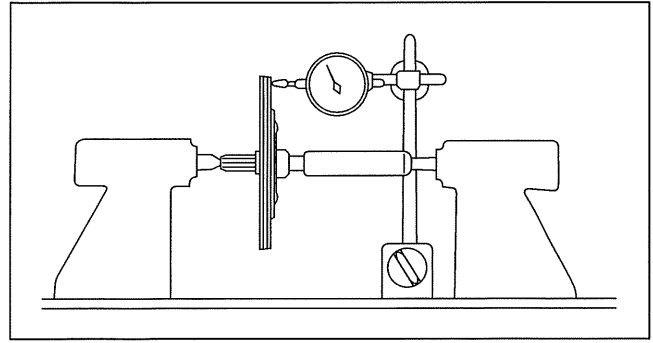


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CLUTCH

11. Measure the clutch disc runout using a dial gauge.
 - If it exceeds the maximum specification, replace the clutch disc. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

Maximum clutch disc runout
0.7 mm {0.03 in}



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12. Install in the reverse order of removal.
13. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
14. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
15. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.

Warning

- **Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.**

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE OVERHAUL' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)

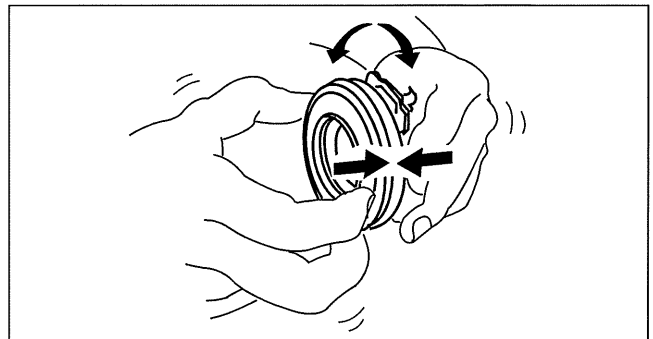
CLUTCH RELEASE COLLAR INSPECTION [G35M-R, G66M-R]

id051008010j1

Caution

- **Do not clean the clutch release collar with cleaning fluids or a steam cleaner because it is filled with grease.**

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
8. Remove the manual transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R].)(See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R].)
9. Remove the clutch release collar. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)
10. Turn the collar while applying force in the axial direction, and inspect for sticking, excessive resistance, and an abnormal noise.
 - If there is any malfunction, replace the clutch release collar.
11. Install the clutch release collar. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)



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CLUTCH

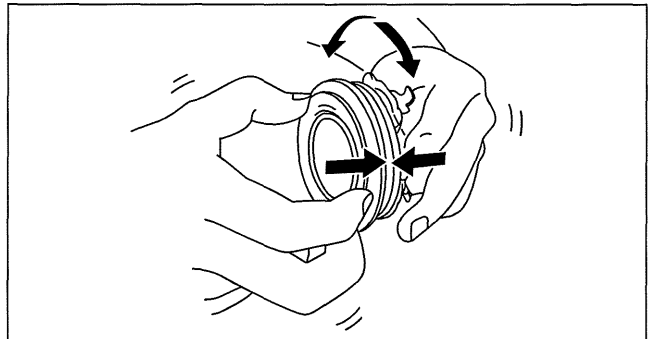
CLUTCH RELEASE COLLAR INSPECTION [A26M-R]

id0510008010m8

Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**
- **Cleaning the clutch release collar with cleaning fluids or a steam cleaner can wash the grease out of the sealed bearing.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove the manual transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
8. Remove the clutch release collar. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
9. Turn the collar while applying force in the axial direction.
 - If the collar sticks or has excessive resistance, replace the clutch release collar. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
10. Install the clutch release collar.
11. Install in the reverse order of removal.
12. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
13. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
14. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.



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Warning

- **Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.**

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE OVERHAUL' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)

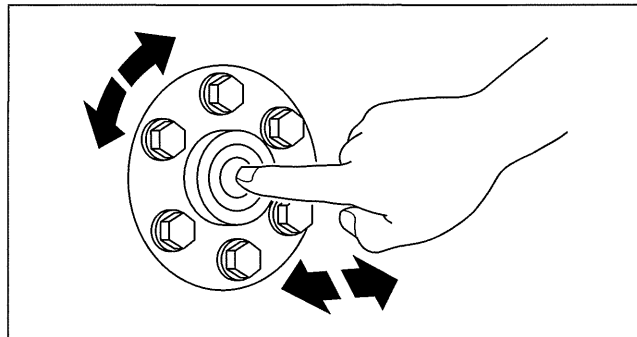
PILOT BEARING INSPECTION [G35M-R, G66M-R]

id0510008002j1

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:

CLUTCH

- (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
- (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
- (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
- (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
8. Remove the manual transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R].)(See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R].)
9. Without removing the pilot bearing, turn the bearing while applying force in the axial direction.
 - If there is any malfunction, replace the pilot bearing. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)



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PILOT BEARING INSPECTION [A26M-R]

id0510008002m8

Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

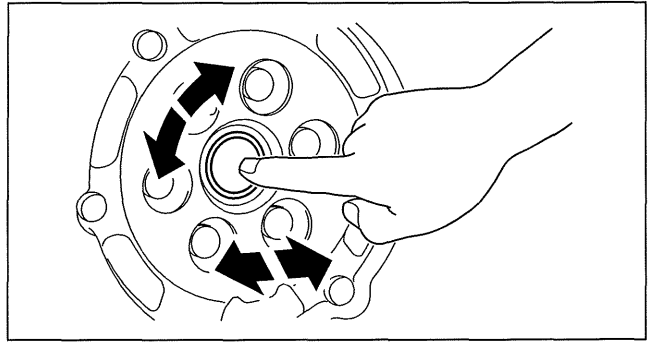
Note

- Perform the pilot bearing inspection with the crankshaft or flywheel installed.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove the manual transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
8. Remove the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
9. Remove the clutch disk. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

CLUTCH

10. Inspect the rotation condition of the pilot bearing for damage or wear.
 - If there is any malfunction, replace the pilot bearing. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
11. Install in the reverse order of removal.
12. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
13. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
14. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.



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Warning

- Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE OVERHAUL' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)

05-10

FLYWHEEL INSPECTION [G35M-R, G66M-R]

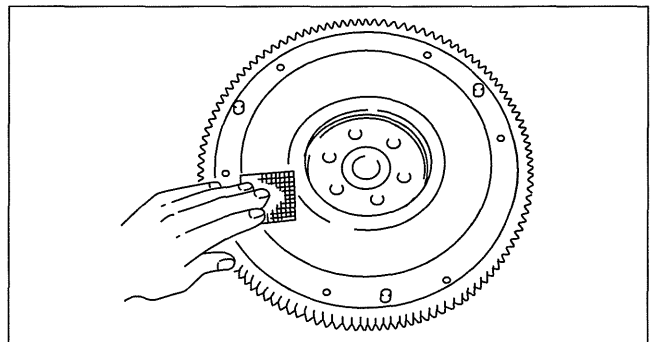
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1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)(See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
8. Remove the manual transaxle. (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R].)(See 05-15B-4 MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R].)
9. Remove the flywheel. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)

Note

- Correct slight scratches and discoloration using sandpaper.
- Inspect the runout of the surface that contacts the clutch disc with the flywheel installed to the crankshaft.

10. Inspect the surface that contacts the clutch disc for scratches, nicks, and discoloration.
11. Inspect the ring gear teeth for damage and wear.



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CLUTCH

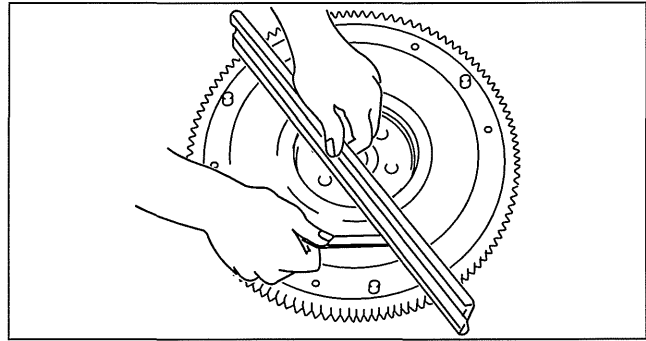
12. Measure the flatness of the flywheel with a straight edge and a feeler gauge.
- If there is any malfunction, replace the flywheel. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)

Maximum clearance of flatness of the flywheel
0.06 mm {0.002 in}

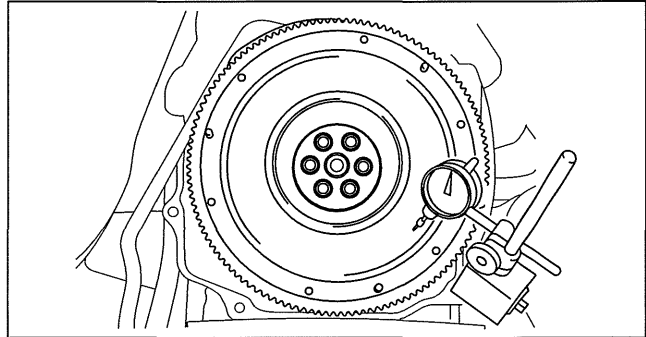
13. Install the flywheel. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)

14. Measure the runout of the surface that contacts the clutch disc using a dial gauge.
- If it exceeds the maximum specification, replace the flywheel. (See 05-10-16 CLUTCH UNIT REMOVAL/INSTALLATION [G35M-R, G66M-R].)

Flywheel maximum runout
0.1 mm {0.004 in}



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FLYWHEEL INSPECTION [A26M-R]

id0510008001m8

Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**
- **Do not rework the dual-mass flywheel if it is distorted.**
- **Do not clean the dual-mass flywheel with any kind of fluid. Clean the dual-mass flywheel with a dry cloth only.**
- **Do not clean the gap between the primary and secondary mass. Only clean the bolt connection surface and the clutch surface.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove the manual transaxle. (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/INSTALLATION [A26M-R].)
8. Remove the clutch cover. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
9. Remove the clutch disk. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

CLUTCH

10. Remove the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

Note

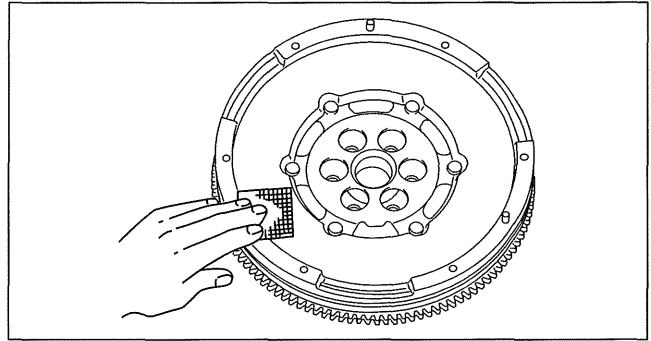
- Correct slight scratches and discoloration using sandpaper.
- Inspect the runout of the surface that contacts the clutch disc with the dual-mass flywheel installed to the crankshaft.

11. Inspect the dual-mass flywheel.

- Cracks
- Worn ring gear teeth
- Chipped or cracked ring gear teeth
- Surface that contacts the clutch disc for scratches, nicks, and discoloration.
- If there is any malfunction, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

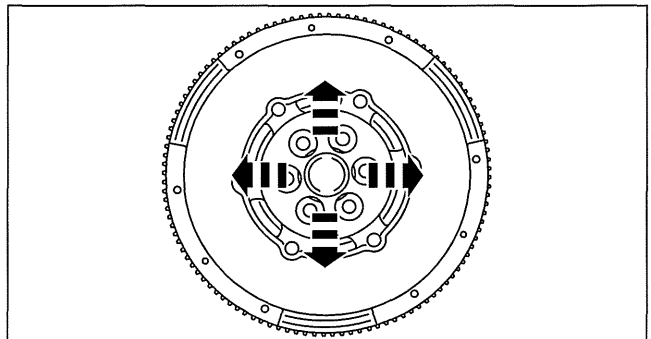
12. Verify that the center of the dual-mass flywheel does not move.

- (1) Rotate the dual-mass flywheel or attempt to move it up and down, and left and right to verify that the center of the dual-mass flywheel does not move.
- If there is any movement as indicated by the arrows in the figure, replace the dual-mass flywheel with a new one. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)



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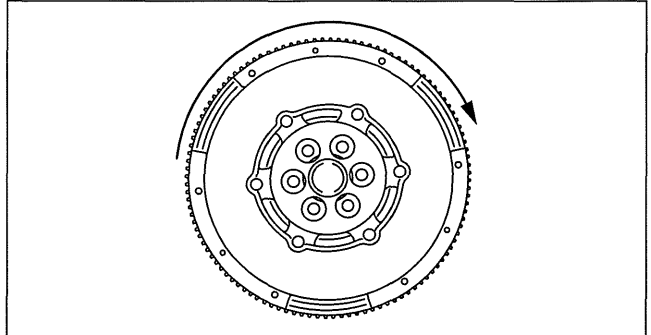
05-10



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13. Verify that the secondary mass rotates by 15 teeth or more.

- If it rotates by 15 teeth or more, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)



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14. Inspect for locating dowels touching the primary mass of the dual-mass flywheel.

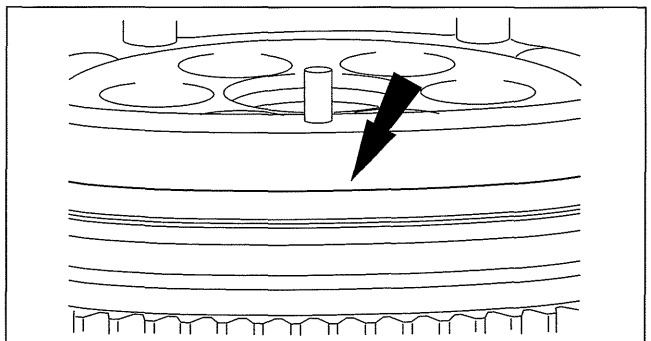
Caution

- **Make sure that the three locating dowels are installed.**

- If the locating dowels are touching the primary mass of the dual-mass flywheel, replace the dual-mass flywheel with a new one.

15. Visually inspect the secondary mass.

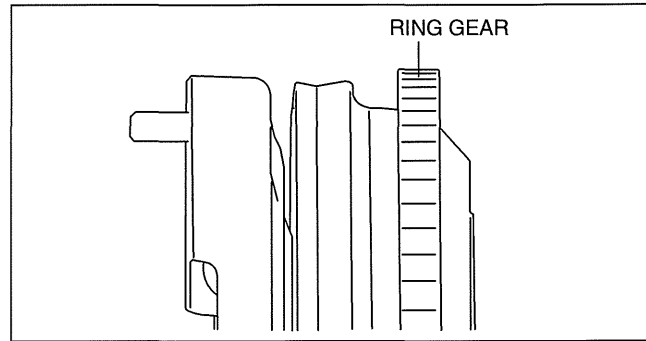
- If there is any damage, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)



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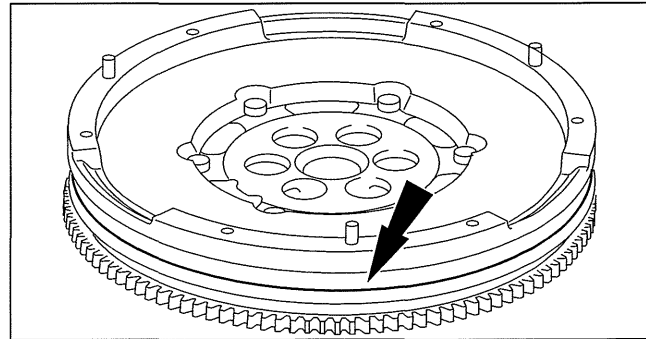
CLUTCH

16. Visually inspect the ring gear on the dual-mass flywheel.
- If there is any damage, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)



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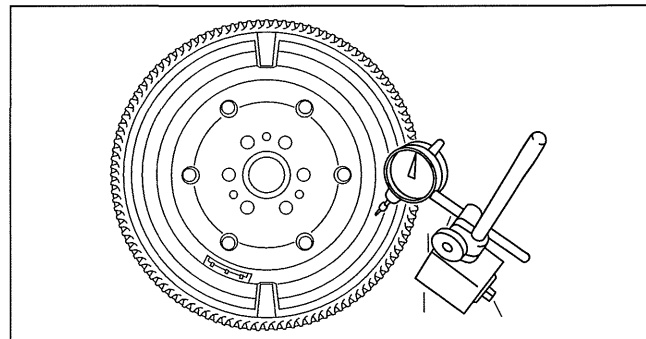
17. Inspect the welded area of the dual-mass flywheel for grease leakage.
- If there is grease leakage, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)



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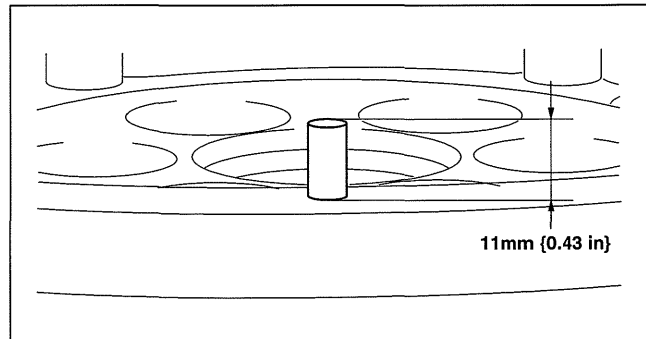
18. Inspect the dual-mass flywheel runout.
- If it is more than the maximum specification, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)

**Flywheel maximum runout [A26M-R]
1.5 mm {0.059 in}**



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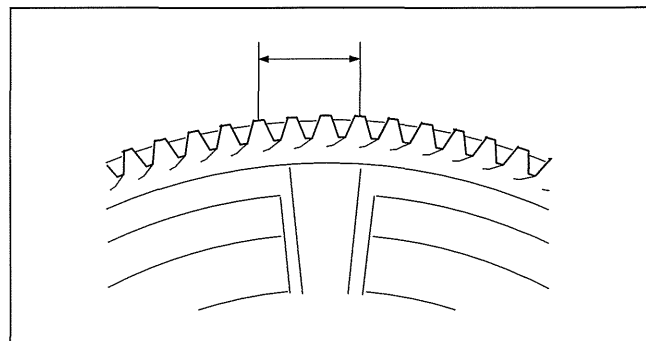
19. Inspect the dual-mass flywheel for the amount of guide pin projection.
- If not within the specification, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)



11mm {0.43 in}

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20. Rotate the secondary mass left and right and verify that it rotates within a range of three teeth without resistance.
- If there is any malfunction, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
21. Inspect the dual-mass flywheel for cracks.
- If there are cracks, replace the dual-mass flywheel. (See 05-10-20 CLUTCH UNIT REMOVAL/INSTALLATION [A26M-R].)
22. Install in the reverse order of removal.



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CLUTCH

23. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
24. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
25. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.

Warning

- **Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.**

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE OVERHAUL' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)

05-15A MANUAL TRANSAXLE [G35M-R]

MANUAL TRANSAXLE LOCATION

INDEX [G35M-R] 05-15A-1

NEUTRAL SWITCH REMOVAL/
INSTALLATION [G35M-R] 05-15A-1

BACK-UP LIGHT SWITCH REMOVAL/
INSTALLATION [G35M-R] 05-15A-2

TRANSAXLE OIL INSPECTION
[G35M-R] 05-15A-2

TRANSAXLE OIL REPLACEMENT
[G35M-R] 05-15A-3

OIL SEAL (DIFFERENTIAL)
REPLACEMENT [G35M-R] 05-15A-3

MANUAL TRANSAXLE REMOVAL/ INSTALLATION [G35M-R]

INSTALLATION [G35M-R] 05-15A-4

Shift Cable And Select Cable
Removal Note 05-15A-6

No.4 Engine Mount Removal Note 05-15A-6

Manual Transaxle Removal Note 05-15A-7

Manual Transaxle Installation Note 05-15A-8

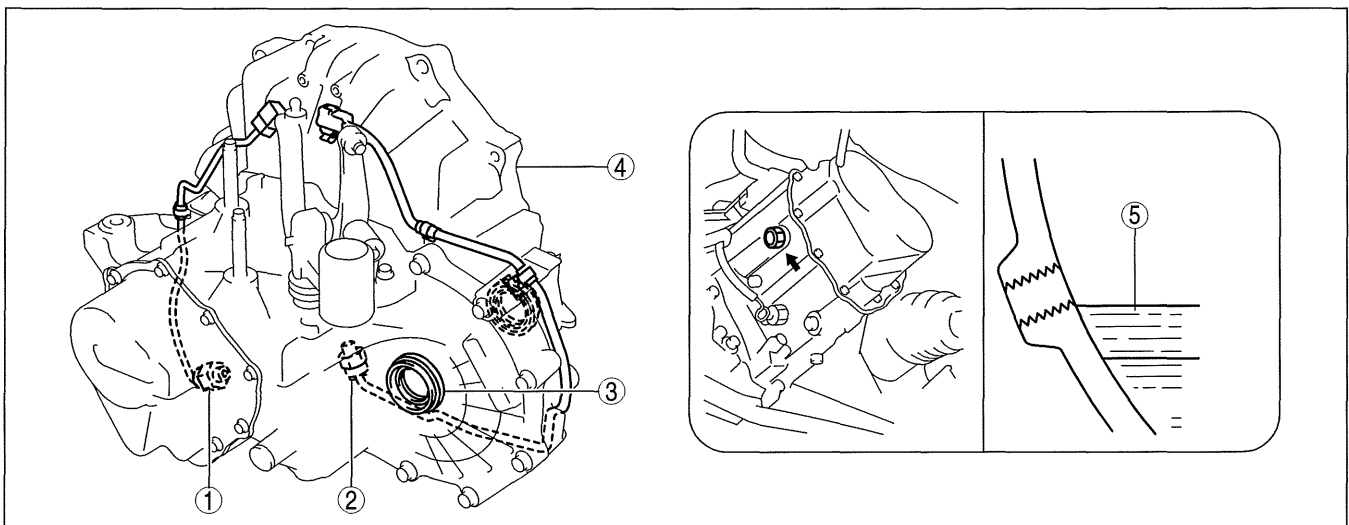
No.1 Engine Mount and No.4 Engine
Mount Installation Note 05-15A-8

INSPECTION AFTER TRANSAXLE
INSTALLATION [G35M-R] 05-15A-10

MANUAL TRANSAXLE LOCATION INDEX [G35M-R]

id0515b1800500

05-15A



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1	Back-up light switch (See 05-15A-2 BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G35M-R].) (See 09-18-55 BACK-UP LIGHT SWITCH INSPECTION.)
2	Neutral switch (See 05-15A-1 NEUTRAL SWITCH REMOVAL/ INSTALLATION [G35M-R].) (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].)

3	Oil seal (differential) (See 05-15A-3 OIL SEAL (DIFFERENTIAL) REPLACEMENT [G35M-R])
4	Manual transaxle (See 05-15A-4 MANUAL TRANSAXLE REMOVAL/ INSTALLATION [G35M-R])
5	Transaxle oil (See 05-15A-2 TRANSAXLE OIL INSPECTION [G35M-R]) (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R])

NEUTRAL SWITCH REMOVAL/INSTALLATION [G35M-R]

id0515b1800700

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Drain the oil from the transaxle. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)

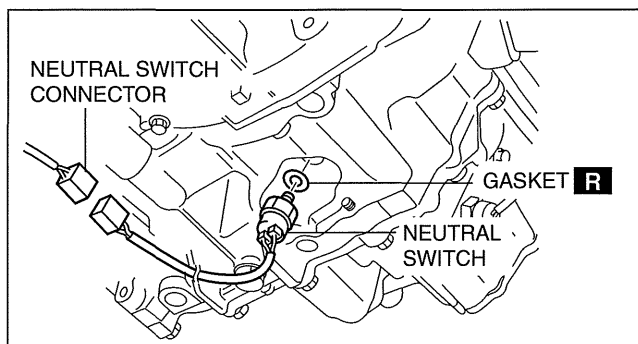
MANUAL TRANSAXLE [G35M-R]

6. Disconnect the neutral switch connector and remove the neutral switch.
7. Install the neutral switch (with a new gasket) to the transaxle case.

Tightening torque

20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}

8. Install the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
9. Install the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
10. Add the specified amount and type of oil. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)
11. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G35M-R]

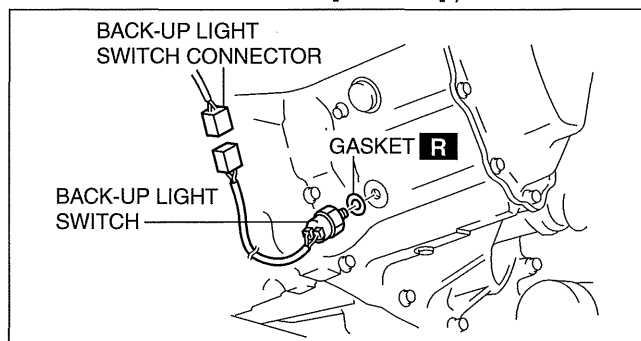
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1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Drain the oil from the transaxle. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)
6. Disconnect the back-up light switch connector and remove the back-up light switch.
7. Install the back-up light switch (with a new gasket) to the transaxle case.

Tightening torque

20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}

8. Install the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
9. Install the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
10. Add the specified amount and type of oil. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)
11. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



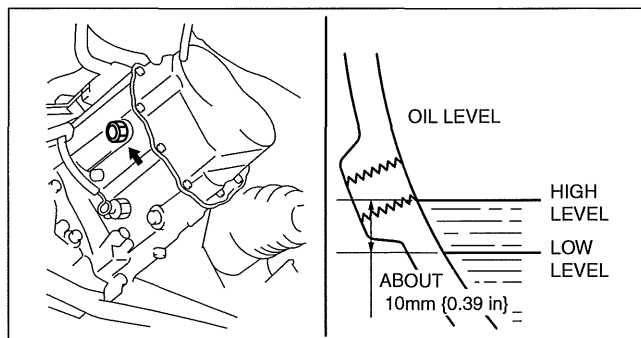
TRANSAXLE OIL INSPECTION [G35M-R]

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1. Park the vehicle on level ground.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the oil level plug and washer.
4. Verify that the oil is near the brim of the plug port.
 - If the oil level is lower than the low level, add the specified amount and type of oil through the oil level plug hole.

Manual transaxle oil Grade
API GL-4

Manual transaxle oil Viscosity
SAE 75W-80



MANUAL TRANSAXLE [G35M-R]

5. Install a new washer and the oil level plug.

Tightening torque

39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

6. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

TRANSAXLE OIL REPLACEMENT [G35M-R]

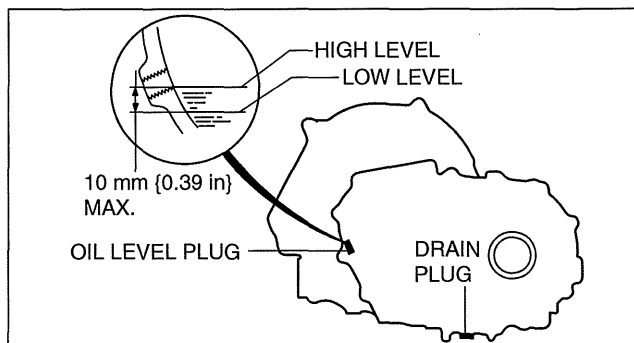
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1. Park the vehicle on level ground.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the drain plug with the washer.
4. Drain the oil into a suitable container.
5. Install a new washer and the drain plug.

Tightening torque

39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

6. Remove the oil level plug with washer and add the specified amount and type of oil through the oil level plug hole until the level reaches the bottom of the oil level plug hole.



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Manual transaxle oil Grade
API GL-4

Manual transaxle oil Viscosity
SAE 75W-80

Manual transaxle oil capacity (approx. quantity)
2.77 L {2.93 US qt, 2.44 Imp qt}

7. Install a new washer and the oil level plug.

Tightening torque

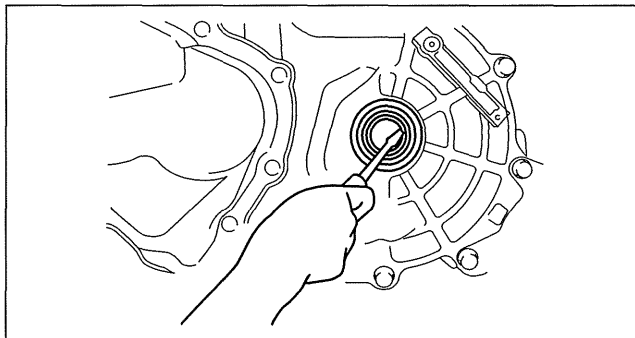
39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

8. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

OIL SEAL (DIFFERENTIAL) REPLACEMENT [G35M-R]

id0515b1800200

1. On level ground, jack up the vehicle and support it evenly on safety stands.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Drain the oil from the transaxle. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)
4. Remove the front splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
5. Separate the drive shaft and joint shaft from the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.) (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
6. Remove the oil seals using a screwdriver.

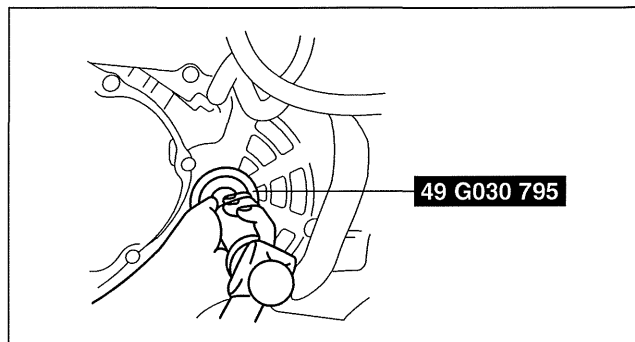


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05-15A

MANUAL TRANSAXLE [G35M-R]

7. Using the **SST** and a hammer, tap each new oil seal in evenly until the **SST** contacts the transaxle case.
8. Coat the lip of each oil seal with transaxle oil.
9. Insert the drive shaft and joint shaft to the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.) (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
10. Install the front splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Add the specified amount and type of oil. (See 05-15A-3 TRANSAXLE OIL REPLACEMENT [G35M-R].)
12. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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MANUAL TRANSAXLE REMOVAL/INSTALLATION [G35M-R]

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Caution

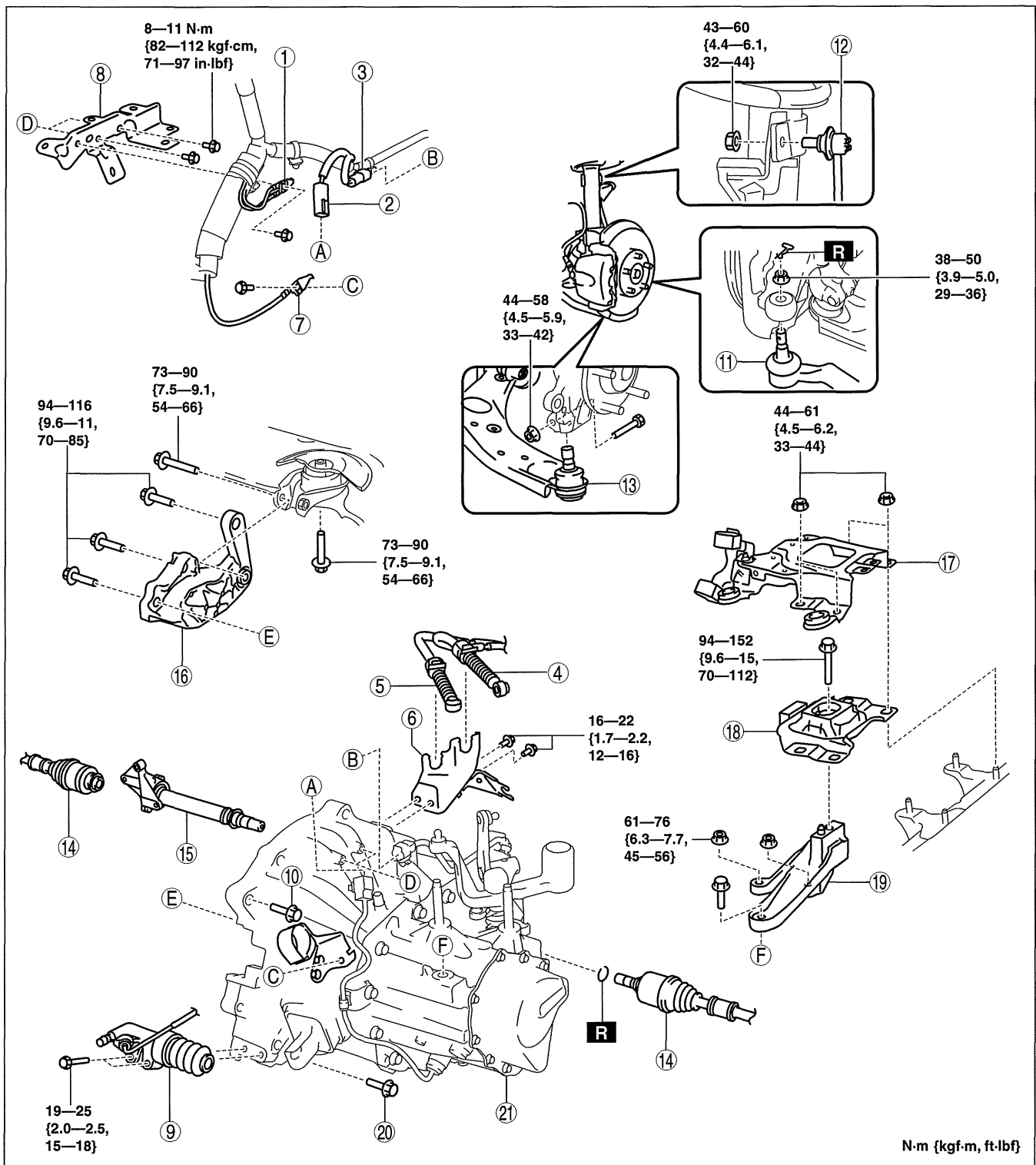
- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (2) Front splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container.
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Add the specified amount of specified transaxle oil.

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE INSTALLATION' and verify that there is no abnormality. (See 05-15A-10 INSPECTION AFTER TRANSAXLE INSTALLATION [G35M-R].)

MANUAL TRANSAXLE [G35M-R]



05-15A

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1	Ground
2	Back-up light switch connector
3	Neutral switch connector
4	Select cable (See 05-15A-6 Shift Cable And Select Cable Removal Note.)
5	Shift cable (See 05-15A-6 Shift Cable And Select Cable Removal Note.)
6	Cable bracket

7	Ground
8	Harness bracket
9	Clutch release cylinder
10	Transaxle mounting bolt (upper side)
11	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
12	Stabilizer control link
13	Lower arm ball joint

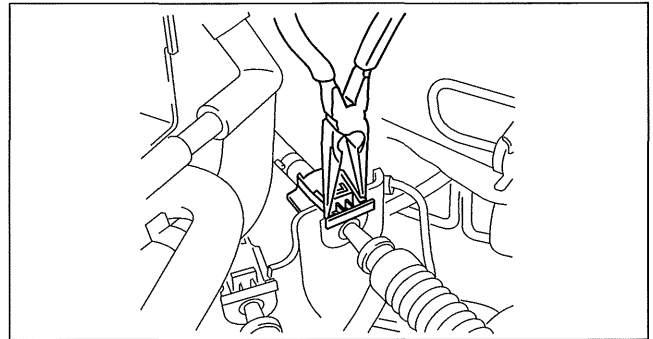
MANUAL TRANSAXLE [G35M-R]

14	Drive shaft (See 03-13-3 DRIVE SHAFT REMOVAL/ INSTALLATION.)
15	Joint shaft (See 03-13-13 JOINT SHAFT REMOVAL/ INSTALLATION.)
16	No.1 engine mount bracket (See 05-15A-8 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
17	Battery bracket

18	No.4 engine mount rubber (See 05-15A-6 No.4 Engine Mount Removal Note.) (See 05-15A-8 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
19	No.4 engine mount bracket (See 05-15A-6 No.4 Engine Mount Removal Note.) (See 05-15A-8 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
20	Transaxle mounting bolt (lower side)
21	Manual transaxle (See 05-15A-7 Manual Transaxle Removal Note.) (See 05-15A-8 Manual Transaxle Installation Note.)

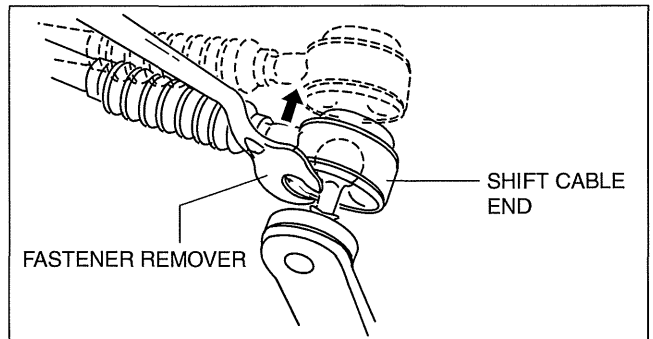
Shift Cable And Select Cable Removal Note

1. Remove the shift and selector cable outer ends as shown in the figure.



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2. Remove the both shift cable end and select cable end using a fastener remover.



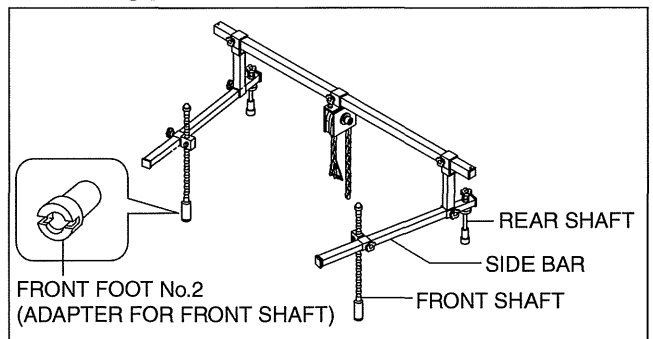
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No.4 Engine Mount Removal Note

1. Install the SST using the following procedure.

Caution

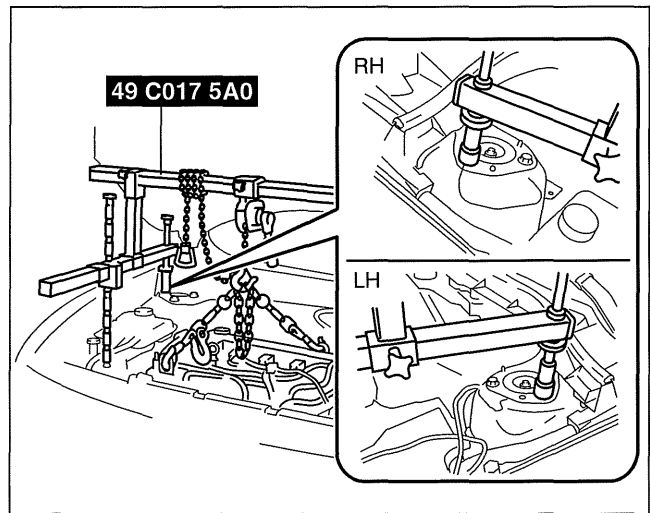
- Refer to the SST instruction manual for the basic handling procedure.



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MANUAL TRANSAXLE [G35M-R]

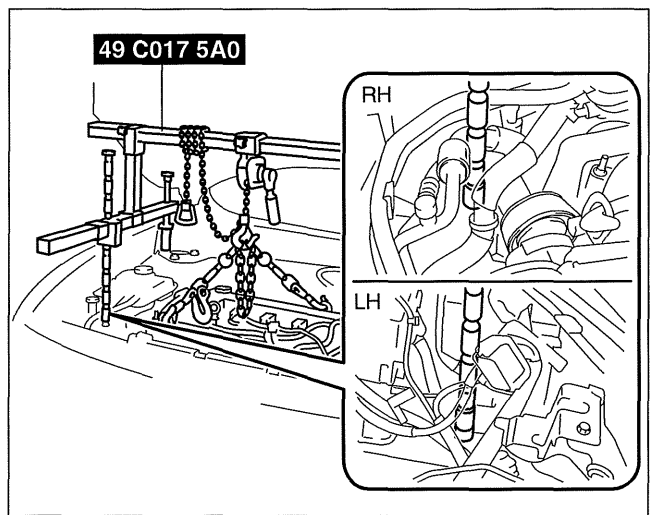
- (1) Align the bolt of the shock absorber (right side) shown in the figure with the rear shaft bolt for the right side of the **SST**.
- (2) Align the bolt of the shock absorber (left side) shown in the figure with the rear shaft bolt for the left side of the **SST**.



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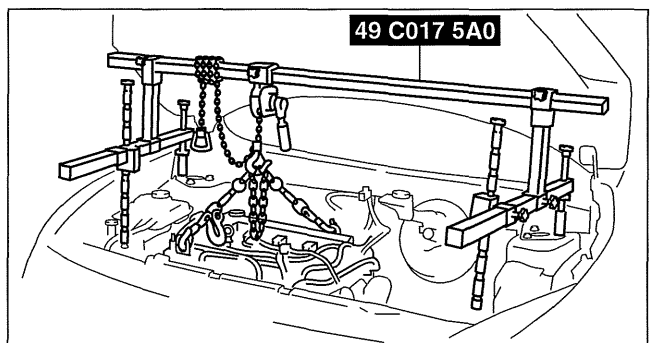
05-15A

- (3) Install one front foot No.2 to each of the left and right front shafts of the **SST**, and then align the holes of the **SST** front shafts with the bolt on the left and right side of each front side frame.
- (4) Adjust the height of the left and right side bars so that they are leveled, then tighten each part of the **SST**.
- (5) Make sure each joint is securely tightened.



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2. Suspend the engine using the **SST**.
3. Remove the battery bracket, No.4 engine mount rubber and No.4 engine mount bracket.



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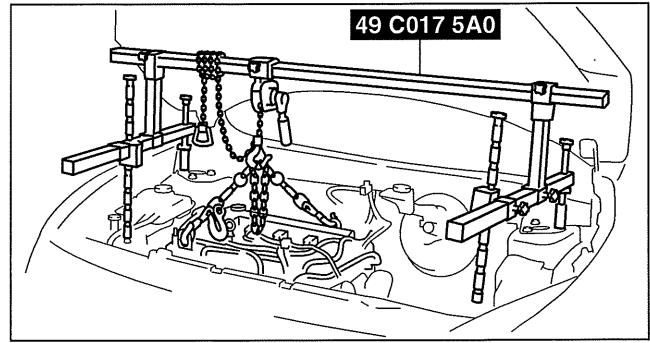
Manual Transaxle Removal Note

Warning

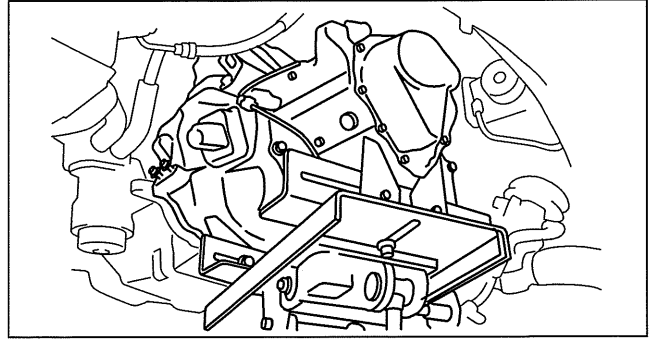
- Remove the transaxle carefully, holding it steady. If the transaxle falls it could be damaged or cause injury.

MANUAL TRANSAXLE [G35M-R]

1. Lean the engine toward the transaxle.



2. Support the transaxle on a jack.
3. Remove the transaxle mounting bolts.
4. Remove the transaxle.

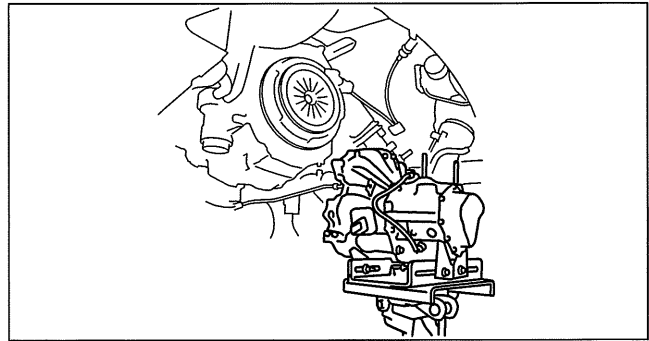


Manual Transaxle Installation Note

Warning

- Install the transaxle carefully, holding it steady. If the transaxle falls it could be damaged or cause injury.

1. Set the transaxle on a jack and lift into place.
2. Install the transaxle mounting bolts.
3. Adjust the **SST** (49 C017 5A0) so that the engine is located at the specified position.

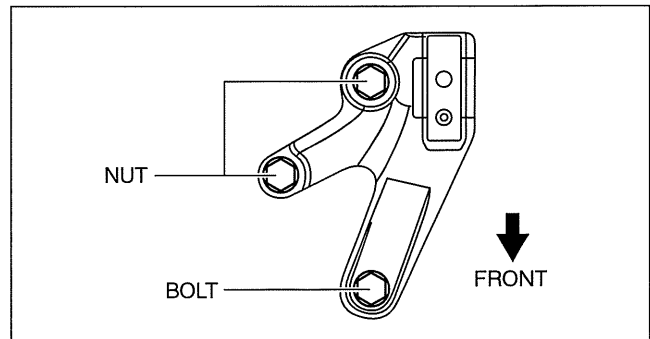


No.1 Engine Mount and No.4 Engine Mount Installation Note

1. Install the No.4 engine mount bracket on the transaxle case and tighten bolt and nuts.

Tightening torque

61—76 N·m {6.3—7.7 kgf·m, 45—56 ft·lbf}

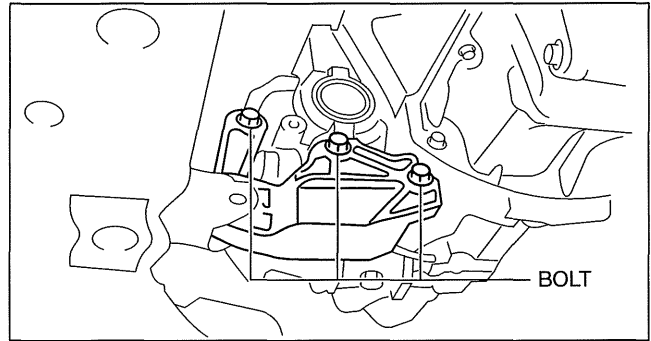


MANUAL TRANSAXLE [G35M-R]

2. Install the No.1 engine mount bracket to the transaxle case, and then tighten the bolts.

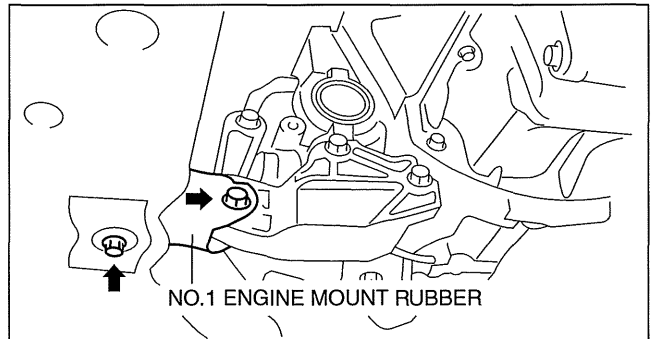
Tightening torque

94—116 N·m {9.6—11 kgf·m, 70—85 ft·lbf}



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3. Install the No.1 engine mount rubber to the front crossmember, and then temporarily tighten the bolts.

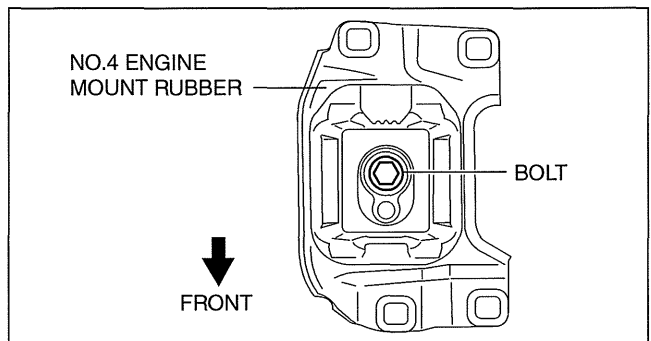


am3uuw0000525

4. Place the No.4 engine mount rubber with the body stud bolts passing through the holes and tighten the bolt in the figure.

Tightening torque

94—152 N·m {9.6—15 kgf·m, 70—112 ft·lbf}

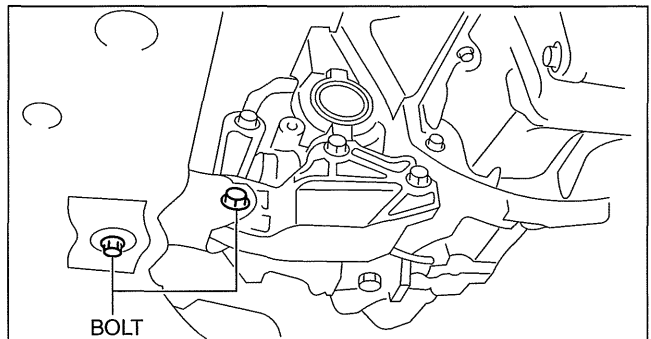


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5. Fully tighten the bolts.

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}



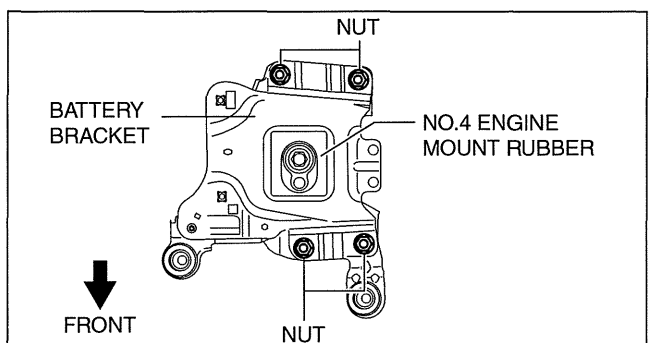
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6. Place the battery bracket on the No.4 Engine mount rubber with the body stud bolts passing through the holes and tighten bolts and nuts in the order shown in the figure.

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}

7. Remove the SST (49 C017 5A0).



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05-15A

MANUAL TRANSAXLE [G35M-R]

INSPECTION AFTER TRANSAXLE INSTALLATION [G35M-R]

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Note

- Perform the following inspection only when the transaxle has been overhauled.

1. Perform a road test and inspect the following items:
 - (1) No abnormal noise in each shift position.
 - (2) Smooth shift operation when shifting gears.
 - (3) No gear slipout after shifting gears.
 - (4) Back-up light switch operates correctly.

05-15B MANUAL TRANSAXLE [G66M-R]

MANUAL TRANSAXLE LOCATION

INDEX [G66M-R] 05-15B-1
 NEUTRAL SWITCH REMOVAL/
 INSTALLATION [G66M-R] 05-15B-2
 BACK-UP LIGHT SWITCH REMOVAL/
 INSTALLATION [G66M-R] 05-15B-2
 TRANSAXLE OIL INSPECTION
 [G66M-R] 05-15B-2
 TRANSAXLE OIL REPLACEMENT
 [G66M-R] 05-15B-3
 OIL SEAL (DIFFERENTIAL)
 REPLACEMENT [G66M-R] 05-15B-3

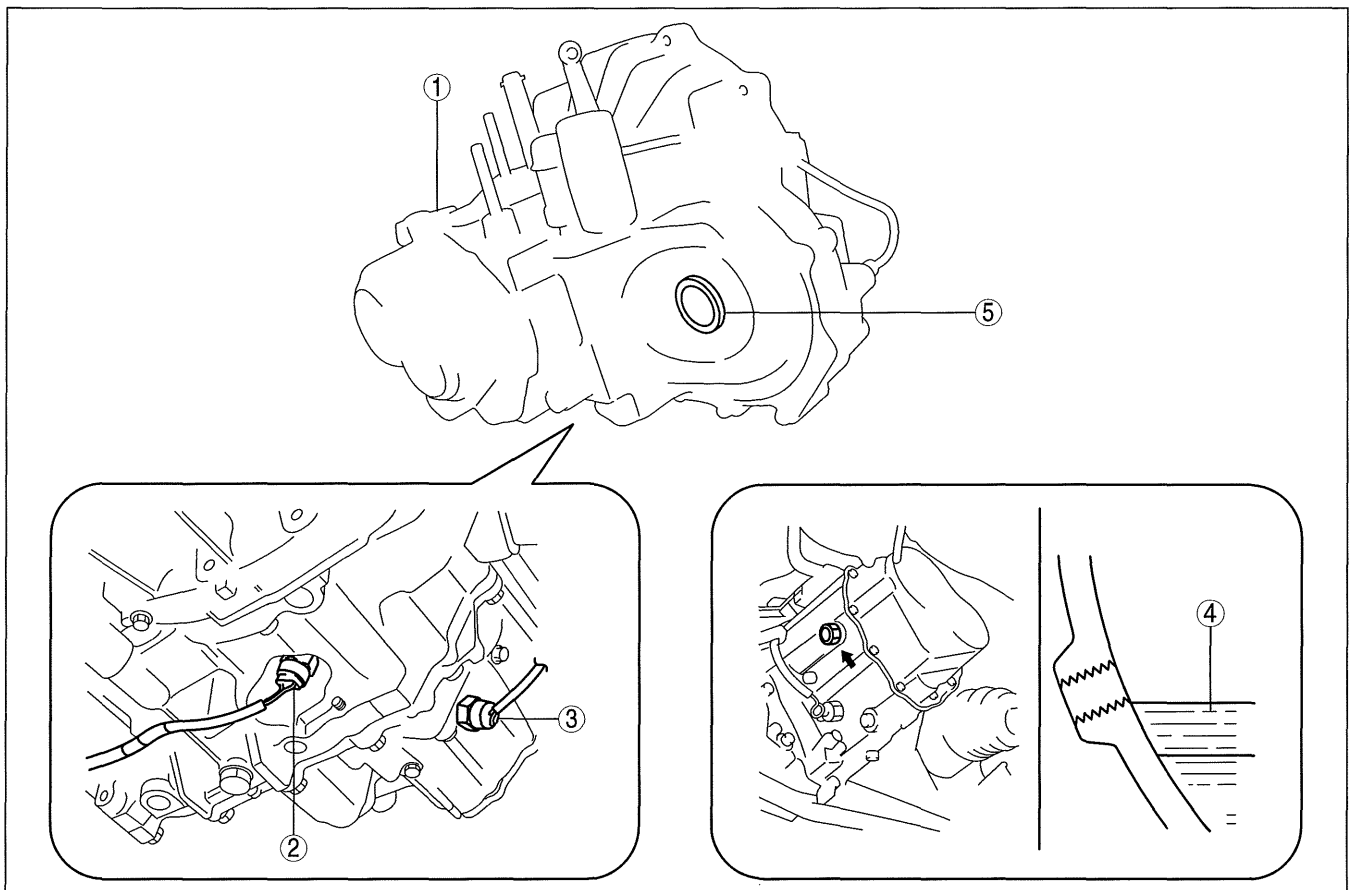
**MANUAL TRANSAXLE REMOVAL/
 INSTALLATION [G66M-R]**

..... 05-15B-4
 Shift Cable And Select Cable
 Removal Note 05-15B-6
 No.4 Engine Mount Removal Note 05-15B-6
 Manual Transaxle Removal Note 05-15B-7
 Manual Transaxle Installation Note ... 05-15B-8
 No.1 Engine Mount and No.4 Engine
 Mount Installation Note 05-15B-8
**INSPECTION AFTER TRANSAXLE
 INSTALLATION [G66M-R]** 05-15B-10

MANUAL TRANSAXLE LOCATION INDEX [G66M-R]

id0515k1800500

05-15B



am3uuw0000463

1	Manual transaxle (See 05-15B-4 MANUAL TRANSAXLE REMOVAL/ INSTALLATION [G66M-R].)
2	Neutral switch (See 05-15B-2 NEUTRAL SWITCH REMOVAL/ INSTALLATION [G66M-R].) (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].)
3	Back-up light switch (See 05-15B-2 BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G66M-R].) (See 09-18-55 BACK-UP LIGHT SWITCH INSPECTION.)

4	Transaxle oil (See 05-15B-2 TRANSAXLE OIL INSPECTION [G66M-R].) (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
5	Oil seal (differential) (See 05-15B-3 OIL SEAL (DIFFERENTIAL) REPLACEMENT [G66M-R].)

MANUAL TRANSAXLE [G66M-R]

NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R]

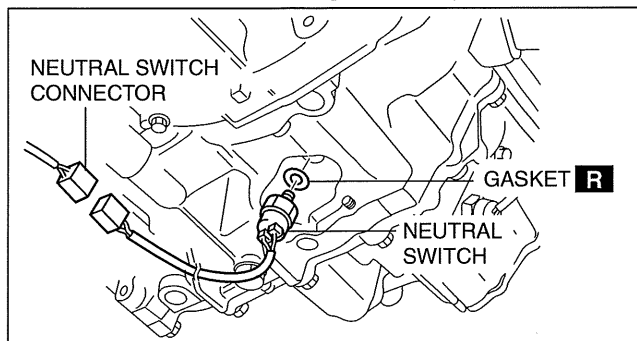
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1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Drain the oil from the transaxle. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
6. Remove the neutral switch.
7. Install the neutral switch (with a new gasket) to the transaxle case.

Tightening torque

20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}

8. Install the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
9. Install the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
10. Add the specified amount and type of oil. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
11. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G66M-R]

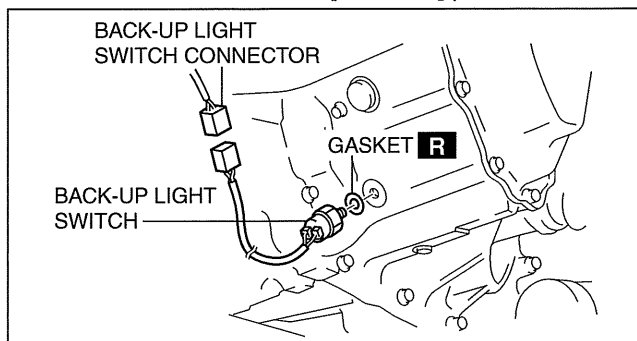
id0515k1800800

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Drain the oil from the transaxle. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
6. Disconnect the back-up light switch connector and remove the back-up light switch.
7. Install the back-up light switch (with a new gasket) to the transaxle case.

Tightening torque

20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}

8. Install the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
9. Install the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
10. Add the specified amount and type of oil. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
11. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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TRANSAXLE OIL INSPECTION [G66M-R]

id0515k1800000

1. Park the vehicle on level ground.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the oil level plug and washer.

MANUAL TRANSAXLE [G66M-R]

- Verify that the oil is near the brim of the plug port.
 - If the oil level is lower than the low level, add the specified amount and type of oil through the oil level plug hole.

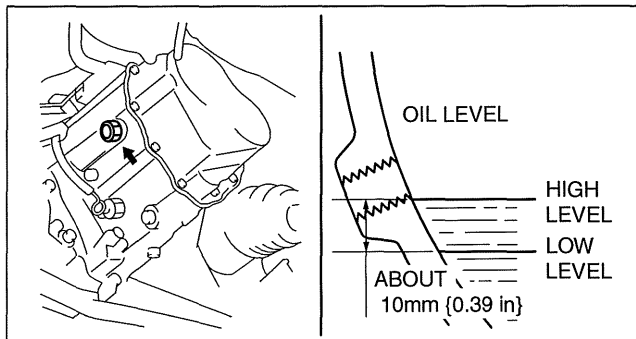
Manual transaxle oil Grade
API GL-4

Manual transaxle oil Viscosity
SAE 75W-80

- Install a new washer and the oil level plug.

Tightening torque
39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

- Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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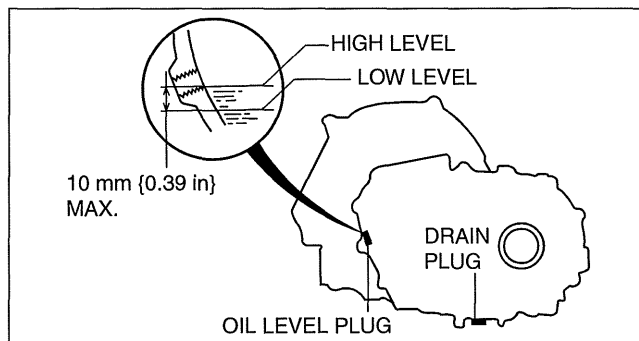
TRANSAXLE OIL REPLACEMENT [G66M-R]

id0515k1800100

- Park the vehicle on level ground.
- Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
- Remove the drain plug with the washer.
- Drain the oil into a suitable container.
- Install a new washer and the drain plug.

Tightening torque
39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

- Remove the oil level plug with washer and add the specified amount and type of oil through the oil level plug hole until the level reaches the bottom of the oil level plug hole.



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Manual transaxle oil Grade
API GL-4

Manual transaxle oil Viscosity
SAE 75W-80

Manual transaxle oil Capacity (approx. quantity)
2.85 L {3.01 US qt, 2.51 Imp qt}

- Install a new washer and the oil level plug.

Tightening torque
39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

- Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

OIL SEAL (DIFFERENTIAL) REPLACEMENT [G66M-R]

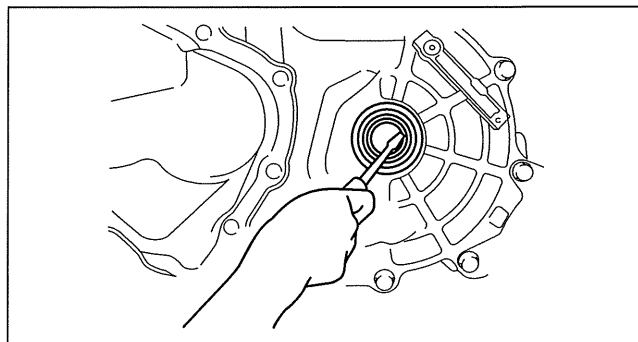
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- On level ground, jack up the vehicle and support it evenly on safety stands.
- Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
- Drain the oil from the transaxle. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
- Remove the front splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
- Separate the drive shaft and joint shaft from the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.) (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)

05-15B

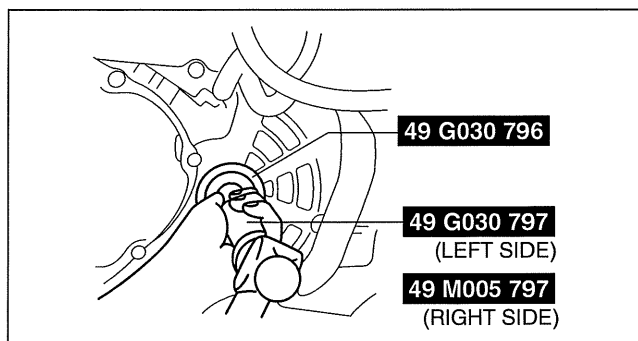
MANUAL TRANSAXLE [G66M-R]

6. Remove the oil seals using a screwdriver.



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7. Using the **SST** and a hammer, tap each new oil seal in evenly until the **SST** contacts the transaxle case.
8. Coat the lip of each oil seal with transaxle oil.
9. Insert the drive shaft and joint shaft to the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.) (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
10. Install the front splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
11. Add the specified amount and type of oil. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)
12. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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MANUAL TRANSAXLE REMOVAL/INSTALLATION [G66M-R]

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Caution

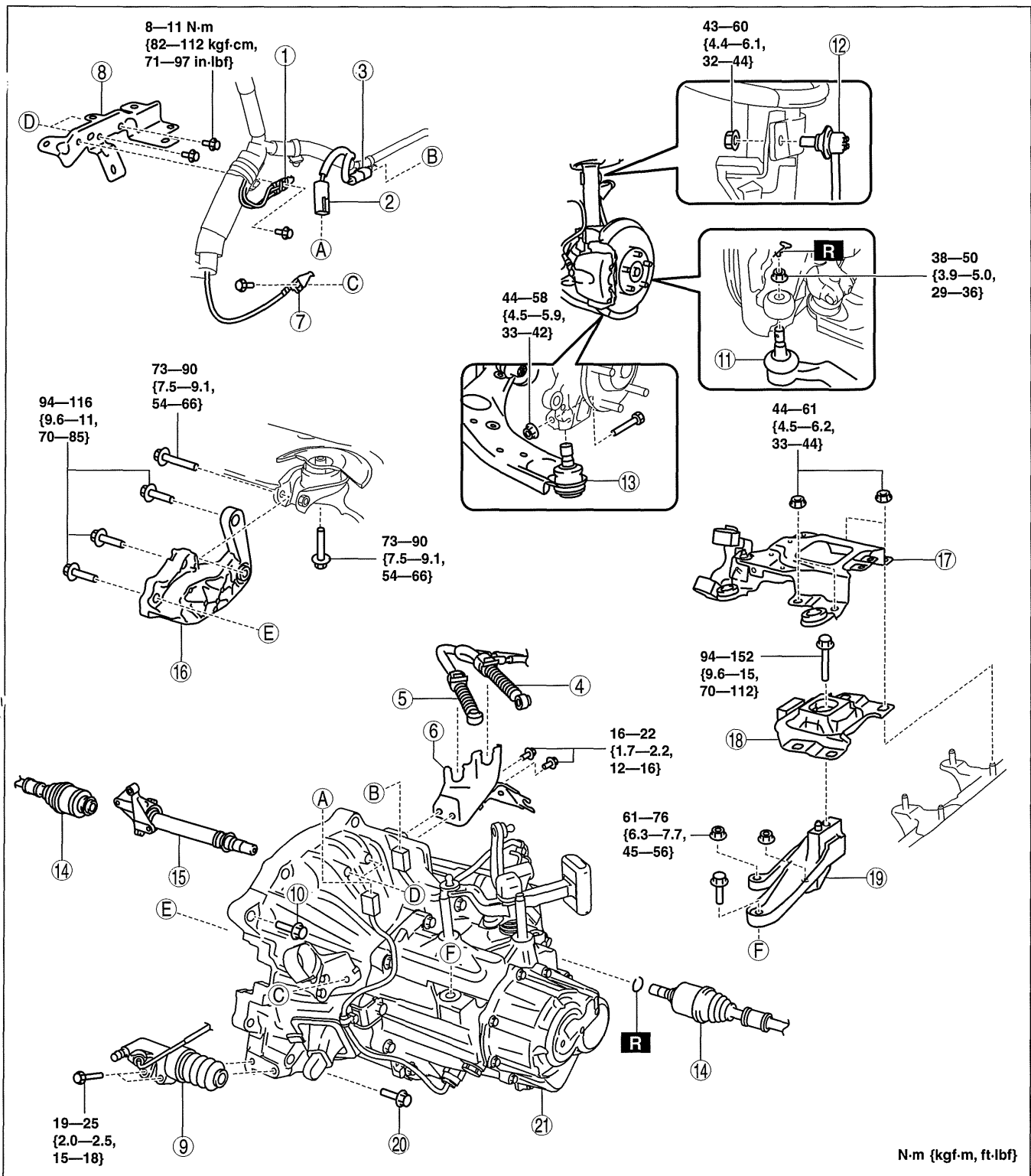
- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component)(See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the exhaust manifold insulator installation bolts and set the exhaust manifold insulator aside.
6. Remove the following parts:
 - (1) Exhaust manifold bracket
 - (2) Front splash shields (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (3) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Starter (See 01-19A-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Drain the transaxle oil into a suitable container.
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Add the specified amount of specified transaxle oil. (See 05-15B-3 TRANSAXLE OIL REPLACEMENT [G66M-R].)

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE INSTALLATION' and verify that there is no abnormality. (See 05-15B-10 INSPECTION AFTER TRANSAXLE INSTALLATION [G66M-R].)

MANUAL TRANSAXLE [G66M-R]



05-15B

1	Ground
2	Back-up light switch connector
3	Neutral switch connector
4	Select cable (See 05-15B-6 Shift Cable And Select Cable Removal Note.)
5	Shift cable (See 05-15B-6 Shift Cable And Select Cable Removal Note.)
6	Cable bracket

7	Ground
8	Harness bracket
9	Clutch release cylinder
10	Transaxle mounting bolt (upper side)
11	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
12	Stabilizer control link
13	Lower arm ball joint

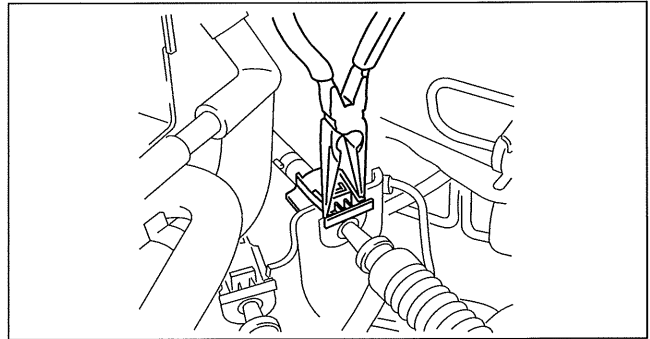
MANUAL TRANSAXLE [G66M-R]

14	Drive shaft (See 03-13-3 DRIVE SHAFT REMOVAL/ INSTALLATION.)
15	Joint shaft (See 03-13-13 JOINT SHAFT REMOVAL/ INSTALLATION.)
16	No.1 engine mount bracket (See 05-15B-8 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
17	Battery tray bracket

18	No.4 engine mount rubber (See 05-15B-6 No.4 Engine Mount Removal Note.) (See 05-15B-8 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
19	No.4 engine mount bracket (See 05-15B-6 No.4 Engine Mount Removal Note.) (See 05-15B-8 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
20	Transaxle mounting bolt (lower side)
21	Manual transaxle (See 05-15B-7 Manual Transaxle Removal Note.) (See 05-15B-8 Manual Transaxle Installation Note.)

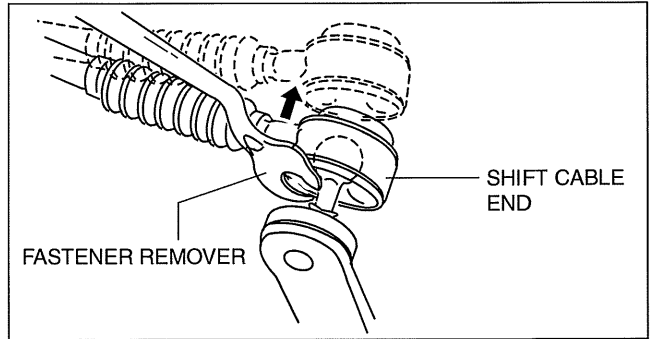
Shift Cable And Select Cable Removal Note

1. Remove the shift and selector cable outer ends as shown in the figure.



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2. Remove the both shift cable end and select cable end using a fastener remover.



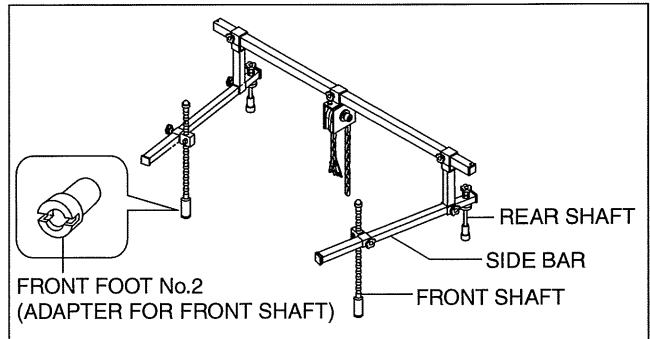
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No.4 Engine Mount Removal Note

1. Install the SST using the following procedure.

Caution

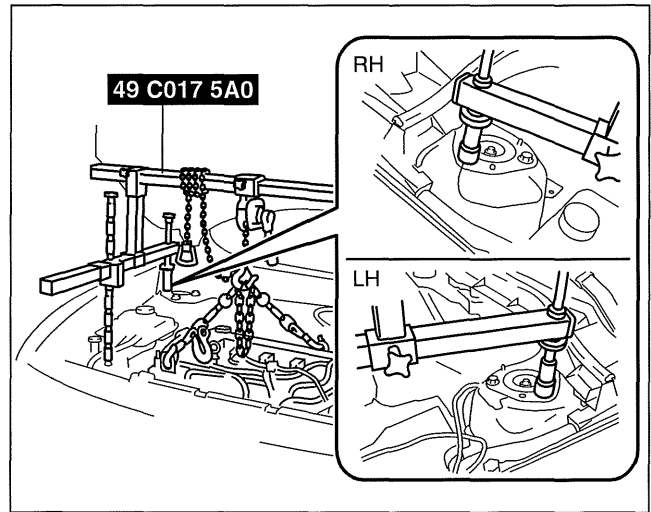
- Refer to the SST instruction manual for the basic handling procedure.



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MANUAL TRANSAXLE [G66M-R]

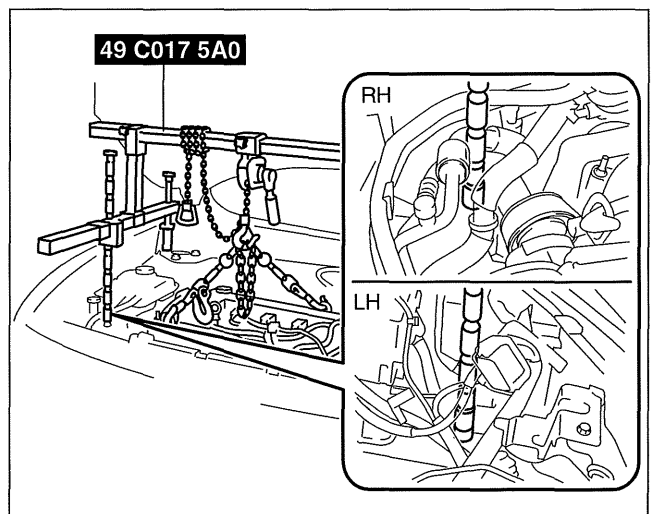
- (1) Align the bolt of the shock absorber (right side) shown in the figure with the rear shaft hole for the right side of the **SST**.
- (2) Align the bolt of the shock absorber (left side) shown in the figure with the rear shaft hole for the left side of the **SST**.



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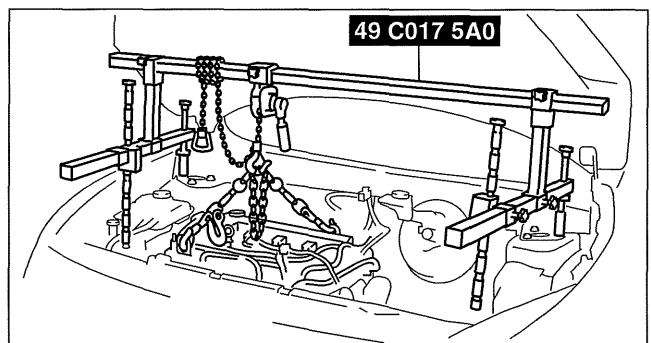
05-15B

- (3) Install one front foot No.2 to each of the left and right front shafts of the **SST**, and then align the holes of the **SST** front shafts with the bolt on the left and right side of each front side frame.
- (4) Adjust the height of the left and right side bars so that they are leveled, then tighten each part of the **SST**.
- (5) Make sure each joint is securely tightened.



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2. Support the engine using the **SST**.
3. Remove the No.4 engine mount rubber and bracket.



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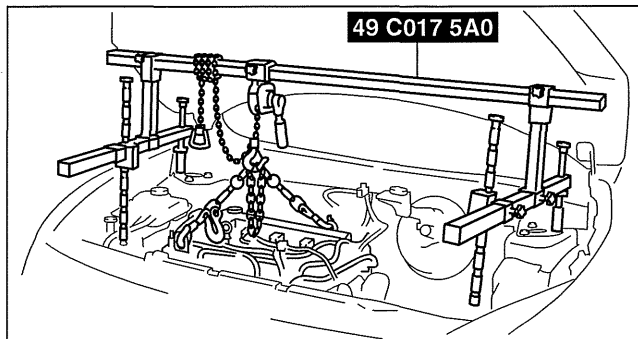
Manual Transaxle Removal Note

Warning

- Remove the transaxle carefully, holding it steady. If the transaxle falls it could be damaged or cause injury.

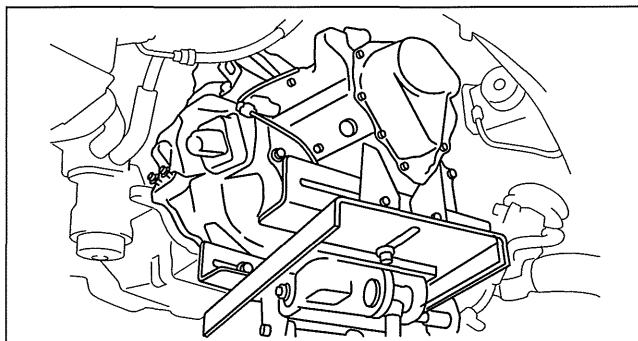
MANUAL TRANSAXLE [G66M-R]

1. Adjust the **SST** and lean the engine toward the transaxle.



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2. Support the transaxle on a jack.
3. Remove the transaxle mounting bolts.
4. Remove the transaxle.



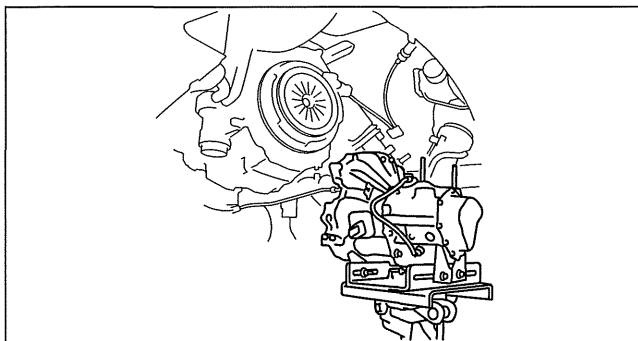
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Manual Transaxle Installation Note

Warning

- Install the transaxle carefully, holding it steady. If the transaxle falls it could be damaged or cause injury.

1. Set the transaxle on a jack and lift into place.
2. Install the transaxle mounting bolts.
3. Adjust the **SST** (49 C017 5A0) so that the engine is located at the specified position.



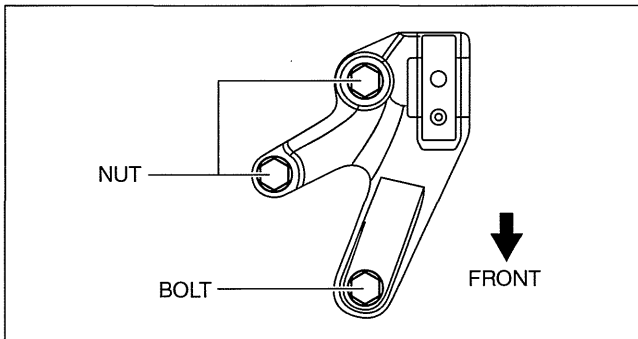
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No.1 Engine Mount and No.4 Engine Mount Installation Note

1. Install the No.4 engine mount bracket on the transaxle case and tighten bolt and nuts.

Tightening torque

61—76 N·m {6.3—7.7 kgf·m, 45—56 ft·lbf}



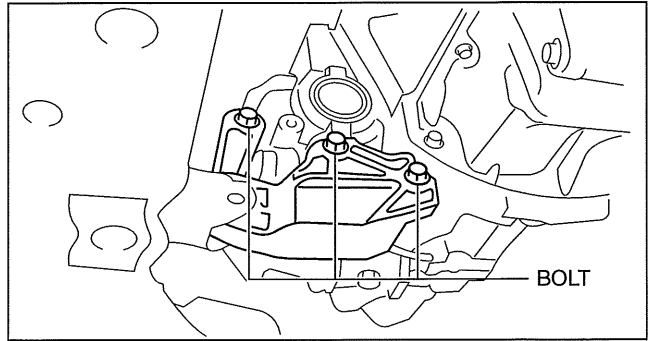
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MANUAL TRANSAXLE [G66M-R]

2. Install the No.1 engine mount bracket to the transaxle case, and then tighten the bolts.

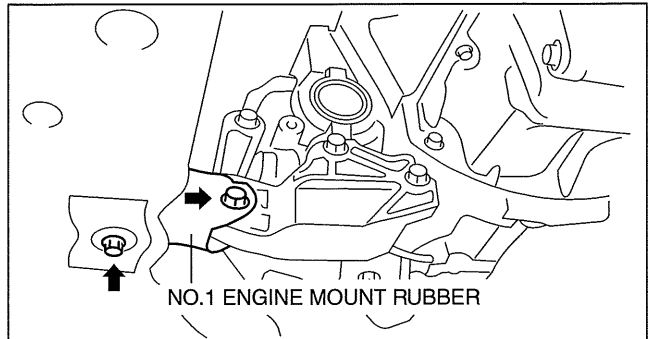
Tightening torque

94—116 N·m {9.6—11 kgf·m, 70—85 ft·lbf}



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3. Install the No.1 engine mount rubber to the front crossmember, and then temporarily tighten the bolts.

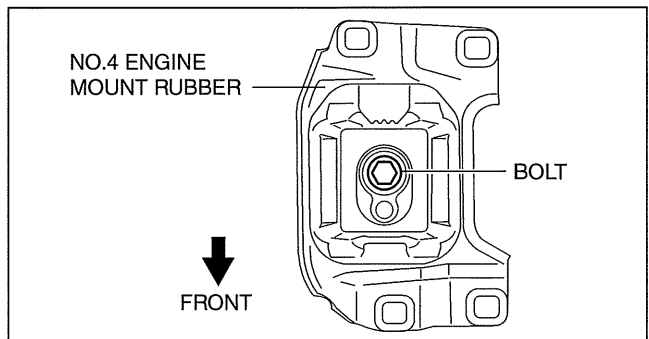


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4. Place the No.4 engine mount rubber with the body stud bolts passing through the holes and tighten the bolt in the figure.

Tightening torque

94—152 N·m {9.6—15 kgf·m, 70—112 ft·lbf}

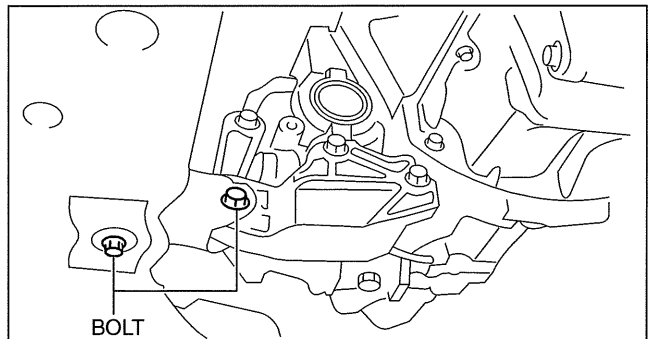


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5. Fully tighten the bolts.

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}



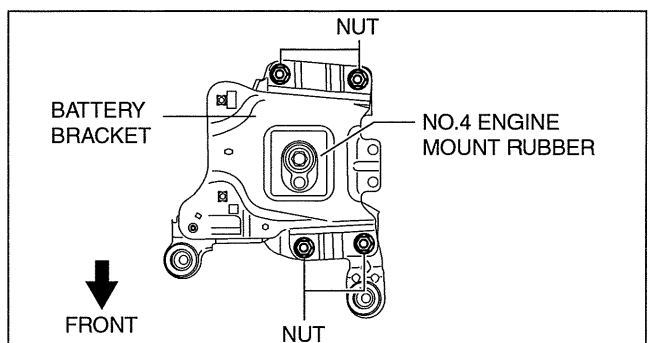
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6. Place the battery bracket on the No.4 Engine mount rubber with the body stud bolts passing through the holes and tighten bolts and nuts in the order shown in the figure.

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}

7. Remove the SST (49 C017 5A0).



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05-15B

MANUAL TRANSAXLE [G66M-R]

INSPECTION AFTER TRANSAXLE INSTALLATION [G66M-R]

id0515k1800300

Note

- Perform the following inspection only when the transaxle has been overhauled.

1. Perform a road test and inspect the following items:
 - (1) No abnormal noise in each shift position.
 - (2) Smooth shift operation when shifting gears.
 - (3) No gear slipout after shifting gears.
 - (4) Back-up light switch operates correctly.

05-15C MANUAL TRANSAXLE [A26M-R]

MANUAL TRANSAXLE LOCATION

INDEX [A26M-R] 05-15C-1
 NEUTRAL SWITCH REMOVAL/
 INSTALLATION [A26M-R] 05-15C-2
 BACK-UP LIGHT SWITCH REMOVAL/
 INSTALLATION [A26M-R] 05-15C-2
 TRANSAXLE OIL INSPECTION
 [A26M-R] 05-15C-2
 TRANSAXLE OIL REPLACEMENT
 [A26M-R] 05-15C-3
 OIL SEAL (DIFFERENTIAL)
 REPLACEMENT [A26M-R] 05-15C-3

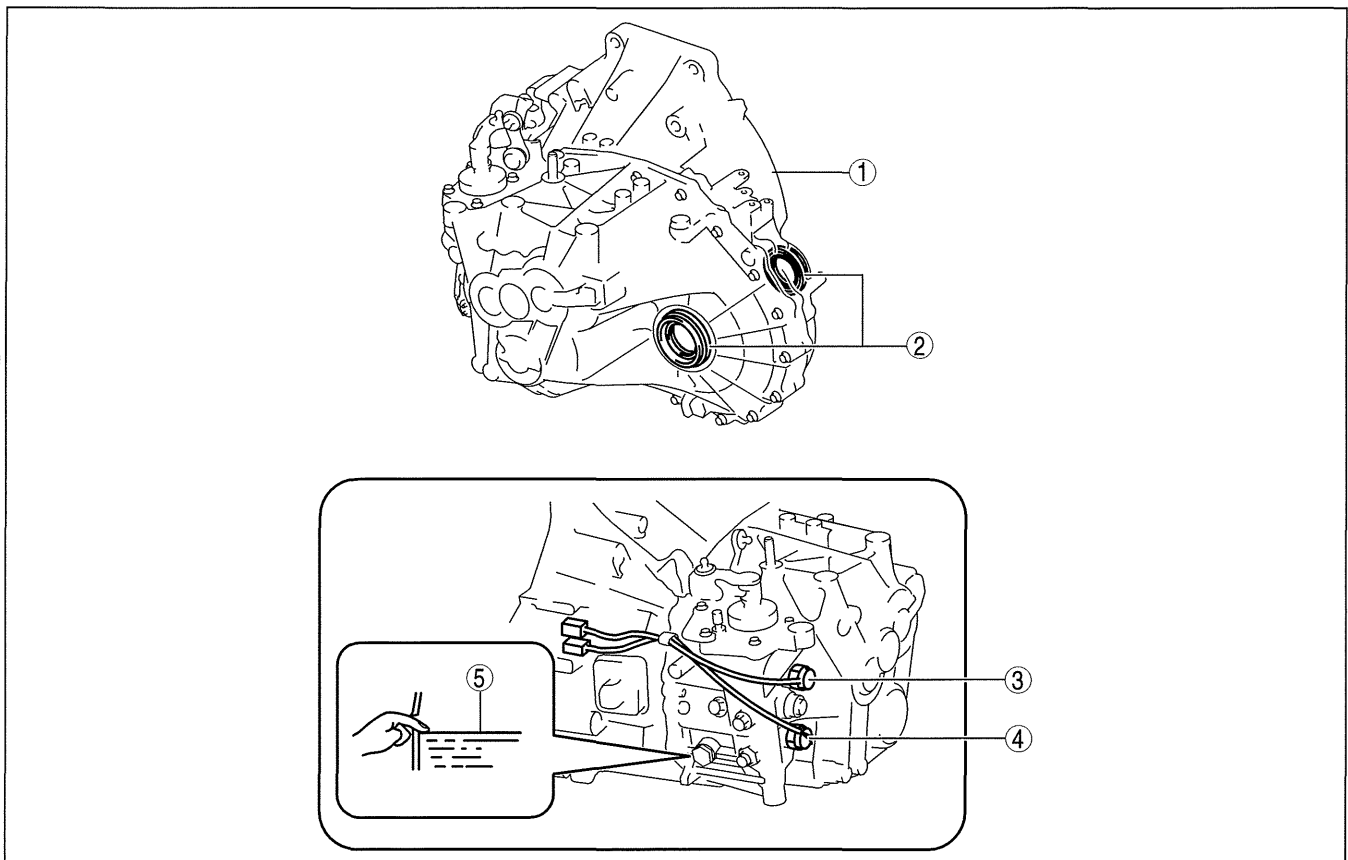
**MANUAL TRANSAXLE REMOVAL/
 INSTALLATION [A26M-R]**

.....05-15C-5
 Shift Cable and Select Cable
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**INSPECTION AFTER TRANSAXLE
 INSTALLATION [A26M-R]**05-15C-13

MANUAL TRANSAXLE LOCATION INDEX [A26M-R]

id051511800500

05-15C



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1	Manual transaxle (See 05-15C-5 MANUAL TRANSAXLE REMOVAL/ INSTALLATION [A26M-R])
2	Oil seal (differential) (See 05-15C-3 OIL SEAL (DIFFERENTIAL) REPLACEMENT [A26M-R])
3	Back-up light switch (See 05-15C-2 BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [A26M-R].) (See 09-18-55 BACK-UP LIGHT SWITCH INSPECTION.)

4	Neutral switch (See 05-15C-2 NEUTRAL SWITCH REMOVAL/ INSTALLATION [A26M-R]) (See 01-40B-23 NEUTRAL SWITCH INSPECTION [L3 WITH TC])
5	Transaxle oil (See 05-15C-2 TRANSAXLE OIL INSPECTION [A26M-R]) (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R])

MANUAL TRANSAXLE [A26M-R]

NEUTRAL SWITCH REMOVAL/INSTALLATION [A26M-R]

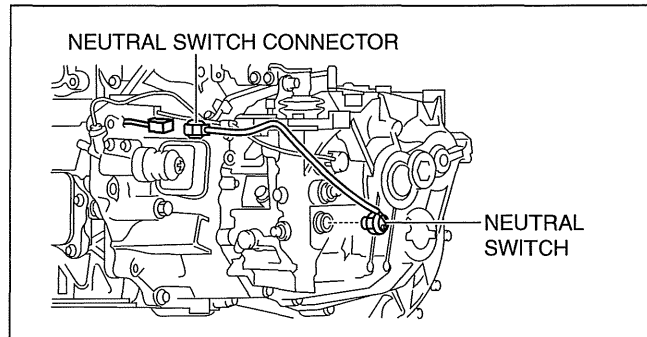
id05151800700

1. Disconnect the negative battery cable.
2. Disconnect the neutral switch connector.
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove the neutral switch.
5. Install the neutral switch to the transaxle case.

Tightening torque

29—52 N·m {2.9—5.3 kgf·m, 21—38 ft·lbf}

6. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
7. Connect the negative battery cable.



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BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [A26M-R]

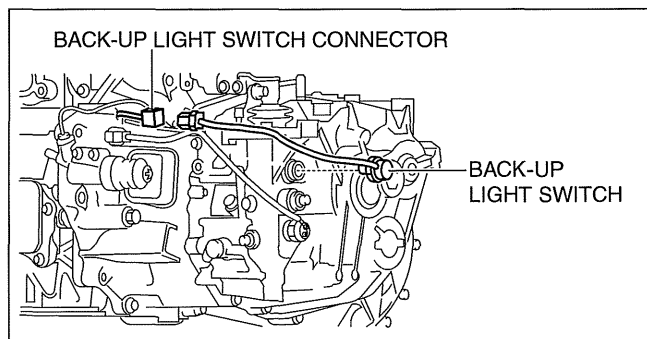
id05151800800

1. Disconnect the negative battery cable.
2. Disconnect the back-up light switch connector.
3. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove the back-up light switch.
5. Install the back-up light switch to the transaxle case.

Tightening torque

29—52 N·m {2.9—5.3 kgf·m, 21—38 ft·lbf}

6. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
7. Connect the negative battery cable.



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TRANSAXLE OIL INSPECTION [A26M-R]

id05151800000

1. Park the vehicle on level ground.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the oil level plug and washer.
4. Verify that the oil is near the brim of the plug port.
 - If the oil level is low, add the specified amount and type of oil through the filler plug hole.

Manual transaxle oil grade
API service GL-4

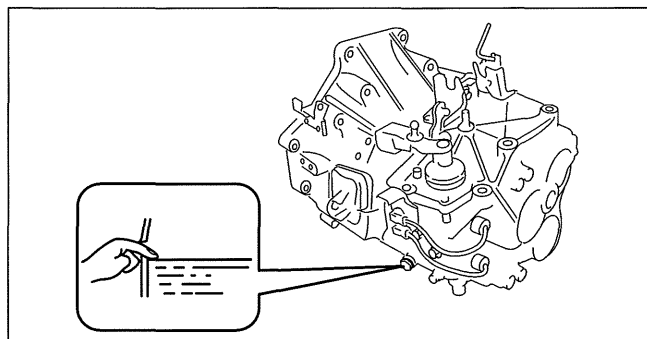
Manual transaxle oil viscosity
SAE 75W-80

5. Tighten the oil level plug with a new washer.

Tightening torque

28—50 N·m {2.9—5.1 kgf·m, 21—37 ft·lbf}

6. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)



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MANUAL TRANSAXLE [A26M-R]

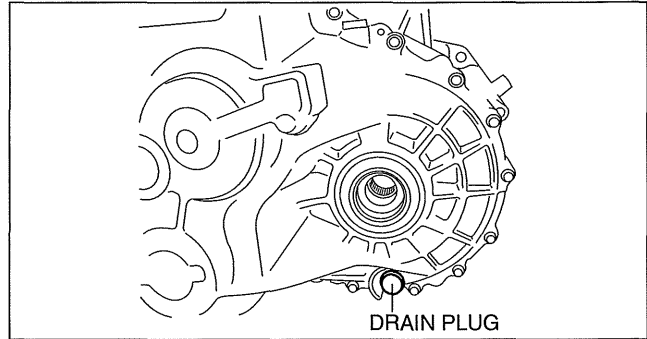
TRANSAXLE OIL REPLACEMENT [A26M-R]

id051511800100

1. Park the vehicle on level ground.
2. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the drain plug with the washer.
4. Drain the oil into a suitable container.
5. Install a new washer and the drain plug.

Tightening torque

28—50 N·m {2.9—5.1 kgf·m, 21—37 ft·lbf}



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6. Remove the oil level plug with washer and add the specified amount and type of oil through the oil level plug hole until the level reaches the bottom of the oil level plug hole.

Manual transaxle oil grade

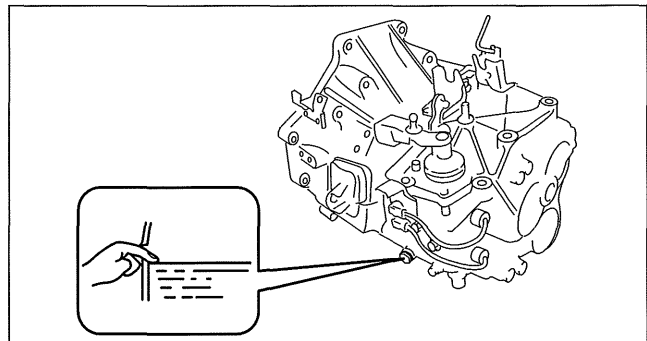
API service GL-4

Manual transaxle oil viscosity

SAE 75W-80

Manual transaxle oil capacity (approx. quantity)

2.4—2.6 L {2.6—2.7 US qt, 2.12—2.28 Imp qt}



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05-15C

7. Install a new washer and the oil level plug.

Tightening torque

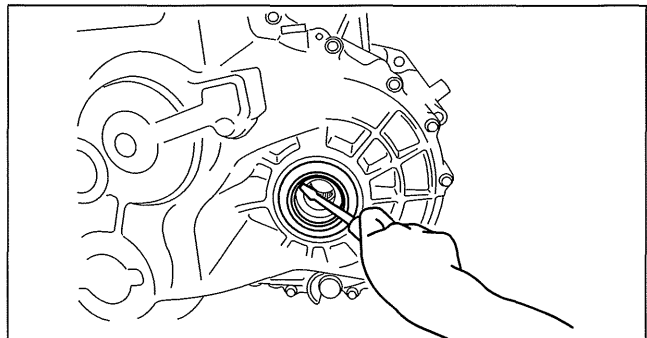
28—50 N·m {2.9—5.1 kgf·m, 21—37 ft·lbf}

8. Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

OIL SEAL (DIFFERENTIAL) REPLACEMENT [A26M-R]

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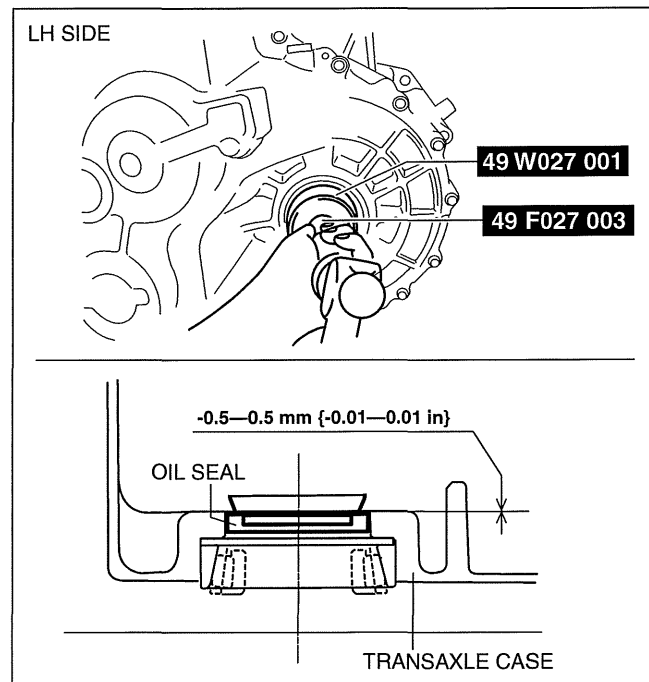
1. On level ground, jack up the vehicle and support it evenly on safety stands.
2. Drain the oil from the transaxle. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
3. Remove the front tires. (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
4. Remove the splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
5. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
6. Separate the drive shaft and joint shaft from the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.) (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
7. Remove the oil seals using a screwdriver.



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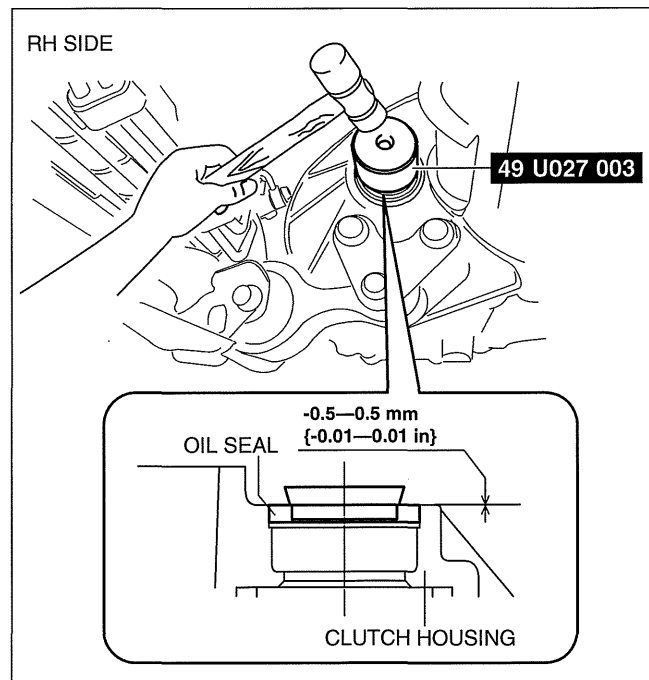
MANUAL TRANSAXLE [A26M-R]

- Using the **SSTs** and a hammer, tap each new oil seal in evenly until the **SSTs** contact the transaxle case.



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- Coat the lip of each oil seal with transaxle oil.
- Insert the drive shaft and joint shaft to the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION) (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION)
- Install the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
- Install the splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
- Install the front tires. (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
- Add the specified amount and type of oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)



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Caution

- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
3. Remove the PCM cover No.1. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the following parts:
 - (1) Battery tray and PCM component (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Air cleaner component (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (3) Charge air cooler cover (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (4) Charge air cooler (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (5) Fuel pump resistor (See 01-14B-16 FUEL PUMP RESISTOR REMOVAL/INSTALLATION [L3 WITH TC].)
 - (6) Front tires (See 02-10-1 GENERAL PROCEDURES (SUSPENSION).)
 - (7) Splash shield (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
 - (8) Aerodynamic under cover No.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (9) WU-TWC bracket (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
 - (10) Starter (See 01-19B-2 STARTER REMOVAL/INSTALLATION [L3 WITH TC].)
 - (11) Front auto leveling sensor (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
6. Drain the transaxle oil into a suitable container. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. Perform the auto leveling system initialization. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)
10. Add the specified amount of specified transaxle oil. (See 05-15C-3 TRANSAXLE OIL REPLACEMENT [A26M-R].)
11. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.

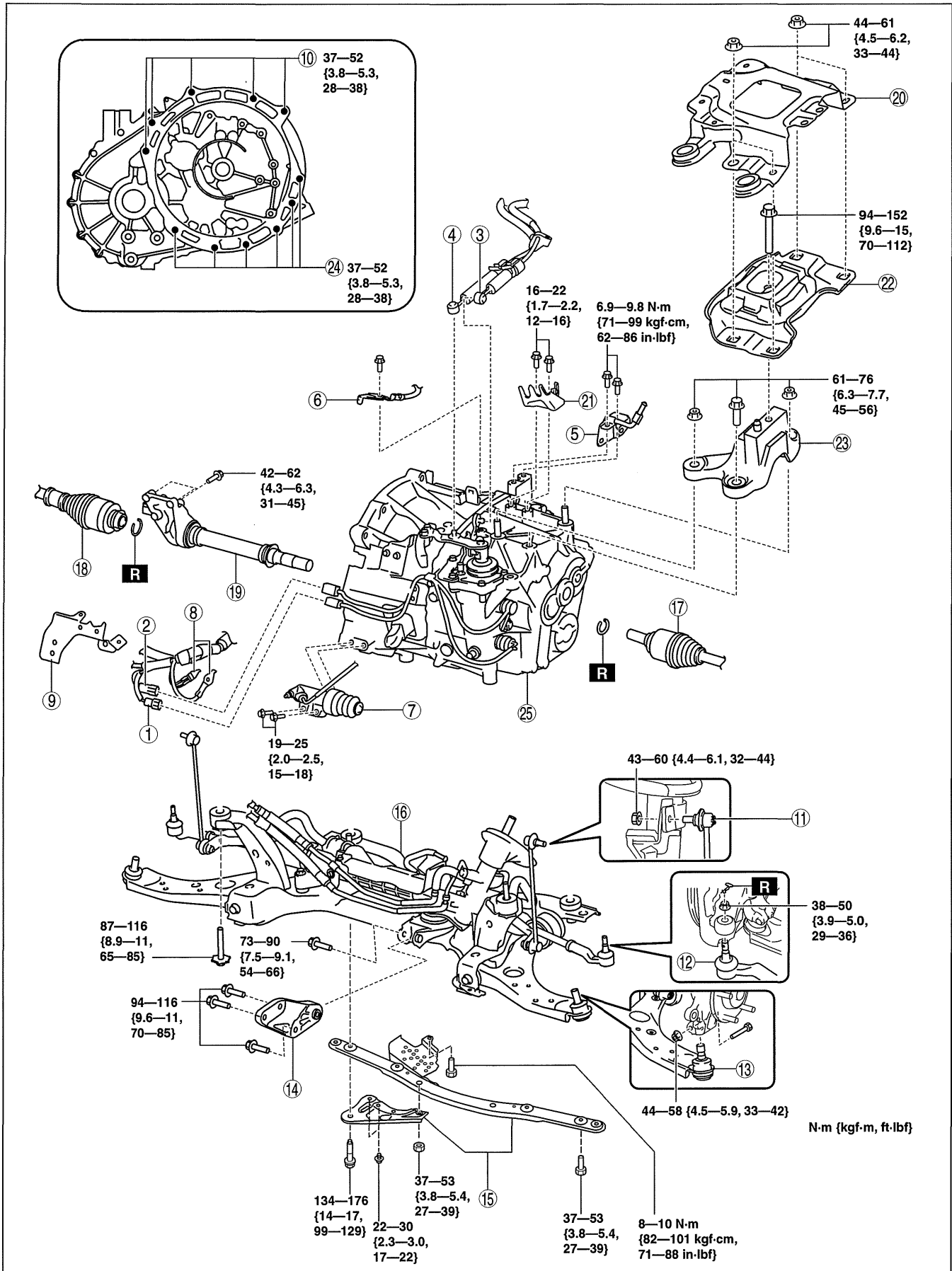
Warning

- **Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.**

Note

- If the transaxle is overhauled and installed to the vehicle, perform the 'INSPECTION AFTER TRANSAXLE INSTALLATION' and verify that there is no abnormality. (See 05-15C-13 INSPECTION AFTER TRANSAXLE INSTALLATION [A26M-R].)

MANUAL TRANSAXLE [A26M-R]



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MANUAL TRANSAXLE [A26M-R]

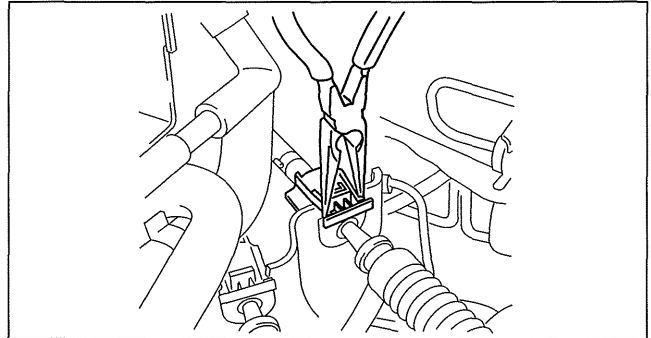
1	Neutral switch connector
2	Back-up light switch connector
3	Selector cable (See 05-15C-7 Shift Cable and Select Cable Removal Note.)
4	Shift cable (See 05-15C-7 Shift Cable and Select Cable Removal Note.)
5	Cable rubber bracket
6	GND wiring harness
7	Clutch release cylinder
8	GND wiring harness
9	Wiring harness bracket
10	Transaxle mounting bolt (upper side)
11	Tie-rod end ball joint (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
12	Stabilizer control link
13	Lower arm ball joint
14	No.1 engine mount (See 05-15C-8 No.1 Engine Mount Rubber Removal Note.) (See 05-15C-11 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
15	Crossmember bracket

16	Crossmember component (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
17	Drive shaft (LH) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION)
18	Drive shaft (RH) (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
19	Joint shaft (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
20	Battery tray bracket
21	Cable bracket
22	No.4 engine mount rubber (See 05-15C-8 No.4 Engine Mount Removal Note.) (See 05-15C-11 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
23	No.4 engine mount bracket (See 05-15C-8 No.4 Engine Mount Removal Note.) (See 05-15C-11 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
24	Transaxle mounting bolt (lower side)
25	Manual transaxle (See 05-15C-10 Manual Transaxle Removal Note.) (See 05-15C-11 Manual Transaxle Installation Note.)

05-15C

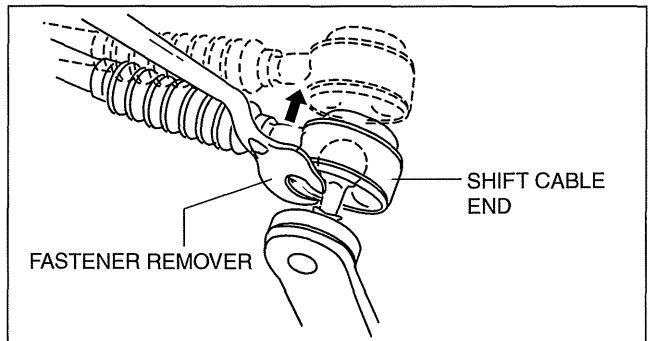
Shift Cable and Select Cable Removal Note

1. Remove the shift and selector cable outer ends as shown in the figure.



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2. Remove the both shift cable end and select cable end using a fastener remover.

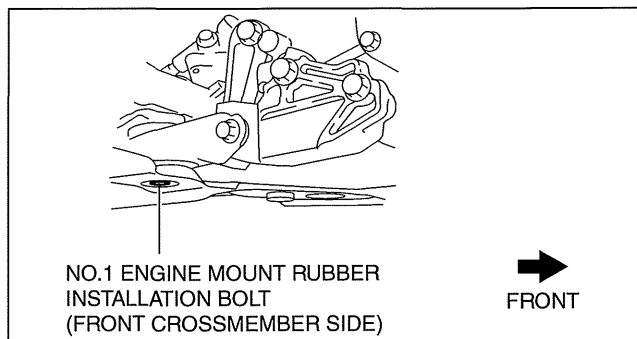


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MANUAL TRANSAXLE [A26M-R]

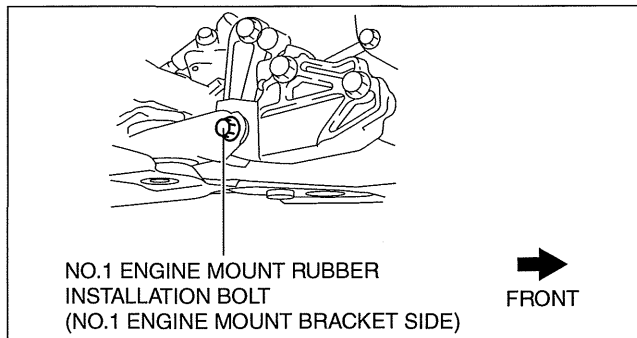
No.1 Engine Mount Rubber Removal Note

1. Loosen the No.1 engine mount rubber installation bolt (front crossmember side) shown in the figure.



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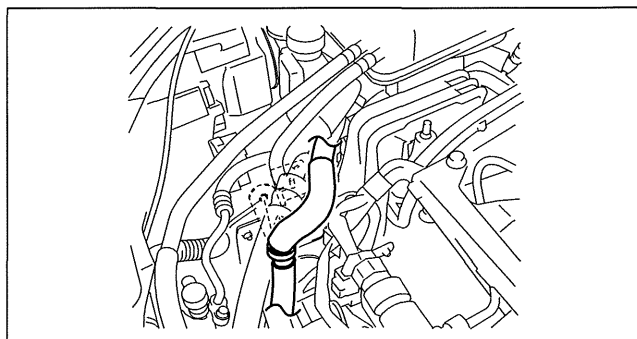
2. Remove the No.1 engine mount rubber installation bolt (No.1 engine mount bracket side) shown in the figure.
3. Remove the No.1 engine mount rubber and the front crossmember component as a single unit.



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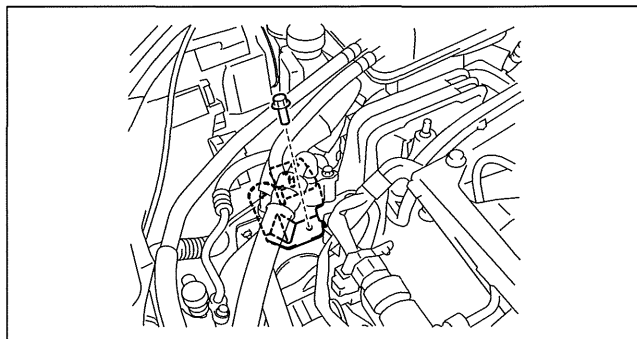
No.4 Engine Mount Removal Note

1. Detach the hose clip shown in the figure.



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2. Remove the bracket bolt shown in the figure and set the bracket aside to prevent interference with the SST.



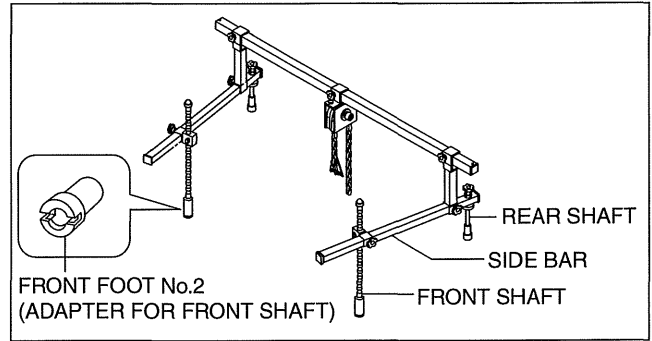
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MANUAL TRANSAXLE [A26M-R]

3. Install the **SST** using the following procedure.

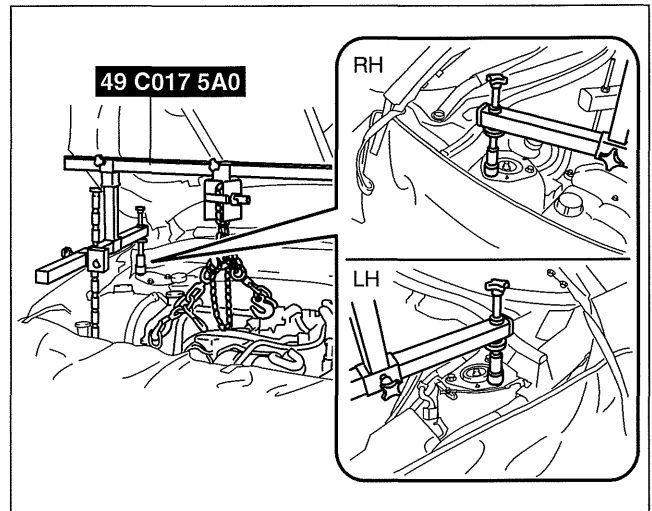
Caution

- Refer to the **SST** instruction manual for the basic handling procedure.



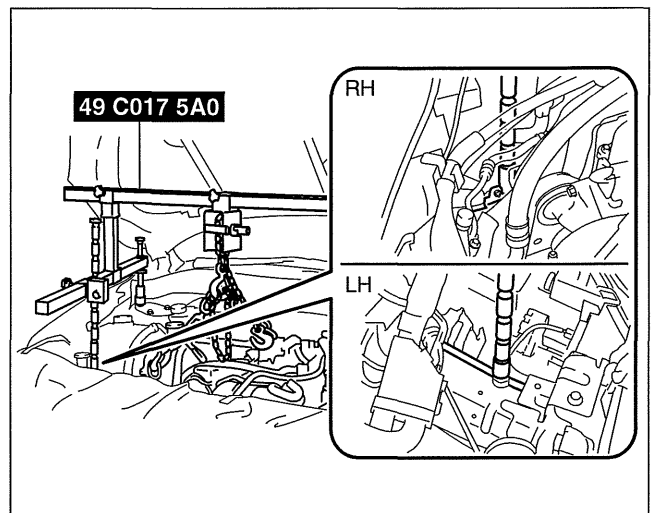
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- (1) As shown in the figure, set the rear shafts of the **SST** to the left and right shock absorber installation nut.



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- (2) Install front foot No.2 to the left/right front shaft of the **SST**, then align the groove of the front shaft of the **SST** with the folded up part of the vehicle as shown in the figure.
- (3) Adjust the positions of the **SST** side bars so that they are the same height (left and right) and horizontal.
- (4) Make sure each joint is securely tightened.

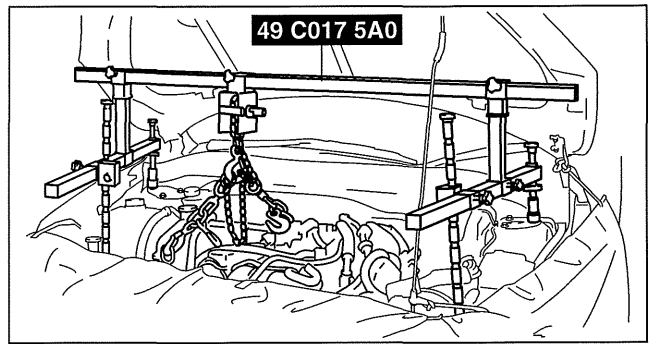


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05-15C

MANUAL TRANSAXLE [A26M-R]

- Support the engine using the **SST**.
- Remove the battery tray bracket, No.4 engine mount rubber and bracket.



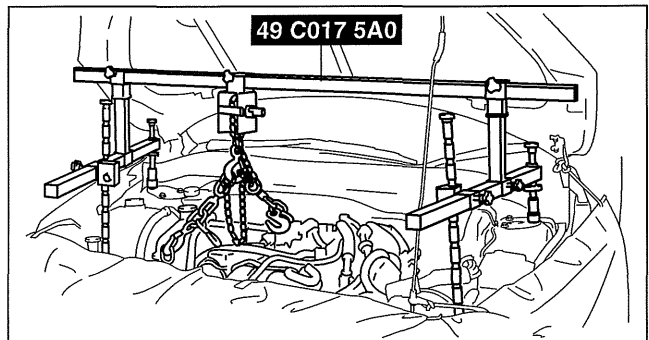
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Manual Transaxle Removal Note

Warning

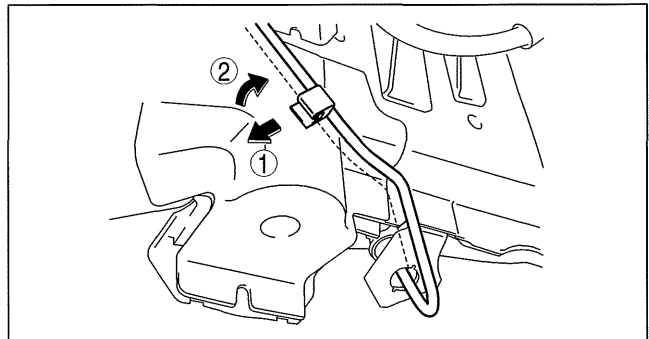
- Remove the transaxle carefully, holding it steady. If the transaxle falls it could be damaged or cause injury.

- Adjust the **SST** and lean the engine toward the transaxle.



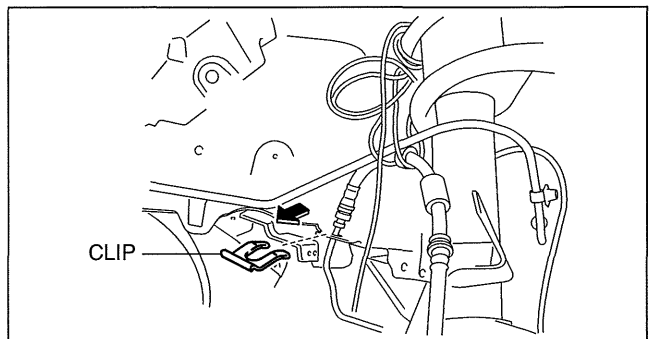
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- To prevent interference when removing the transaxle, remove the brake pipe from the clip as shown in the figure and set it in a place out of the way.



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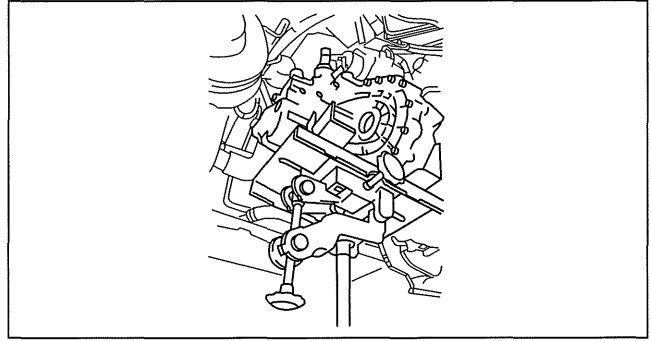
- Remove the clip and suspend the brake hose as shown in the figure using a cable or similar item.



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MANUAL TRANSAXLE [A26M-R]

4. Support the transaxle on a jack.
5. Remove the transaxle mounting bolts.
6. Remove the transaxle.



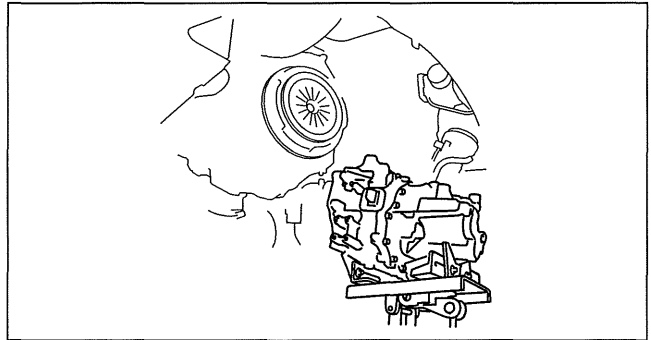
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Manual Transaxle Installation Note

Warning

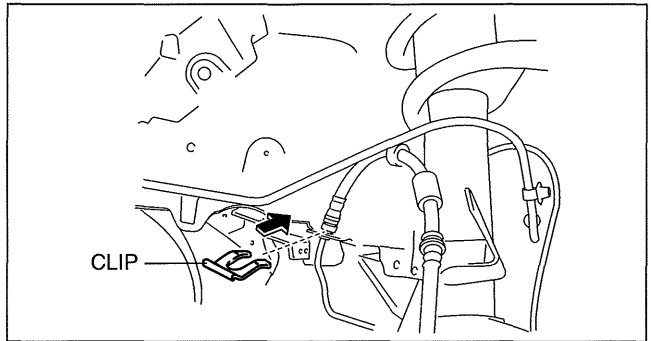
- Install the transaxle carefully, holding it steady. If the transaxle falls it could be damaged or cause injury.

1. Set the transaxle on a jack and lift into place.
2. Install the transaxle mounting bolts.
3. Adjust the **SST** (49 C017 5A0) so that the engine is located at the specified position.



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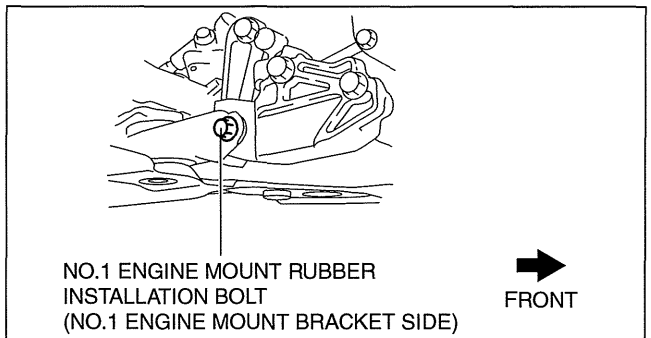
4. Install the brake hose to the bracket as shown in the figure and install the clip.



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No.1 Engine Mount and No.4 Engine Mount Installation Note

1. Install the front crossmember component. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/ INSTALLATION.)
2. Temporarily tighten the No.1 engine mount rubber installation bolts.



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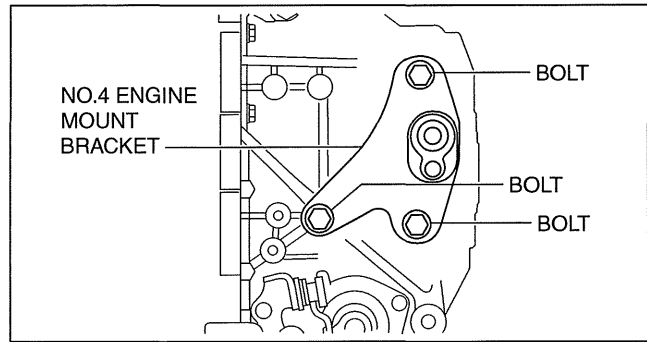
05-15C

MANUAL TRANSAXLE [A26M-R]

3. Tighten the bolt shown in the figure.

Tightening torque

61—76 N·m {6.3—7.7 kgf·m, 45—56 ft·lbf}



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4. Tighten the No.4 engine mount rubber installation bolt.

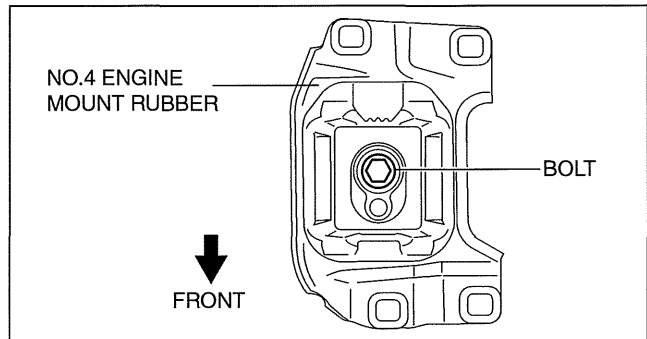
Tightening torque

94—152 N·m {9.6—15 kgf·m, 70—112 ft·lbf}

5. Tighten the No.1 engine mount rubber installation bolts in the order shown.

Caution

- Tighten the bolts in the order shown in the figure to prevent abnormal noise and vibration after assembly.
- Tighten the bolts while being careful of their length to prevent interference between the steering gear housing and bolt.



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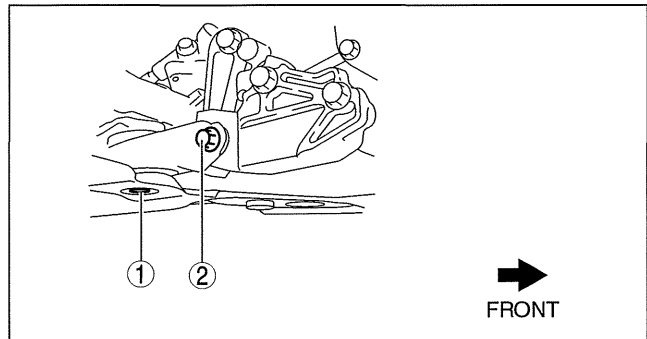
Bolt stem length

Front crossmember side: 62mm {2.4 in}

No.1 engine mount bracket side: 65mm {2.6 in}

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}

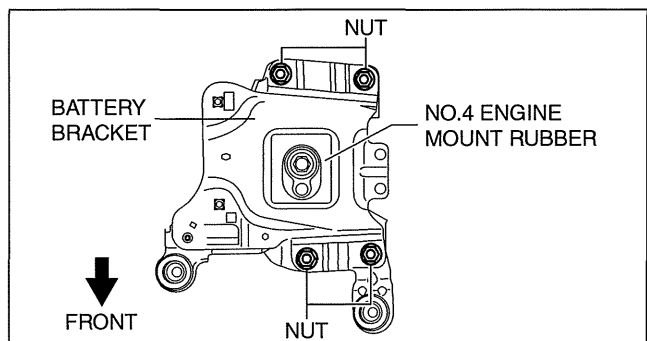


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6. Tighten the No.4 engine mount rubber and battery tray bracket installation nuts as shown in the figure.

Tightening torque

44—61 N·m {4.5—6.2 kgf·m, 33—44 ft·lbf}



am3uuw0000598

Note

- Perform the following inspection only when the transaxle has been overhauled.

1. Perform a road test and inspect the following items:

- (1) No abnormal noise in each shift position.
- (2) Smooth shift operation when shifting gears.
- (3) No gear slipout after shifting gears.
- (4) Back-up light switch operates correctly.

05-16 MANUAL TRANSAXLE SHIFT MECHANISM

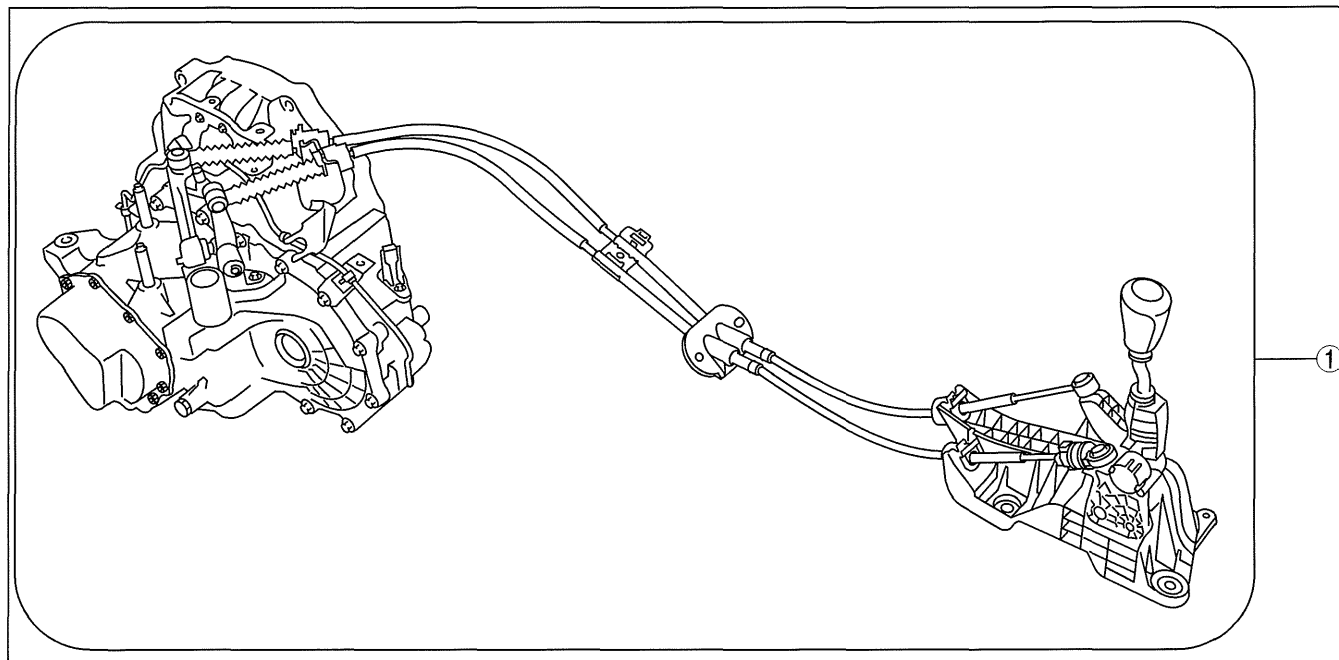
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MANUAL TRANSAXLE SHIFT
MECHANISM REMOVAL/
INSTALLATION 05-16-2

G35M-R, G66M-R.....05-16-2
A26M-R.....05-16-3

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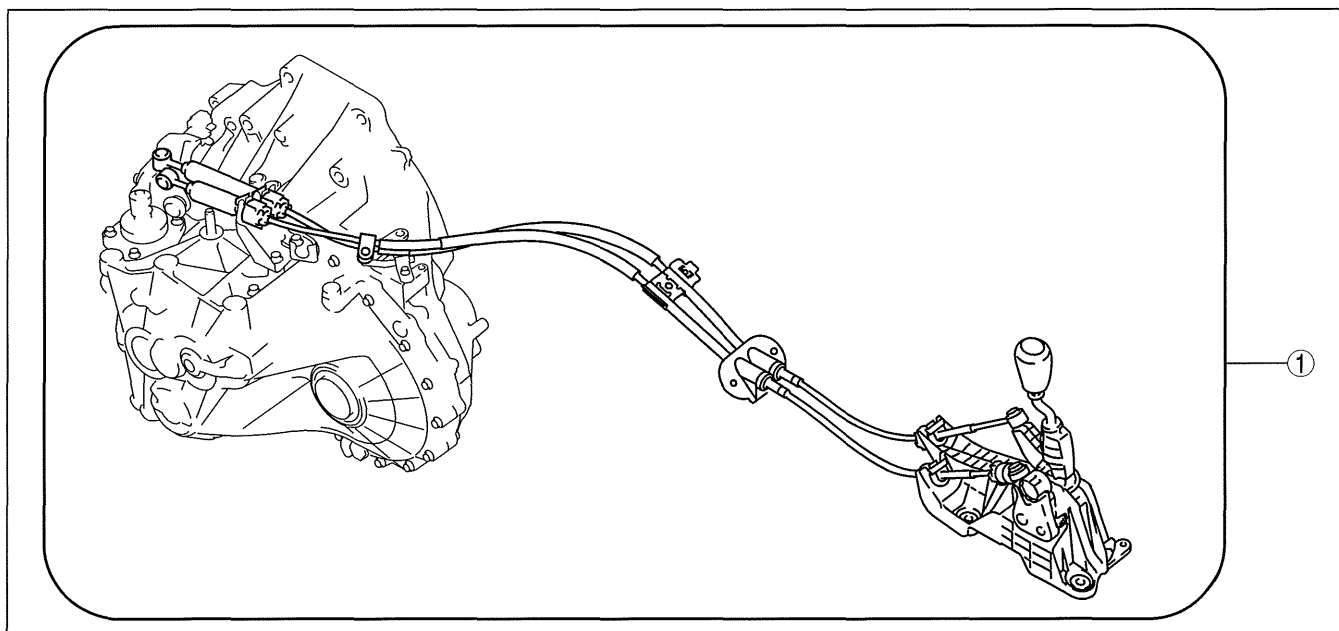
G35M-R, G66M-R



05-16

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A26M-R



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1	Shift mechanism (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
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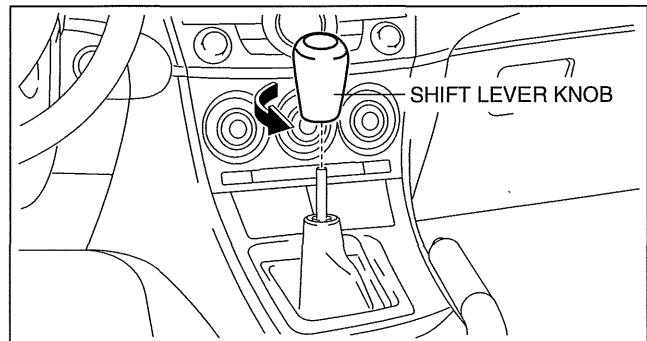
MANUAL TRANSAXLE SHIFT MECHANISM

MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION

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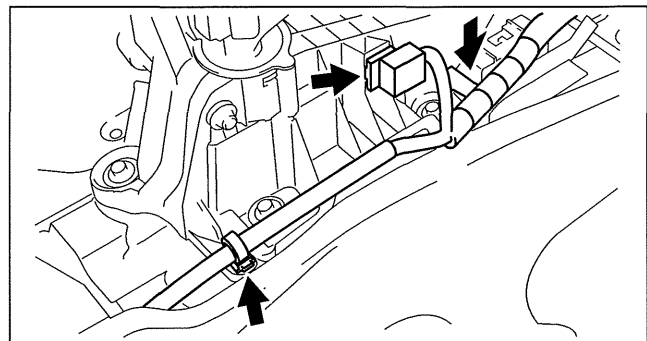
G35M-R, G66M-R

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component. (ex: battery, battery tray and PCM component) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
6. Remove the tunnel member. (rear) (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
7. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
8. Remove the shift lever knob.
9. Remove the shift panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
10. Remove the side wall. (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
11. Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)



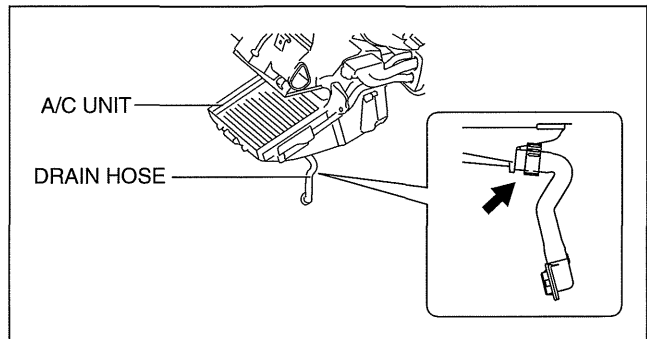
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12. Detach the clip as shown in the figure.



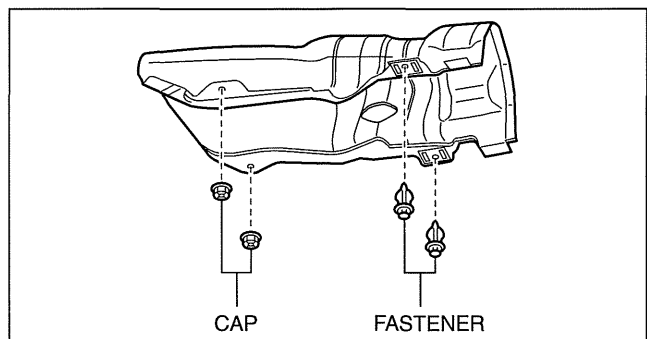
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13. Disconnect the drain hose connected to A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)



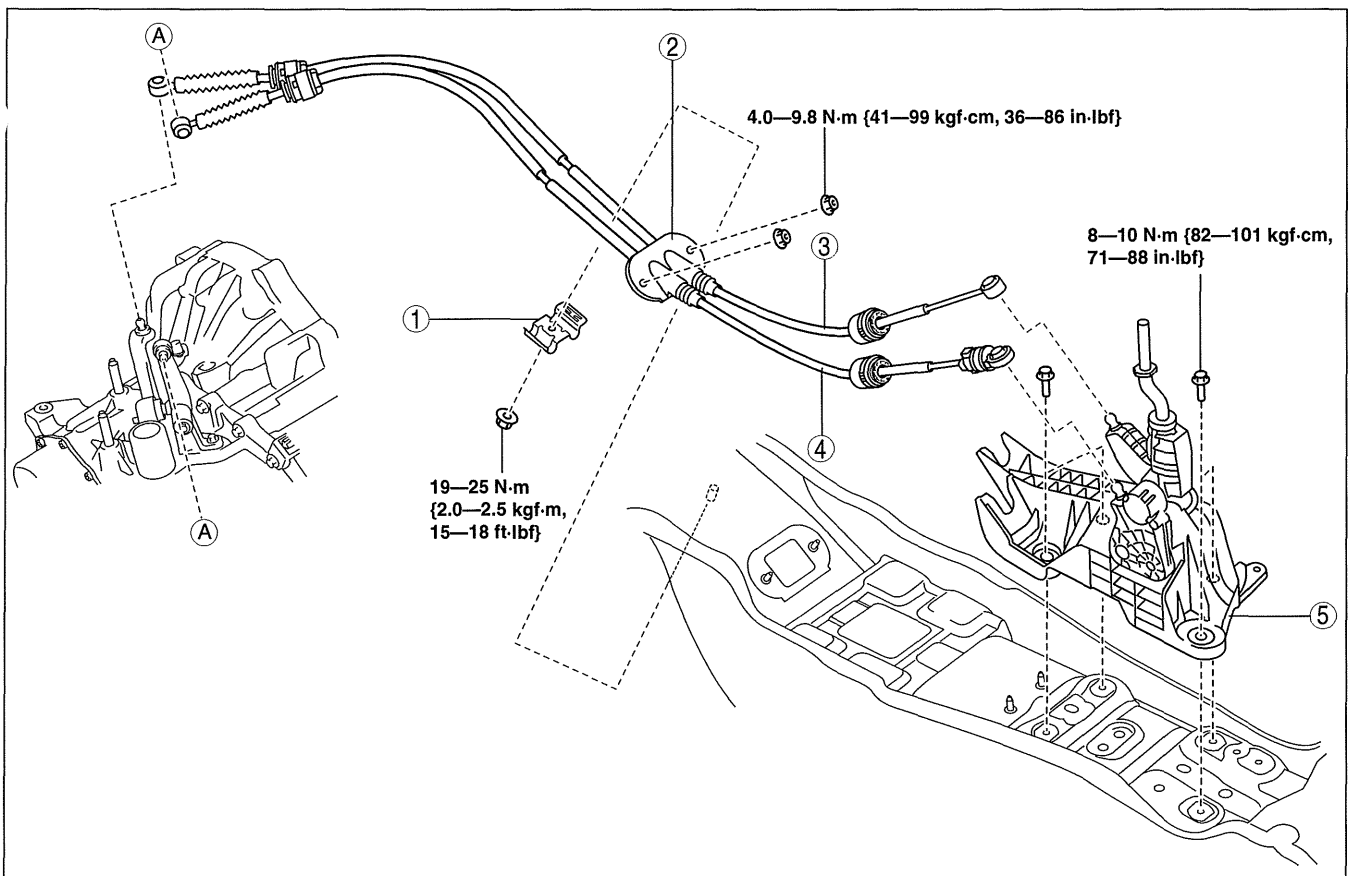
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14. Remove the cap and fastener securing the insulator (front) and set the insulator (front) aside.
15. Remove in the order indicated in the table.
16. Install in the reverse order of removal.
17. After installation, verify that the shift lever can be shifted smoothly into each position.



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MANUAL TRANSAXLE SHIFT MECHANISM



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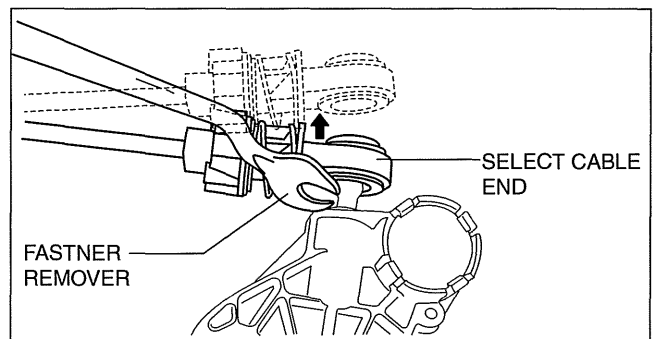
05-16

1	Clip
2	Grommet
3	Main shift cable (See 05-16-3 Main shift cable and main select cable removal note.)

4	Main select cable (See 05-16-3 Main shift cable and main select cable removal note.)
5	Shift lever component

Main shift cable and main select cable removal note

1. Remove the both shift cable end and select cable end using a fastener remover.



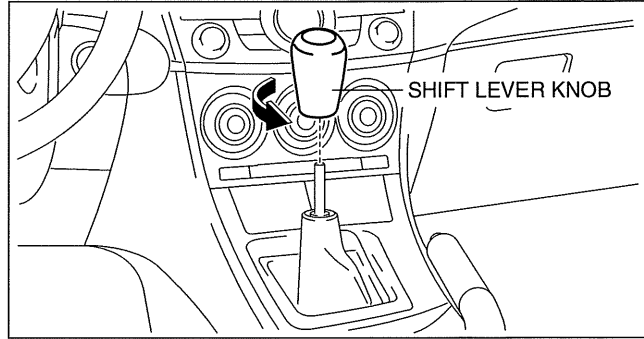
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A26M-R

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2. Disconnect the negative battery cable.
3. Remove the battery and battery tray. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
4. Remove the air cleaner and air inlet hose. (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

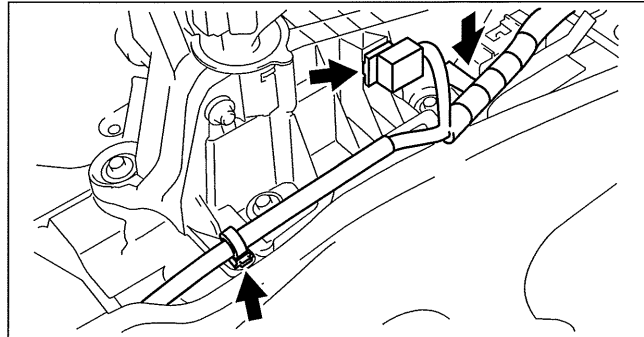
MANUAL TRANSAXLE SHIFT MECHANISM

6. Remove the tunnel member (rear). (See 01-15B-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
7. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
8. Remove the shift lever knob.
9. Remove the shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
10. Remove the side wall. (See 09-17-31 SIDE PANEL REMOVAL/INSTALLATION.)



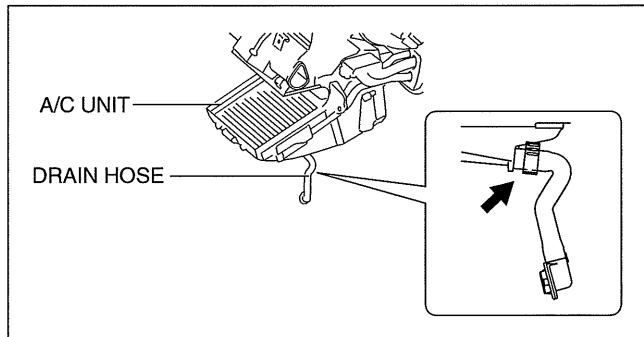
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11. Detach the clip as shown in the figure.



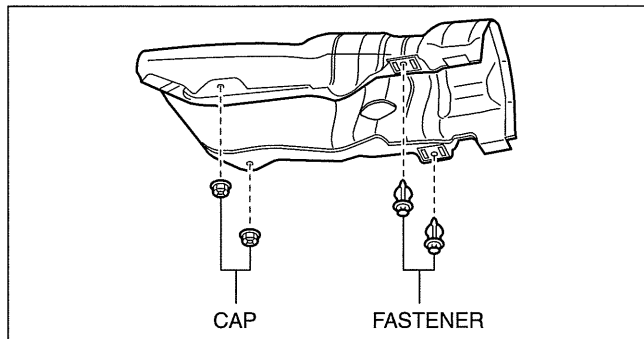
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12. Disconnect the drain hose connected to A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)



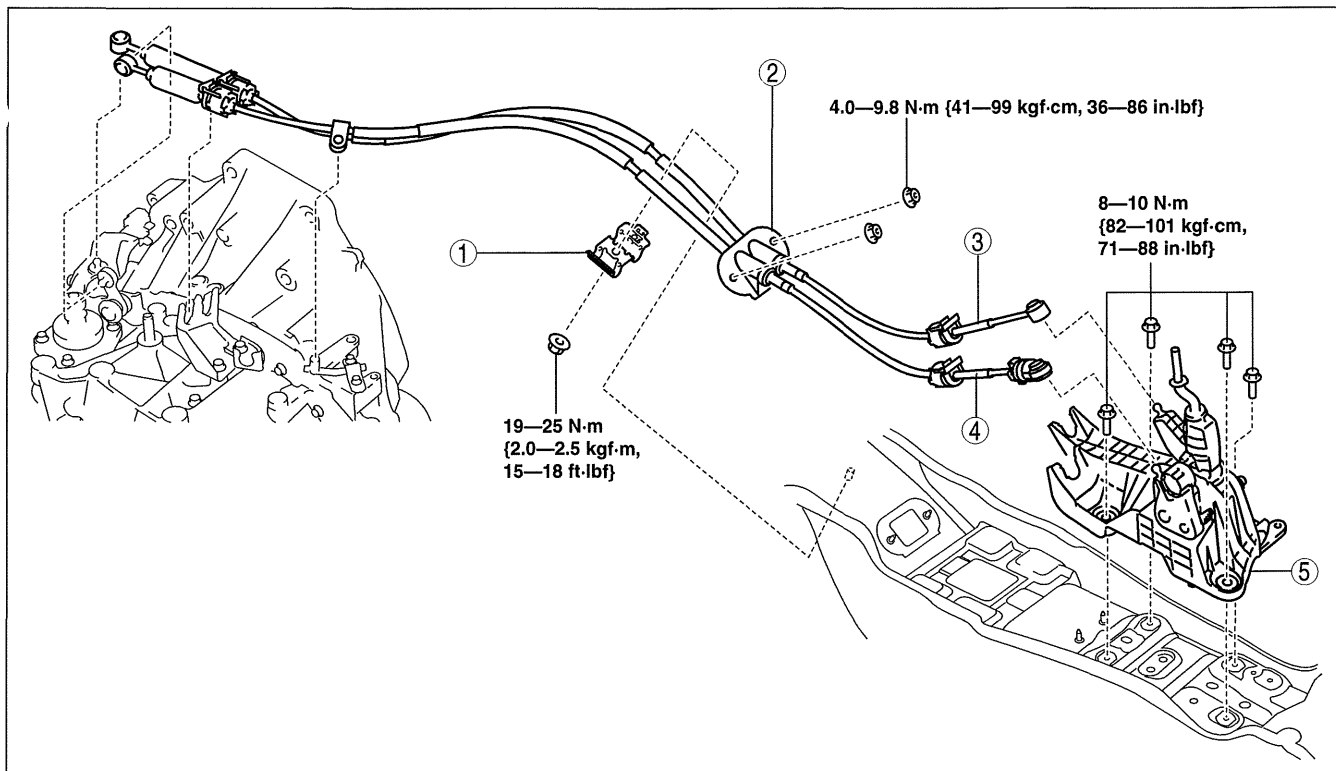
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13. Remove the cap and fastener securing the insulator (front) and set the insulator (front) aside.
14. Remove in the order indicated in the table.
15. Install in the reverse order of removal.
16. After installation, verify that the shift lever can be shifted smoothly into each position.



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MANUAL TRANSAXLE SHIFT MECHANISM



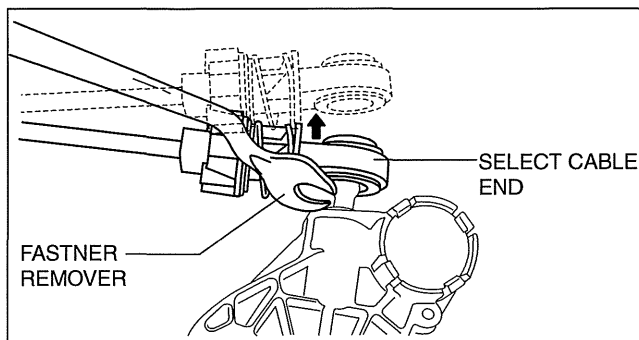
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1	Clip
2	Grommet
3	Main shift cable (See 05-16-5 Main shift cable and main select cable removal note.)

4	Main select cable (See 05-16-5 Main shift cable and main select cable removal note.)
5	Shift lever component

Main shift cable and main select cable removal note

1. Remove the both shift cable end and select cable end using a fastener remover.



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05-17 AUTOMATIC TRANSAXLE [FS5A-EL]

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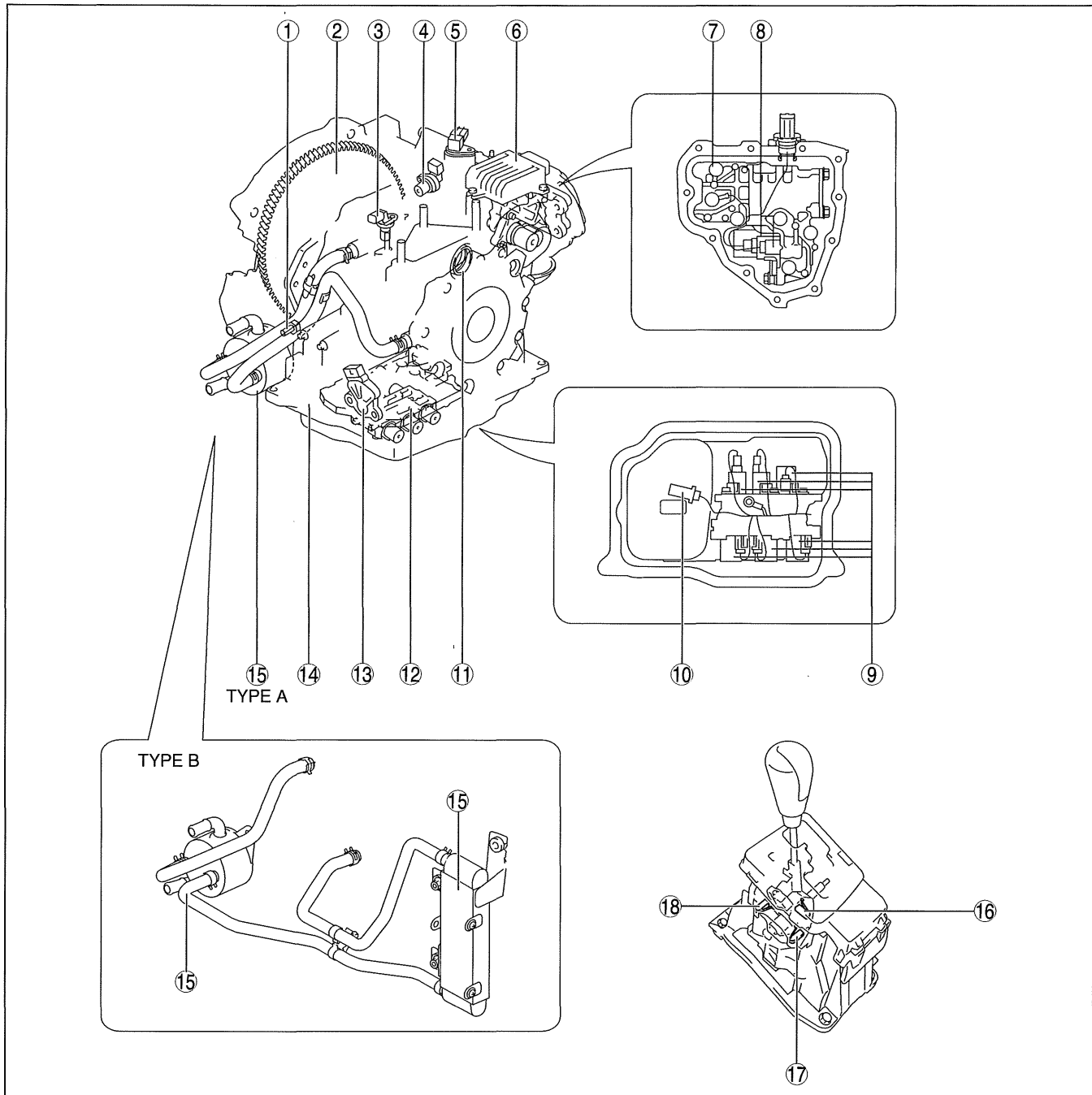
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AUTOMATIC TRANSAXLE [FS5A-EL]

AUTOMATIC TRANSAXLE LOCATION INDEX [FS5A-EL]

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1	Oil pressure switch (See 05-17-22 OIL PRESSURE SWITCH INSPECTION [FS5A-EL].) (See 05-17-24 OIL PRESSURE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
2	Drive plate (See 05-17-46 DRIVE PLATE REMOVAL/INSTALLATION [FS5A-EL].)
3	Input/turbine speed sensor (See 05-17-24 INPUT/TURBINE SPEED SENSOR INSPECTION [FS5A-EL].) (See 05-17-25 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION [FS5A-EL].)

4	VSS (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) (See 05-17-28 VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION [FS5A-EL].)
5	Intermediate sensor (See 05-17-25 INTERMEDIATE SENSOR INSPECTION [FS5A-EL].) (See 05-17-26 INTERMEDIATE SENSOR REMOVAL/INSTALLATION [FS5A-EL].)
6	TCM (See 05-17-34 TCM INSPECTION [FS5A-EL].) (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)

AUTOMATIC TRANSAXLE [FS5A-EL]

7	Secondary control valve body (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)	13	TR switch (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) (See 05-17-15 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT [FS5A-EL].) (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
8	Pressure control solenoid B Shift solenoid F (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)	14	Automatic transaxle (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].) (See 05-17-7 ROAD TEST [FS5A-EL].) (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].) (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
9	Pressure control solenoid A Shift solenoid A Shift solenoid B Shift solenoid C Shift solenoid D Shift solenoid E (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)	15	Oil cooler (See 05-17-47 OIL COOLER REMOVAL/INSTALLATION [FS5A-EL].) (See 05-17-51 OIL COOLER FLUSHING [FS5A-EL].)
10	TFT sensor (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) (See 05-17-21 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL].)	16	M range switch (See 05-17-18 M RANGE SWITCH INSPECTION [FS5A-EL].) (See 05-17-18 M RANGE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
11	Oil seal (See 05-17-47 OIL SEAL REPLACEMENT [FS5A-EL].)	17	Up switch (See 05-17-18 UP SWITCH INSPECTION [FS5A-EL].) (See 05-17-19 UP SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
12	Primary control valve body (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)	18	Down switch (See 05-17-19 DOWN SWITCH INSPECTION [FS5A-EL].) (See 05-17-20 DOWN SWITCH REMOVAL/INSTALLATION [FS5A-EL].)

05-17

MECHANICAL SYSTEM TEST [FS5A-EL]

id051721290600

Mechanical System Test Preparation

1. Engage the parking brake and use wheel chocks at the front and rear of the wheels.
2. Inspect the engine coolant. (See 01-12A-2 ENGINE COOLANT LEVEL INSPECTION [LF, L5].)
3. Inspect the engine oil. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)
4. Inspect the ATF. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].)
5. Inspect the idle speed. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
6. Inspect the ignition timing. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
7. Verify that no DTCs recorded. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].)

Line Pressure Test

1. Perform "Mechanical System Test Preparation". (See 05-17-3 Mechanical System Test Preparation.)

Warning

- **Removing the square-head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square-head plug, allow the ATF to cool.**

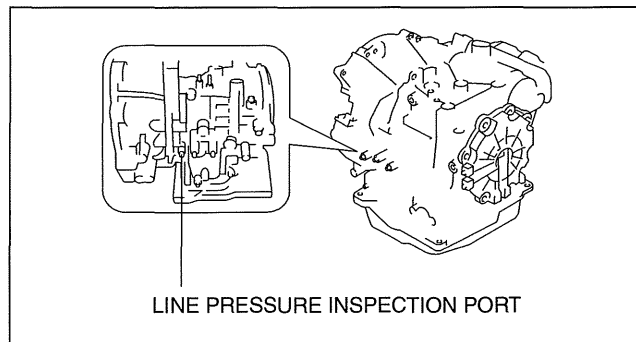
Note

- Use a suitable oil pressure gauge that corresponds to the line pressure because the maximum scale value differs depending on the oil pressure gauge.

2. Perform the line pressure test with the engine idle at D range.

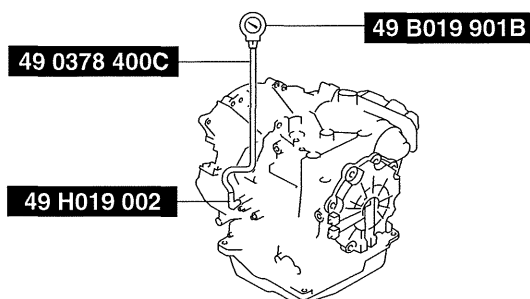
AUTOMATIC TRANSAXLE [FS5A-EL]

- (1) Remove the square-head plug from the line pressure inspection port.
- (2) Connect the SSTs as following:
 - When using the oil pressure gauge set (49 0378 400C), connect the SSTs (49 H019 002, 49 0378 400C, 49 B019 901B) to the line pressure inspection port as shown in the figure.
 - When using the oil pressure gauge set (49 D019 9A2), connect the SSTs (49 D019 910, 49 D019 911, 49 D019 913, 49 D019 909, 49 D019 908) to the line pressure inspection port as shown in the figure.

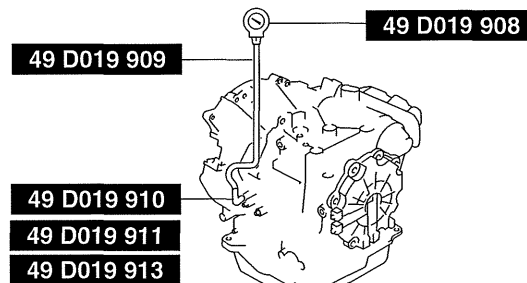


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USING OIL PRESSURE GAUGE SET (49 0378 400C)



USING OIL PRESSURE GAUGE SET (49 D019 9A2)



• 49 0378 400C

- 49 B019 901B (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 B019 902A (HIGH Pressure Gauge): 0—2,500 kPa {0.00—25.49 kgf/cm², 0.0—362.5 psi}

• 49 D019 9A2

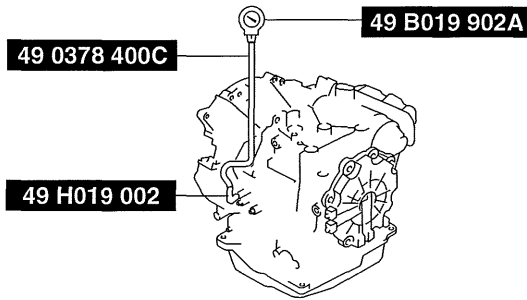
- 49 D019 908 (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 D019 907 (HIGH Pressure Gauge): 0—3,000 kPa {0.00—30.59 kgf/cm², 0.0—435.1 psi}

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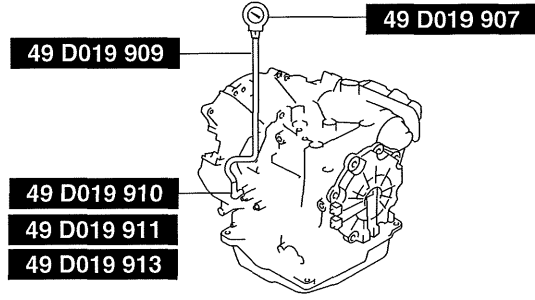
- (3) Start the engine.
 - (4) Warm-up the transaxle until the ATF temperature reaches at 60—70 °C {140—158 °F}.
 - (5) Select the selector lever to D range.
 - (6) Read the line pressure with the engine idle.
3. Perform the line pressure test at the engine idle at each position/range in the same manner.
 4. Stop the engine.
 5. Perform the line pressure test with the engine stall at D range.
 - (1) Replace the oil pressure gauge as following:
 - When using the oil pressure gauge set (49 0378 400C), replace the SST (49 B019 901B) with SST (49 B019 902A).
 - When using the oil pressure gauge set (49 D019 9A2), replace the SST (49 D019 908) with SST (49 D019 907).

AUTOMATIC TRANSAXLE [FS5A-EL]

USING OIL PRESSURE GAUGE SET (49 0378 400C)



USING OIL PRESSURE GAUGE SET (49 D019 9A2)



• 49 0378 400C

- 49 B019 901B (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 B019 902A (HIGH Pressure Gauge): 0—2,500 kPa {0.00—25.49 kgf/cm², 0.0—362.5 psi}

• 49 D019 9A2

- 49 D019 908 (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 D019 907 (HIGH Pressure Gauge): 0—3,000 kPa {0.00—30.59 kgf/cm², 0.0—435.1 psi}

05-17

am6xuw0000280

- (2) Start the engine.
- (3) Firmly depress the brake pedal with the left foot.
- (4) Select the selector lever to D range.

Caution

- If the accelerator pedal is pressed for longer than 5 s while the brake pedal is pressed, the transaxle could be damaged. Therefore, perform Steps (5)—(6) within 5 s.

- (5) Gradually depress the accelerator pedal with the right foot.
 - (6) When the engine speed no longer increases, quickly read the line pressure and release the accelerator pedal.
 - (7) Select the selector lever to N position and let the engine idle for 1 min or more to cool the ATF.
6. Perform the line pressure test with the engine stall at each position/range in the same manner.
- If there is any malfunction, inspect the following “possible cause” according to the condition.

Condition		Possible Cause
Low pressure	In all ranges	<ul style="list-style-type: none"> • Worn oil pump • Oil leakage from oil pump, control valve body, and/or transaxle case • Pressure regulator valve sticking • Pressure control solenoid A malfunction
	In D range and M range (1GR, 2GR)	<ul style="list-style-type: none"> • Oil leakage from forward clutch hydraulic circuit
	In M range (2GR)	<ul style="list-style-type: none"> • Oil leakage from 2-4 brake band hydraulic circuit
	In M range (1GR), R position	<ul style="list-style-type: none"> • Oil leakage from low and reverse brake hydraulic circuit
	In R position	<ul style="list-style-type: none"> • Oil leakage from reverse clutch hydraulic circuit
High pressure	In all ranges	<ul style="list-style-type: none"> • Pressure regulator valve stuck • Pressure control solenoid A malfunction

AUTOMATIC TRANSAXLE [FS5A-EL]

Line Pressure

Test Condition		Specification (kPa {kgf/cm ² , psi})	
		LF	L5
Idle	D range	330—470 {3.37—4.79, 47.9—68.1}	
	M range (1GR, 2GR)	330—470 {3.37—4.79, 47.9—68.1}	
	R position	490—710 {5.00—7.23, 71.1—102.0}	
Stall	D range	1,200—1,320 {12.24—13.46, 174.1—191.4}	
	M range (1GR, 2GR)	1,200—1,320 {12.24—13.46, 174.1—191.4}	
	R position	1,630—1,950 {16.63—19.88, 236.5—282.8}	1,820—2,090 {18.56—21.31, 264.0—303.1}

7. Stop the engine.

Warning

- **Removing the square-head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square-head plug, allow the ATF to cool.**

8. Remove the SSTs.

Note

- Do not reuse the square-head plug because it is coated.

9. Install a new square-head plug in the inspection port.

Tightening torque

4.8—9.8 N·m {49—99 kgf·cm, 43—86 in·lbf}

Stall Test

1. Perform "Mechanical System Test Preparation". (See 05-17-3 Mechanical System Test Preparation.)
2. Start the engine.
3. Perform the stall test at D range.
 - (1) Firmly depress the brake pedal with the left foot.
 - (2) Select the selector lever to D range.

Caution

- **If the accelerator pedal is pressed for longer than 5 s while the brake pedal is pressed, the transaxle could be damaged. Therefore, perform Steps (3)—(4) within 5 s.**

- (3) Gently depress the accelerator pedal with the right foot.
- (4) When the engine speed no longer increases, quickly read the speed and release the accelerator pedal.
- (5) Select the selector lever to N position and let the engine idle for 1 min or more to cool the ATF.
4. Perform the stall test at each position/range in the same manner.
 - If there is any malfunction, inspect the following "possible cause" according to the condition.

Condition		Possible Cause	
Above specification	In all ranges	Insufficient line pressure	<ul style="list-style-type: none"> • Worn oil pump • Oil leakage from oil pump, control valve body, and/or transaxle case • Pressure regulator valve sticking • Converter relief valve sticking • Pressure control solenoid A malfunction
	In D range and M range (1GR, 2GR)	• Forward clutch slipping	
	In M range (2GR)	• 2-4 brake band slipping	
	In M range (1GR), R position	• Low and reverse brake slipping	
	In R position	<ul style="list-style-type: none"> • Perform "ROAD TEST" to determine whether problem is in reverse clutch or low and reverse brake <ul style="list-style-type: none"> — Engine braking felt in M range (1GR): Reverse clutch is defective — Engine braking not felt in M range (1GR): Low and reverse brake is defective 	
Below specification		• Engine lack of power	

AUTOMATIC TRANSAXLE [FS5A-EL]

Stall Speed

Test Condition	Specification (rpm)	
	LF	L5
D range	2,200—2,800	2,400—3,000
M range	2,200—2,800	2,400—3,000
R position	2,200—2,800	2,400—3,000

Time Lag Test

1. Perform “Mechanical System Test Preparation”. (See 05-17-3 Mechanical System Test Preparation.)
2. Start the engine.
3. Perform the time lag test when selecting the selector lever from N position to D range.
 - (1) Select the selector lever from N position to D range while the brake pedal is depressed.
 - (2) Measure the time it takes from selecting until shock is felt when shifting the selector lever from N position to D range.
4. Perform the time lag test when selecting the selector lever from N position to R position in the same manner.
 - If there is any malfunction, inspect the following “possible cause” according to the condition.

Condition		Possible Cause
From N position to D range	More than specification	<ul style="list-style-type: none"> • Low line pressure • Oil leakage from forward clutch hydraulic circuit • Forward clutch slipping • Shift solenoid A malfunction
	Less than specification	<ul style="list-style-type: none"> • High line pressure • Shift solenoid A malfunction • Forward accumulator malfunction
From N position to R position	More than specification	<ul style="list-style-type: none"> • Low line pressure • Low and reverse brake slipping • Reverse clutch slipping
	Less than specification	<ul style="list-style-type: none"> • High line pressure • Servo apply accumulator malfunction • Shift solenoid B malfunction

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Time Lag

Test Condition	Specification (s)	
	LF	L5
From N position to D range	0.4—0.7	
From N position to R position	0.4—0.7	

ROAD TEST [FS5A-EL]

id051721290700

Warning

- When performing a road test, be aware of other vehicles, people, impediments, etc. to avoid an accident.

Note

- When the legal speed limit must be exceeded, use a chassis dynamometer instead of performing a road test.

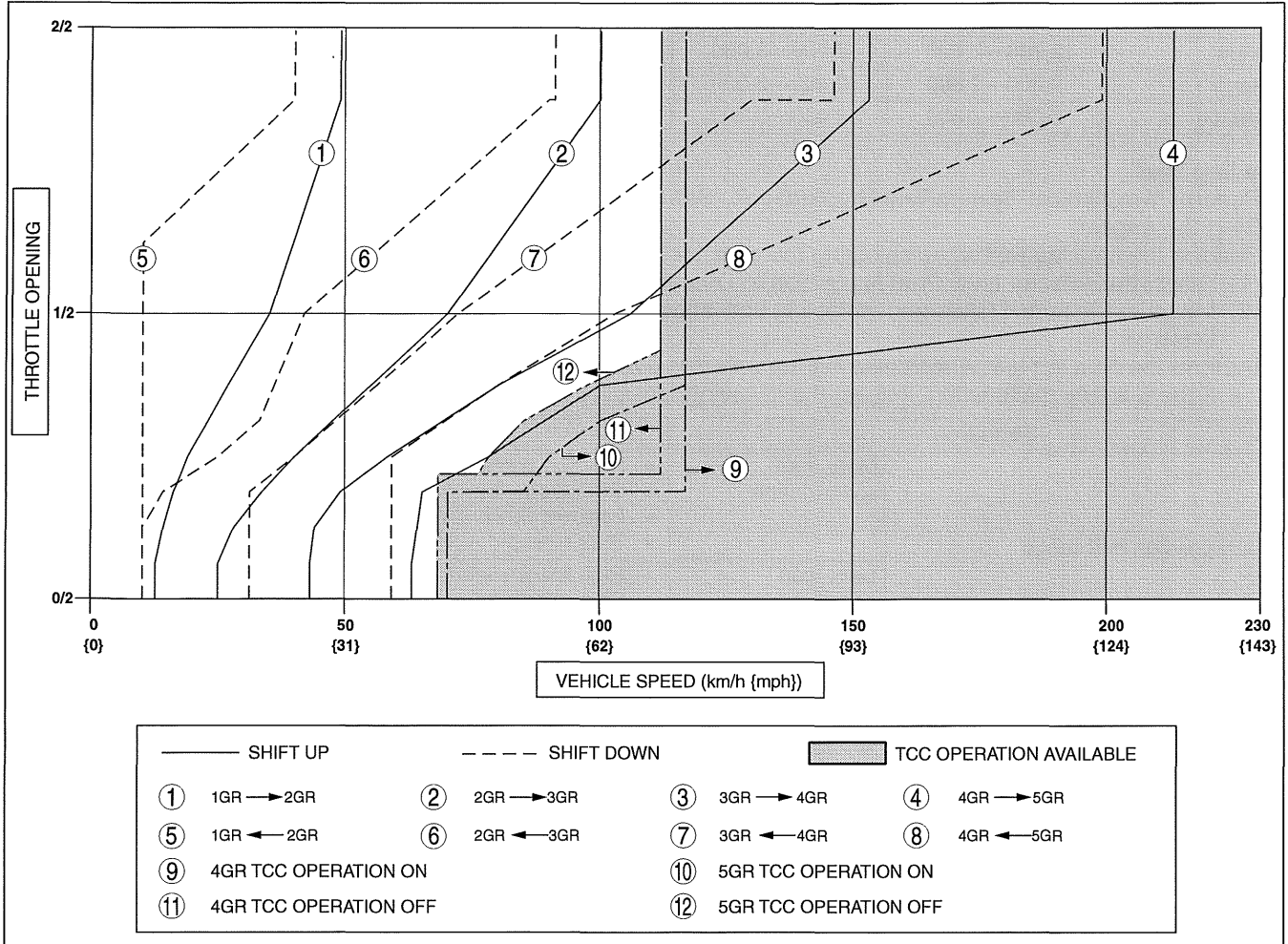
Road Test Preparation

1. Inspect the engine coolant. (See 01-12A-2 ENGINE COOLANT LEVEL INSPECTION [LF, L5].)
2. Inspect the engine oil. (See 01-11A-3 ENGINE OIL LEVEL INSPECTION [LF, L5].)
3. Inspect the ATF. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].)
4. Inspect the idle speed. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
5. Inspect the ignition timing. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].)
6. Verify that no DTCs recorded. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].)

AUTOMATIC TRANSAXLE [FS5A-EL]

Shift Diagram (Normal Mode at D Range)

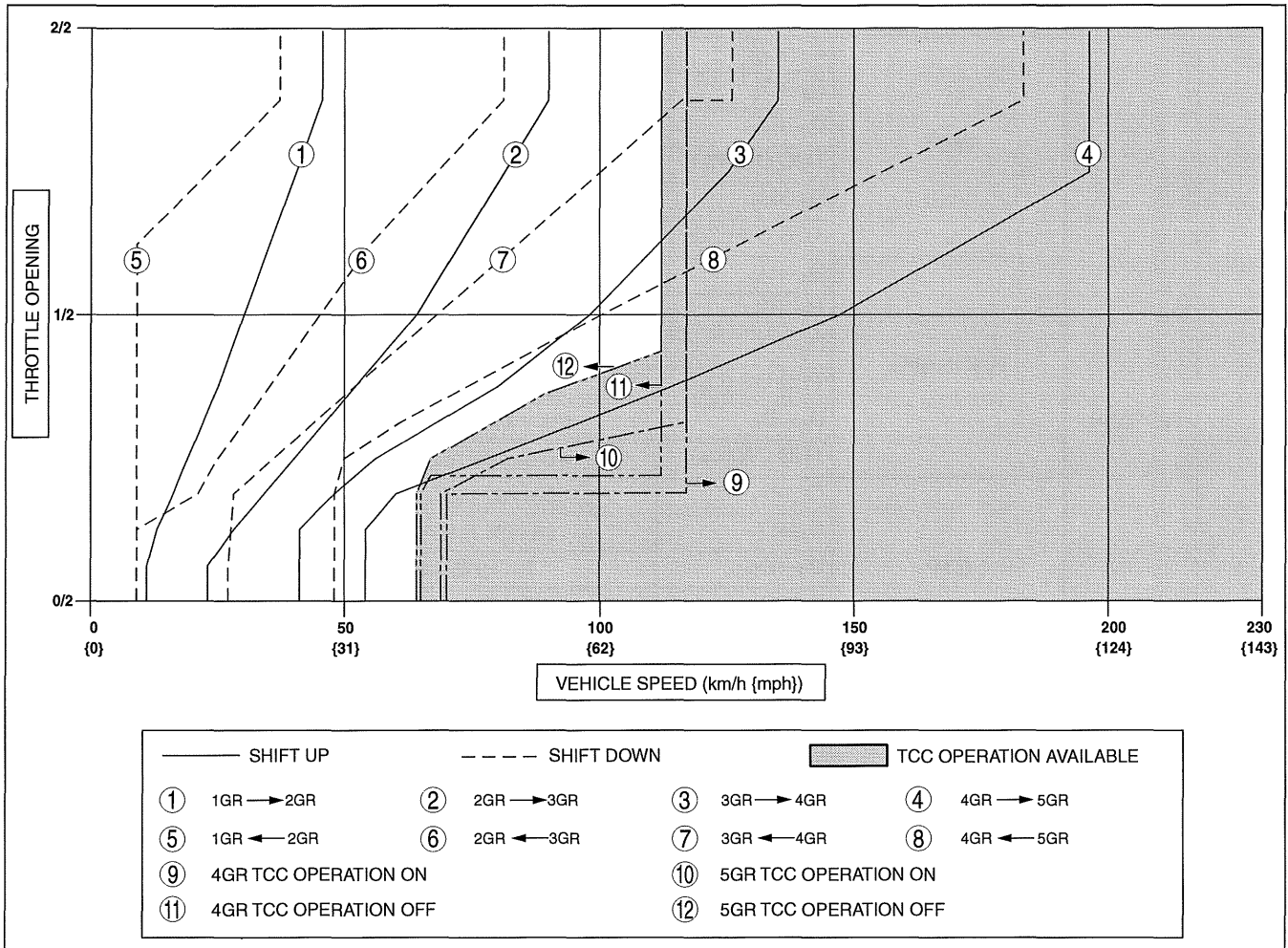
LF



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AUTOMATIC TRANSAXLE [FS5A-EL]

L5



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D Range Test

1. Perform "Road Test Preparation". (See 05-17-7 Road Test Preparation.)
2. Warm-up the transaxle until the ATF temperature reaches at 60—70 °C.
3. Select the selector lever to D range.
4. Perform the road test at D range.
 - If there is any malfunction, perform the "Symptom Troubleshooting".
 - (1) Accelerate the vehicle with half and WOT, then verify that 1GR—2GR, 2GR—3GR, 3GR—4GR, and 4GR—5GR upshifts can be obtained. The shift points must be as shown in the table below.
 - (2) Decelerate the vehicle in 5GR, then verify that 5—4, 4—3, 3—2 and 2—1 downshifts can be obtained. The shift points must be as shown in the table below.
 - (3) Drive the vehicle in 5GR, 4GR, 3GR, and 2GR and verify that kickdown occurs for 5GR—4GR, 4GR—3GR, 3GR—2GR, 2GR—1GR downshifts, and that the shift points are as shown in the table below.
 - (4) Decelerate the vehicle and verify that engine braking effect is felt in 5GR, 4GR, 3GR and 2GR.
 - (5) Drive the vehicle and verify that TCC operation is obtained. The operation points must be as shown in the table below.

AUTOMATIC TRANSAXLE [FS5A-EL]

Shift point (LF)

Range/Mode		Throttle condition	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)
D	NORMAL	WOT	D ₁ →D ₂	48—54 {30—33}	5,250—5,850
			D ₂ →D ₃	98—106 {61—65}	5,700—6,100
			D ₃ →D ₄	150—160 {93—99}	5,850—6,150
			TCC ON (D ₄)	114—124 {71—76}	3,250—3,450
			D ₄ →D ₅	210—220 {131—136}	5,900—6,150
			TCC ON (D ₅)	114—124 {71—76}	2,400—2,550
		Half throttle	D ₁ →D ₂	29—38 {18—23}	3,150—4,150
			D ₂ →D ₃	59—76 {37—47}	3,400—4,400
			D ₃ →D ₄	87—115 {54—71}	3,400—4,450
			TCC ON (D ₄)	108—126 {67—78}	3,050—3,500
			D ₄ →D ₅	134—179 {84—110}	3,750—5,000
			TCC ON (D ₅)	108—126 {67—78}	2,250—2,600
		CTP	D ₅ →D ₄	56—62 {35—38}	1,200—1,250
			D ₄ →D ₃	28—34 {18—21}	800—950
			D ₃ →D ₂	7—13 {5—8}	300—500
			D ₂ →D ₁	7—13 {5—8}	450—750
	D ₃ →D ₁		7—13 {5—8}	300—500	
	Kickdown (WOT)	D ₅ →D ₄	194—204 {121—126}	4,050—4,200	
		D ₄ →D ₃	141—151 {88—93}	4,000—4,200	
		D ₃ →D ₂	87—95 {54—58}	3,400—3,650	
		D ₂ →D ₁	37—43 {23—26}	2,150—2,450	
	AAS	WOT	D ₁ →D ₂	48—54 {30—33}	5,250—5,850
			D ₂ →D ₃	98—106 {61—65}	5,700—6,100
			D ₃ →D ₄	150—160 {93—99}	5,850—6,150
			D ₄ →D ₅	210—220 {131—136}	5,900—6,150
		Half throttle	D ₁ →D ₂	29—38 {18—23}	3,150—4,150
			D ₂ →D ₃	59—76 {37—47}	3,400—4,400
			D ₃ →D ₄	87—115 {54—71}	3,400—4,450
D ₄ →D ₅			134—179 {84—110}	3,750—5,000	
CTP		D ₅ →D ₄	56—62 {35—38}	1,200—1,250	
		D ₄ →D ₃	28—34 {18—21}	800—950	
		D ₃ →D ₂	7—13 {5—8}	300—500	
		D ₂ →D ₁	7—13 {5—8}	450—750	
		D ₃ →D ₁	7—13 {5—8}	300—500	
Kickdown (WOT)		D ₅ →D ₄	194—204 {121—126}	4,050—4,200	
		D ₄ →D ₃	141—151 {88—93}	4,000—4,200	
		D ₃ →D ₂	87—95 {54—58}	3,400—3,650	
	D ₂ →D ₁	37—43 {23—26}	2,150—2,450		

AUTOMATIC TRANSAXLE [FS5A-EL]

Shift point (L5)

Range/Mode	Throttle condition	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)	
D	NORMAL	WOT	D ₁ →D ₂	45—50 {28—31}	5,150—5,800
			D ₂ →D ₃	88—96 {55—59}	5,400—5,850
			D ₃ →D ₄	132—142 {82—88}	5,400—5,750
			TCC ON (D ₄)	114—124 {71—76}	3,400—3,650
			D ₄ →D ₅	193—203 {120—125}	5,750—6,000
			TCC ON (D ₅)	114—124 {71—76}	2,550—2,700
		Half throttle	D ₁ →D ₂	26—34 {17—21}	3,000—3,900
			D ₂ →D ₃	54—71 {34—44}	3,300—4,350
			D ₃ →D ₄	83—109 {52—67}	3,400—4,450
			TCC ON (D ₄)	108—126 {67—78}	3,250—3,700
			D ₄ →D ₅	127—159 {79—98}	3,800—4,700
			TCC ON (D ₅)	108—126 {67—78}	2,400—2,750
	CTP	D ₅ →D ₄	45—51 {28—31}	1,000—1,100	
		D ₄ →D ₃	24—30 {15—18}	750—850	
		D ₃ →D ₂	6—12 {4—7}	250—450	
		D ₂ →D ₁	6—12 {4—7}	400—700	
		D ₃ →D ₁	6—12 {4—7}	250—450	
	Kickdown (WOT)	D ₅ →D ₄	178—188 {111—116}	3,950—4,100	
		D ₄ →D ₃	121—131 {76—81}	3,600—3,850	
		D ₃ →D ₂	77—85 {48—52}	3,150—3,450	
		D ₂ →D ₁	34—40 {22—24}	2,100—2,400	
	AAS	WOT	D ₁ →D ₂	45—50 {28—31}	5,150—5,800
			D ₂ →D ₃	88—96 {55—59}	5,400—5,850
			D ₃ →D ₄	132—142 {82—88}	5,400—5,750
D ₄ →D ₅			193—203 {120—125}	5,750—6,000	
Half throttle		D ₁ →D ₂	26—34 {17—21}	3,000—3,900	
		D ₂ →D ₃	54—71 {34—44}	3,300—4,350	
		D ₃ →D ₄	83—109 {52—67}	3,400—4,450	
		D ₄ →D ₅	127—159 {79—98}	3,800—4,700	
CTP		D ₅ →D ₄	45—51 {28—31}	1,000—1,100	
		D ₄ →D ₃	25—31 {16—19}	750—900	
		D ₃ →D ₂	6—12 {4—7}	250—450	
		D ₂ →D ₁	6—12 {4—7}	400—700	
		D ₃ →D ₁	6—12 {4—7}	250—450	
Kickdown (WOT)		D ₅ →D ₄	178—188 {111—116}	3,950—4,100	
		D ₄ →D ₃	121—131 {76—81}	3,600—3,850	
		D ₃ →D ₂	77—85 {48—52}	3,150—3,450	
		D ₂ →D ₁	34—40 {22—24}	2,100—2,400	

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M Range Test

1. Perform "Road Test Preparation". (See 05-17-7 Road Test Preparation.)
2. Warm-up the transaxle until the ATF temperature reaches at 60—70 °C.
3. Select the selector lever to M range.
4. Perform the road test at M range.
 - If there is any malfunction, perform the "Symptom Troubleshooting".
 - (1) Verify that upshifts and downshifts are obtained by manual shifting of the selector lever forward and back.
 - (2) Decelerate the vehicle in 5GR, then verify that 5—4, 4—3, 3—2 and 2—1 downshifts can be obtained. The shift points must be as shown in the table below.
 - (3) Decelerate the vehicle and verify that engine braking effect is felt in all gear position.
 - (4) Drive the vehicle and verify that TCC operation is obtained in 4GR and 5GR.

AUTOMATIC TRANSAXLE [FS5A-EL]

Shift point (LF)

Range/Mode		Throttle condition	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)
M	MANUAL	WOT	TCC ON (M ₄)	114—124 {71—76}	3,250—3,450
			TCC ON (M ₅)	114—124 {71—76}	2,400—2,550
		Half throttle	TCC ON (M ₄)	108—126 {67—78}	3,050—3,500
			TCC ON (M ₅)	108—126 {67—78}	2,250—2,600
		CTP	M ₅ →M ₄	28—34 {18—21}	600—700
			M ₄ →M ₃	28—34 {18—21}	800—950
			M ₃ →M ₂	7—13 {5—8}	300—500
			M ₂ →M ₁	7—13 {5—8}	450—750
			M ₃ →M ₁	7—13 {5—8}	300—500

Shift point (L5)

Range/Mode		Throttle condition	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)
M	MANUAL	WOT	TCC ON (M ₄)	114—124 {71—76}	3,400—3,650
			TCC ON (M ₅)	114—124 {71—76}	2,550—2,700
		Half throttle	TCC ON (M ₄)	108—126 {67—78}	3,250—3,700
			TCC ON (M ₅)	108—126 {67—78}	2,400—2,750
		CTP	M ₅ →M ₄	28—34 {18—21}	650—700
			M ₄ →M ₃	28—34 {18—21}	850—1,000
			M ₃ →M ₂	7—13 {5—8}	300—500
			M ₂ →M ₁	7—13 {5—8}	450—750
			M ₃ →M ₁	7—13 {5—8}	300—500

P Position Test

- Select the selector lever to P position on a gentle slope.
- Release the brake and verify that the vehicle does not roll.
 - If the vehicle rolls, inspect the parking mechanism in the transaxle.

AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL]

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Automatic Transaxle Fluid (ATF) Condition Inspection

- One way of determining whether the transaxle should be disassembled is by noting:
 - If the ATF is muddy or varnished.
 - If the ATF smells strange or unusual.

ATF Condition		Possible cause
Clear red	Normal	—
Light red: pink	Contaminated with water	<ul style="list-style-type: none"> Broken oil cooler inside of radiator Poor filler tube installation: <ul style="list-style-type: none"> — Problem could be occurring to parts inside the transaxle by water contamination. It is necessary to overhaul transaxle and detect defected parts. If necessary, exchange transaxle.
Reddish brown	Has burnt smell and metal specks are found	<ul style="list-style-type: none"> Defect powertrain components inside of transaxle: Specks cause wide range of problems by plugging up in oil pipe, control valve body and oil cooler in radiator. <ul style="list-style-type: none"> — When large amount of metal specks are found, overhaul transaxle and detect defected parts. If necessary, exchange transaxle. — Implement flushing operation as there is a possibility to have specks plugging up oil pipe and/or oil cooler inside of radiator.
	Has no burnt smell	<ul style="list-style-type: none"> Discoloration by oxidation

AUTOMATIC TRANSAXLE [FS5A-EL]

Automatic Transaxle Fluid (ATF) Level Inspection

Caution

- If there is no ATF adhering to the dipstick after warming-up the engine, there is insufficient ATF. Therefore do not drive the vehicle as it could damage the transaxle.
- If a final inspection of the ATF level is performed without driving the vehicle, or the ATF amount is inspected while the ATF temperature is not at about 60—70 °C {140—158 °F}, the transaxle could be damaged because the ATF level inspection would be incorrect.
- If too much ATF is added, the ATF temperature will increase and ATF could leak from the breather hose.

Note

- The dipstick of the FS5A-EL type measures the ATF level on the differential side and, under the condition that the ATF temperature on the differential side does not rise even after warming up the engine, ATF adhering to the end of the dipstick is normal.

1. Inspect the ATF level before driving the vehicle.

- (1) Park the vehicle on level ground, and then engage the parking brake and use wheel chocks at the front and rear of the wheels.
- (2) Verify visually that there is no ATF leakage from the oil hose or housing.
- (3) Start the engine and warm it up in the P position.

Caution

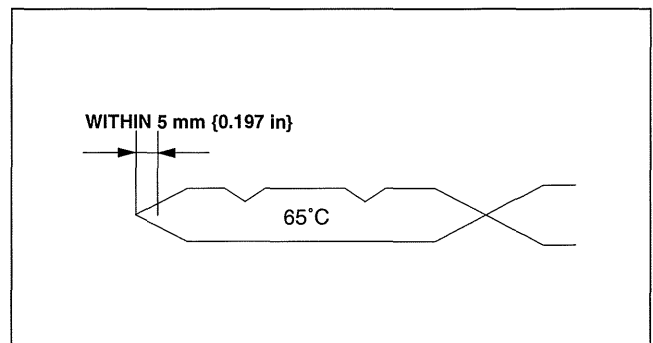
- If the oil level decreases dramatically while warming-up the engine, do not select the selector lever as it could damage the transaxle.

- (4) Remove the dipstick and wipe it clean while the engine is idling.
- (5) Install the dipstick and remove it again.
- (6) Verify that the ATF level is in the range as shown in the figure.
 - If the ATF level is out of the range, adjust the ATF to the specification.

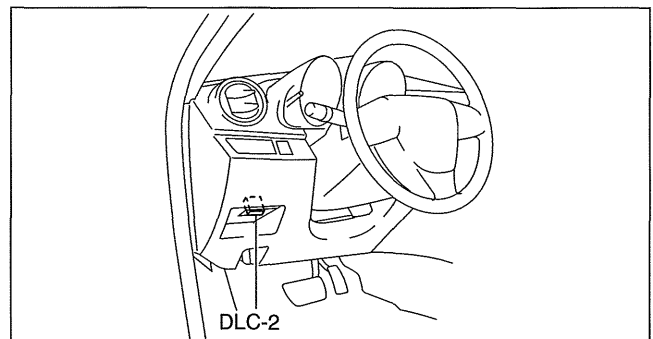
ATF type ATF M-V

2. Inspect the ATF level after driving the vehicle.

- (1) Select the selector lever and pause momentarily in each position/range (from P position to D range) while depressing the brake pedal.
- (2) Drive on city roads at a minimum of 5 km {3 mile}.
- (3) Connect the M-MDS to the DLC-2.
- (4) Verify that the ATF temperature is 60—70 °C {140—158 °F} using the M-MDS.
- (5) Remove the dipstick and wipe it clean while the engine is idling.



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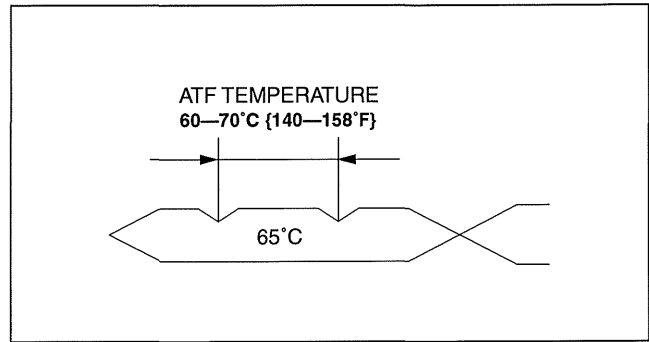
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AUTOMATIC TRANSAXLE [FS5A-EL]

- (6) Verify that the ATF level is in the range as shown in the figure.
- If the ATF level is out of the range, adjust the ATF to the specification.

ATF type
ATF M-V



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AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL]

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Warning

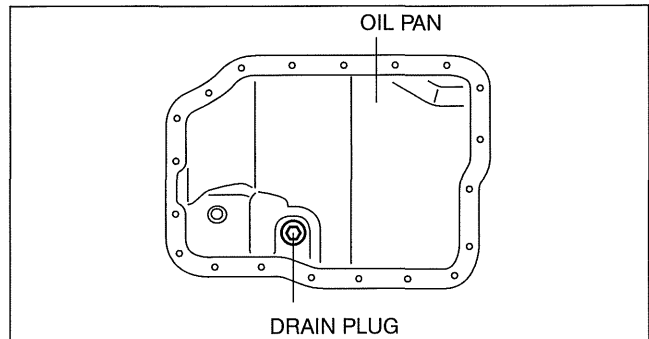
- **A hot transaxle and ATF can cause severe burns. Turn off the engine and wait until they are cool before changing the ATF.**

1. Drain the ATF.
 - (1) Remove the oil dipstick.
 - (2) Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (3) Remove the drain plug and washer to drain the ATF into a container.
2. Add the ATF.
 - (1) Install a new washer and the drain plug.

Tightening torque

30—41 N·m {3.1—4.1 kgf·m, 23—30 ft·lbf}

- (2) Add the specified ATF through the oil filler tube.



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ATF Type
ATF M-V

ATF Capacity (Reference)

Draining ATF from drain plug: 3.0 L {3.2 US qt, 2.6 Imp qt}

Overhauling transaxle: 5.0 L {5.3 US qt, 4.4 Imp qt}

3. Install the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Install the oil dipstick.
5. Inspect the ATF level. (See 05-17-12 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].)

TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL]

id051721291800

Caution

- **Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.**

Operation Inspection

1. Perform the following procedures to inspect the TR switch.
 - If there is any malfunction, adjust the TR switch. (See 05-17-15 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT [FS5A-EL].)
- (1) Verify that the starter operates only when the ignition is switched to START with the selector lever in P or N position.
- (2) Verify that the back-up lights illuminate when selected to R position with the ignition at ON.
- (3) Verify that the positions of the selector lever and the selector indicator light are aligned.

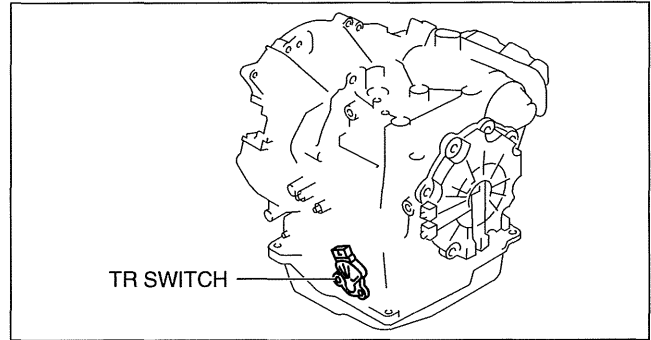
On-Vehicle Inspection

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.

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AUTOMATIC TRANSAXLE [FS5A-EL]

- (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
- (4) Disconnect the TR switch connector.



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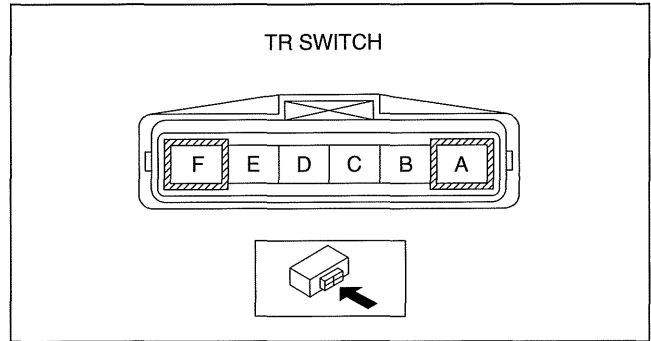
2. Inspect continuity as indicated in the table.

○—○ : Continuity

Position/ Range	Terminal				B—C Resistance (Ω)
	A	F	D	E	
P	○—○				4,085—4,515
R			○—○		1,425—1,575
N	○—○				713—788
D					371—410

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- If there is any malfunction, adjust the TR switch. (See 05-17-15 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT [FS5A-EL].)



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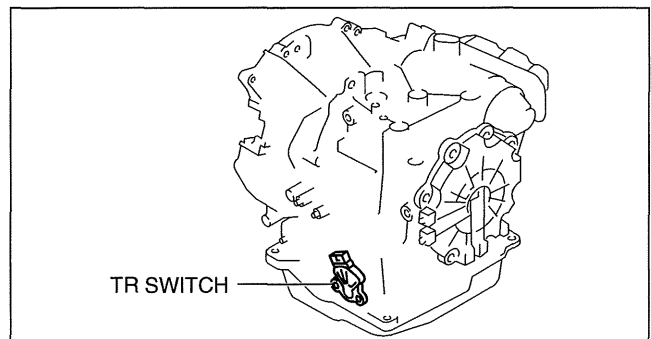
TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT [FS5A-EL]

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Caution

- **Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.**

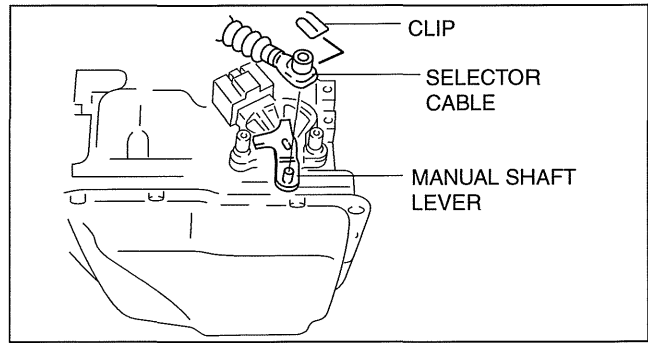
1. Select the selector lever to N position.
2. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (4) Disconnect the TR switch connector.
3. Loosen the TR switch.
 - (1) Remove the clip from the selector cable.



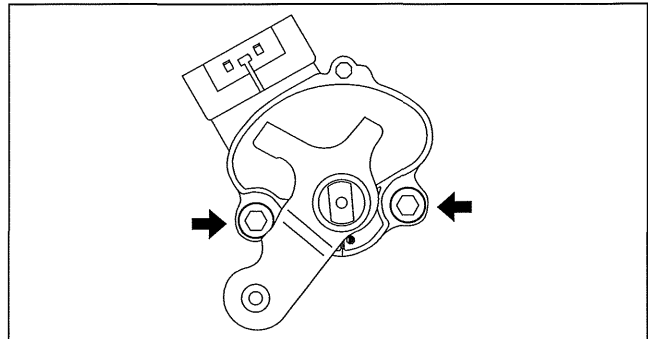
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AUTOMATIC TRANSAXLE [FS5A-EL]

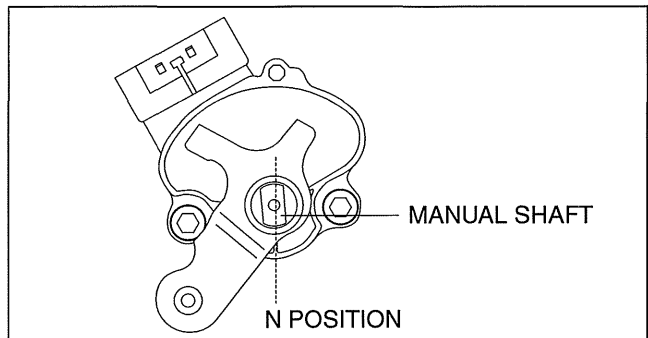
- (2) Disconnect the selector cable from manual shaft lever.



- (3) Loosen the TR switch installation bolts.
4. Adjust the TR switch.



- (1) Verify that the manual shaft is aligned with N position.

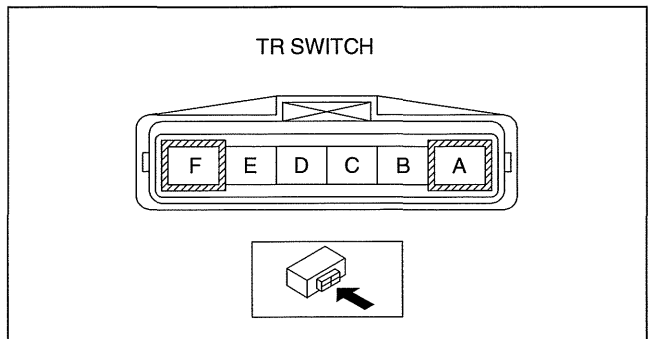


- (2) Adjust the TR switch between terminals B and C until the resistance becomes specification.

TR switch specification
713—788 ohms

- (3) Tighten the TR switch installation bolts.

Tightening torque
8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL]

id051721292000

Caution

- Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.

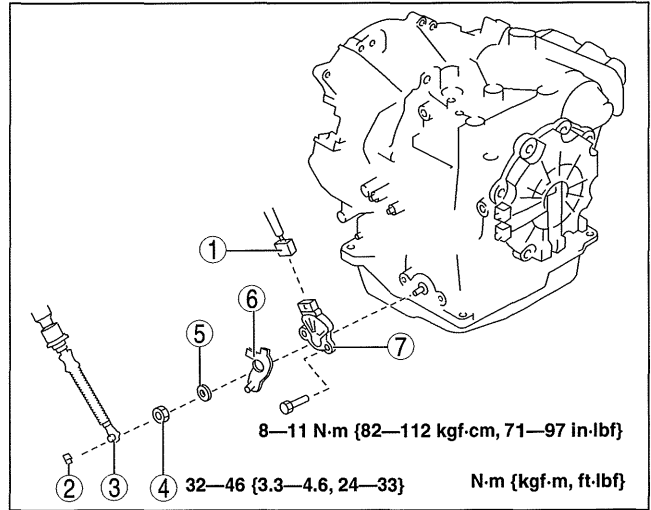
1. Select the selector lever to N position.
2. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

AUTOMATIC TRANSAXLE [FS5A-EL]

3. Remove in the order indicated in the table.

1	Connector
2	Clip
3	Selector cable
4	Manual shaft nut (See 05-17-17 Manual Shaft Nut Removal Note.) (See 05-17-18 Manual Shaft Nut Installation Note.)
5	Washer
6	Manual shaft lever
7	TR switch (See 05-17-17 TR switch Installation Note.)

4. Install in the reverse order of removal.
 5. Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].)



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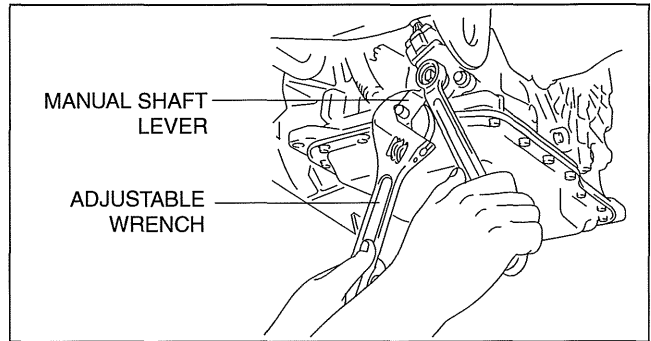
05-17

Manual Shaft Nut Removal Note

1. Set the adjustable wrench as shown to hold the manual shaft lever and loosen the manual shaft nut.

Caution

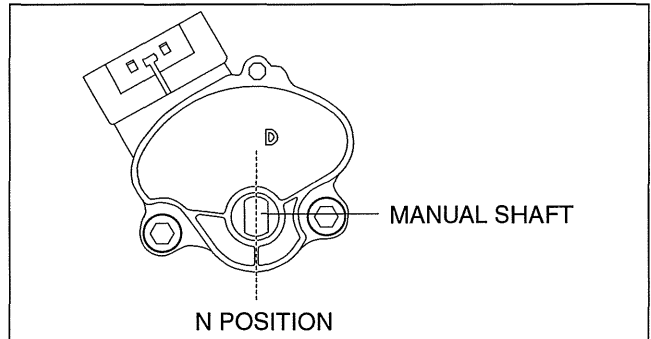
- Do not use an impact wrench. Hold the manual shaft lever when removing the manual shaft nut, or the transaxle may be damaged.



am6xuw0000194

TR switch Installation Note

1. Verify that the manual shaft is aligned with N position.



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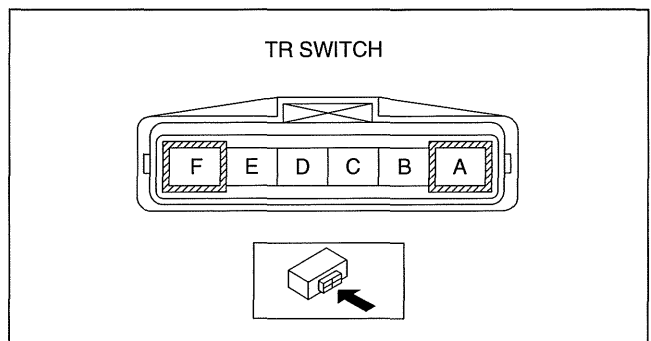
2. Adjust the TR switch between terminals B and C until the resistance becomes specification.

TR switch specification 713—788 ohms

3. Tighten the TR switch installation bolts.

Tightening torque

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



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AUTOMATIC TRANSAXLE [FS5A-EL]

Manual Shaft Nut Installation Note

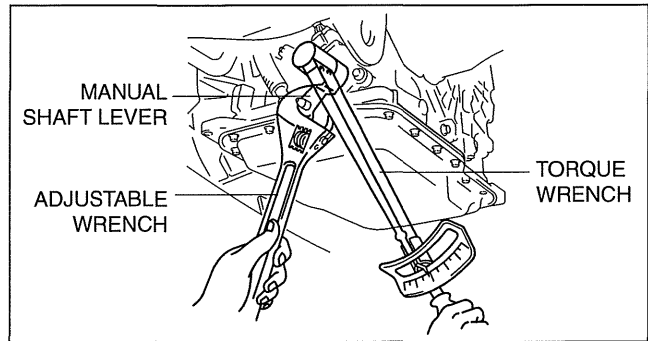
- Set the adjustable wrench as shown to hold the manual shaft lever and tighten the manual shaft nut.

Caution

- Do not use an impact wrench. Hold the manual shaft lever when installing the manual shaft nut, or the transaxle may be damaged

Tightening torque

32—46 N·m {3.3—4.6 kgf·m, 24—33 ft·lb}

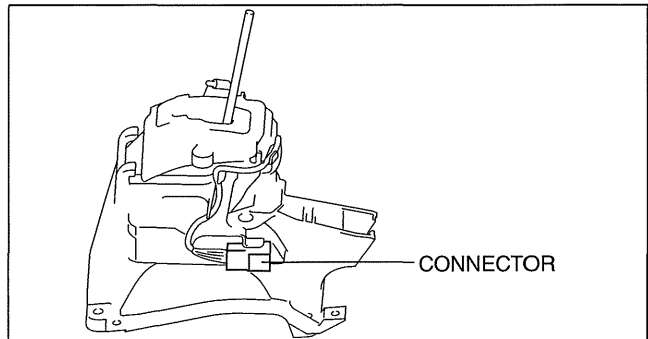


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M RANGE SWITCH INSPECTION [FS5A-EL]

id051721291400

- Perform the following procedures.
 - Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - Disconnect the negative battery cable.
 - Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - Disconnect the selector lever component connector.

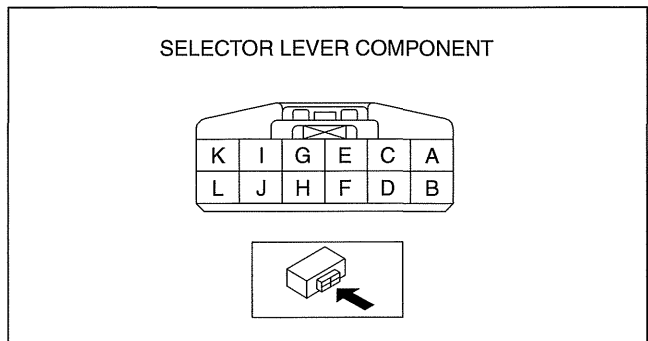


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- Inspect the continuity between the selector lever component terminals A and H.
 - If there is any malfunction, replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

M range switch specification

Test condition	Continuity
M range	Continuity
Except M range	No continuity



am3uuw0000243

M RANGE SWITCH REMOVAL/INSTALLATION [FS5A-EL]

id051721291500

Note

- The M range switch is built into the selector lever component.

- Replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

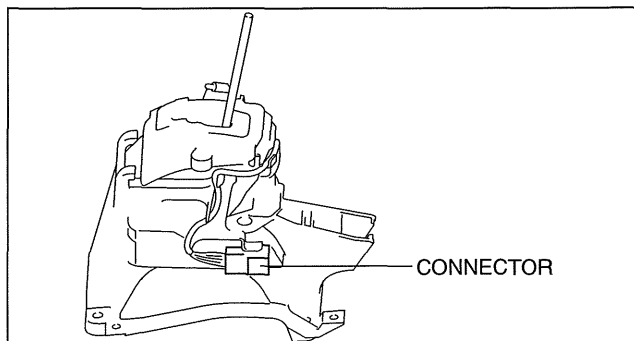
UP SWITCH INSPECTION [FS5A-EL]

id051721310000

- Perform the following procedures.
 - Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - Disconnect the negative battery cable.
 - Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)

AUTOMATIC TRANSAXLE [FS5A-EL]

- (4) Disconnect the selector lever component connector.

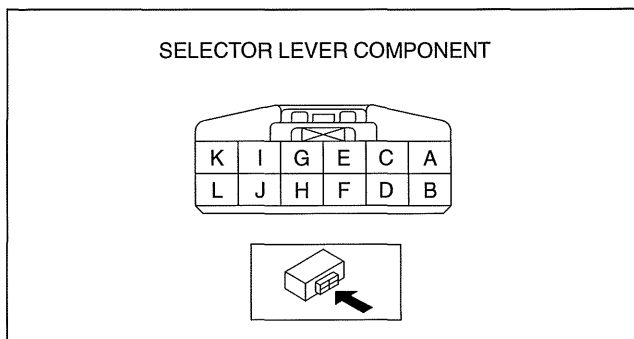


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2. Inspect the continuity between the selector lever component terminals B and H.
- If there is any malfunction, replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

Up switch specification

Test condition	Continuity
Selector lever is in the M range (+) side position	Continuity
Selector lever is not in the M range (+) side position	No continuity



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05-17

UP SWITCH REMOVAL/INSTALLATION [FS5A-EL]

id051721310100

Note

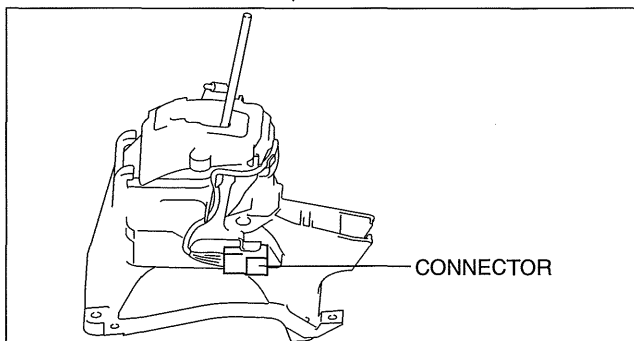
- The up switch is built into the selector lever component.

1. Replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

DOWN SWITCH INSPECTION [FS5A-EL]

id051721310200

1. Perform the following procedures.
- (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (4) Disconnect the selector lever component connector.



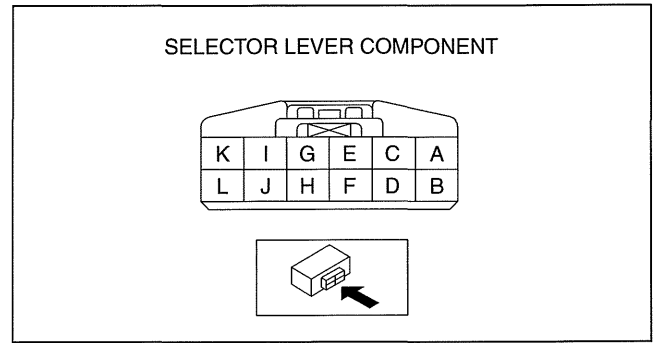
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AUTOMATIC TRANSAXLE [FS5A-EL]

2. Inspect the continuity between the selector lever component terminals C and H.
 - If there is any malfunction, replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

Up switch specification

Test condition	Continuity
Selector lever is in the M range (-) side position	Continuity
Selector lever is not in the M range (-) side position	No continuity



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DOWN SWITCH REMOVAL/INSTALLATION [FS5A-EL]

id051721310300

Note

- The down switch is built into the selector lever component.

1. Replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL]

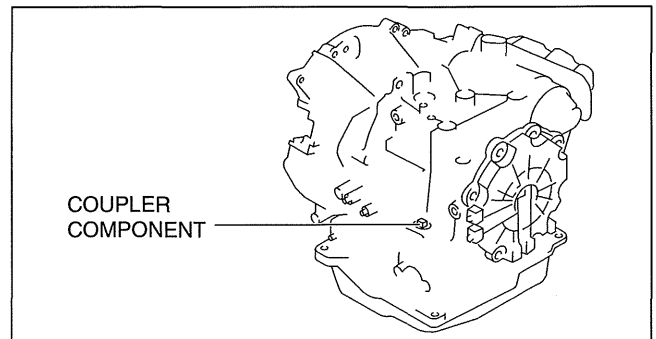
id051721292100

Caution

- **Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.**

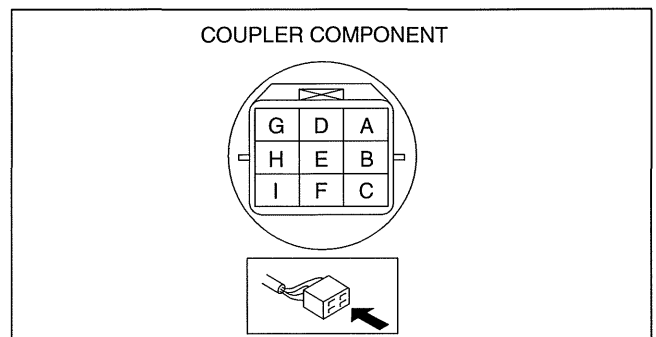
On-Vehicle Inspection

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (4) Disconnect the coupler component connector.



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2. Measure the resistance between the coupler component terminals E and H.
 - If there is any malfunction, replace the TFT sensor. (See 05-17-21 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL].)



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AUTOMATIC TRANSAXLE [FS5A-EL]

TFT sensor specification

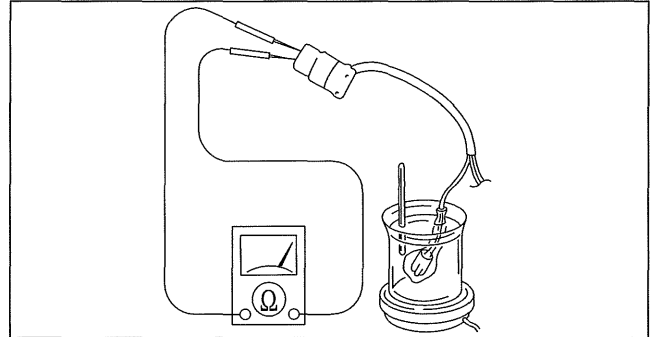
ATF temperature (°C{°F})	Resistance (kilohm)
-20 {-4}	236—324
0 {32}	84.3—110
20 {68}	33.5—42.0
40 {104}	14.7—17.9
60 {140}	7.08—8.17
80 {176}	3.61—4.15
100 {212}	1.96—2.24
120 {248}	1.13—1.28
130 {266}	0.87—0.98

Off-Vehicle Inspection

- Place the TFT sensor and a thermometer in ATF as shown, and heat the ATF gradually.

Warning

- A hot ATF and beaker can cause severe burns. Do not touch them.

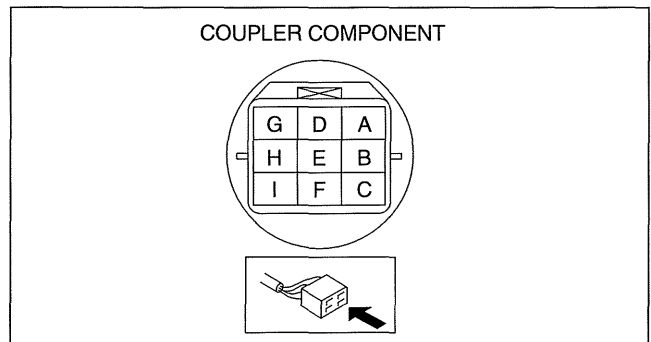


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- Measure the resistance between the coupler component terminals E and H.
 - If there is any malfunction, replace the TFT sensor. (See 05-17-21 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL].)

TFT sensor specification

ATF temperature (°C{°F})	Resistance (kilohm)
-20 {-4}	236—324
0 {32}	84.3—110
20 {68}	33.5—42.0
40 {104}	14.7—17.9
60 {140}	7.08—8.17
80 {176}	3.61—4.15
100 {212}	1.96—2.24
120 {248}	1.13—1.28
130 {266}	0.87—0.98



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TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [FS5A-EL]

id051721292200

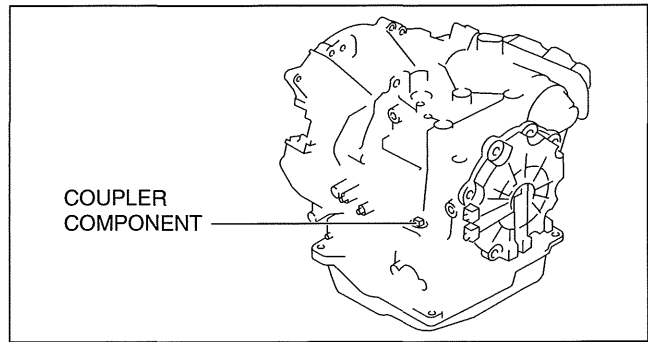
Warning

- A hot transaxle and ATF can cause severe burns. Turn off the engine and wait until they are cool.

- Remove the primary control valve body.
 - Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - Disconnect the negative battery cable.
 - Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - Clean the transaxle exterior throughout with a steam cleaner or cleaning solvents.
 - Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
 - Remove the oil pan.
 - Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)

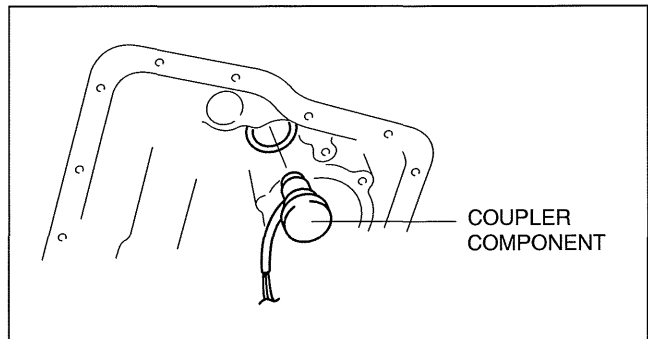
AUTOMATIC TRANSAXLE [FS5A-EL]

- (8) Disconnect the coupler component connector.



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2. Remove the coupler component from transaxle case.
3. Remove the O-ring from the coupler component.
4. Install the primary control valve body.
 - (1) Apply ATF to a new O-ring and install it on the coupler component.
 - (2) Install the coupler component to transaxle case.
 - (3) Connect the coupler component connector.
 - (4) Install the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)



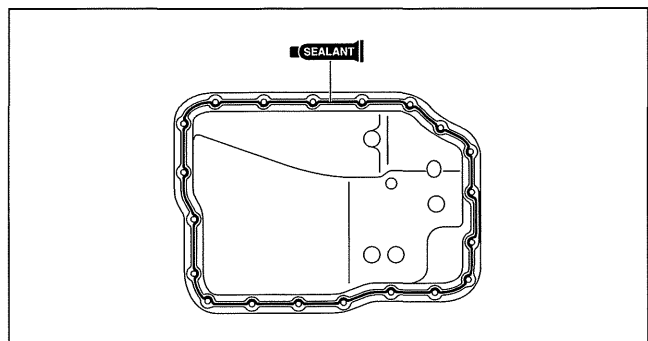
am6xuw000195

5. Apply a light coat of silicon sealant (TB1217E) to the contact surfaces of the oil pan and transaxle case.

Caution

- If any old sealant gets into the transaxle during installation of the oil pan, trouble may occur in the transaxle case and oil pan, and clean with cleaning fluids.

6. Install the oil pan before the applied sealant starts to harden.



am6xuw000195

Tightening torque

6—8 N·m {62—81 kgf·cm, 54—70 in·lbf}

7. Add ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
8. Install the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
9. Connect the negative battery cable.
10. Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
11. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)

OIL PRESSURE SWITCH INSPECTION [FS5A-EL]

id051721292300

Caution

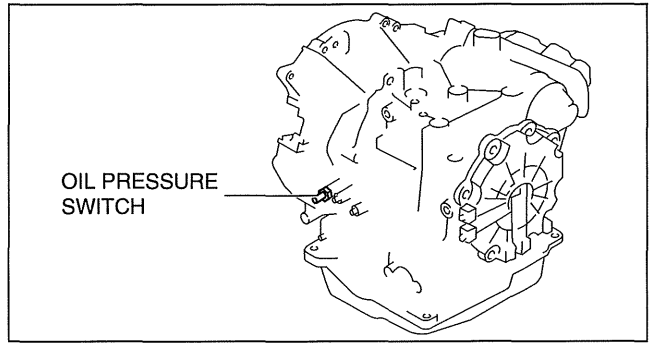
- Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.

On-Vehicle Inspection

1. Perform the following procedures.
 - (1) Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

AUTOMATIC TRANSAXLE [FS5A-EL]

- (2) Disconnect the oil pressure switch connector.
2. Start the engine.

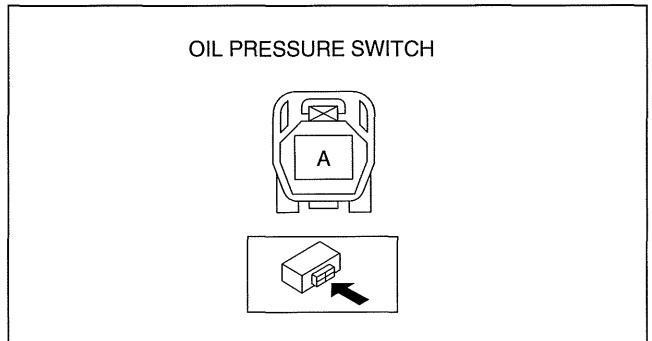


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3. Inspect the continuity between the oil pressure switch terminal A and body GND.
 - If there is any malfunction, replace the oil pressure switch. (See 05-17-24 OIL PRESSURE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)

Oil pressure switch specification

Test Condition	Continuity
In P position	No continuity
In R position	No continuity
In N position	No continuity
In D range	Continuity

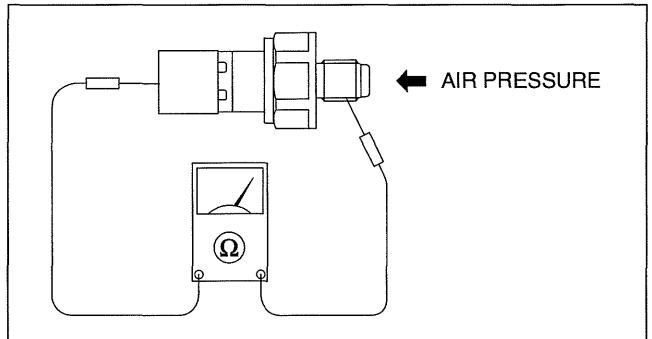


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05-17

Off-Vehicle Inspection

1. Apply air pressure at 400—440 kPa {4.08—4.48 kgf/cm², 58.1—63.8 psi} as shown in the figure.

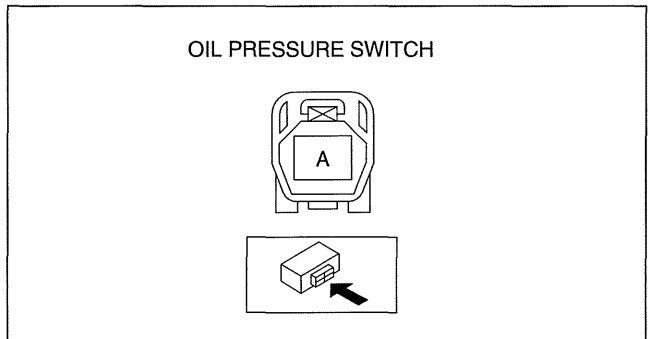


am8rrw00002346

2. Inspect continuity between the oil pressure switch terminal A and screw part.
 - If there is any malfunction, replace the oil pressure switch. (See 05-17-24 OIL PRESSURE SWITCH REMOVAL/INSTALLATION [FS5A-EL].)

Oil pressure switch specification

Test Condition	Continuity
Applying air pressure	No continuity
Applying no air pressure	Continuity



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AUTOMATIC TRANSAXLE [FS5A-EL]

OIL PRESSURE SWITCH REMOVAL/INSTALLATION [FS5A-EL]

id051721292400

Warning

- A hot transaxle and ATF can cause severe burns. Turn off the engine and wait until they are cool.

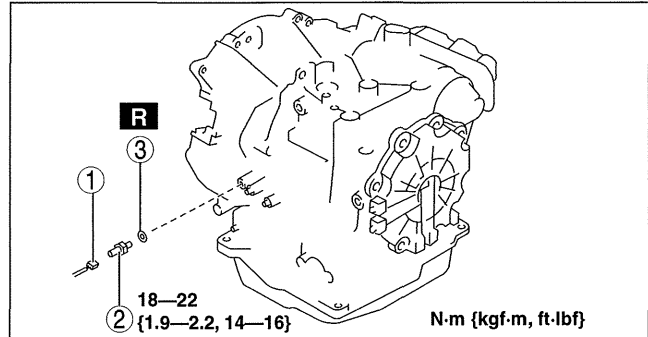
1. Perform the following procedures.

- (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- (2) Disconnect the negative battery cable.
- (3) Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)

2. Remove in the order indicated in the table.

1	Connector
2	Oil pressure switch
3	Washer

3. Install in the reverse order of removal.



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INPUT/TURBINE SPEED SENSOR INSPECTION [FS5A-EL]

id051721292500

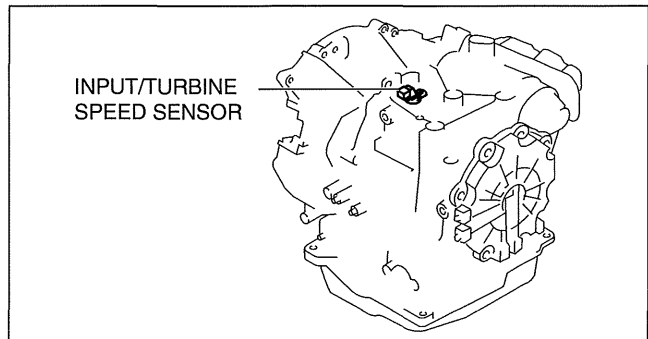
Caution

- Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.

On-Vehicle Inspection

1. Perform the following procedures.

- (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- (2) Disconnect the negative battery cable.
- (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
- (4) Disconnect the input/turbine speed sensor connector.

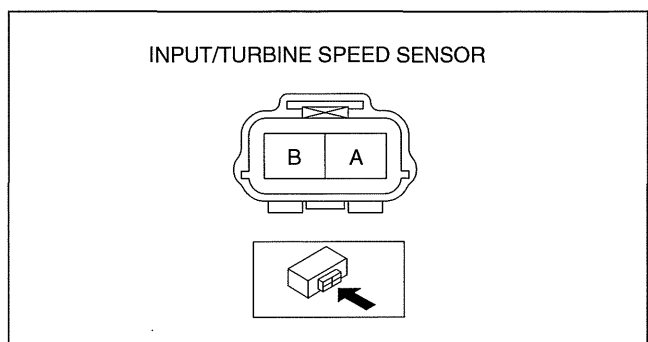


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2. Measure the resistance between the input/turbine speed sensor terminals A and B.

- If there is any malfunction, replace the input/turbine speed sensor. (See 05-17-25 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION [FS5A-EL].)

Input/turbine speed sensor specification
250—600 ohms



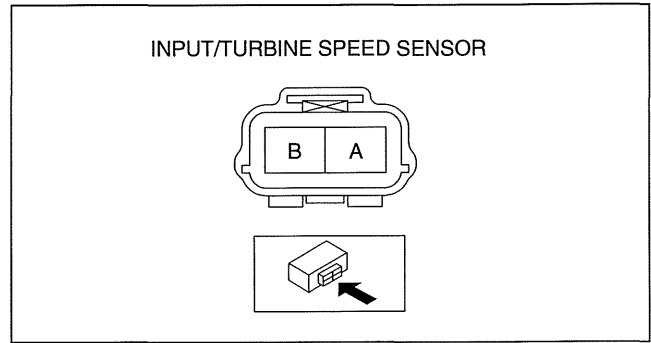
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AUTOMATIC TRANSAXLE [FS5A-EL]

Off-Vehicle Inspection

1. Measure the resistance between the input/turbine speed sensor terminals A and B.
 - If there is any malfunction, replace the input/turbine speed sensor. (See 05-17-25 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION [FS5A-EL].)

Input/turbine speed sensor specification
250—600 ohms



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INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION [FS5A-EL]

id051721292600

Caution

- Always use a new bolt. If the removed input/turbine speed sensor installation bolt is reused, it may cause oil leakage.
- A sealant coating is applied to the input/turbine speed sensor installation bolt to prevent oil leakage from the installation bolt hole which passes through the component.

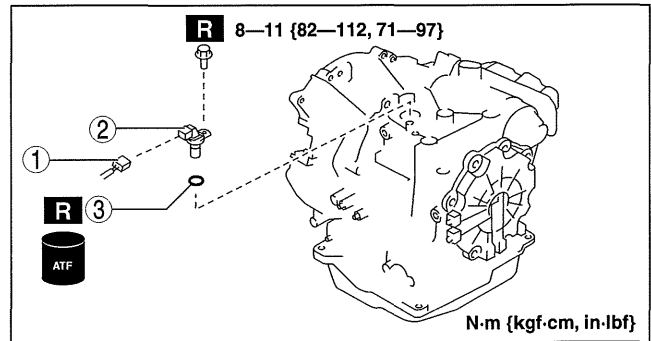
05-17

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

2. Remove in the order indicated in the table.

1	Connector
2	Input/turbine speed sensor
3	O-ring

3. Install in the reverse order of removal.



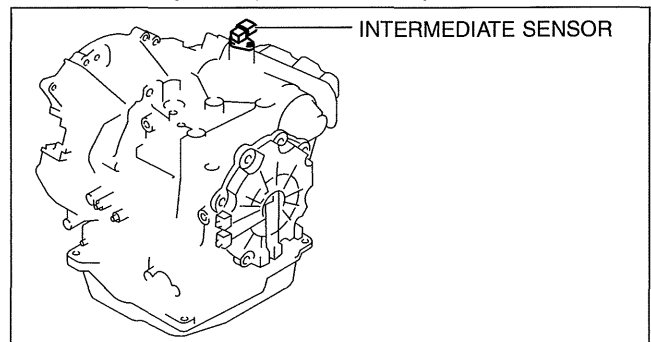
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INTERMEDIATE SENSOR INSPECTION [FS5A-EL]

id051721292700

On-Vehicle Inspection

1. Inspect the power supply circuit for the intermediate sensor.
 - (1) Set the battery component (ex: battery, battery tray and PCM component) out of the way.
 - (2) Disconnect the intermediate sensor connector.
 - (3) Switch the ignition to ON (engine off).



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AUTOMATIC TRANSAXLE [FS5A-EL]

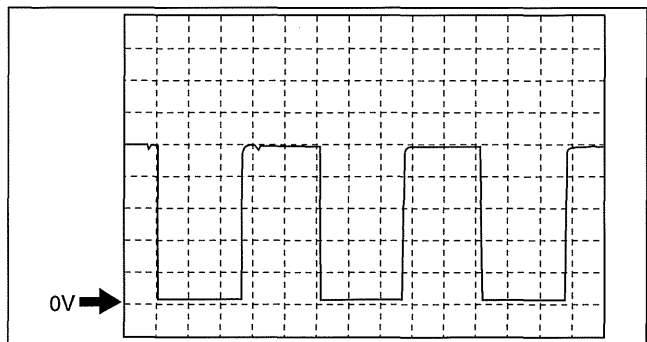
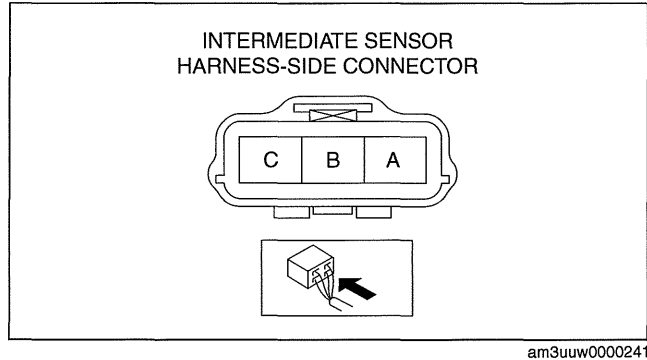
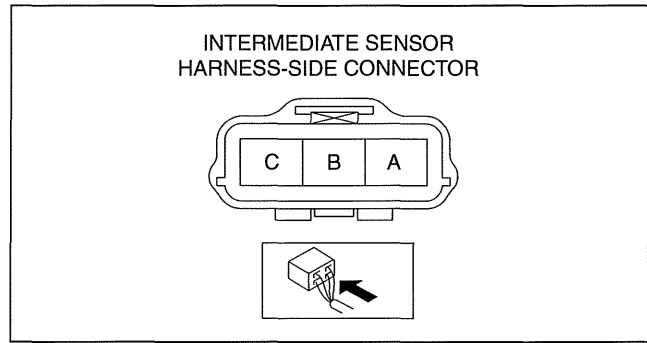
- (4) Measure the voltage at intermediate sensor connector terminal A (harness-side).
 - If there is any malfunction, repair wiring harness between intermediate sensor and TCM.

Intermediate sensor specification 4.5—5.5 V

- (5) Switch the ignition to off.
 - (6) Connect the intermediate sensor connector.
2. Inspect the GND circuit for the intermediate sensor.
 - (1) Switch the ignition to off.
 - (2) Measure the voltage at intermediate sensor connector terminal C (harness-side).
 - If there is any malfunction, repair wiring harness between intermediate sensor and TCM.

Intermediate sensor specification Below 1.0 V

3. Inspect the signal circuit for the intermediate sensor.
 - (1) Connect the oscilloscope to the following TCM connector terminals and set it as below.
 - (+) lead: TCM terminal AC
 - (-) lead: battery negative terminal
 - Oscilloscope setting: 1 V/DIV (Y), 2 ms/DIV (X), DC range
 - (2) Start the engine.
 - (3) Measure the wave form when vehicle speed at 30 km/h {19 mph}.
 - If there is any malfunction, replace the intermediate sensor. (See 05-17-26 INTERMEDIATE SENSOR REMOVAL/INSTALLATION [FS5A-EL].)



INTERMEDIATE SENSOR REMOVAL/INSTALLATION [FS5A-EL]

id051721292800

Caution

- If foreign materials are stuck to the sensor, disturbance by magnetic flux can cause sensor output to be abnormal and thereby negatively affect control. Make sure that foreign materials such as iron filings are not stuck to the sensor during installation.

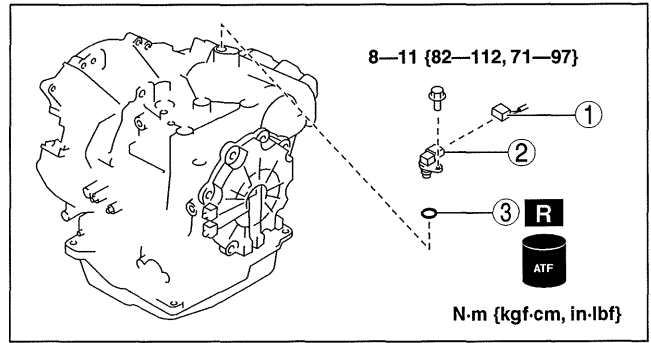
1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)

AUTOMATIC TRANSAXLE [FS5A-EL]

2. Remove in the order indicated in the table.

1	Connector
2	Intermediate sensor
3	O-ring

3. Install in the reverse order of removal.



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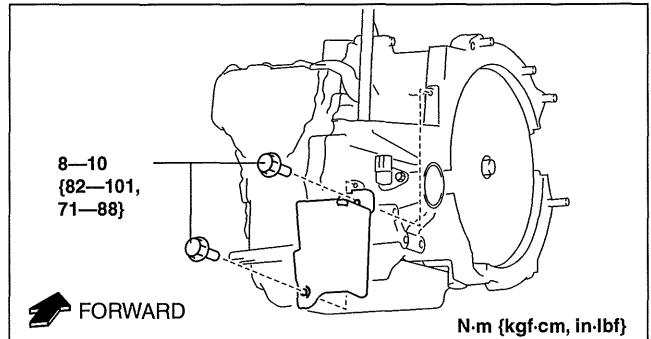
VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL]

id051721292900

On-Vehicle Inspection

1. Inspect the power supply circuit for the VSS.

(1) Remove the insulator from the transaxle.

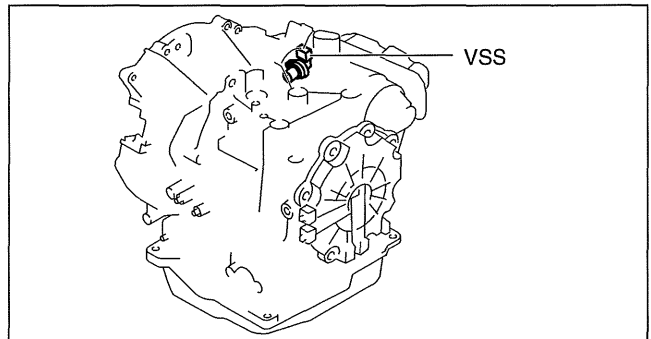


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(2) Disconnect the VSS connector.

(3) Switch the ignition to ON (engine off).



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(4) Measure the voltage at VSS connector terminal A (harness-side).

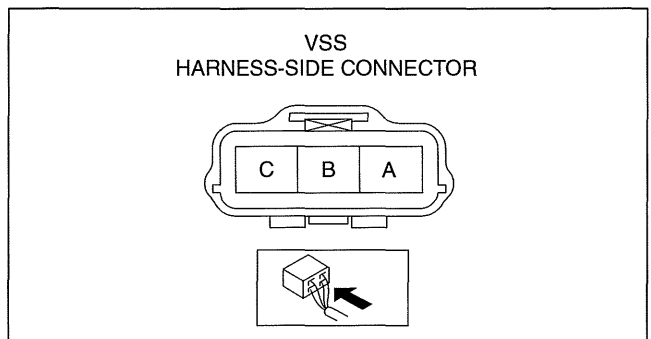
- If there is any malfunction, repair wiring harness between VSS and TCM.

VSS specification

4.5—5.5 V

(5) Switch the ignition to off.

(6) Connect the VSS connector.



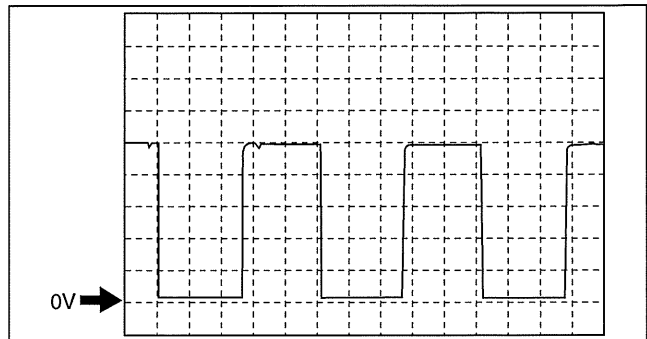
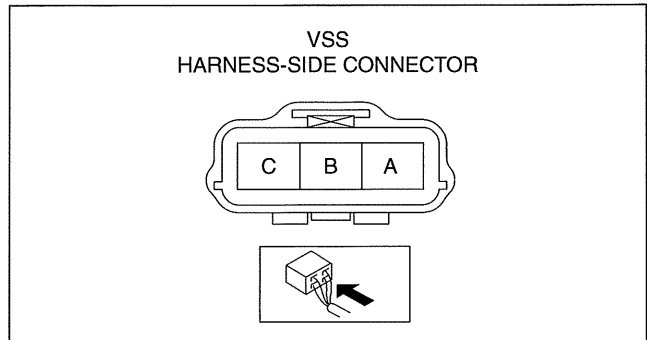
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AUTOMATIC TRANSAXLE [FS5A-EL]

2. Inspect the GND circuit for the VSS.
 - (1) Switch the ignition to off.
 - (2) Measure the voltage at intermediate sensor connector terminal C (harness-side).
 - If there is any malfunction, repair wiring harness between intermediate sensor and TCM.

Intermediate sensor specification Below 1.0 V

3. Inspect the signal circuit for the VSS.
 - (1) Connect the oscilloscope to the following TCM connector terminals and set it as below.
 - (+) lead: TCM terminal Z
 - (-) lead: battery negative terminal
 - Oscilloscope setting: 1 V/DIV (Y), 2 ms/DIV (X), DC range
 - (2) Start the engine.
 - (3) Measure the wave form when vehicle speed at 30 km/h {19 mph}.
 - If there is any malfunction, replace the VSS. (See 05-17-28 VEHICLE SPEED SENSOR (VSS) REMOVAL/ INSTALLATION [FS5A-EL].)

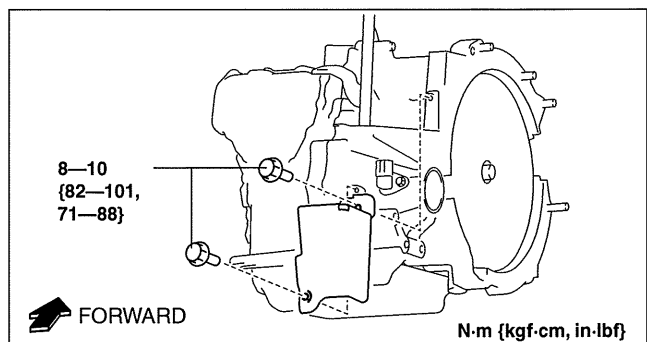


VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION [FS5A-EL]

Caution

- If foreign materials are stuck to the sensor, disturbance by magnetic flux can cause sensor output to be abnormal and thereby negatively affect control. Make sure that foreign materials such as iron filings are not stuck to the sensor during installation.

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the insulator from the transaxle.

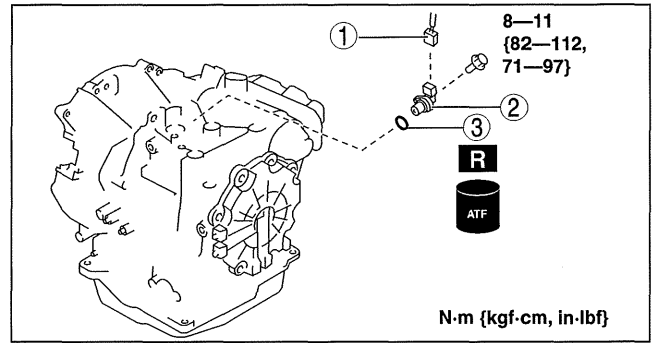


AUTOMATIC TRANSAXLE [FS5A-EL]

2. Remove in the order indicated in the table.

1	Connector
2	VSS
3	O-ring

3. Install in the reverse order of removal.



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SOLENOID VALVE INSPECTION [FS5A-EL]

id051721293100

Caution

- Water or foreign objects entering the connector can cause a poor connection or corrosion. Be sure not to drop water or foreign objects on the connector when disconnecting it.

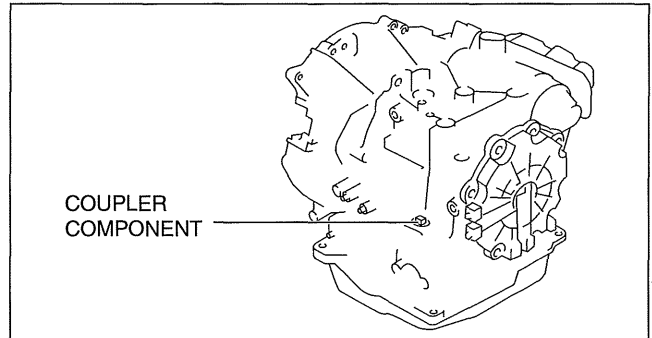
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Primary Control Valve Body

On-vehicle inspection

1. Perform the following procedures.

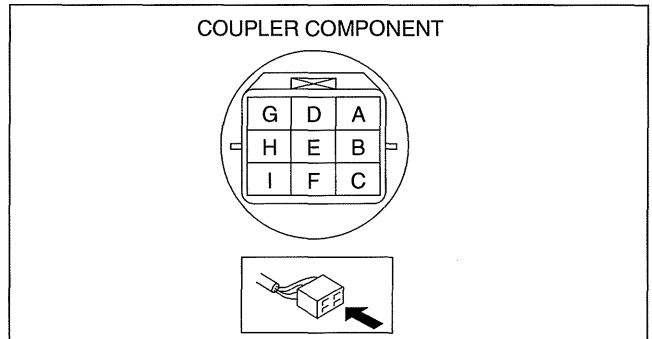
- (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- (2) Disconnect the negative battery cable.
- (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
- (4) Disconnect the coupler component connector.



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2. Measure the resistance between the coupler component terminals.

- If there is any malfunction, inspect the coupler component for continuity.
- If coupler component has no malfunction, perform the "Off-vehicle inspection". (See 05-17-30 Off-Vehicle inspection.)



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Solenoid valve specification

Solenoid valve	Terminal	Resistance (ohm)
Pressure control solenoid A	D⇔I	2.4—7.3
Shift solenoid A	A⇔GND	1.0—4.2
Shift solenoid B	C⇔GND	1.0—4.2
Shift solenoid C	G⇔GND	1.0—4.2
Shift solenoid D	B⇔GND	10.9—26.2
Shift solenoid E	F⇔GND	10.9—26.2

AUTOMATIC TRANSAXLE [FS5A-EL]

Operating inspection

Caution

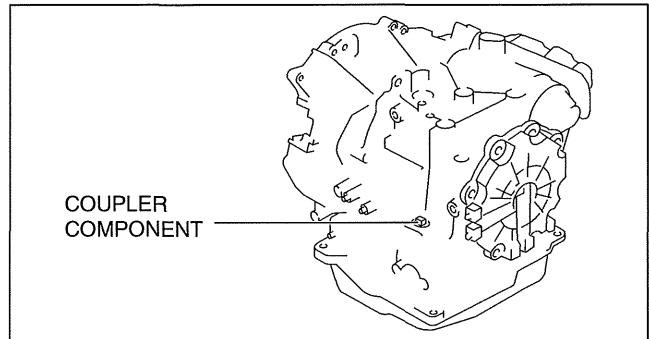
- Do not apply battery positive voltage to terminals for more than 3 s.

Note

- Because the operation sound of the solenoid valve is small, perform inspection in a quiet place.

1. Perform the following procedures.

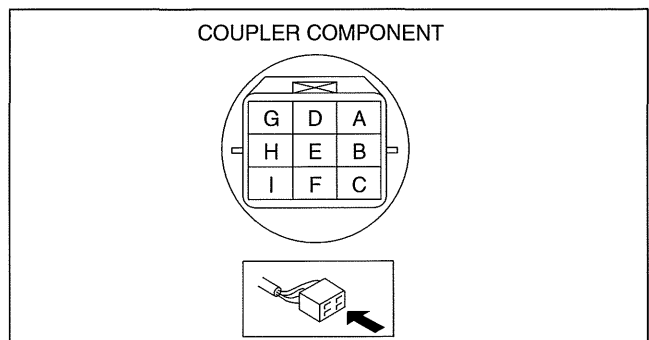
- (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- (2) Disconnect the negative battery cable.
- (3) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
- (4) Disconnect the coupler component connector.



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2. Apply battery positive voltage to the coupler component terminals A, B, C, F or G and battery negative voltage to GND, and verify that operating sound is heard from solenoid valve.

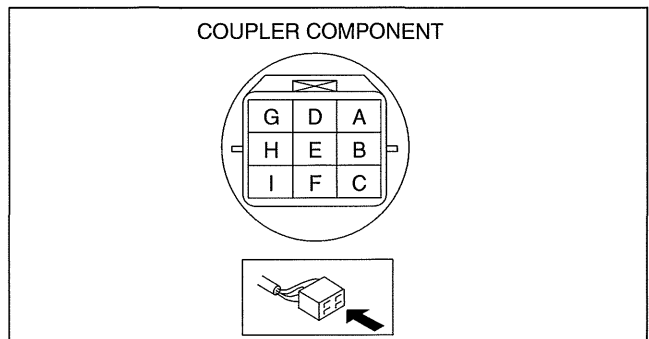
- If the operation sound is not heard, inspect the coupler component for continuity.
- If coupler component has no malfunction, perform the "Off-vehicle inspection". (See 05-17-30 Off-Vehicle inspection.)



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3. Apply battery positive voltage to the coupler component terminal D and battery negative voltage to terminal I, and verify that operating sound is heard from solenoid valve.

- If the operation sound is not heard, inspect the coupler component for continuity.
- If coupler component has no malfunction, perform the "Off-vehicle inspection". (See 05-17-30 Off-Vehicle inspection.)



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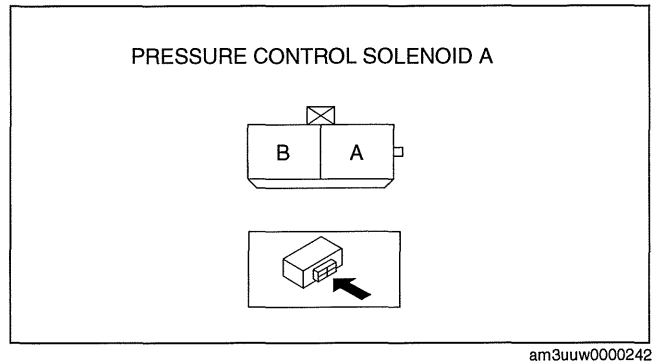
Off-Vehicle inspection

1. Measure the resistance between the solenoid valve terminals.

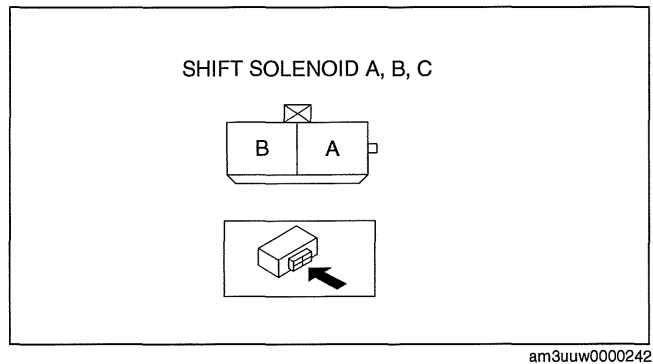
- If there is any malfunction, replace the solenoid valve. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)

AUTOMATIC TRANSAXLE [FS5A-EL]

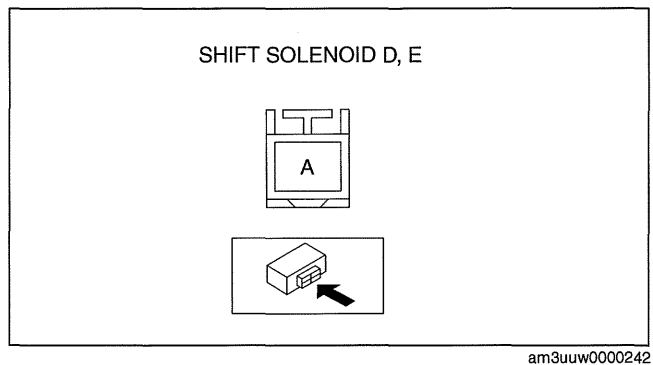
Pressure control solenoid A specification 2.4—7.3 ohms



Shift solenoid A, B, C specification 1.0—4.2 ohms



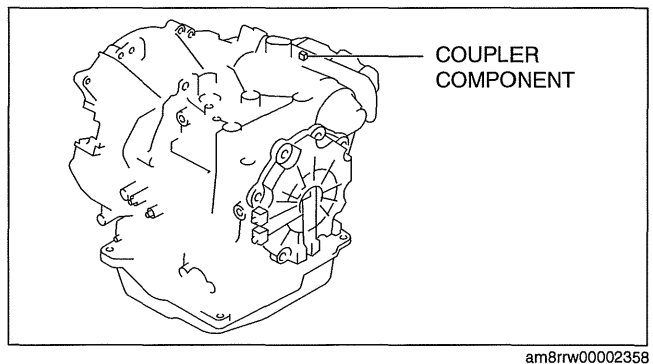
Shift solenoid D, E specification 10.9—26.2 ohms



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Secondary Control Valve Body On-vehicle inspection

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (4) Disconnect the coupler component connector.

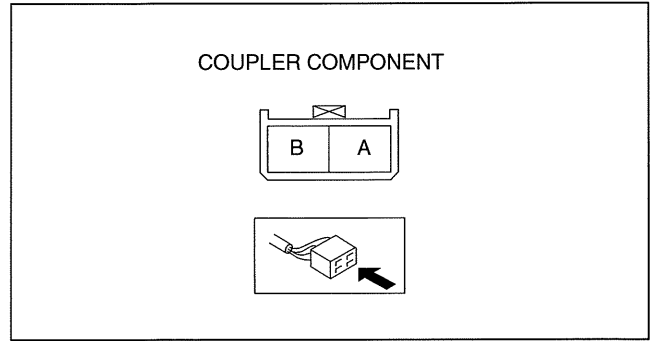


AUTOMATIC TRANSAXLE [FS5A-EL]

2. Measure the resistance between the coupler component terminals A and B.
 - If there is any malfunction, inspect the coupler component for continuity.
 - If coupler component has no malfunction, perform the "Off-vehicle inspection". (See 05-17-33 Off-Vehicle inspection.)

Solenoid valve specification

Solenoid valve	Terminal	Resistance (ohm)
Pressure control solenoid B	A↔GND	1.0—4.2
Shift solenoid F	B↔GND	8.4—21.8



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Operating inspection

Caution

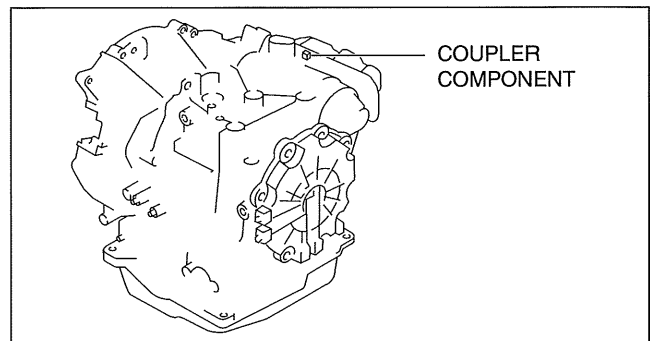
- Do not apply battery position voltage to terminals for more than 3 s.

Note

- Because the operation sound of the solenoid valve is small, perform inspection in a quiet place.

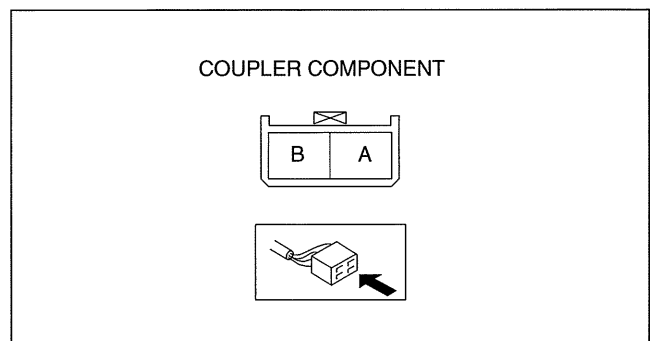
1. Perform the following procedures.

- (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- (2) Disconnect the negative battery cable.
- (3) Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- (4) Disconnect the coupler component connector.



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2. Apply battery positive voltage to the coupler component terminals A, B and battery negative voltage to GND, and verify that operating sound is heard from solenoid valve.
 - If the operation sound is not heard, inspect the coupler component for continuity.
 - If coupler component has no malfunction, perform the "Off-vehicle inspection". (See 05-17-33 Off-Vehicle inspection.)



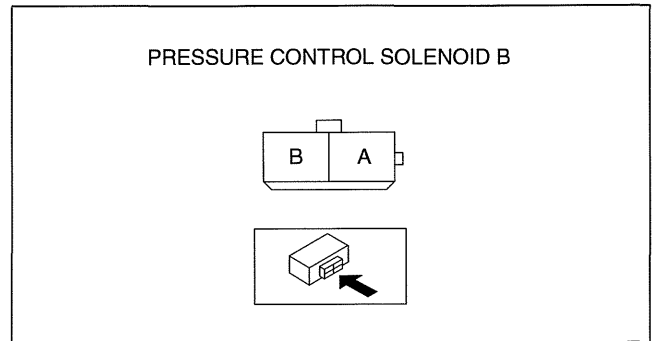
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AUTOMATIC TRANSAXLE [FS5A-EL]

Off-Vehicle inspection

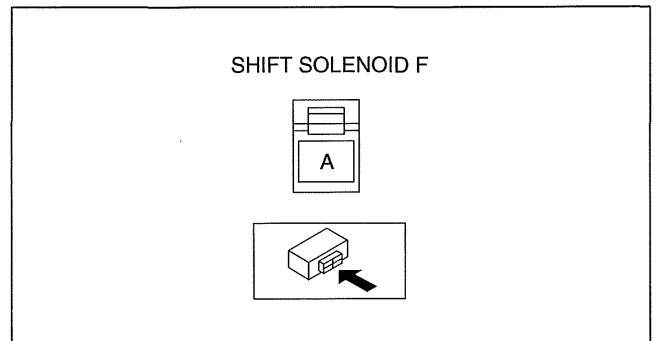
1. Measure the resistance between the solenoid valve terminals.
 - If there is any malfunction, replace the solenoid valve. (See 05-17-33 SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL].)

Pressure control solenoid B specification 1.0—4.2 ohms



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Shift solenoid F specification 8.4—21.8 ohms



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SOLENOID VALVE REMOVAL/INSTALLATION [FS5A-EL]

id051721293200

Warning

- A hot transaxle and ATF can cause severe burns. Turn off the engine and wait until they are cool.

Primary Control Valve Body

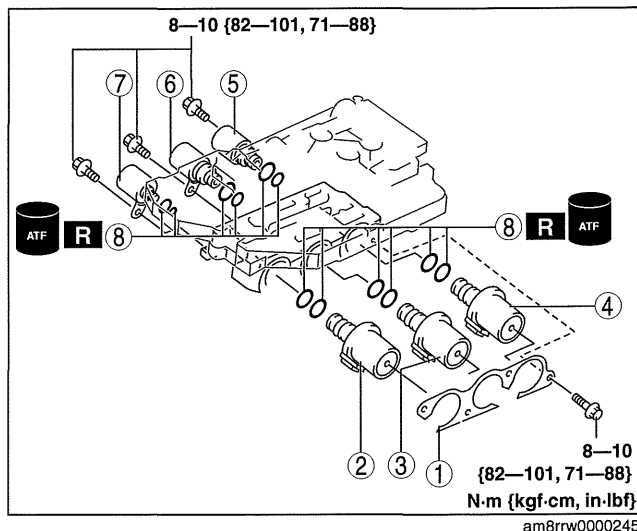
1. Remove the primary control valve body.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (4) Clean the transaxle exterior throughout with a steam cleaner or cleaning solvents.
 - (5) Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
 - (6) Remove the oil pan. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)
 - (7) Remove the primary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)

AUTOMATIC TRANSAXLE [FS5A-EL]

2. Remove in the order indicated in the table.

1	Bracket
2	Shift solenoid A
3	Shift solenoid C
4	Shift solenoid B
5	Shift solenoid E
6	Shift solenoid D
7	Pressure control solenoid A
8	O-ring

3. Install in the reverse order of removal.
4. Add ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)
6. Perform the "Road Test". (See 05-17-7 ROAD TEST [FS5A-EL].)

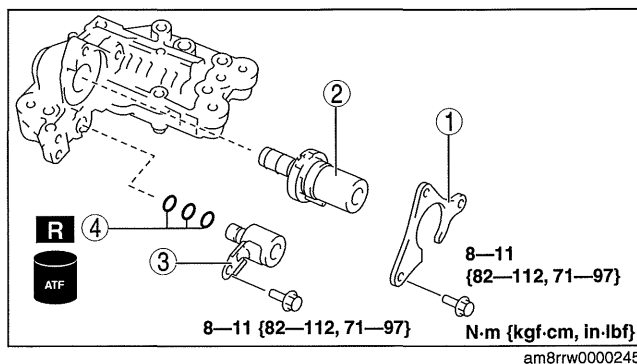


Secondary Control Valve Body

1. Remove the secondary control valve body.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (4) Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
 - (5) Clean the transaxle exterior throughout with a steam cleaner or cleaning solvents.
 - (6) Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
 - (7) Remove the oil cover. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)
 - (8) Remove the secondary control valve body. (See 05-17-52 CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL].)
2. Remove in the order indicated in the table.

1	Bracket
2	Pressure control solenoid B
3	Shift solenoid F
4	O-ring

3. Install in the reverse order of removal.
4. Add ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
5. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)
6. Perform the "Road Test". (See 05-17-7 ROAD TEST [FS5A-EL].)



TCM INSPECTION [FS5A-EL]

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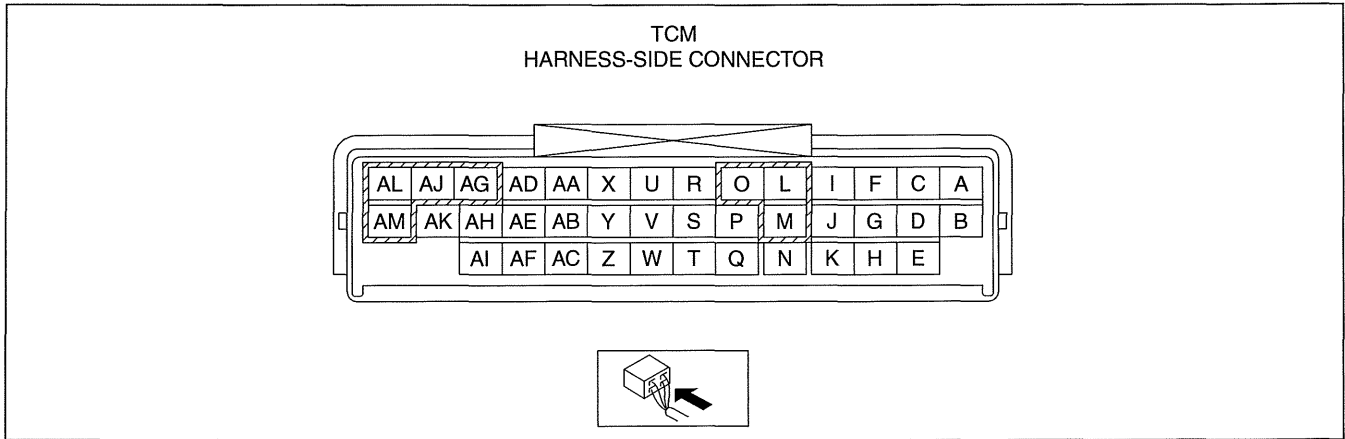
Note

- The TCM terminal voltage can vary with conditions when measuring and changes due to age deterioration on the vehicle, causing false diagnosis. Therefore a comprehensive inspection of the input and output systems, and the TCM is necessary to determine where the malfunction occurs.

1. Connect the voltmeter (-) lead to body GND.
2. Measure the voltage at each terminal.
 - If any incorrect voltage is detected, inspect the related system(s), wiring harnesses and connector(s) referring to the "Inspection Item" column in the "TCM Terminal Voltage".

AUTOMATIC TRANSAXLE [FS5A-EL]

TCM Terminal Voltage (Reference)



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Terminal	Connected to	Test Condition	Voltage (V)	Inspection Item
A	—	—	—	—
B	CAN module	Because this terminal is for CAN, no valid determination of terminal voltage is possible.		
C	—	—	—	—
D	—	—	—	—
E	CAN module	Because this terminal is for CAN, no valid determination of terminal voltage is possible.		
F	Down switch	Selector lever down-shift position	Below 1.0	<ul style="list-style-type: none"> Down switch (See 05-17-19 DOWN SWITCH INSPECTION [FS5A-EL].) Related harness
		Except selector lever down-shift position	B+	
G	Up switch	Selector lever up-shift position	Below 1.0	<ul style="list-style-type: none"> Up switch (See 05-17-18 UP SWITCH INSPECTION [FS5A-EL].) Related harness
		Except selector lever up-shift position	B+	
H	—	—	—	—
I	AT main relay	Ignition switch off	Below 1.0	<ul style="list-style-type: none"> AT main relay (See 09-21-17 RELAY INSPECTION.) Related harness
		Ignition switch ON	B+	
J	Battery	Under any condition	B+	<ul style="list-style-type: none"> Battery (See 01-17B-4 BATTERY INSPECTION [LF, L5].) Related harness
K	M range switch	M range	Below 1.0	<ul style="list-style-type: none"> M range switch (See 05-17-18 M RANGE SWITCH INSPECTION [FS5A-EL].) Related harness
		Except M range	B+	
L	GND	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related harness
M	GND	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related harness
N	—	—	—	—
O	AT main relay	Ignition switch off	Below 1.0	<ul style="list-style-type: none"> AT main relay (See 09-21-17 RELAY INSPECTION.) Related harness
		Ignition switch ON	B+	
P	AT main relay	Ignition switch off	Below 1.0	<ul style="list-style-type: none"> AT main relay (See 09-21-17 RELAY INSPECTION.) Related harness
		Ignition switch ON	B+	
Q	—	—	—	—
R	—	—	—	—

AUTOMATIC TRANSAXLE [FS5A-EL]

Terminal	Connected to	Test Condition	Voltage (V)	Inspection Item
S	Oil pressure switch	1GR	Below 1.0	<ul style="list-style-type: none"> Oil pressure switch (See 05-17-22 OIL PRESSURE SWITCH INSPECTION [FS5A-EL].) Related harness
		2GR	Below 1.0	
		3GR	Below 1.0	
		4GR	B+	
		5GR	B+	
T	—	—	—	—
U	TR switch	P position	4.3—4.8	<ul style="list-style-type: none"> TR switch (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) Related harness
		R position	3.8—4.2	
		N position	3.0—3.5	
		D range	2.2—2.7	
		M range	2.2—2.7	
V	TR switch, TFT sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related harness
W	—	—	—	—
X	—	—	—	—
Y	Input/turbine speed sensor (-)	(See 05-17-39 Input/turbine speed sensor.)		<ul style="list-style-type: none"> Input/turbine speed sensor (See 05-17-24 INPUT/TURBINE SPEED SENSOR INSPECTION [FS5A-EL].) Related harness
Z	VSS	(See 05-17-39 VSS.)		<ul style="list-style-type: none"> VSS (See 05-17-27 VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL].) Related harness
AA	TFT sensor	ATF temperature 20 °C	Approx.3.3	<ul style="list-style-type: none"> TFT sensor (See 05-17-20 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION [FS5A-EL].) Related harness
		ATF temperature 65 °C	Approx.1.3	
AB	Input/turbine speed sensor (+)	(See 05-17-39 Input/turbine speed sensor.)		<ul style="list-style-type: none"> Input/turbine speed sensor (See 05-17-24 INPUT/TURBINE SPEED SENSOR INSPECTION [FS5A-EL].) Related harness
AC	Intermediate sensor	(See 05-17-39 Intermediate sensor.)		<ul style="list-style-type: none"> Intermediate sensor (See 05-17-25 INTERMEDIATE SENSOR INSPECTION [FS5A-EL].) Related harness
AD	Pressure control solenoid A (+)	(See 05-17-38 Pressure control solenoid A (+).)		<ul style="list-style-type: none"> Pressure control solenoid A (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
AE	Pressure control solenoid A (-)	(See 05-17-38 Pressure control solenoid A (-).)		<ul style="list-style-type: none"> Pressure control solenoid A (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
AF	—	—	—	—
AG	Shift solenoid A	(See 05-17-37 Shift solenoid A.)		<ul style="list-style-type: none"> Shift solenoid A (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
AH	Shift solenoid D	D range 1GR	Below 1.0	<ul style="list-style-type: none"> Shift solenoid D (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		D range 2GR	Below 1.0	
		D range 3GR	Below 1.0	
		D range 4GR	B+	
		D range 5GR	B+	

AUTOMATIC TRANSAXLE [FS5A-EL]

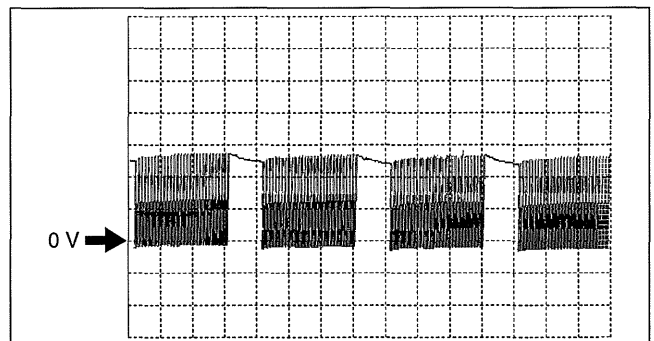
Terminal	Connected to	Test Condition	Voltage (V)	Inspection Item
AI	Shift solenoid F	D range 1GR	B+	<ul style="list-style-type: none"> Shift solenoid F (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		D range 2GR	B+	
		D range 3GR	B+	
		D range 4GR	B+	
		D range 5GR	Below 1.0	
AJ	Shift solenoid B	(See 05-17-37 Shift solenoid B.)		<ul style="list-style-type: none"> Shift solenoid B (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
AK	Shift solenoid E	TCC released	Below 1.0	<ul style="list-style-type: none"> Shift solenoid E (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
		TCC engaged	B+	
AL	Shift solenoid C	(See 05-17-38 Shift solenoid C.)		<ul style="list-style-type: none"> Shift solenoid C (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness
AM	Pressure control solenoid B	(See 05-17-38 Pressure control solenoid B.)		<ul style="list-style-type: none"> Pressure control solenoid B (See 05-17-29 SOLENOID VALVE INSPECTION [FS5A-EL].) Related harness

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Input/Output Wave From (Reference)

Shift solenoid A

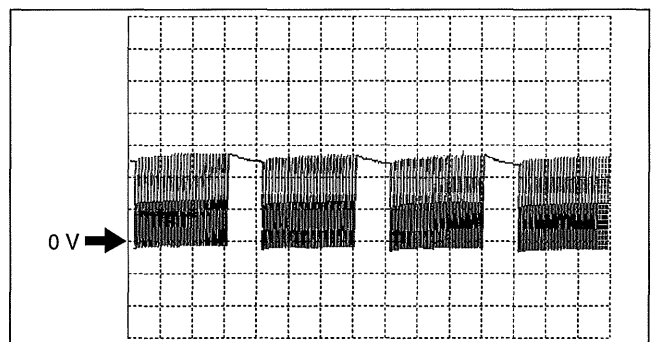
- TCM terminals
AG (+)—body GND (-)
- Oscilloscope setting
5 V/DIV (Y), 5 ms/DIV (X), DC range
- Test Condition
D range 4GR



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Shift solenoid B

- TCM terminals
AJ (+)—body GND (-)
- Oscilloscope setting
5 V/DIV (Y), 5 ms/DIV (X), DC range
- Test Condition
D range 1GR

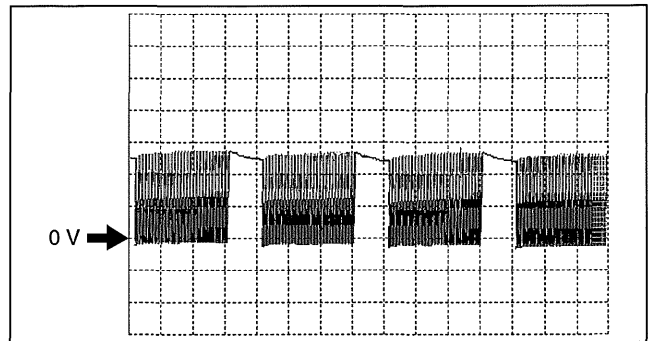


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AUTOMATIC TRANSAXLE [FS5A-EL]

Shift solenoid C

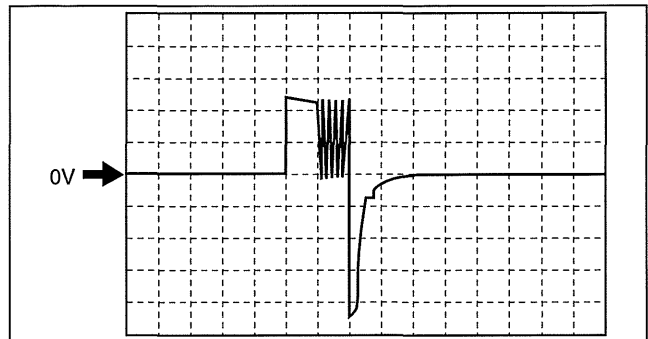
- TCM terminals
AL (+)—body GND (-)
- Oscilloscope setting
5 V/DIV (Y), 5 ms/DIV (X), DC range
- Test Condition
D range 1GR



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Pressure control solenoid B

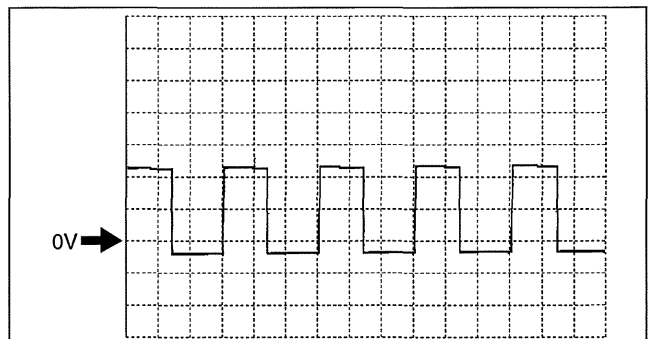
- TCM terminals
AM (+)—body GND (-)
- Oscilloscope setting
5 V/DIV (Y), 5 ms/DIV (X), DC range
- Test Condition
Shifting from 4GR to 5GR or from 5GR to 4GR



aaajjw00001013

Pressure control solenoid A (+)

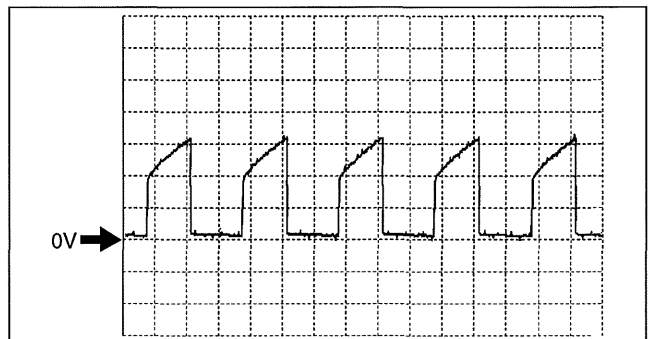
- TCM terminals
AD (+)—body GND (-)
- Oscilloscope setting
5 V/DIV (Y), 1 ms/DIV (X), DC range
- Test Condition
The following conditions are met:
 - Ignition switch ON (engine off)
 - P position
 - Accelerator pedal fully depressed



aaajjw00001014

Pressure control solenoid A (-)

- TCM terminals
AE (+)—body GND (-)
- Oscilloscope setting
200 mV/DIV (Y), 1 ms/DIV (X), DC range
- Test Condition
The following conditions are met:
 - Ignition switch ON (engine off)
 - P position
 - Accelerator pedal fully depressed

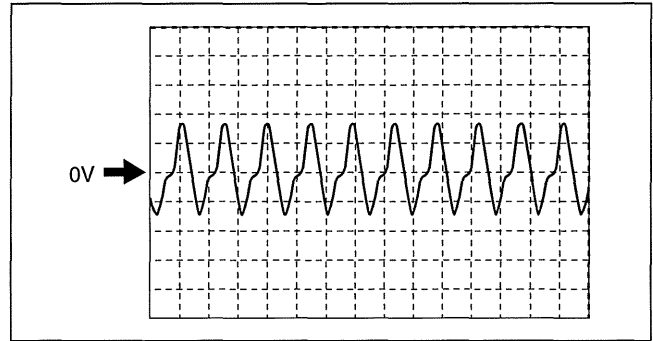


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AUTOMATIC TRANSAXLE [FS5A-EL]

Input/turbine speed sensor

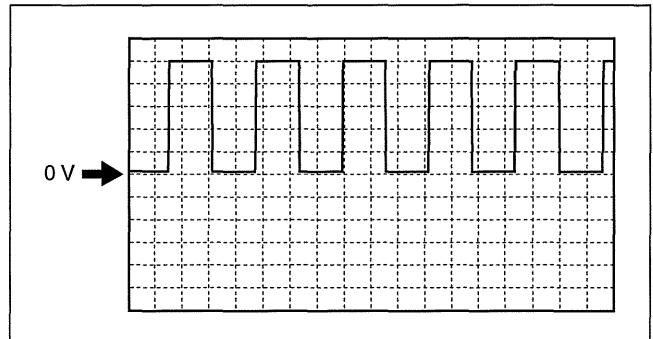
- TCM terminals
AB (+)—Y (-)
- Oscilloscope setting
1 V/DIV (Y), 2 ms/DIV (X), DC range
- Test Condition
Idle at P position after warm-up



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Intermediate sensor

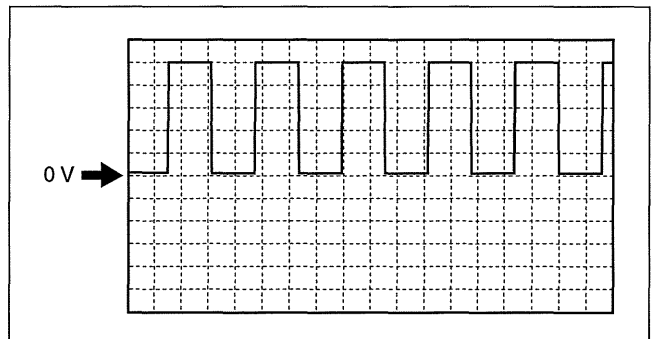
- TCM terminals
AC (+)—body GND (-)
- Oscilloscope setting
1 V/DIV (Y), 2.5 ms/DIV (X), DC range
- Test Condition
Vehicle speed at 30 km/h {19 mph}.



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VSS

- TCM terminals
Z (+)—body GND (-)
- Oscilloscope setting
1 V/DIV (Y), 2.5 ms/DIV (X), DC range
- Test Condition
Vehicle speed at 30 km/h {19 mph}.



ampjjw00005642

TCM REMOVAL/INSTALLATION [FS5A-EL]

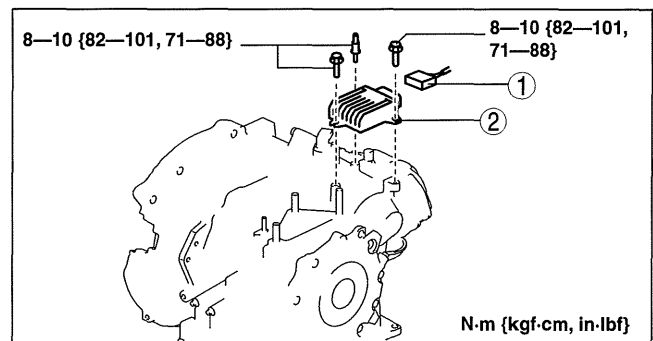
id051721294000

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)

2. Remove in the order indicated in the table.

1	Connector
2	TCM

3. Install in the reverse order of removal.



N·m {kgf·cm, in·lbf}

am3uuw0000245

AUTOMATIC TRANSAXLE [FS5A-EL]

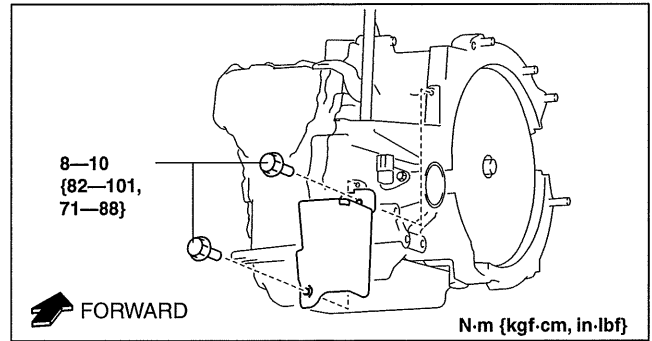
AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL]

id051721294100

Caution

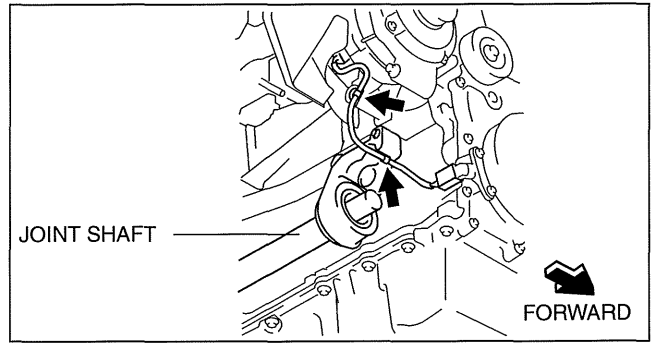
- **Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.**

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover No. 2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Remove the front splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
5. Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
6. Disconnect and/or remove the following parts in the engine compartment.
 - (1) Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
 - (3) Disconnect the selector cable from the transaxle.
 - (4) Remove the insulator from the transaxle.
 - (5) Disconnect the connectors and GND wiring harness from the transaxle.
 - (6) Remove the bracket from the transaxle.
 - (7) Disconnect the oil hoses from the transaxle.
 - (8) Remove the water-cooled oil cooler from the transaxle with the hose connected. (See 05-17-47 OIL COOLER REMOVAL/INSTALLATION [FS5A-EL].)
 - (9) Remove the filler tube from the transaxle.
 - (10) Remove the starter. (See 01-19B-2 STARTER REMOVAL/INSTALLATION [LF, L5].)
7. Disconnect and/or remove the following parts related to the suspension and axle.
 - (1) Remove the front tires. (See 03-10-1 GENERAL PROCEDURES (FRONT AND REAR AXLES).)
 - (2) Disconnect the ABS wheel-speed sensors from the steering knuckles. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
 - (3) Disconnect the clip securing the brake hose (LH) from the shock absorber. (See 04-11-31 BRAKE HOSE (FRONT) REMOVAL/INSTALLATION [LF, L5].)
 - (4) Disconnect the brake hose (LH) from the shock absorber. (See 04-11-31 BRAKE HOSE (FRONT) REMOVAL/INSTALLATION [LF, L5].)
 - (5) Disconnect the tie-rod end ball joints from the steering knuckles. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
 - (6) Disconnect the front lower arms from the steering knuckles. (See 02-13-8 FRONT LOWER ARM REMOVAL/INSTALLATION.)
 - (7) Disconnect the stabilizer control links from the shock absorbers. (See 02-13-3 FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.)
 - (8) Disconnect the drive shaft (LH) from the transaxle. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)
 - (9) Disconnect the drive shaft (RH) from the joint shaft. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)



AUTOMATIC TRANSAXLE [FS5A-EL]

- (10) Disconnect the clips to set the CKP sensor harness out of the way to prevent interference with the joint shaft. (L5).
- (11) Remove the joint shaft. (See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)

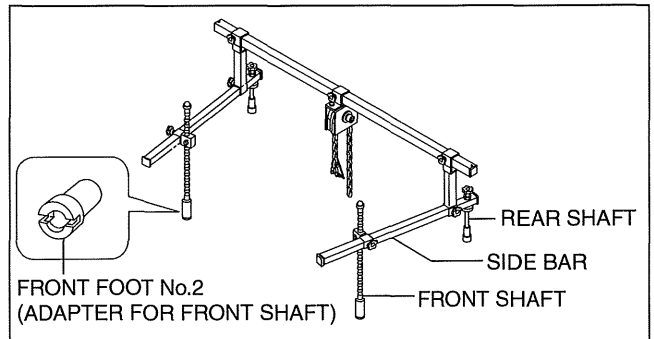


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8. Install the SST using the following procedures.

Caution

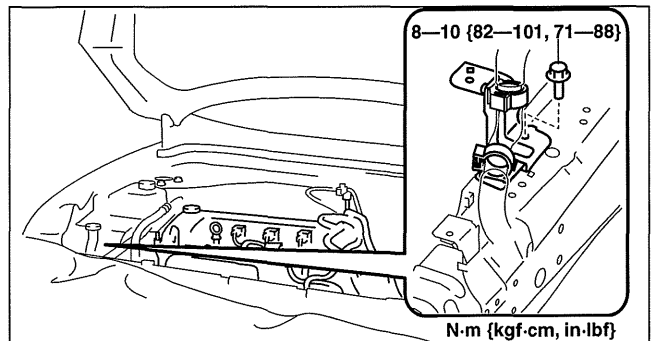
- Refer to the SST instruction manual for the basic handling procedure.



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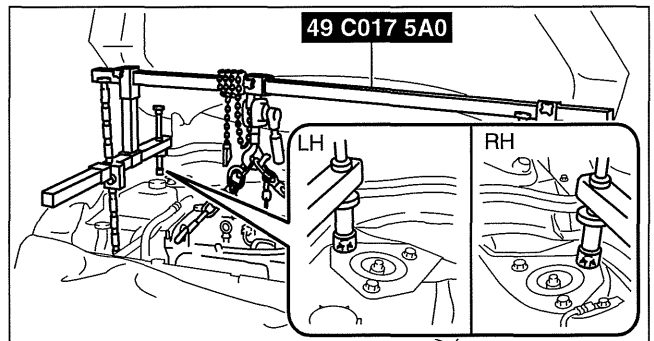
05-17

- (1) Remove the installation bolt for the bracket securing the lower radiator hose.
- (2) Set the bracket securing the lower radiator hose aside to prevent it from interfering with the front shaft of the SST (right side)



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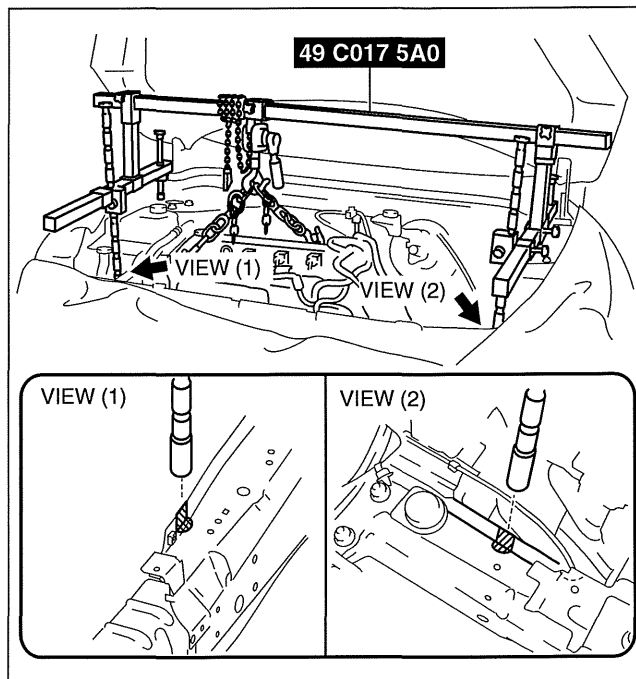
- (3) As shown in the figure, set the rear shafts of the SST to the left and right shock absorber bolts.



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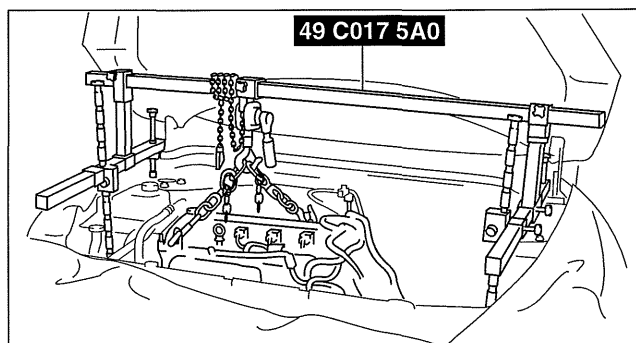
AUTOMATIC TRANSAXLE [FS5A-EL]

- (4) Install front foot No.2 to the left/right front shaft of the SST, then align the groove of the front shaft of the SST with the folded up part of the vehicle as shown in the figure.



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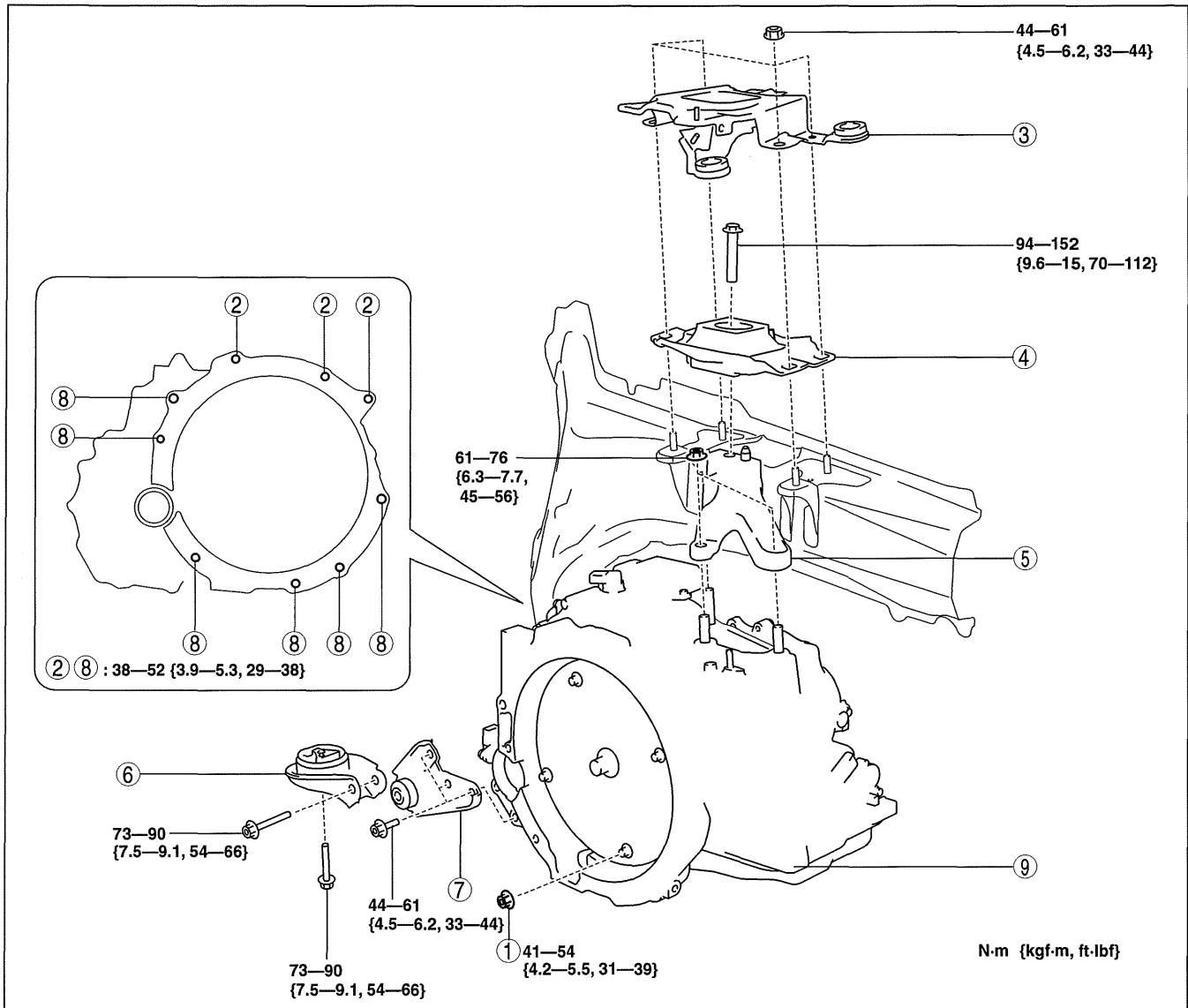
- (5) Adjust the positions of the SST side bars so that they are the same height (left and right) and horizontal. Make sure each joint is securely tightened.



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AUTOMATIC TRANSAXLE [FS5A-EL]

9. Remove in the order indicated in the table.



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1	Torque converter installation nuts (See 05-17-44 Torque Converter Installation Nuts Removal Note.)
2	Transaxle mounting bolts (upper side)
3	Battery tray bracket (See 05-17-45 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
4	No.4 engine mount rubber (See 05-17-45 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
5	No.4 engine mount bracket (See 05-17-45 No.1 Engine Mount and No.4 Engine Mount Installation Note.)

6	No.1 engine mount rubber (See 05-17-45 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
7	No.1 engine mount bracket (See 05-17-45 No.1 Engine Mount and No.4 Engine Mount Installation Note.)
8	Transaxle mounting bolts (lower side) (See 05-17-44 Transaxle Mounting Bolts (Lower Side) Removal Note.)
9	Transaxle (See 05-17-44 Transaxle Mounting Bolts (Lower Side) Removal Note.)

Warning

- Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.

Caution

- To prevent the torque converter and transaxle from separating, remove the transaxle without tilting it toward the torque converter.

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AUTOMATIC TRANSAXLE [FS5A-EL]

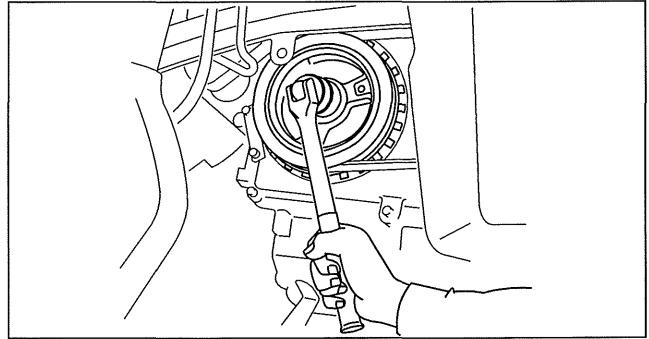
10. Install in the reverse order of removal.
11. Add ATF to the specified level. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
12. Perform the following test according to the service item. (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)(See 05-17-7 ROAD TEST [FS5A-EL].)

Service item	Test item			
	Line pressure test	Stall test	Time lag test	Road test
ATX replacement	×			
ATX overhaul	×	×	×	×
Torque converter replacement	×	×		
Oil pump replacement	×			
Clutch system replacement	×		×	×

× : Test to be performed after the service work

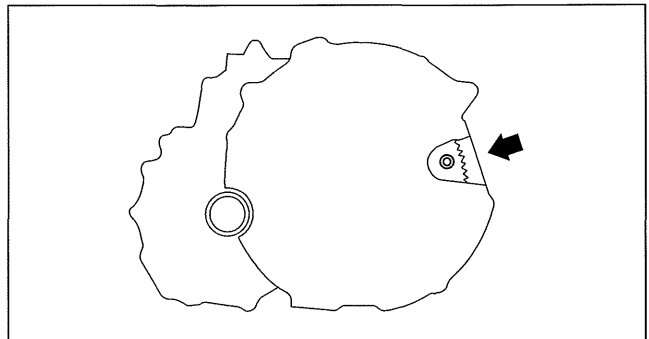
Torque Converter Installation Nuts Removal Note

1. Hold the crankshaft pulley to prevent drive plate from rotating.



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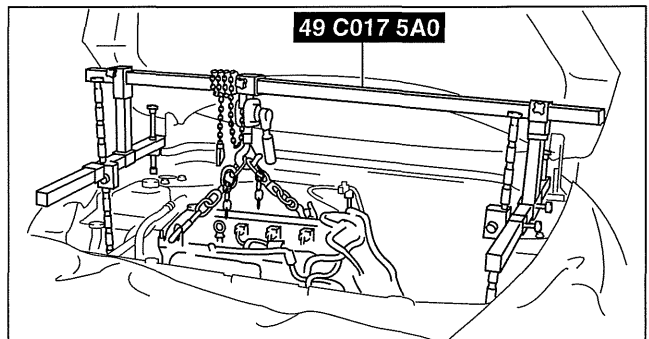
2. Remove the torque converter nuts from the starter installation hole.



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Transaxle Mounting Bolts (Lower Side) Removal Note

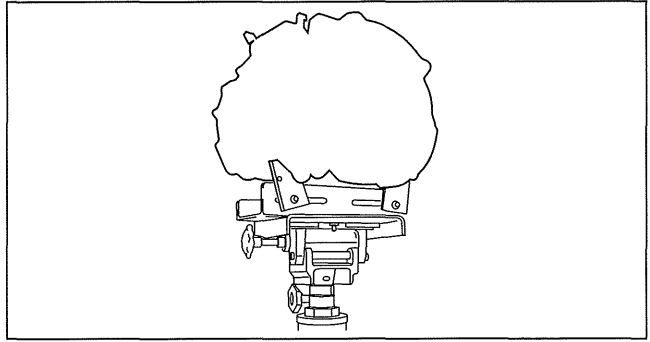
1. Adjust the SST (49 C017 5A0) and lean the engine toward the transaxle.
2. Support the transaxle on a jack.
3. Remove the transaxle mounting bolts (lower side).



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AUTOMATIC TRANSAXLE [FS5A-EL]

4. Remove the transaxle.



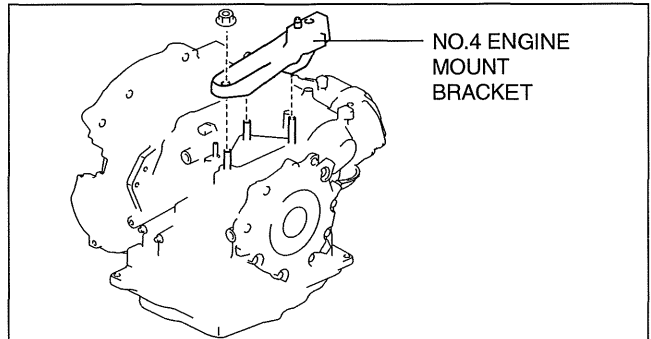
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No.1 Engine Mount and No.4 Engine Mount Installation Note

1. Install the No.4 engine mount bracket to the transaxle case, and then tighten the nuts.

Tightening torque

61—76 N·m {6.3—7.7 kgf·m, 45—56 ft·lbf}



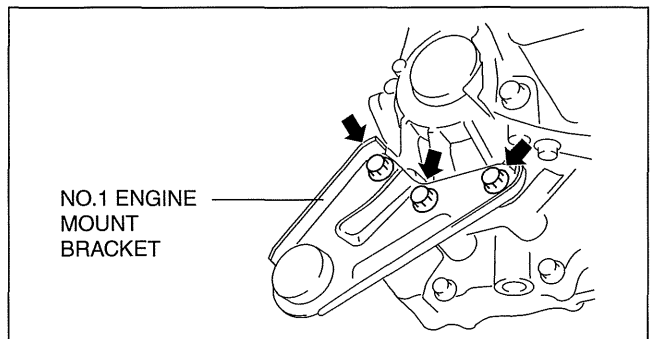
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05-17

2. Install the No.1 engine mount bracket to the converter housing, and then tighten the bolts.

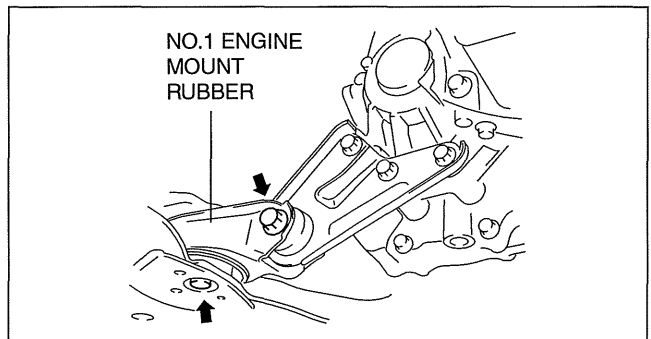
Tightening torque

44—61 N·m {4.5—6.2 kgf·m, 33—44 ft·lbf}



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3. Install the No.1 engine mount rubber to the front crossmember, and then temporarily tighten the bolts.



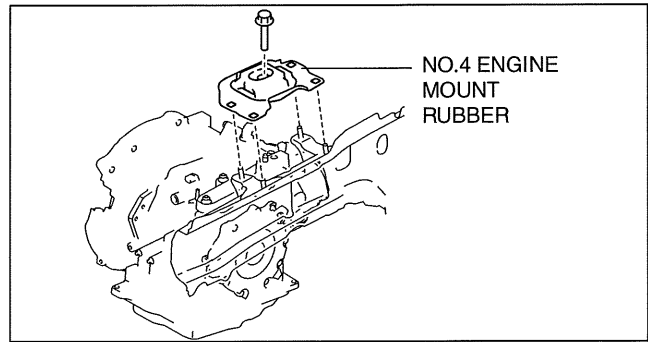
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AUTOMATIC TRANSAXLE [FS5A-EL]

4. Align the No.4 engine mount rubber installation hole to the stud bolts on the body.
5. Install the No.4 engine mount rubber to the No.4 engine mount bracket, and then tighten the bolt.

Tightening torque

94—152 N·m {9.6—15 kgf·m, 70—112 ft·lbf}

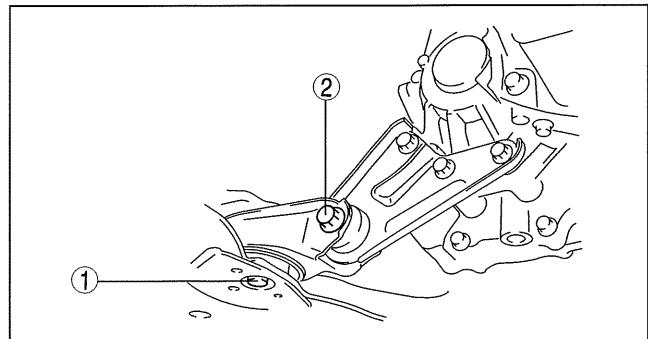


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6. Tighten the No.1 engine mount rubber installation bolts in the order shown.

Tightening torque

73—90 N·m {7.5—9.1 kgf·m, 54—66 ft·lbf}



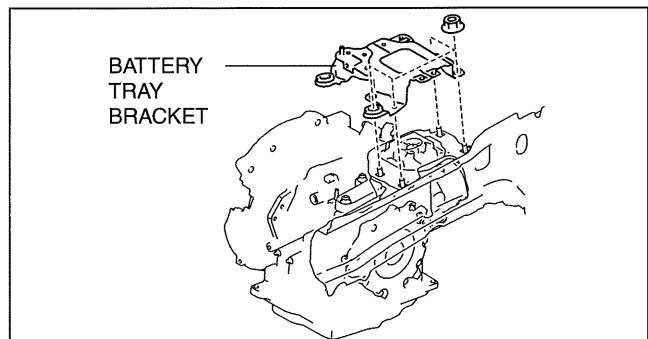
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7. Align the battery tray bracket installation hole to the stud bolts on the body.
8. Install the battery tray bracket to the No.4 engine mount rubber, and then tighten the nuts.

Tightening torque

44—61 N·m {4.5—6.2 kgf·m, 33—44 ft·lbf}

9. Remove the SST (49 C017 5A0).



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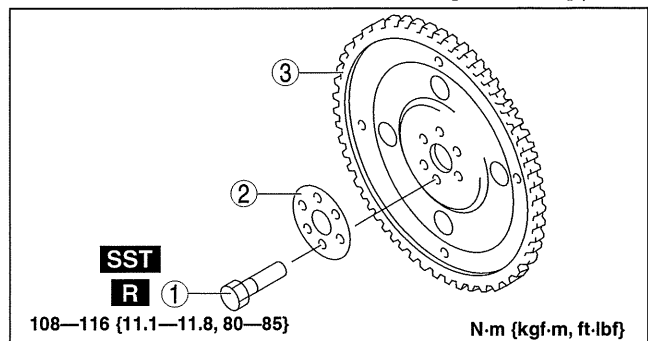
DRIVE PLATE REMOVAL/INSTALLATION [FS5A-EL]

id051721294200

1. Remove the transaxle. (See 05-17-40 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [FS5A-EL].)
2. Remove in the order indicated in the table.

1	Drive plate installation bolts (See 05-17-47 Drive Plate Installation Bolts Removal Note.) (See 05-17-47 Drive Plate Installation Bolts Installation Note.)
2	Backing plate
3	Drive plate

3. Install in the reverse order of removal

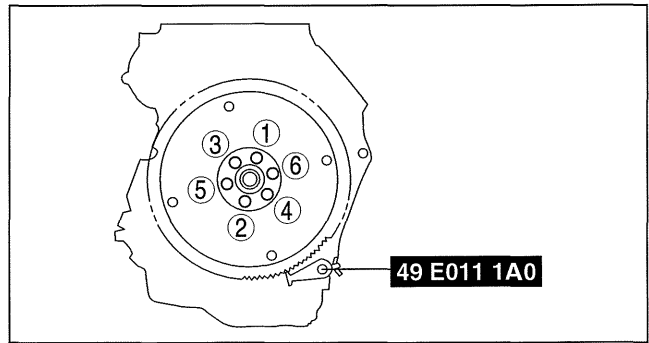


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AUTOMATIC TRANSAXLE [FS5A-EL]

Drive Plate Installation Bolts Removal Note

1. Set the SST against the drive plate.
2. Loosen the drive plate installation bolts in two or three steps in the order as shown in the figure, then remove the bolts and the drive plate.



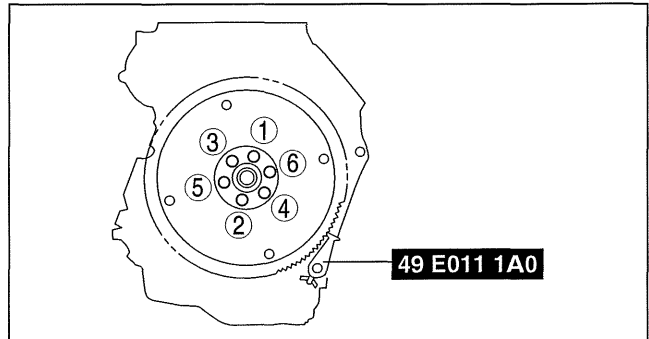
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Drive Plate Installation Bolts Installation Note

1. Set the SST against the drive plate.
2. Tighten the drive plate mounting bolts in two or three steps in the order as shown in the figure.

Tightening torque

108—116 N·m {11.1—11.8 kgf·m, 80—85 ft·lbf}



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05-17

OIL SEAL REPLACEMENT [FS5A-EL]

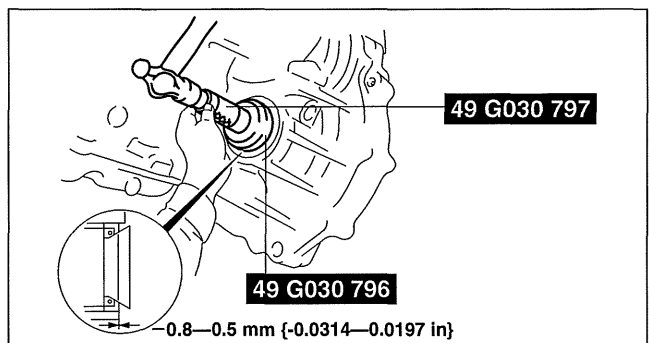
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1. Remove the aerodynamic under cover No. 2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
2. Remove the oil seal.
 - (1) Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
 - (2) Remove the drive shaft and/or joint shaft. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)(See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)

Caution

- The oil seal is easily damaged by the sharp edges of the drive shaft splines. Do not let the splines contact the oil seal.

- (3) Remove the oil seal using a flathead screwdriver.
3. Using the SSTs and a hammer, tap a new oil seal in evenly until the SST (body) contacts the transaxle case.
4. Coat the lip of the oil seal with ATF.
5. Install the drive shaft and/or joint shaft. (See 03-13-3 DRIVE SHAFT REMOVAL/INSTALLATION.)(See 03-13-13 JOINT SHAFT REMOVAL/INSTALLATION.)
6. Add the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
7. Install the aerodynamic under cover No. 2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
8. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)



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OIL COOLER REMOVAL/INSTALLATION [FS5A-EL]

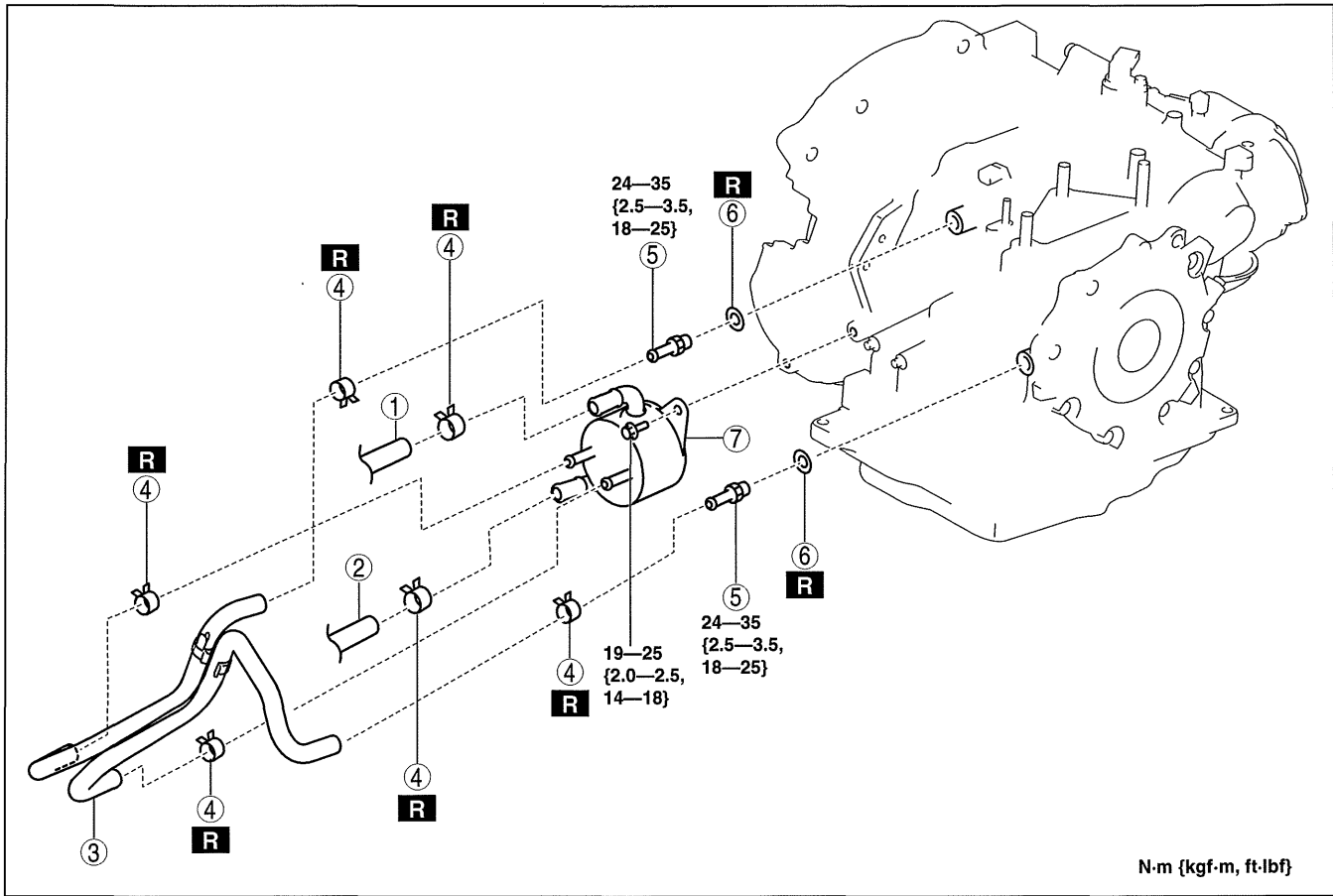
id051721294400

Type A

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)

AUTOMATIC TRANSAXLE [FS5A-EL]

4. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
6. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
7. Remove in the order indicated in the table.



am3uuw0000448

1	Water hose (connected to the outlet)
2	Water hose (connected to the thermostat)
3	Oil hose (See 05-17-48 Oil Hose Installation Note.)

4	Hose clamp (See 05-17-48 Oil Hose Installation Note.)
5	Connector bolt
6	Packing
7	Water-cooled oil cooler

8. Install in the reverse order of removal.
9. Add the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)
10. Add the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
11. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)

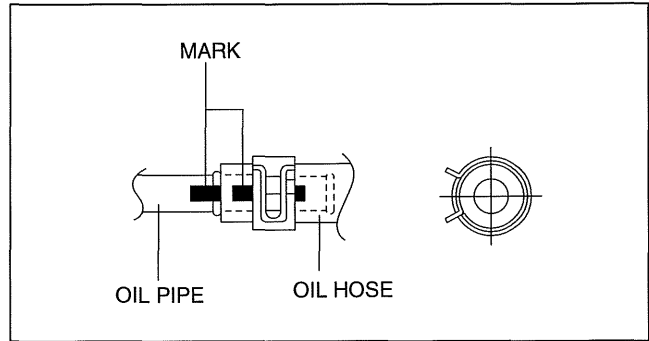
Oil Hose Installation Note

Note

- If reusing the hose, install the new hose clamp exactly on the mark left by the previous hose clamp. Then apply force to the hose clamp in the direction of the arrow in order to fit the clamp in place.

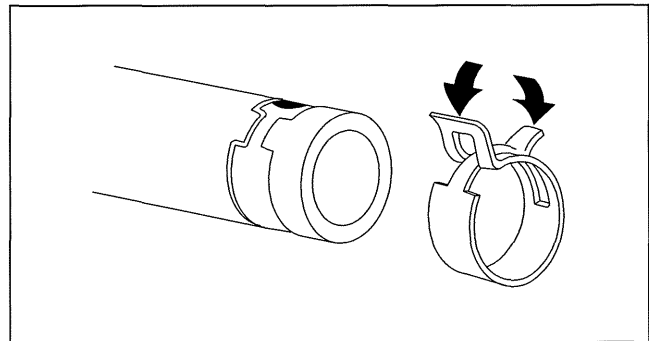
AUTOMATIC TRANSAXLE [FS5A-EL]

1. Align the marks, and slide the oil hose onto the oil pipe until it is fully seated as shown.
2. Install the hose clamp.



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3. Install the hose clamp onto the hose.
4. Verify that the hose clamp does not interfere with any other components.



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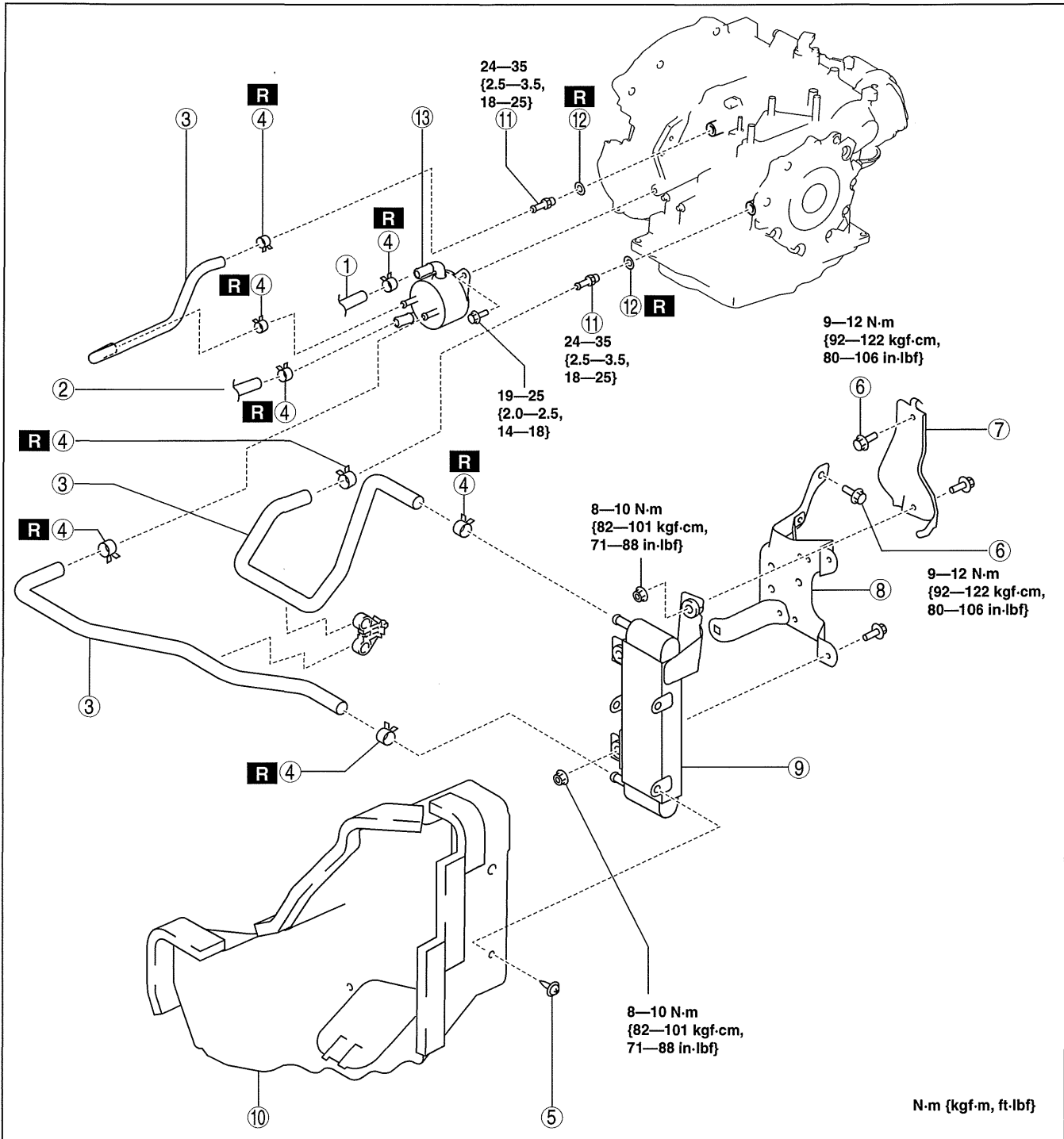
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Type B

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Remove the front splash shield (LH). (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION.)
6. Remove the front mudguard (LH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
7. Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
8. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)

AUTOMATIC TRANSAXLE [FS5A-EL]

9. Remove in the order indicated in the table.



am3uuw0000262

1	Water hose (connected to the outlet)
2	Water hose (connected to the thermostat)
3	Oil hose (See 05-17-48 Oil Hose Installation Note.)
4	Hose clamp (See 05-17-48 Oil Hose Installation Note.)
5	Fastener
6	Bracket installation bolt

7	Bracket
8	Bracket
9	Air-cooled oil cooler
10	Oil cooler duct
11	Connector bolt
12	Packing
13	Water-cooled oil cooler

10. Install in the reverse order of removal.

11. Add the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].)

AUTOMATIC TRANSAXLE [FS5A-EL]

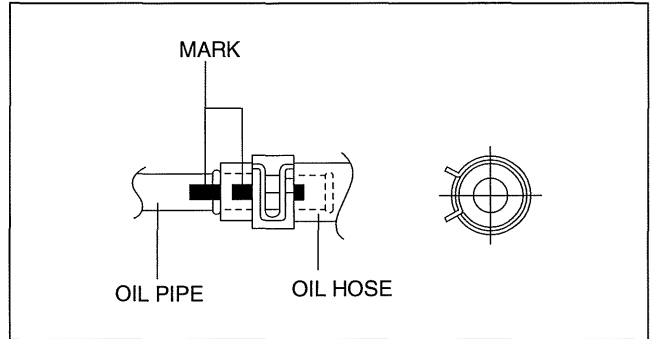
12. Add the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
13. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)

Oil Hose Installation Note

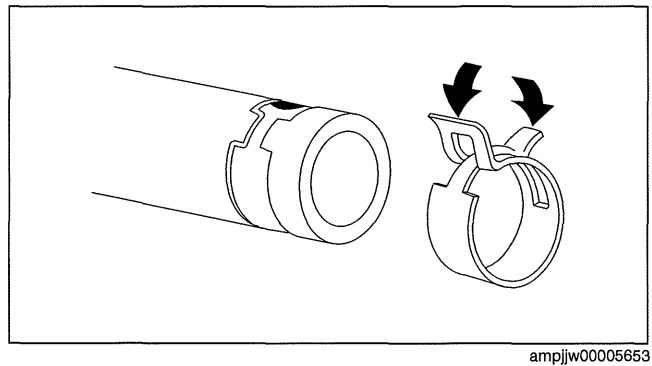
Note

- If reusing the hose, install the new hose clamp exactly on the mark left by the previous hose clamp. Then apply force to the hose clamp in the direction of the arrow in order to fit the clamp in place.

1. Align the marks, and slide the oil hose onto the oil pipe until it is fully seated as shown.
2. Install the hose clamp.



3. Install the hose clamp onto the hose.
4. Verify that the hose clamp does not interfere with any other components.



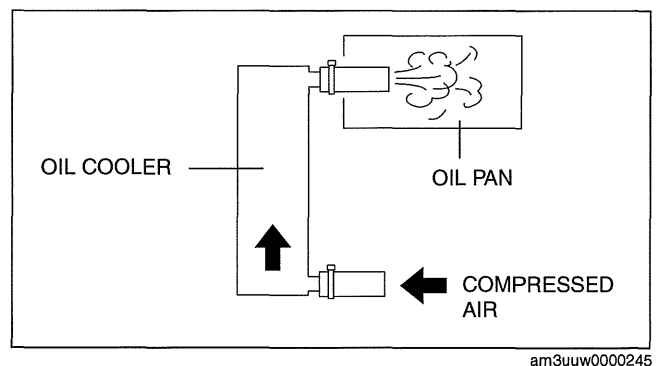
OIL COOLER FLUSHING [FS5A-EL]

id051721294500

Note

- If the automatic transaxle is replaced, flush and inspect the oil cooler.
- When replacing the automatic transaxle, inspect the oil cooler together with flushing it using the following procedures, and with the oil cooler hose removed.

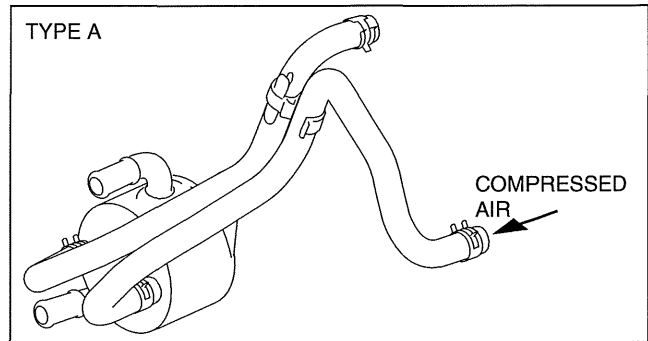
1. Disconnect the oil hose.
2. Set a clean oil pan up to the oil hose inlet.
3. Blow 491—882 kPa {5—9 kgf/cm², 72—127 psi} of compressed air from the oil hose outlet to drain remaining oil.



05-17

AUTOMATIC TRANSAXLE [FS5A-EL]

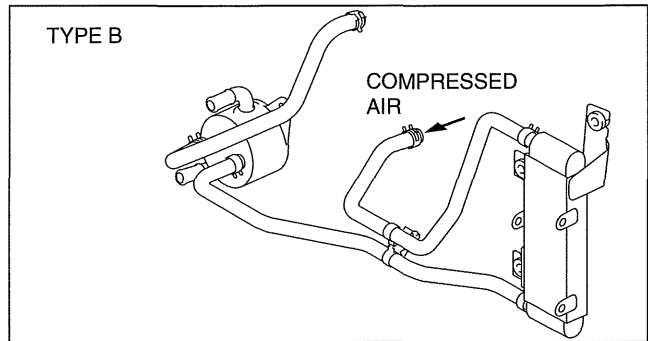
Type A



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Type B

4. Add new ATF from the oil cooler hose outlet and blow 491—882 kPa {5—9 kgf/cm², 72—127 psi} of compressed air to flush. (Repeat 2 or 3 times)
5. Verify that none of the following foreign material is mixed in with the drained ATF:
 - Large metal fragments of ϕ 0.5 mm {0.02 mm} or more that cannot pass through the oil strainer
 - Fibrous clutch facing
6. Repeat the procedures from Step 3 to 4 and flush the inside of the oil cooler.
 - If foreign material such as metal fragments or clutch facing remains even after the oil cooler is flushed repeatedly, replace the oil cooler.



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CONTROL VALVE BODY REMOVAL/INSTALLATION [FS5A-EL]

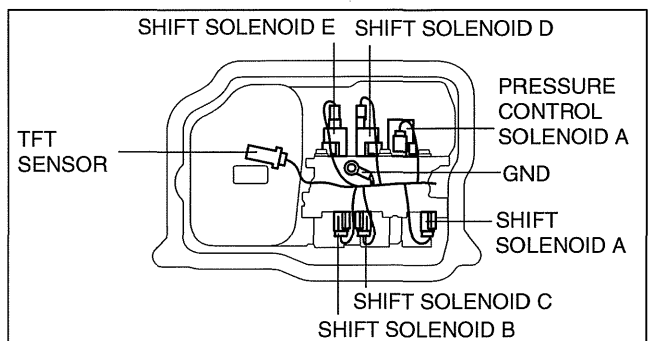
id051721294600

Primary Control Valve Body On-Vehicle Removal

Warning

- A hot transaxle and ATF can cause severe burns. Turn off the engine and wait until they are cool.
- Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eyeglasses whenever using compressed air.

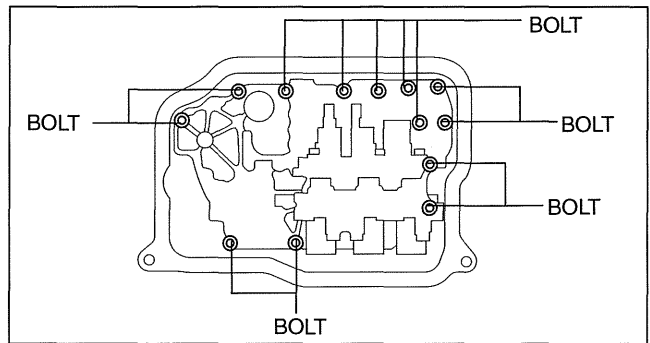
1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
4. Clean the transaxle exterior throughout with a steam cleaner or cleaning solvents.
5. Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
6. Remove the oil pan.
7. Remove the oil strainer.
8. Disconnect each solenoid valve connector and GND.



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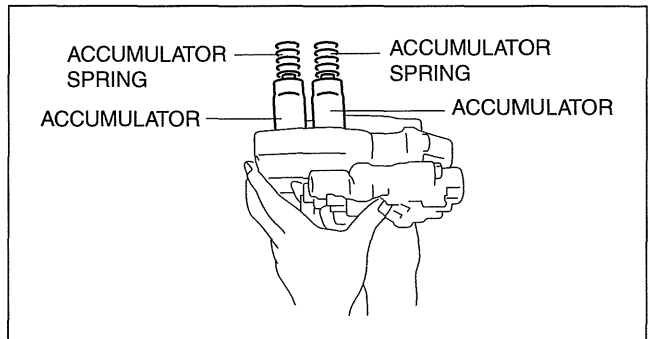
AUTOMATIC TRANSAXLE [FS5A-EL]

9. Remove the bolts as shown, then remove the primary control valve body.



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10. Remove the accumulators and accumulator springs.



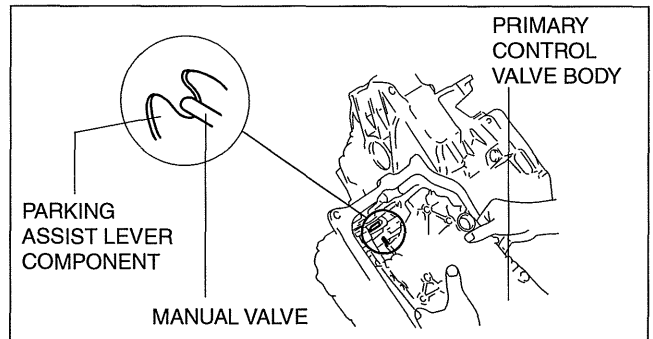
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05-17

Primary Control Valve Body On-Vehicle Installation

Caution

- Be sure to align the parking rod and the manual valve.

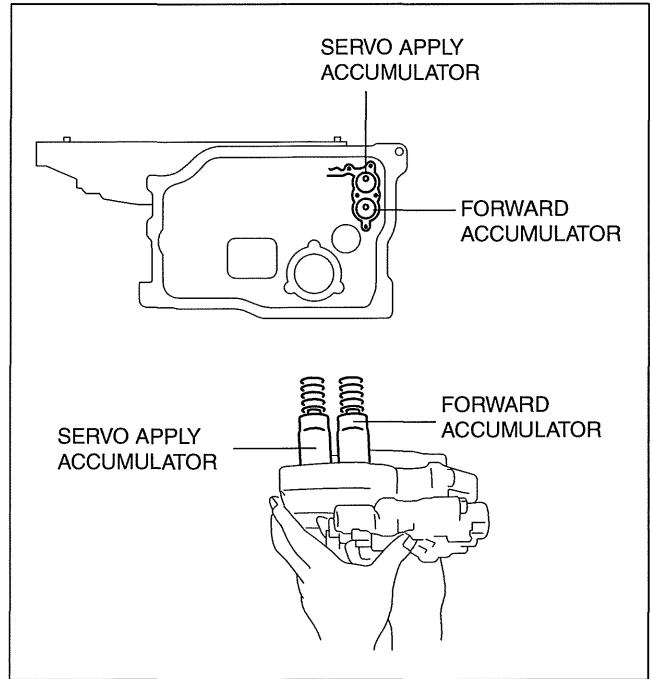


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AUTOMATIC TRANSAXLE [FS5A-EL]

1. Install the accumulator springs, accumulators and primary control valve body.

Accumulator spring specification



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Spring	Outer diameter (mm {in})	Free Length (mm {in})	No. of coils	Wire diameter (mm {in})
Servo apply accumulator large spring	21.0 {0.827}	67.8 {2.669}	10.3	3.5 {0.138}
Servo apply accumulator small spring	13.0 {0.512}	67.8 {2.669}	17.1	2.2 {0.087}
Forward accumulator large spring	21.0 {0.827}	75.0 {2.953}	10.7	2.3 {0.091}
Forward accumulator small spring	15.6 {0.614}	49.0 {1.929}	7.7	2.4 {0.094}

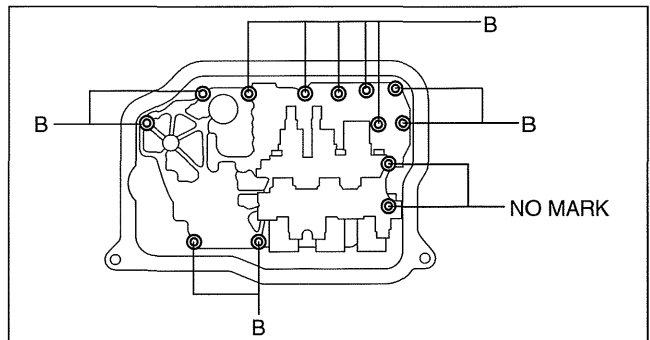
2. Tighten the bolts as shown to install the primary control valve body.

Tightening torque

8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

Bolt length measured from below the head

Mark	Length measured from below the head
B	40mm {1.575 in}
No mark	70mm {2.756 in}



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AUTOMATIC TRANSAXLE [FS5A-EL]

3. Match the harness colors, then connect each solenoid valves connector.

Connector color (harness-side)

Solenoid valve	Connector color
Pressure control solenoid A	Black
Shift solenoid A	White
Shift solenoid B	Blue
Shift solenoid C	Green
Shift solenoid D	White
Shift solenoid E	Black

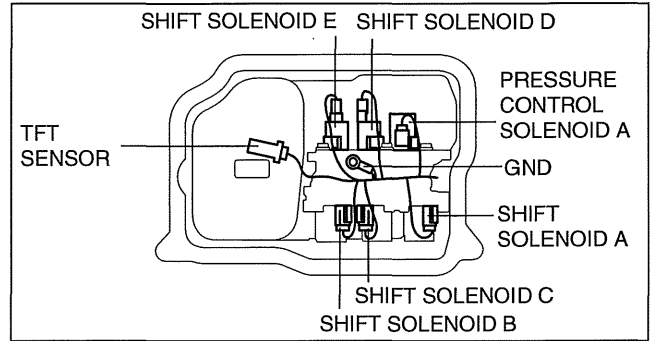
4. Install the GND.

Tightening torque

8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

5. Install the TFT sensor to the oil strainer.

6. Install the oil strainer.

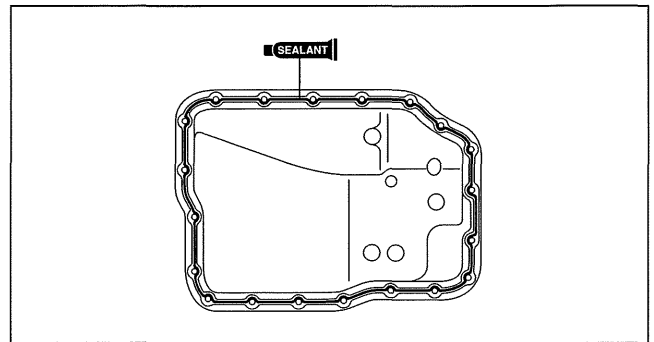


7. Apply a light coat of silicon sealant (TB1217E) to the contact surfaces of the oil pan and transaxle case.

Caution

- If any old sealant gets into the transaxle during installation of the oil pan, trouble may occur in the transaxle case and oil pan, and clean with cleaning fluids.

8. Install the oil pan before the applied sealant starts to harden.



Tightening torque

6—8 N·m {62—81 kgf·cm, 54—70 in·lbf}

9. Add ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
10. Install the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
11. Connect the negative battery cable.
12. Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
13. Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)
14. Perform the "Road Test". (See 05-17-7 ROAD TEST [FS5A-EL].)

Secondary Control Valve Body On-Vehicle Removal

Warning

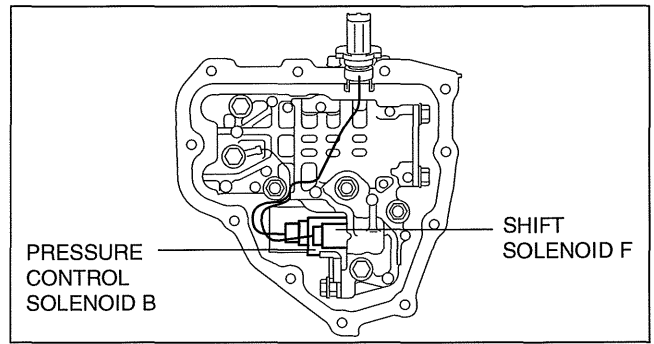
- A hot transaxle and ATF can cause severe burns. Turn off the engine and wait until they are cool.
- Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eyeglasses whenever using compressed air.

1. Remove the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
5. Clean the transaxle exterior throughout with a steam cleaner or cleaning solvents.
6. Drain the ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)

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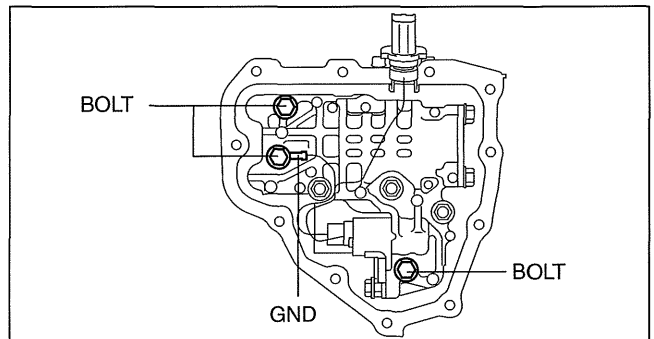
AUTOMATIC TRANSAXLE [FS5A-EL]

7. Disconnect each solenoid valve connector.



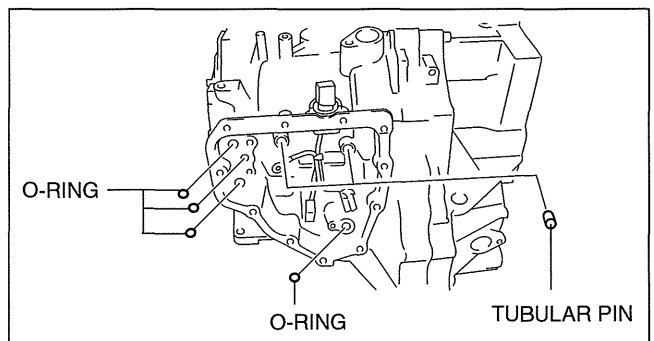
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8. Remove the bolts and GND as shown, then remove the secondary control valve body.



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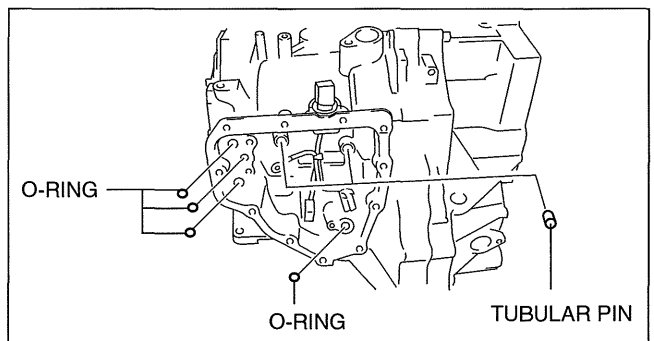
9. Remove the tubular pin and O-ring.



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Secondary Control Valve Body On-Vehicle Installation

1. Install the tubular pin and new O-rings to the transaxle case.
2. Install the secondary control valve body.



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AUTOMATIC TRANSAXLE [FS5A-EL]

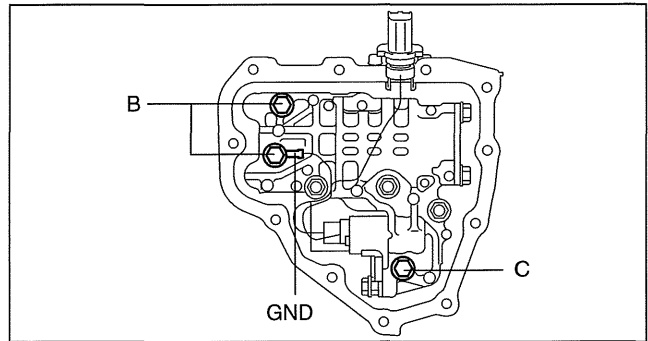
- Tighten the bolts and GND as shown to install the secondary control valve body.

Tightening torque

8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

Bolt length measured from below the head

Mark	Length measured from below the head
B	40mm {1.575 in}
C	50mm {1.967 in}

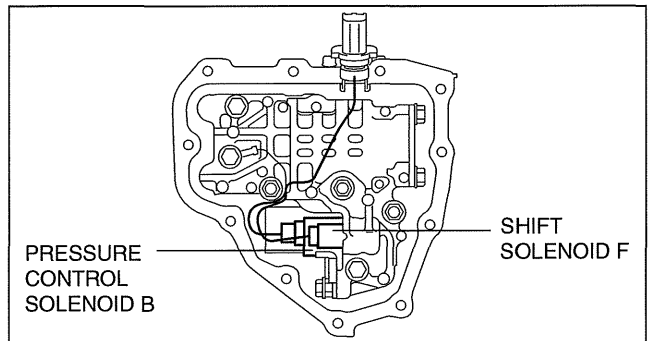


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- Connect each solenoid valve connector.

Connector color (harness-side)

Solenoid valve	Connector color
Pressure control solenoid B	White
Shift solenoid F	Black



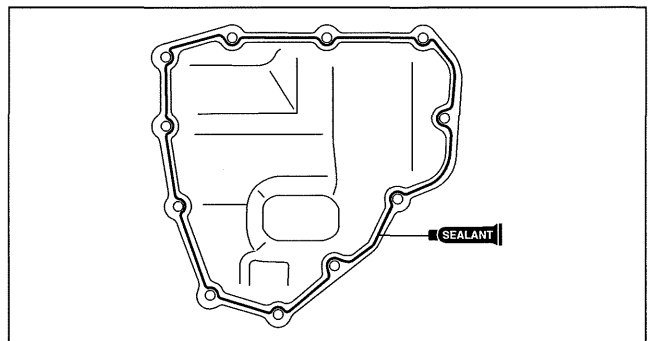
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- Apply a light coat of silicon sealant (TB1217E) to the contact surfaces of the oil cover and transaxle case.
- Install the oil cover.

Tightening torque

8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

- Add ATF. (See 05-17-14 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL].)
- Install the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
- Install the battery component (ex: battery, battery tray and PCM component). (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- Connect the negative battery cable.
- Install the battery cover. (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- Perform the "Mechanical System Test". (See 05-17-3 MECHANICAL SYSTEM TEST [FS5A-EL].)
- Perform the "Road Test". (See 05-17-7 ROAD TEST [FS5A-EL].)



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05-18 AUTOMATIC TRANSAXLE SHIFT MECHANISM

AUTOMATIC TRANSAXLE SHIFT MECHANISM LOCATION INDEX 05-18-1

AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION 05-18-2

 Selector Lever Removal/Installation . . . 05-18-2

 Selector Cable Removal/Installation . . . 05-18-5

 Bulb Removal/Installation. 05-18-9

 Selector Cable Adjustment. 05-18-10

SELECTOR LEVER INSPECTION 05-18-11

SHIFT-LOCK SYSTEM INSPECTION . . . 05-18-11

Shift-Lock System Inspection 05-18-11

Shift-Lock Solenoid and P Position Switch Inspection 05-18-11

Emergency Override Button Inspection 05-18-12

KEY INTERLOCK SYSTEM INSPECTION 05-18-12

 Key Interlock System Inspection 05-18-12

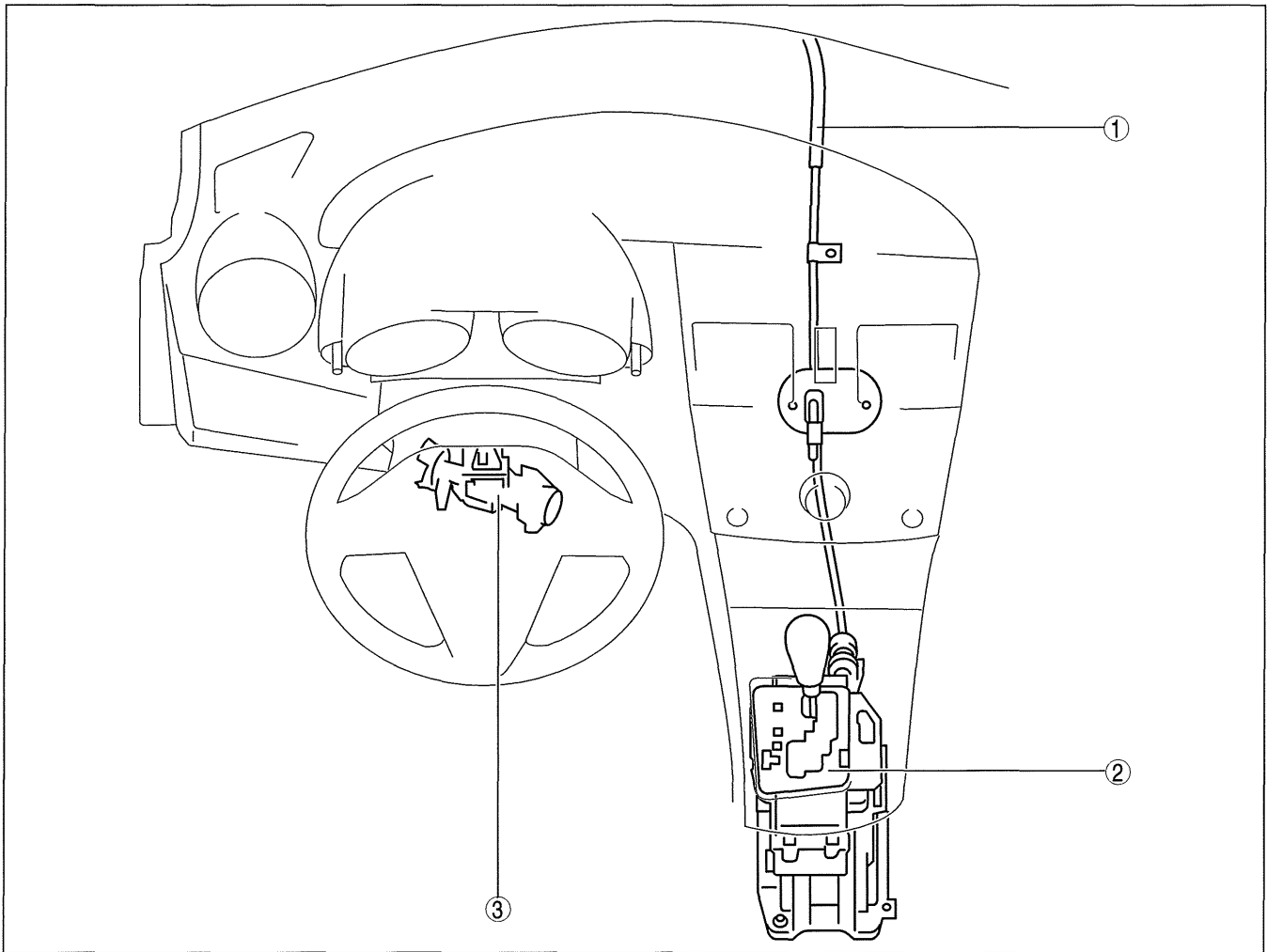
 Key Interlock Solenoid Inspection 05-18-12

 NOT P Position Switch Inspection. 05-18-13

AUTOMATIC TRANSAXLE SHIFT MECHANISM LOCATION INDEX

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05-18



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1	Selector cable (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
2	Selector lever component (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.) (See 05-18-11 SELECTOR LEVER INSPECTION.) (See 05-18-11 SHIFT-LOCK SYSTEM INSPECTION.)

3	Steering lock (See 05-18-12 KEY INTERLOCK SYSTEM INSPECTION.)
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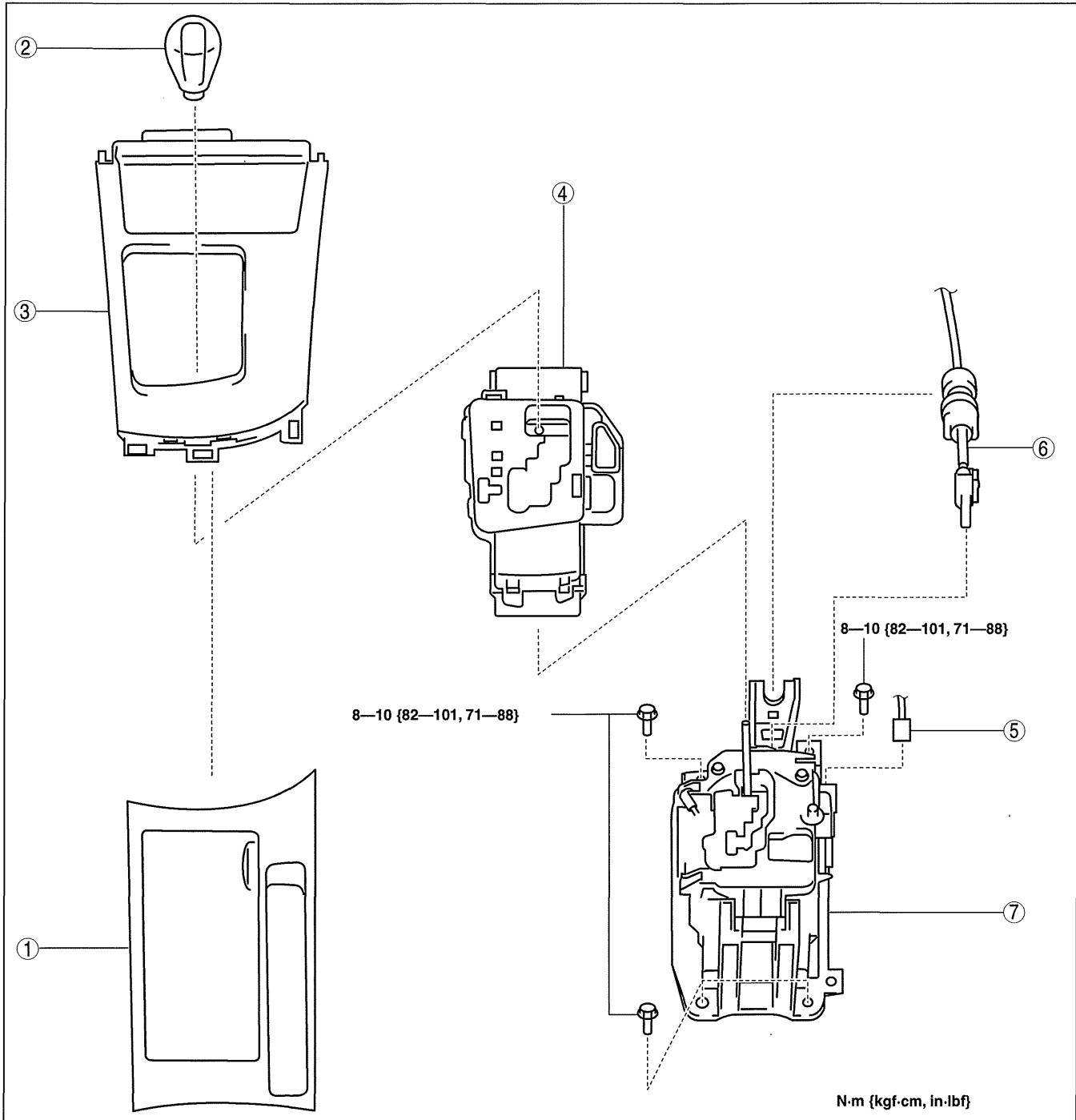
AUTOMATIC TRANSAXLE SHIFT MECHANISM

AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION

id051800296900

Selector Lever Removal/Installation

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



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1	Upper panel (See 09-17-40 UPPER PANEL REMOVAL/ INSTALLATION.)
2	Knob

3	Shift panel (See 05-18-3 Shift panel and indicator panel removal note.) (See 05-18-5 Indicator panel and shift panel installation note.)
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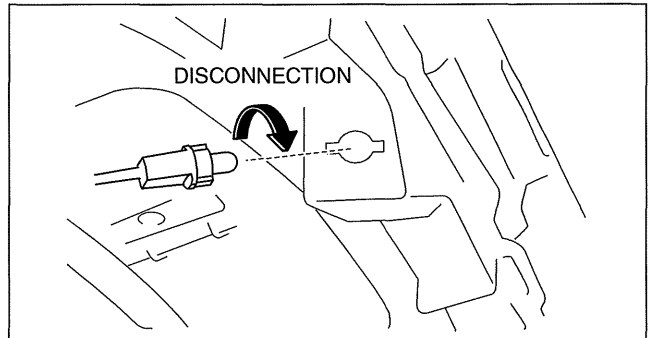
AUTOMATIC TRANSAXLE SHIFT MECHANISM

4	Indicator panel (See 05-18-3 Shift panel and indicator panel removal note.) (See 05-18-5 Indicator panel and shift panel installation note.)
5	Connector

6	Selector cable (selector lever side) (See 05-18-4 Selector cable (selector lever side) installation note.)
7	Selector lever (See 05-18-4 Selector lever installation note.)

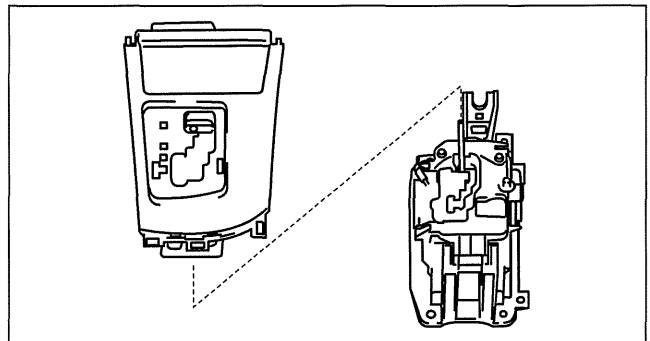
Shift panel and indicator panel removal note

1. Remove the shift panel and indicator panel as a single unit.
 - (1) Release the hooks securing the shift panel and console, and then release the hooks securing the shift panel and ashtray panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (2) Lift up the shift panel and indicator panel and disconnect the bulb socket from the indicator panel.



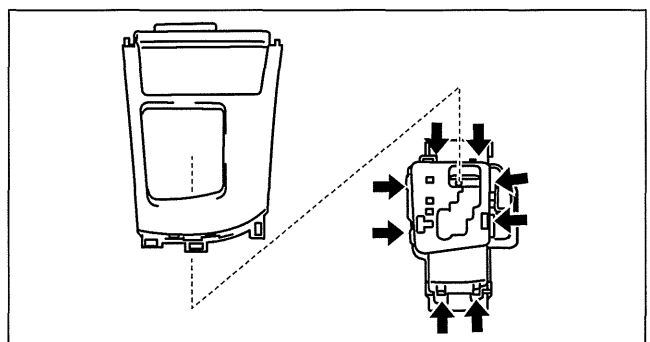
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- (3) Remove the shift panel and indicator panel from the selector lever as a single unit.



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2. Detach the hooks as shown in the figure and remove the indicator panel from the shift panel.



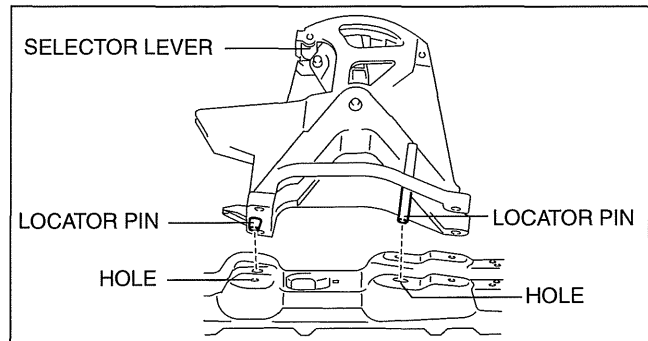
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05-18

AUTOMATIC TRANSAXLE SHIFT MECHANISM

Selector lever installation note

1. Align the locator pin with the hole in the floor as shown in the figure and install the selector lever.

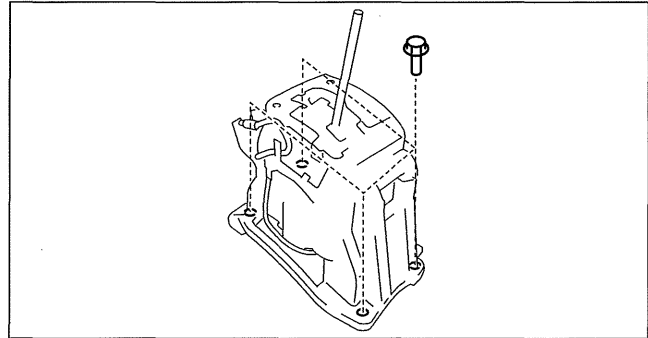


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2. Tighten the selector lever installation bolts.

Tightening torque

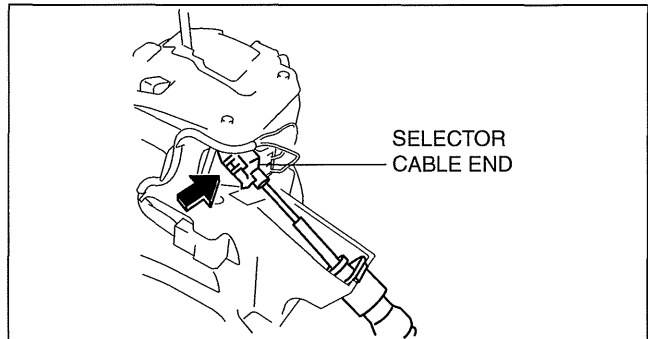
8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}



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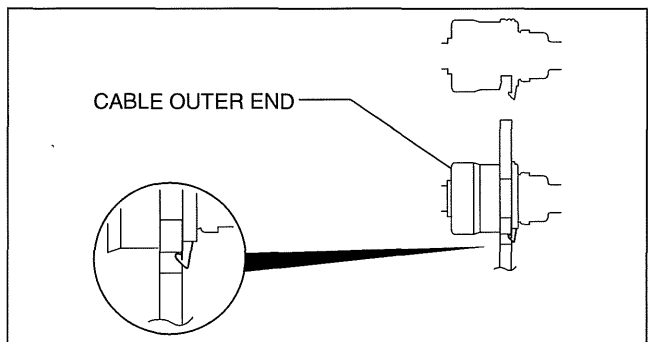
Selector cable (selector lever side) installation note

1. Install the selector cable end (selector lever side) as shown in the figure.



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2. Install the cable outer end (selector lever side) to the selector cable bracket as shown in the figure.
3. Adjust the selector cable. (See 05-18-10 Selector Cable Adjustment.)

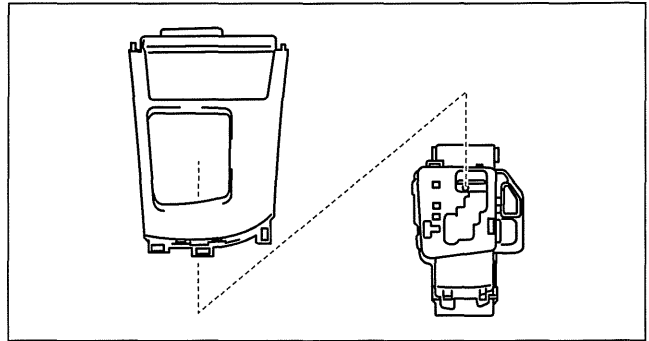


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AUTOMATIC TRANSAXLE SHIFT MECHANISM

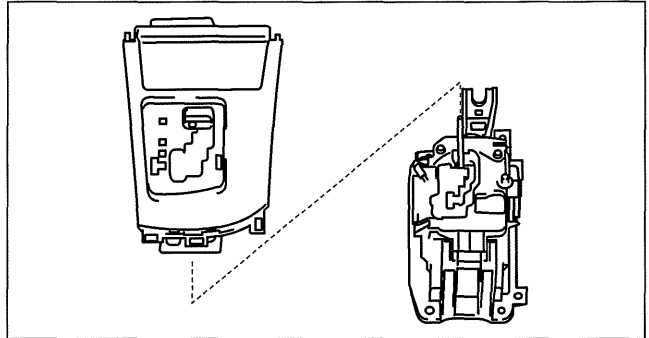
Indicator panel and shift panel installation note

1. Install the shift panel to the indicator panel.



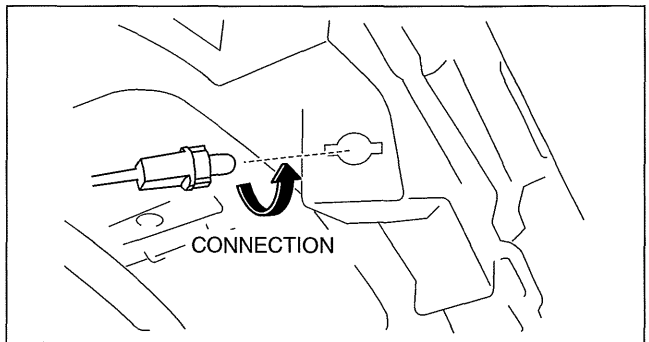
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2. Install the shift panel and indicator panel to the selector lever as a single unit.



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3. Connect the bulb socket to the indicator panel.
4. Install the shift panel and indicator panel to the console and ashtray panel as a single unit. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION)



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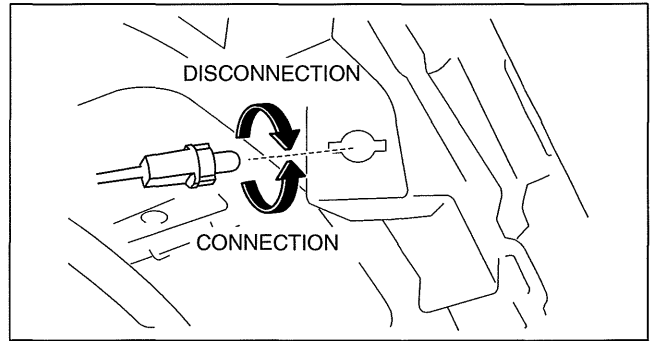
05-18

Selector Cable Removal/Installation

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the battery component (ex: battery, battery tray and PCM component). (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
4. Remove the air cleaner component. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].)
5. Remove the Aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
6. Remove the tunnel member (rear). (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
7. Remove the insulator (front) installation nuts and set the insulator (front) aside. (See 01-15A-1 EXHAUST SYSTEM REMOVAL/INSTALLATION [LF, L5].)
8. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
9. Remove the knob. (See 05-18-2 Selector Lever Removal/Installation.)
10. Remove the shift panel and indicator panel as a single unit.
 - (1) Release the hooks securing the shift panel and console, and then release the hooks securing the shift panel and ashtray panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)

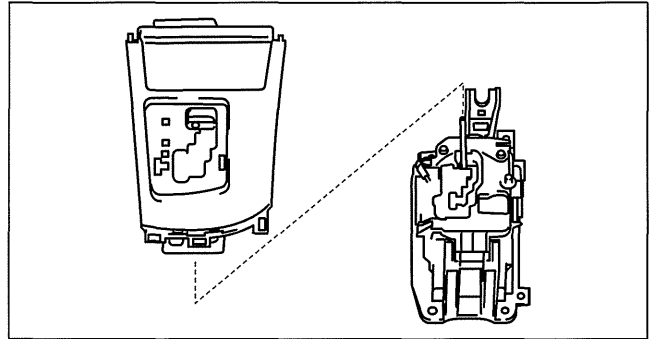
AUTOMATIC TRANSAXLE SHIFT MECHANISM

- (2) Lift up the shift panel and indicator panel and disconnect the bulb socket from the indicator panel.



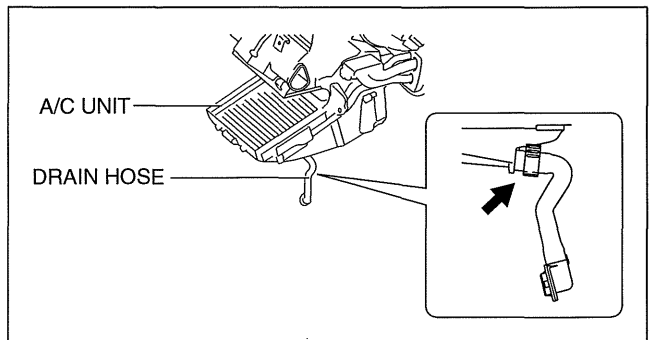
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- (3) Remove the shift panel and indicator panel from the selector lever as a single unit.
 11. Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)

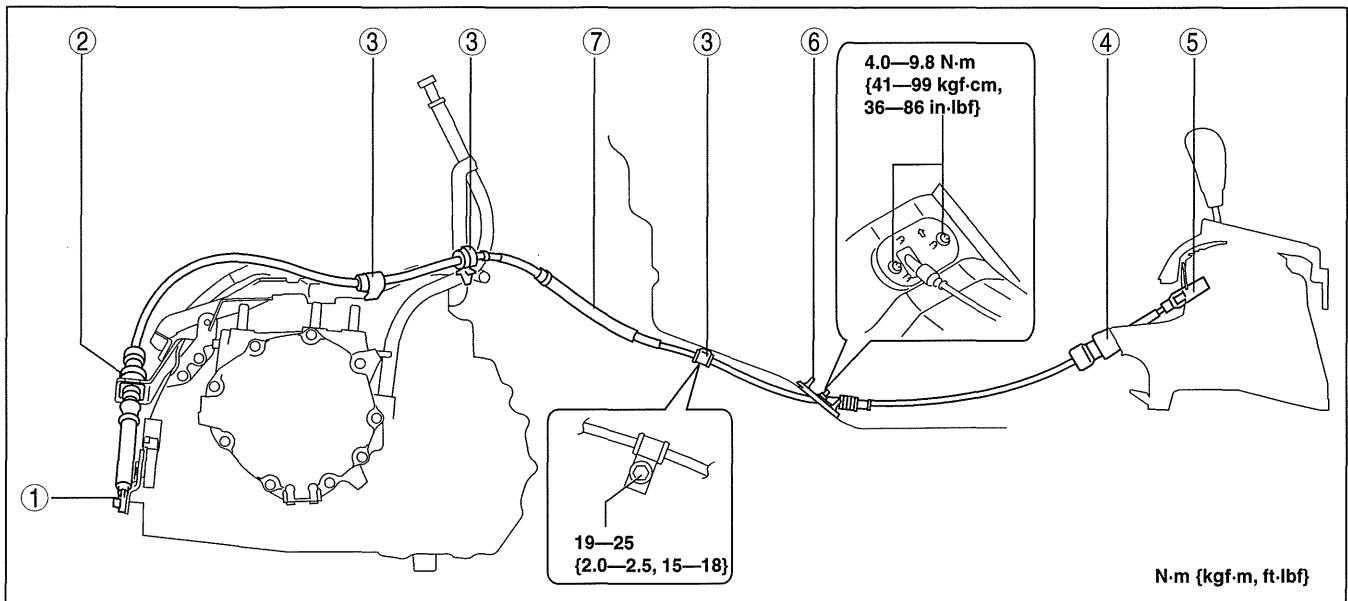


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12. Disconnect the drain hose connected to A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
 13. Remove in the order indicated in the table.
 14. Install in reverse of removal.



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1	Selector cable end (transaxle side) (See 05-18-7 Selector cable end (transaxle side) removal note.)
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2	Cable outer end (transaxle side)
3	Clip
4	Cable outer end (selector lever side)

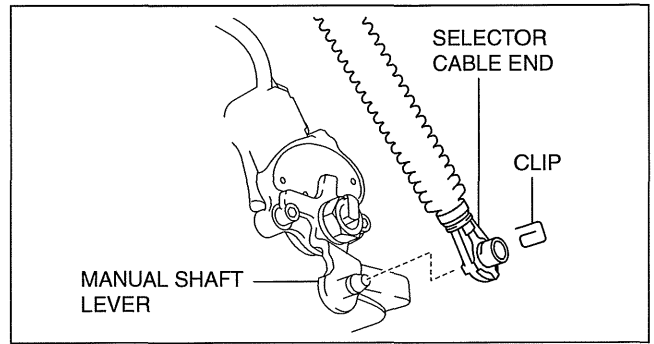
AUTOMATIC TRANSAXLE SHIFT MECHANISM

5	Selector cable end (selector lever side)
6	Grommet

7	Selector cable (See 05-18-7 Selector cable installation note.)
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Selector cable end (transaxle side) removal note

1. Remove the clip, and then disconnect the selector cable end from the manual shaft lever.



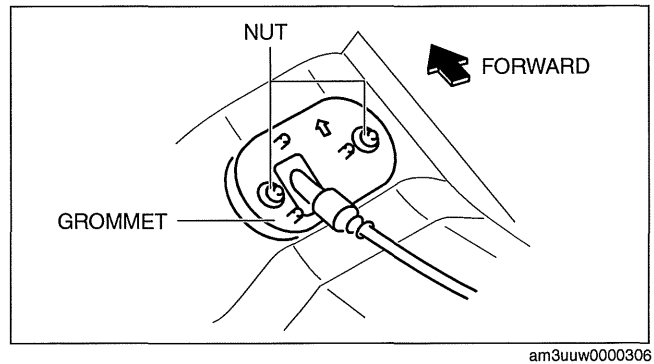
05-18

Selector cable installation note

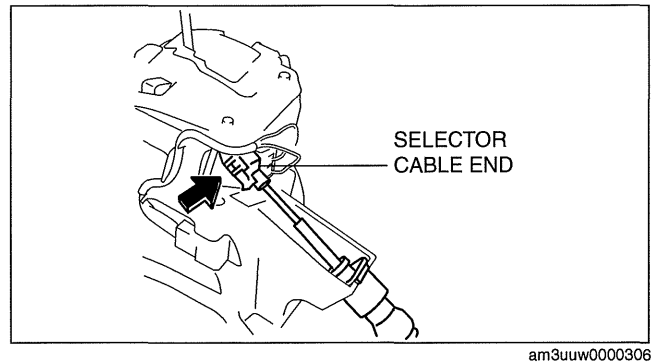
1. Install the grommet as shown in the figure.

Tightening torque

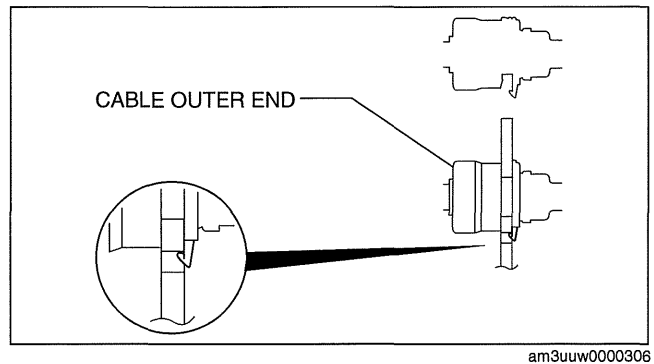
4.0—9.8 N·m {41—99 kgf·cm, 36—86 in·lbf}



2. Install the selector cable end (selector lever side) as shown in the figure.



3. Install the cable outer end (selector lever side) to the selector cable bracket as shown in the figure.



AUTOMATIC TRANSAXLE SHIFT MECHANISM

4. Install the clip as shown in the figure and tighten the nut.

Tightening torque

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}

5. Install the selector cable end (transaxle side) and the cable outer end (transaxle side).

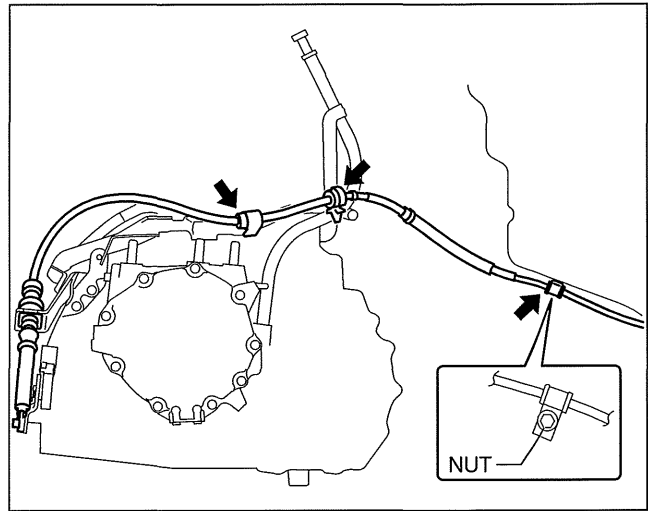
Caution

- When installing selector cable, make sure the boot is not twisted.

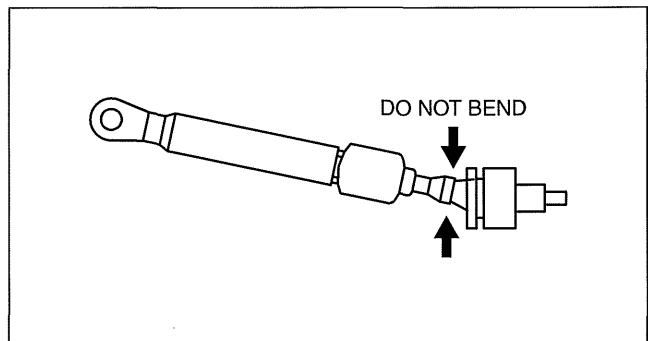
- Bending the selector cable in the manner shown in the figure will damage the cable and it may become loose when shifted. When installing the selector cable, hold it straight.

- (1) Install the cable outer end (transaxle side) to the selector cable bracket as shown in the figure.

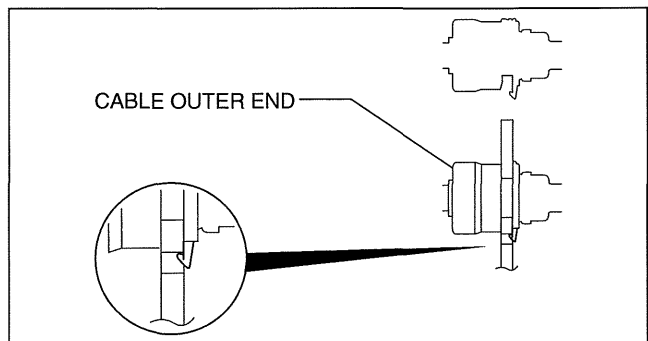
- (2) Install the clip to the selector cable end (transaxle side) as shown in the figure.



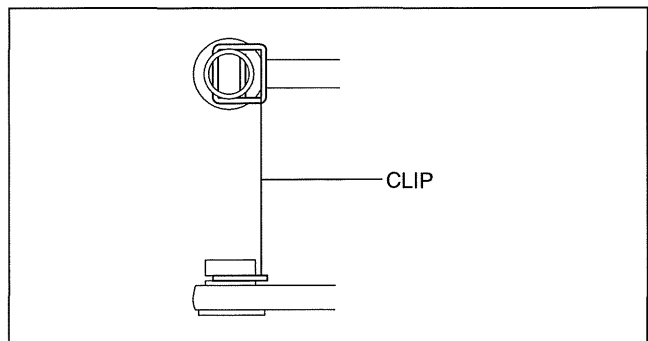
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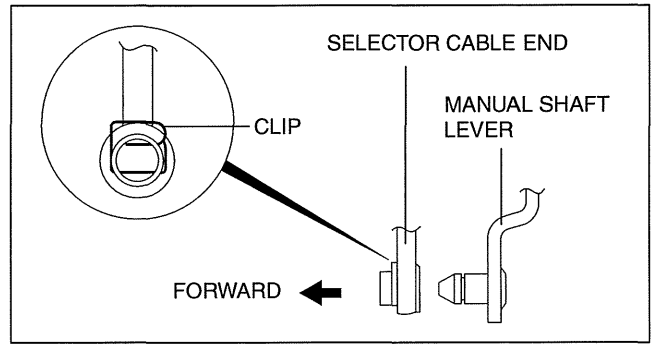
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am3uuw0000306

AUTOMATIC TRANSAXLE SHIFT MECHANISM

- (3) Install the selector cable end (transaxle side) to the manual shaft lever as shown in the figure.
6. Verify that the selector cable is securely installed.
7. Adjust the selector cable. (See 05-18-10 Selector Cable Adjustment.)

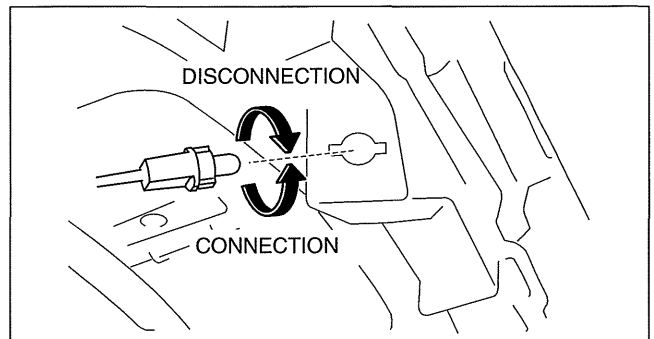


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Bulb Removal/Installation

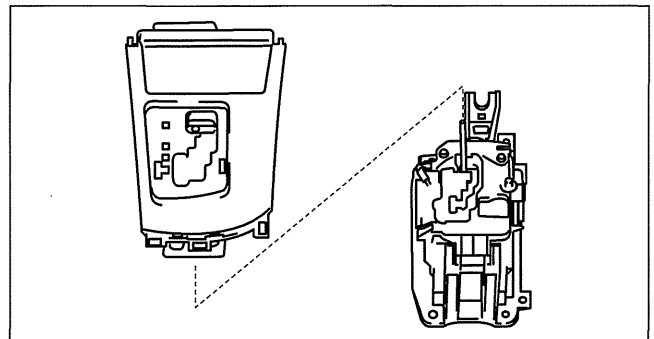
1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
4. Remove the knob. (See 05-18-2 Selector Lever Removal/Installation.)
5. Remove the shift panel and indicator panel as a single unit.
 - (1) Release the hooks securing the shift panel and console, and then release the hooks securing the shift panel and ashtray panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION)
 - (2) Lift up the shift panel and indicator panel and disconnect the bulb socket from the indicator panel.

05-18



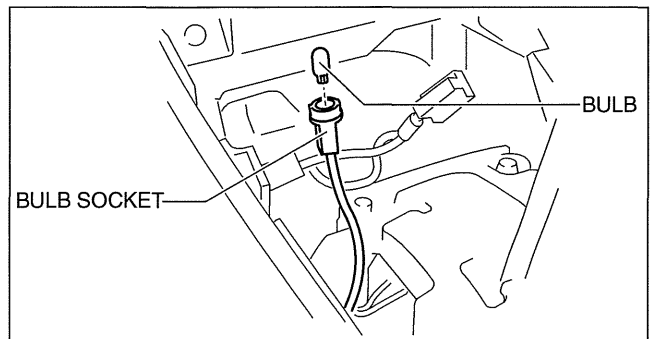
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- (3) Remove the shift panel and indicator pane from the selector lever as a single unit.



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6. Remove the bulb from the bulb socket.
7. Install in the reverse order of removal.

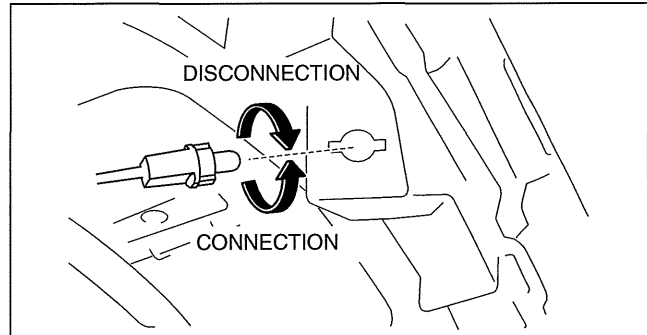


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AUTOMATIC TRANSAXLE SHIFT MECHANISM

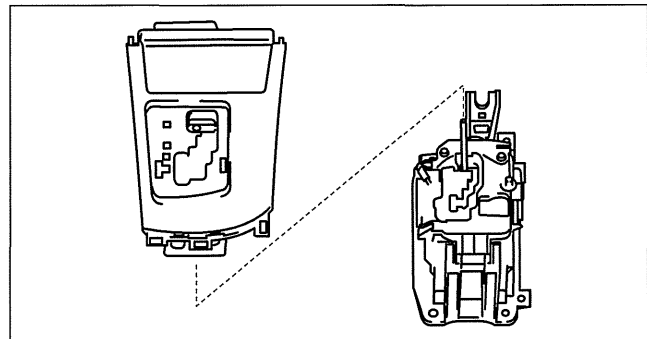
Selector Cable Adjustment

1. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
2. Disconnect the negative battery cable.
3. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
4. Remove the knob. (See 05-18-2 Selector Lever Removal/Installation.)
5. Remove the shift panel and indicator panel as a single unit.
 - (1) Release the hooks securing the shift panel and console, and then release the hooks securing the shift panel and ashtray panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (2) Lift up the shift panel and indicator panel and disconnect the bulb socket from the indicator panel.



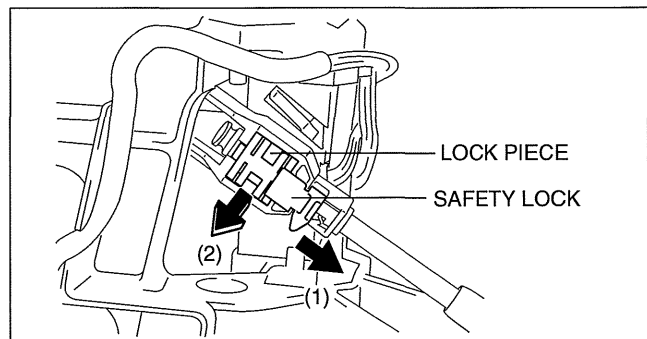
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- (3) Remove the shift panel and indicator panel from the selector lever as a single unit.
6. Shift the selector lever to the P position.



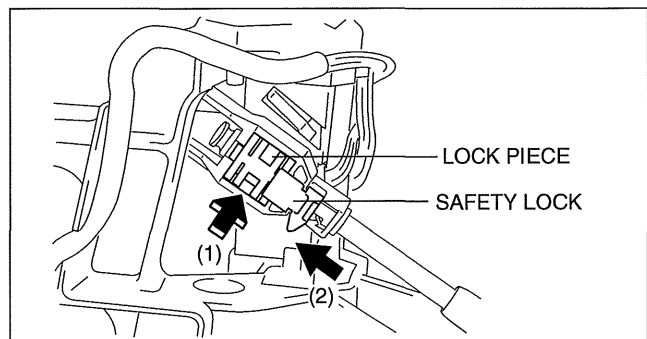
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7. Unlock the lock piece of the selector cable end (selector lever side) in the order as shown in the figure.
8. Verify that the manual shaft is in the P position.



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9. Lock the lock piece and safety lock of the selector cable end (selector lever side) in the order as shown in the figure.



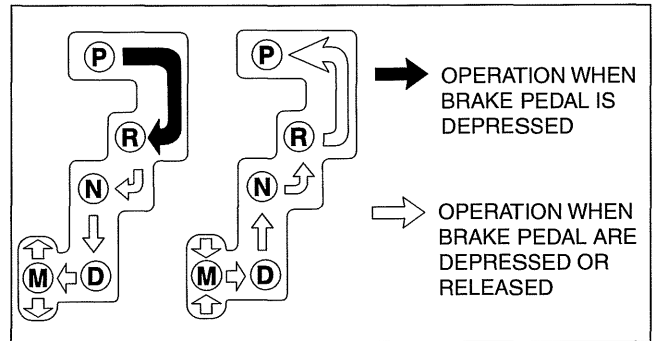
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AUTOMATIC TRANSAXLE SHIFT MECHANISM

SELECTOR LEVER INSPECTION

id051800297000

1. Switch the ignition to ON.
2. Perform the following procedures to inspect the selector lever.
 - If there is any malfunction, adjust the selector cable. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (1) Verify that the selector lever can be operated as shown in the figure.
- (2) Verify that the selector lever can be operated smoothly and moderately.



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SHIFT-LOCK SYSTEM INSPECTION

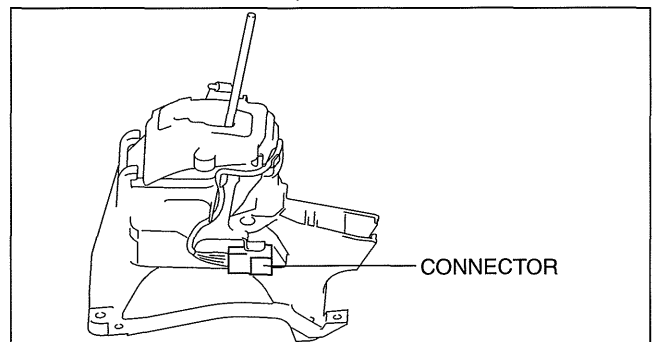
id051800297100

Shift-Lock System Inspection

1. Switch the ignition to ON.
2. Shift the selector lever to the P position.
3. Perform the following procedures to inspect the shift-lock system.
 - If there is any malfunction, inspect the shift-lock solenoid and P position switch. (See 05-18-11 Shift-Lock Solenoid and P Position Switch Inspection.)
- (1) Verify that the selector lever cannot be shifted from P to R position when the brake pedal is released.
- (2) Verify that the selector lever can be shifted from P to R position when the brake pedal is depressed.

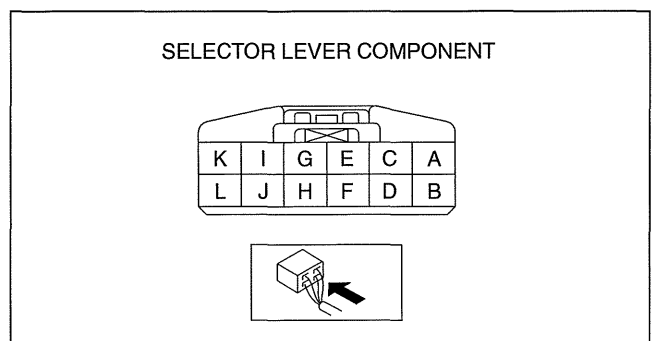
Shift-Lock Solenoid and P Position Switch Inspection

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (4) Disconnect the selector lever component connector.



am3uuw0000299

2. Measure the voltage between the selector lever component terminals.
 - If there is any malfunction, repair or replace the related wiring harness.
 - If there is no malfunction even though the shift-lock system has any malfunction, replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)



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05-18

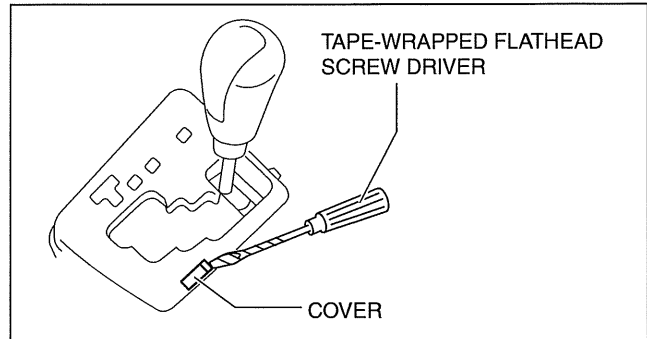
AUTOMATIC TRANSAXLE SHIFT MECHANISM

Shift-lock solenoid specification

Terminals	Connected to	Test condition	Voltage (V)
E—GND	Brake switch	Brake pedal released	Below 1.0
		Brake pedal depressed	B+
I—GND	Ignition switch	Switch the ignition to off	Below 1.0
		Switch the ignition to ACC or ON	B+
K—GND	GND	Under any condition	Below 1.0

Emergency Override Button Inspection

1. Switch the ignition to off.
2. Verify that the selector lever is in the P position.
3. Without the brake pedal depressed, verify that the selector lever cannot be shifted from the P position.
4. Remove the cover using a tape-wrapped flathead screwdriver.
5. Insert the flathead screwdriver into the emergency override hole and push it down.
6. Verify that the selector lever can be shifted from the P position.
 - If there is any malfunction, replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)



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KEY INTERLOCK SYSTEM INSPECTION

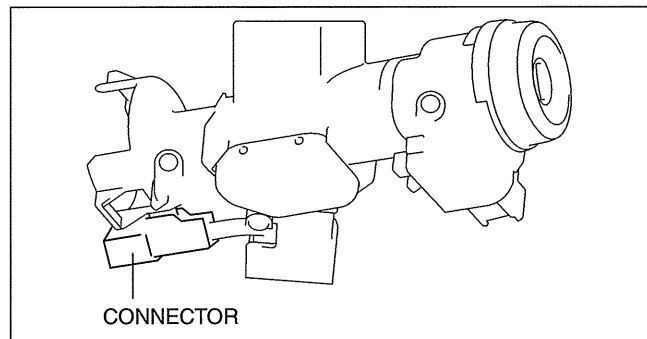
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Key Interlock System Inspection

1. Switch the ignition to ON.
2. Perform the following procedures to inspect the key interlock system.
 - If there is any malfunction, inspect the key interlock solenoid and NOT P position switch. (See 05-18-12 Key Interlock Solenoid Inspection.)(See 05-18-13 NOT P Position Switch Inspection.)
- (1) Verify that the ignition cannot be switched to off when the selector lever is not in the P position.
- (2) Verify that the ignition can be switched to off when the selector lever is in the P position.

Key Interlock Solenoid Inspection

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (4) Disconnect the key interlock solenoid connector.

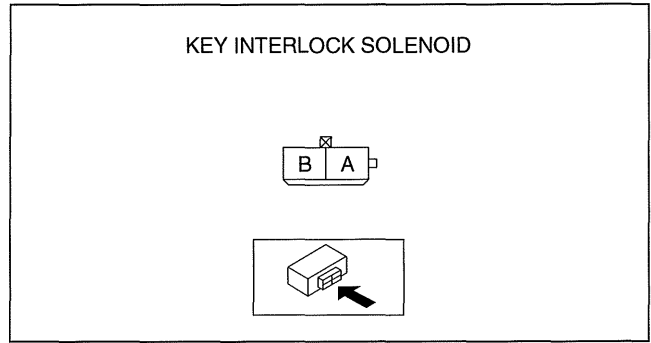


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AUTOMATIC TRANSAXLE SHIFT MECHANISM

2. Measure the resistance between the key interlock solenoid terminals A and B.
 - If there is any malfunction, replace the steering lock. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

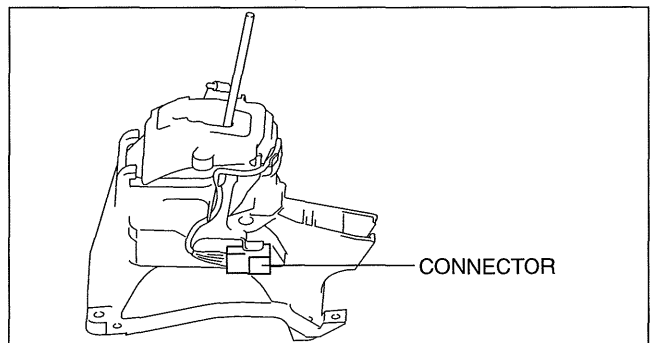
Key interlock solenoid specification
Approx.36 ohms



am3uuw0000243

NOT P Position Switch Inspection

1. Perform the following procedures.
 - (1) Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
 - (2) Disconnect the negative battery cable.
 - (3) Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (4) Disconnect the selector lever component connector.



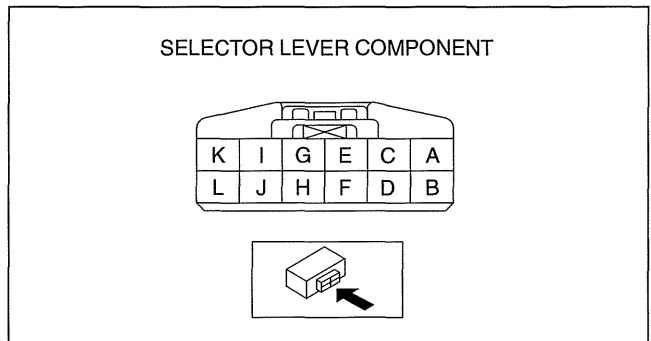
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05-18

2. Inspect the continuity between the selector lever component terminals G and K.
 - If there is any malfunction, replace the selector lever component. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)

NOT P position switch specification

Test condition	Continuity
P position	No continuity
Except P position	Continuity



am3uuw0000243

TECHNICAL DATA

05-50 TECHNICAL DATA

TRANSMISSION/TRANSAXLE

TECHNICAL DATA 05-50-1
 Clutch..... 05-50-1
 Manual Transaxle [G35M-R] 05-50-1

Manual Transaxle [G66M-R]05-50-1
 Manual Transaxle [A26M-R]05-50-1
 Automatic Transaxle [FS5A-EL]05-50-2

TRANSMISSION/TRANSAXLE TECHNICAL DATA

id055000800100

Clutch

Item	Specification
Clutch fluid	SAE J1703 or FMVSS116 DOT-3
Clutch pedal height (Reference value)	142.8 mm {5.622 in}
Distance A, from clutch disengagement point to full stroke (Reference value)	23 mm {0.906 in} or more
Distance B, from clutch disengagement point to floor mat (Reference value)	64.9 mm {2.56 in} or more
Clutch pedal stroke (Reference value)	LF, L3 WITH TC: 135 mm {5.31 in} L5: 126.1 mm {4.965 in}
Clutch cover diaphragm spring fingers maximum depth	0.6 mm {0.024 in}
Maximum clearance of flatness of the pressure plate [G35M-R, G66M-R]	0.5 mm {0.020 in}
Maximum clearance of flatness of the pressure plate [A26M-R]	0.3 mm {0.01 in}
Clutch cover diaphragm spring fingers maximum height difference	1.0 mm {0.039 in}
Clutch disc minimum depth	0.3 mm {0.012 in}
Clutch disc maximum runout	0.7 mm {0.03 in}
Flywheel maximum runout [G35M-R, G66M-R]	0.1 mm {0.004 in}
Flywheel maximum runout [A26M-R]	1.5 mm {0.059 in}

05-50

Manual Transaxle [G35M-R]

Item	Specification
Manual transaxle oil Grade	API service GL-4
Manual transaxle oil Viscosity	SAE 75W-80
Manual transaxle oil capacity (approx. quantity)	2.77 L {2.93 US qt, 2.44 Imp qt}

Manual Transaxle [G66M-R]

Item	Specification
Manual transaxle oil Grade	API service GL-4
Manual transaxle oil Viscosity	SAE 75W-80
Manual transaxle oil Capacity (approx. quantity)	2.85 L {3.01 US qt, 2.51 Imp qt}

Manual Transaxle [A26M-R]

Item	Specification
Manual transaxle oil Grade	API service GL-4
Manual transaxle oil Viscosity	SAE 75W-80
Manual transaxle oil Capacity (approx. quantity)	2.4—2.6 L {2.6—2.7 US qt, 2.12—2.28 Imp qt}

TECHNICAL DATA

Automatic Transaxle [FS5A-EL]

Item	Specification
ATF Type	ATF M-V Draining ATF from drain plug: 3.0 L {3.2 US qt, 2.6 Imp qt} Overhauling transaxle: 5.0 L {5.3 US qt, 4.4 Imp qt}

Line Pressure

Test Condition		Specification (kPa {kgf/cm ² , psi})	
		LF	L5
Idle	D range	330—470 {3.37—4.79, 47.9—68.1}	
	M range (1GR, 2GR)	330—470 {3.37—4.79, 47.9—68.1}	
	R position	490—710 {5.00—7.23, 71.1—102.0}	
Stall	D range	1,200—1,320 {12.24—13.46, 174.1—191.4}	
	M range (1GR, 2GR)	1,200—1,320 {12.24—13.46, 174.1—191.4}	
	R position	1,630—1,950 {16.63—19.88, 236.5—282.8}	1,630—1,950 {16.63—19.88, 236.5—282.8}

Stall Speed

Test Condition	Specification (rpm)	
	LF	L5
D range	2,200—2,800	2,400—3,000
M range	2,200—2,800	2,400—3,000
R position	2,200—2,800	2,400—3,000

Time Lag

Test Condition	Specification (s)	
	LF	L5
From N position to D range	0.4—0.7	
From N position to R position	0.4—0.7	

SERVICE TOOLS

05-60 SERVICE TOOLS

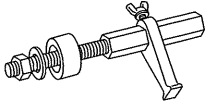
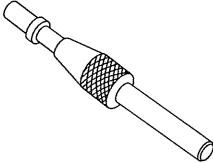
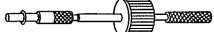
TRANSMISSION/TRANSAXLE SST... 05-60-1
 Clutch..... 05-60-1
 Manual Transaxle [G35M-R] 05-60-1

Manual Transaxle [G66M-R]05-60-1
 Manual Transaxle [A26M-R]05-60-1
 Automatic Transaxle [FS5A-EL]05-60-2

TRANSMISSION/TRANSAXLE SST

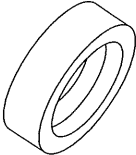
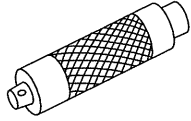
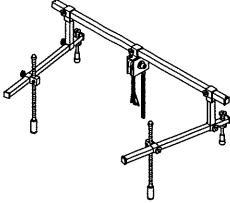
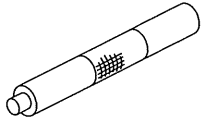
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Clutch

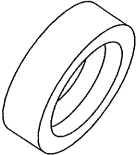
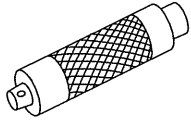
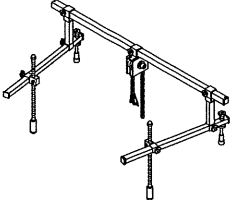
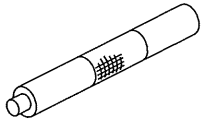
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05-60

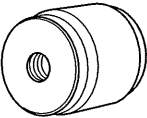
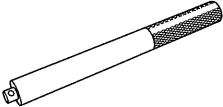
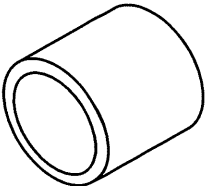
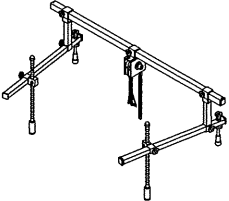
Manual Transaxle [G35M-R]

<p>49 G030 796</p> <p>Body</p> 	<p>49 G030 797</p> <p>Handle</p> 	<p>49 C017 5A0</p> <p>Engine support</p> 
<p>49 M005 797</p> <p>Handle</p> 	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>

Manual Transaxle [G66M-R]

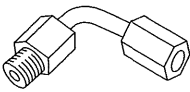
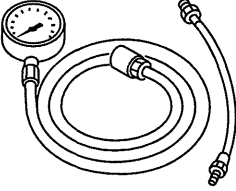
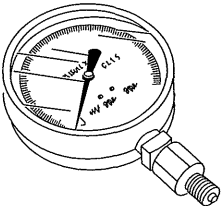
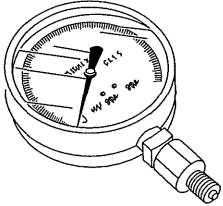
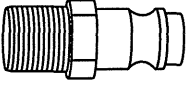
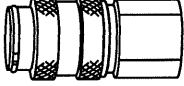
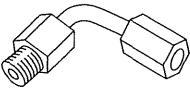
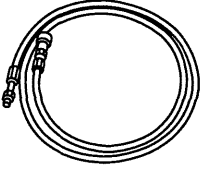
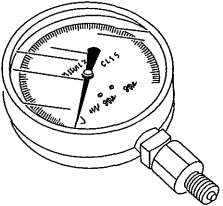
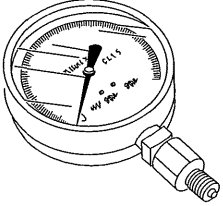
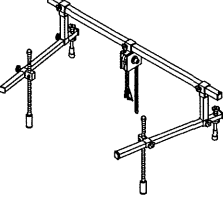
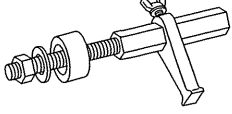

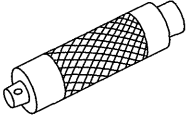
<p>49 G030 796</p> <p>Body</p> 	<p>49 G030 797</p> <p>Handle</p> 	<p>49 C017 5A0</p> <p>Engine support</p> 
<p>49 M005 797</p> <p>Handle</p> 	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>

Manual Transaxle [A26M-R]

<p>49 W027 001</p> <p>Body</p> 	<p>49 F027 003</p> <p>Handle</p> 	<p>49 U027 003</p> <p>Oil Seal Installer</p> 
<p>49 C017 5A0</p> <p>Engine support</p> 	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>

SERVICE TOOLS

Automatic Transaxle [FS5A-EL]

<p>49 H019 002</p> <p>Adapter</p> 	<p>49 0378 400C</p> <p>Oil pressure gauge set</p> 	<p>49 B019 901B</p> <p>Oil pressure gauge</p> 
<p>49 B019 902A</p> <p>Oil pressure gauge</p> 	<p>49 D019 910</p> <p>Adapter (Part of 49 D019 9A2)</p> 	<p>49 D019 911</p> <p>Adapter (Part of 49 D019 9A2)</p> 
<p>49 D019 913</p> <p>Adapter (Part of 49 D019 9A2)</p> 	<p>49 D019 909</p> <p>Hose (Part of 49 D019 9A2)</p> 	<p>49 D019 908</p> <p>Oil pressure gauge (Part of 49 D019 9A2)</p> 
<p>49 D019 907</p> <p>Oil pressure gauge (Part of 49 D019 9A2)</p> 	<p>49 C017 5A0</p> <p>Engine support</p> 	<p>49 E011 1A0</p> <p>Ring gear brake set</p> 
<p>49 G030 796</p> <p>Body (Part of 49 G030 795)</p> 	<p>49 G030 797</p> <p>Handle (Part of 49 G030 795)</p> 	<p>-</p>

STEERING

06
SECTION

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06-02 ON-BOARD DIAGNOSTIC

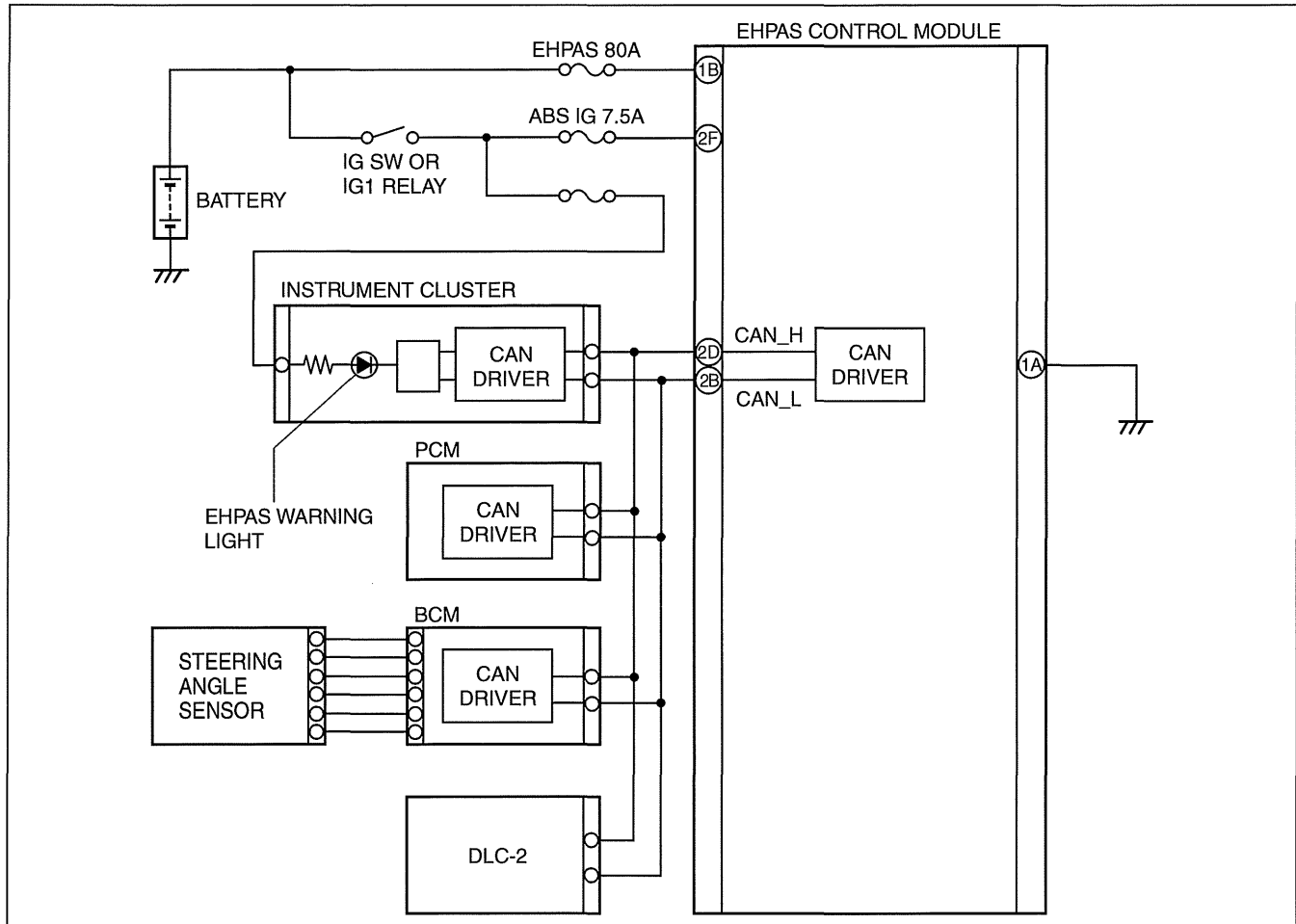
ELECTRO HYDRAULIC POWER		DTC Table	06-02-4
ASSIST STEERING (EHPAS) SYSTEM		PID/DATA Monitor Table	06-02-4
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06-02

ON-BOARD DIAGNOSTIC

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) SYSTEM WIRING DIAGRAM

id060200814000



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ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS

id060200814100

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the EHPAS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the EHPAS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 2 tests:
 - Read/clear diagnostic results, PID monitor and record.

Read/clear diagnostic results

- This function allows reading or clearing of DTCs in the EHPAS CM memory.

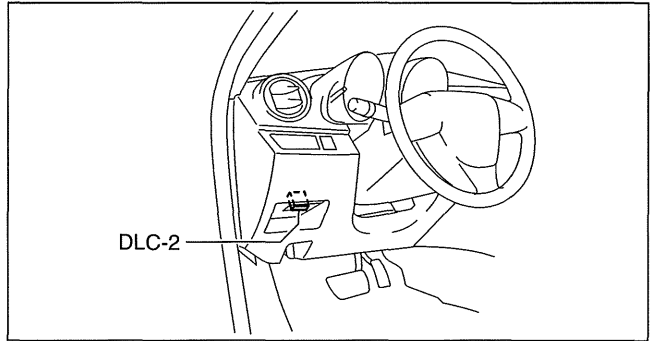
PID/Data monitor and record

- This function allows access of certain data values, input signals, calculated values, and system status information.

ON-BOARD DIAGNOSTIC

Reading DTCs Procedure

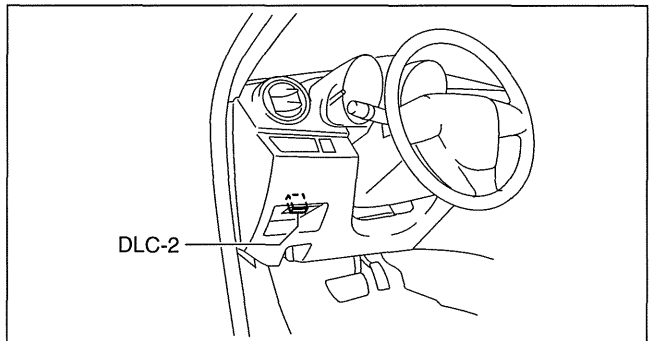
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "EPS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the EHPAS. (See 06-02-3 Clearing DTCs Procedures.)



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Clearing DTCs Procedures

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "EPS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 06-02-3 Reading DTCs Procedure.)
8. Verify that no DTCs are displayed.

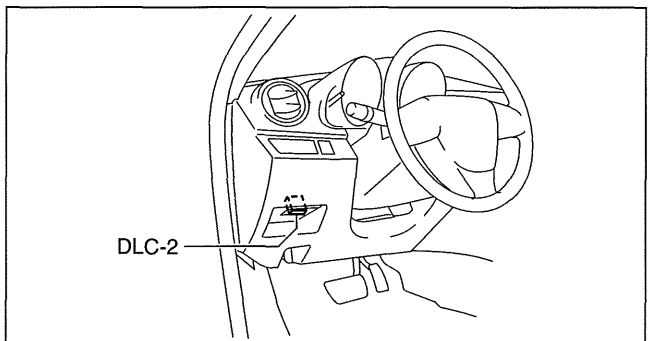


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PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "EPS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



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Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

ON-BOARD DIAGNOSTIC

DTC Table

DTC	Diagnosis system component	Page
B1238	EHPAS CM	(See 06-02-5 DTC B1238.)
B1317	Battery power supply	(See 06-02-5 DTC B1317/B1318.)
B1318	Battery power supply	
B1342	EHPAS CM	(See 06-02-7 DTC B1342.)
B1352	Ignition power supply	(See 06-02-7 DTC B1352.)
B2477	EHPAS CM configuration	(See 06-02-9 DTC B2477.)
C1099	Electric power steering oil pump (motor)	(See 06-02-9 DTC C1099.)
U0073	CAN system communication error	(See 06-02-9 DTC U0073.)
U0100	Communication error to PCM	(See 06-02-10 DTC U0100/U0140/U0155.)
U0140	Communication error to BCM	
U0155	Communication error to instrument cluster	
U1938	Signal error from BCM	(See 06-02-10 DTC U1938.)
U2023	Signal error from PCM	(See 06-02-11 DTC U2023.)

PID/DATA Monitor Table

PID Name (Definition)	Unit/ Condition	Condition/Specification	Action	EHPAS CM terminal
DTC_CNT (Number of continuous codes)	—	<ul style="list-style-type: none"> • DTCs are detected: 1—255 • No DTCs are detected: 0 	Perform inspection using appropriate DTC.	—
ENGRPM (Engine speed signal)	RPM	<ul style="list-style-type: none"> • Engine speed 1,000 rpm: 1000 RPM 	Inspect the PCM. (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].)	—
MTR_AMP (Pump Motor Operation Current)	A	<ul style="list-style-type: none"> • Indicates pump motor operation current. 	Replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/ INSTALLATION.)	—
RPM_ACT (Actual pump motor revolution per minutes)	RPM	<ul style="list-style-type: none"> • Indicates pump motor revolution per minutes. 	Replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/ INSTALLATION.)	—
RPM_TGT (Target pump motor revolution per minutes)	RPM	<ul style="list-style-type: none"> • Indicates pump motor target revolution per minutes. 	Replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/ INSTALLATION.)	—
STEER_RATE (Steering wheel rotation rate)	°/s	<ul style="list-style-type: none"> • Indicates steering wheel rotation rate. 	Inspect steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.)	—
BOARD_T (Printed circuit board temperature)	°F, °C	<ul style="list-style-type: none"> • Indicates circuit temperature. 	Replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/ INSTALLATION.)	—
VPWR (Module supply voltage)	V	<ul style="list-style-type: none"> • Switch the ignition to ON: B+ 	Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].)	1B, 2F

ON-BOARD DIAGNOSTIC

PID Name (Definition)	Unit/ Condition	Condition/Specification	Action	EHPAS CM terminal
VSS (Vehicle speed)	KPH, MPH	<ul style="list-style-type: none"> Vehicle is stopped: 0 KPH/0 MPH Vehicle speed 20 km/h {12 mph}: 20 KPH/12 MPH 	Inspect the PCM. (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)	—

DTC B1238

id060200808000

DTC B1238		EHPAS CM
DETECTION CONDITION	<ul style="list-style-type: none"> Excessive load to electric power steering oil pump 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Due to the continuously static steering, being turned to the lock end, or other causes, the internal temperature of the electric power steering oil pump is more than the specified value. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	SWITCH IGNITION TO OFF AND ALLOW ELECTRIC POWER STEERING OIL PUMP TO COOL DOWN.		
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Switch the ignition to ON. Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Replace the electric power steering oil pump, then go to the next step. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

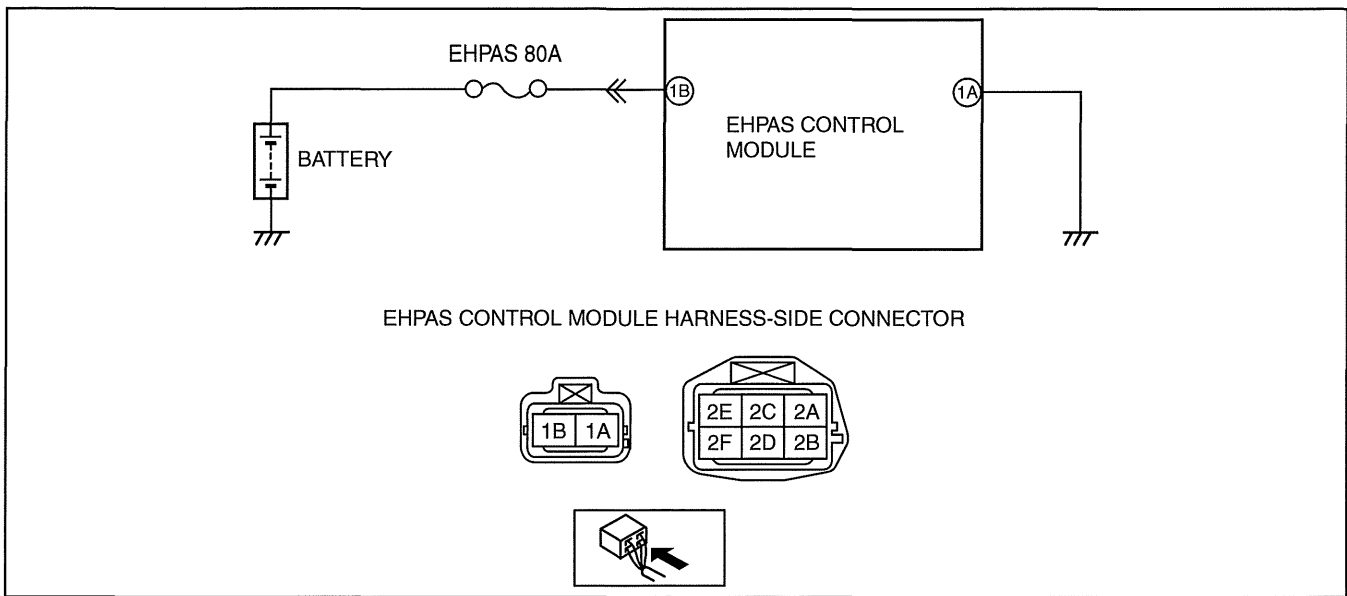
06-02

DTC B1317/B1318

id060200808100

DTC B1317, B1318		Battery power supply
DETECTION CONDITION	<ul style="list-style-type: none"> Low voltage or high voltage are detected at the voltage monitor. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Battery and/or generator malfunction Open or short circuit in wiring harness between EHPAS CM terminal 1B and battery positive terminal 	

ON-BOARD DIAGNOSTIC



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT BATTERY VOLTAGE • Is the battery terminal voltage normal?	Yes	Make sure that battery terminal connection is okay. Go to the next step.
		No	Charge or replace the battery, then go to Step 6.
2	INSPECT BATTERY GRAVITY • Is the battery specific gravity as specified?	Yes	Go to the next step.
		No	Replace the battery, then go to Step 6.
3	INSPECT CHARGING SYSTEM • Are the generator and drive belt tension normal?	Yes	Go to the next step.
		No	Replace the generator and/or drive belt if necessary. Go to step 6.
4	INSPECT EHPAS CM POWER SUPPLY CIRCUIT FOR OPEN OR SHORT CIRCUIT • Start the engine. • Measure the voltage between following EHPAS CM terminal (wiring harness-side) and ground. — EHPAS CM: 1B—ground • Is the voltage 9 V or more ?	Yes	Go to the next Step.
		No	Repair or replace the wiring harness for open circuit between the EHPAS CM and ground, then go to Step 6.
5	INSPECT EHPAS CM GROUND CIRCUIT FOR POOR GROUND OR OPEN CIRCUIT • Switch the ignition to off. • Measure the resistance between the following EHPAS CM terminal (wiring harness-side) and ground. — EHPAS CM: 1A—ground • Is the resistance within 0—1 ohm ?	Yes	Go to the next step.
		No	If there is no continuity: • Repair or replace the wiring harness for open circuit between the EHPAS CM and ground, then go to the next step. If the resistance is not within 0—1 ohm : • Repair or replace the wiring harness for poor ground, then go to the next step.
6	VERIFY THAT THE SAME DTC IS NOT PRESENT • Make sure to reconnect all disconnected connectors. • Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) • Is the same DTC present?	Yes	Replace the electric power steering oil pump, then go to the next step. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCS output?	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B1342

id060200808200

DTC B1342	EHPAS CM
DETECTION CONDITION	<ul style="list-style-type: none"> EHPAS CM on-board diagnostic function detects system malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> EHPAS CM internal malfunction Poor connection at connectors

Diagnostic procedure

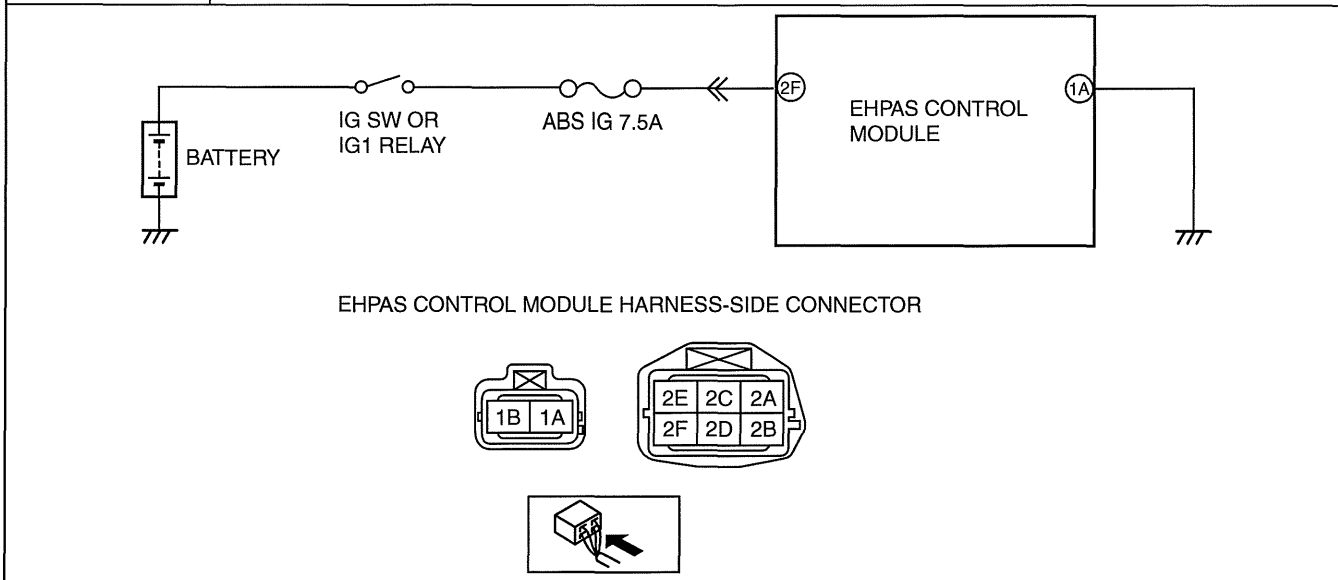
STEP	INSPECTION		ACTION
1	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Replace the electric power steering oil pump, then go to the next step. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

06-02

DTC B1352

id060200808300

DTC B1352	Ignition power supply
DETECTION CONDITION	<ul style="list-style-type: none"> Less than 2.5 V detected at the voltage monitor of the EHPAS CM
POSSIBLE CAUSE	<ul style="list-style-type: none"> Short to ground in wiring harness between EHPAS CM terminal 2F and ignition switch or ignition relay Open circuit in wiring harness between EHPAS CM terminal 2F and ignition switch or ignition relay Poor connection at connectors



ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT FUSES <ul style="list-style-type: none"> • Are the fuses normal? 	Yes	Go to the next step.
		No	Replace the fuses, then go to the step 3.
2	INSPECT EHPAS CM POWER SUPPLY CIRCUIT FOR OPEN OR SHORT CIRCUIT <ul style="list-style-type: none"> • Start the engine. • Measure the voltage between following EHPAS CM terminal (wiring harness-side) and ground. <ul style="list-style-type: none"> — EHPAS CM: 2F—ground • Is voltage 10 V or more? 	Yes	Go to the next step.
		No	Repair or replace the harness for open circuit between EHPAS CM and ground, then go to next step.
3	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) • Is same DTC present? 	Yes	Replace the electric power steering oil pump, then go to the next step. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	Troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B2477

id060200808400

DTC B2477	EHPAS CM configuration
DETECTION CONDITION	<ul style="list-style-type: none"> Configuration setting failure is detected.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Module configuration procedure was not completed properly.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY CONFIGURATION <ul style="list-style-type: none"> Has the EHPAS CM configuration been performed? 	Yes	Go to the next step.
		No	Perform configuration using the M-MDS. (See 06-14-32 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION.)
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

06-02

DTC C1099

id060200808500

DTC C1099	Electric power steering oil pump (motor)
DETECTION CONDITION	<ul style="list-style-type: none"> The EHPAS CM detects that the motor speed is less than the specified value.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Motor internal malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	REPLACE ELECTRIC POWER STEERING OIL PUMP <ul style="list-style-type: none"> Replace the electric power steering oil pump, then go to the next step. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.) 		
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

DTC U0073

id060200808600

DTC U0073	CAN system communication error
DETECTION CONDITION	<ul style="list-style-type: none"> Error detected in line between CAN connection module and CAN bus communication line
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in CAN communication line Malfunction in each control module connecting to CAN communication line EHPAS CM malfunction. Poor connection at connectors

Diagnostic procedure

- Perform inspection according to the diagnostic procedure in BODY & ACCESSORIES. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

ON-BOARD DIAGNOSTIC

DTC U0100/U0140/U0155

id060200808700

DTC	U0100	Communication error to PCM
	U0140	Communication error to BCM
	U0155	Communication error to instrument cluster
DETECTION CONDITION	<ul style="list-style-type: none"> • U0100 — Communication error to PCM is detected in CAN communication • U0140 — Communication error to BCM is detected in CAN communication • U0155 — Communication error to instrument cluster is detected in CAN communication 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CAN system wiring harness open or short circuit with PCM • CAN system wiring harness open or short circuit with BCM • CAN system wiring harness open or short circuit with instrument cluster • Poor connection at connectors 	

Diagnostic procedure

- Perform inspection according to the diagnostic procedure in BODY & ACCESSORIES. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

DTC U1938

id060200808900

DTC	U1938	Signal error from BCM
DETECTION CONDITION	<ul style="list-style-type: none"> • Error detected in signal from BCM via CAN communication 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • BCM malfunction • EHPAS CM malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT FOR BCM MALFUNCTION <ul style="list-style-type: none"> • Using the M-MDS, perform the DTC inspection for the BCM. (See 09-02F-7 DTC INSPECTION [BCM].) • Are any DTCs detected? 	Yes	Go to applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].) DTC troubleshooting completed, then go to the next step.
		No	Go to the next step.
2	VERIFY THAT SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) • Is the same DTC present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC U2023

id060200809000

DTC U2023	Signal error from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> Error detected in signal from PCM via CAN communication
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction EHPAS CM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR PCM MALFUNCTION <ul style="list-style-type: none"> Using the M-MDS, perform the DTC inspection for the PCM. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs detected? 	Yes	Go to applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].) DTC troubleshooting completed, then go to the next step.
		No	Go to the next step.
2	VERIFY THAT SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTC from the memory. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) Is the same DTC present? 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the EHPAS CM. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) 	Yes	Go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

06-02

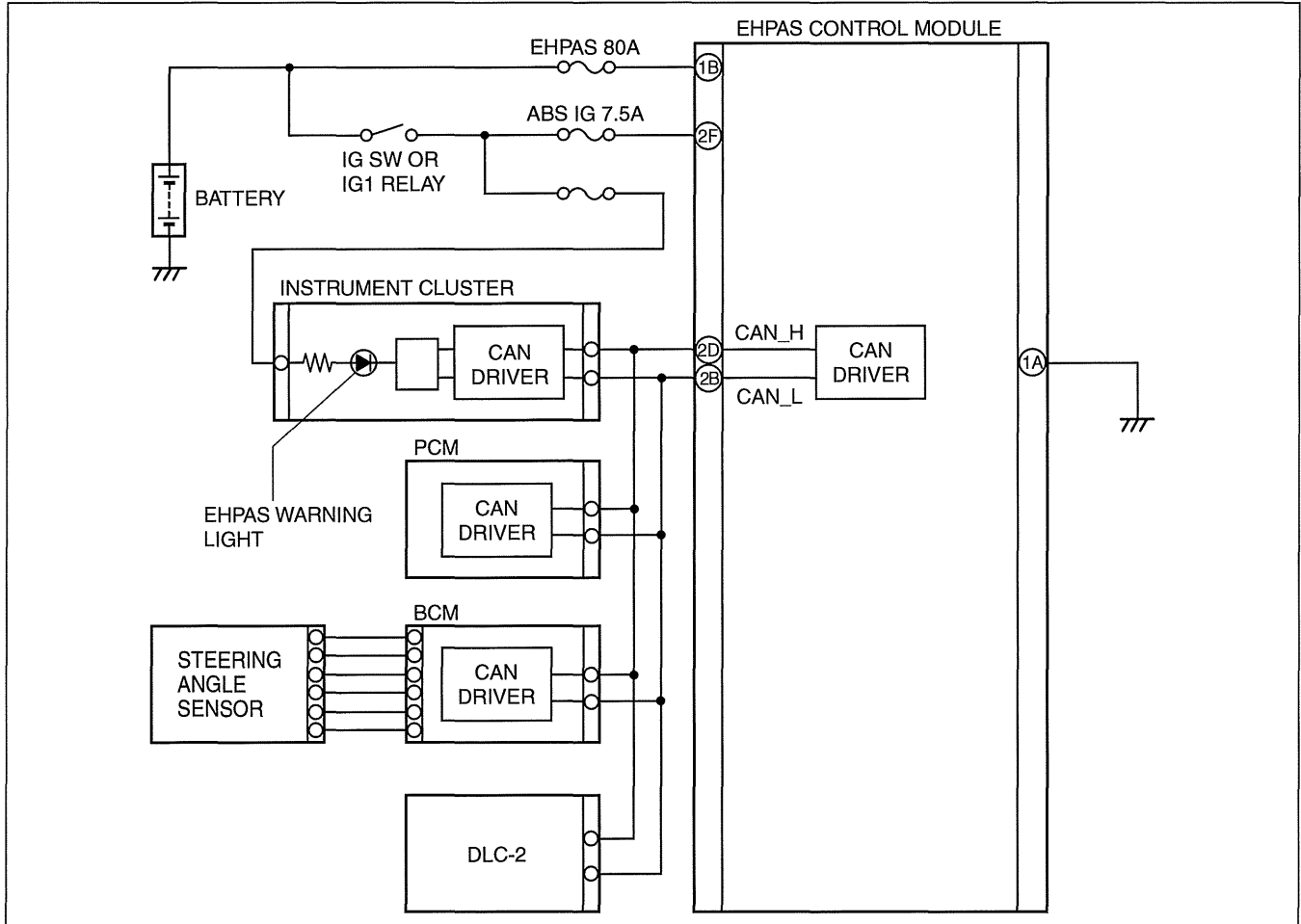
06-03 SYMPTOM TROUBLESHOOTING

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) SYSTEM
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 Troubleshooting 06-03-2

SYMPTOM TROUBLESHOOTING 06-03-3
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NO.2 EXCESSIVE NOISE FROM ELECTRIC POWER STEERING OIL PUMP 06-03-3

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) SYSTEM WIRING DIAGRAM

id06030080000



06-03

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FOREWORD

id060300800100

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To inspect the DTC, follow the DTC Inspection steps. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)

SYMPTOM TROUBLESHOOTING

PRECAUTION

id060300800300

Intermittent Concern Troubleshooting

Vibration method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the following steps.

Note

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Inspect the following:
 - Connectors not fully seated.
 - Wiring harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harness pass through the firewall, body panels and other panels are the major areas to be inspected.

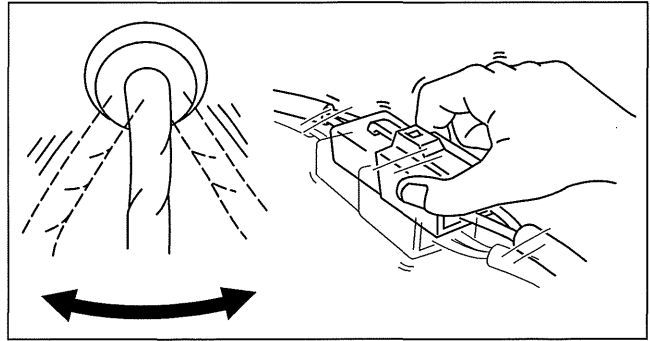
Inspection method for switch and/or sensor connectors or wires

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

Note

- If the engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.
4. Turn the switch on manually.
5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.
 - If the PID value is unstable, inspect for poor connection.



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Inspection method for sensors

1. Connect the M-MDS to the DLC-2.
2. Switch the ignition to ON (engine off).

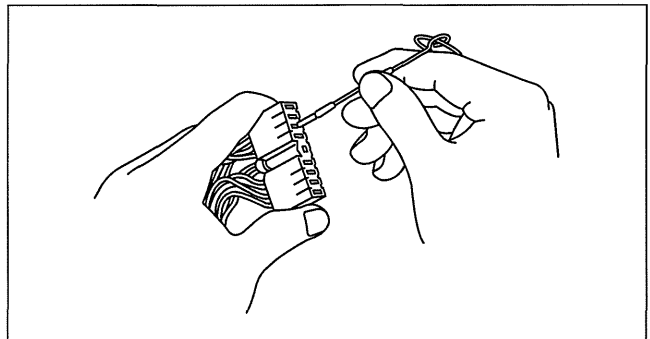
Note

- If the engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.
 - If the PID value is unstable or a malfunction occurs, inspect for poor connection and/or poorly mounted sensor.

Connector terminal inspection method

1. Inspect the connection of each female terminal.
2. Insert the male terminal to the female terminal and inspect the female terminal for looseness.



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SYMPTOM TROUBLESHOOTING

SYMPTOM TROUBLESHOOTING

id060300800400

- Verify the symptom, and perform troubleshooting according to the appropriate number.

No.	Symptom
1	Poor power steering assist
2	Excessive noise from electric power steering oil pump

NO.1 POOR POWER STEERING ASSIST

id060300800200

1	Poor power steering assist
TROUBLESHOOTING HINTS	
<ul style="list-style-type: none"> • EHPAS DTC is stored • Steering gear and linkage malfunction • Power steering fluid leakage from electro hydraulic power assist steering (EHPAS) fluid line • EHPAS control module malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	CONFIRM EHPAS DTC <ul style="list-style-type: none"> • Retrieve the EHPAS DTC using the M-MDS. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.) • Are any DTCs present? 	Yes	Record all DTC and go to the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)
		No	Go to the next step.
2	INSPECT STEERING WHEEL ASSIST FUNCTION <ul style="list-style-type: none"> • Disconnect the EHPAS control module connector (2-pin). • Is the power steering assist function changed? 	Yes	Go to the next step.
		No	Visually inspect the steering gear and linkage. Replace the steering gear and linkage if the malfunction is found. (See 06-14-16 STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
3	INSPECT IF THERE IS ANY FLUID LEAK FROM THE EHPAS FLUID LINE <ul style="list-style-type: none"> • Visually inspect the EHPAS fluid line. • Is there any fluid leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection result.
		No	Replace the EHPAS control module. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)

06-03

NO.2 EXCESSIVE NOISE FROM ELECTRIC POWER STEERING OIL PUMP

id060300800600

2	Excessive noise from electric power steering oil pump
TROUBLESHOOTING HINTS	
<ul style="list-style-type: none"> • Power steering fluid level is low • Air in EHPAS fluid line • Electric power steering oil pump is poor installation • Mount rubber (on bracket) is deterioration 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT POWER STEERING FLUID LEVEL <ul style="list-style-type: none"> • Inspect the power steering fluid level when engine is cold. • Is the power steering fluid level between MAX and MIN of the reserve tank? 	Yes	Go to the next step.
		No	Perform the Fluid Leakage Inspection and add the fluid. (See 06-14-6 POWER STEERING FLUID INSPECTION.)
2	INSPECT AIR IN EHPAS FLUID LINE <ul style="list-style-type: none"> • Perform the air bleed. (See 06-14-3 AIR BLEEDING.) • Is the symptom solved? 	Yes	Symptom troubleshooting completed.
		No	Go to the next step.
3	INSPECT ELECTRIC POWER STEERING OIL PUMP INSTALLATION <ul style="list-style-type: none"> • Inspect the electric power steering oil pump installation condition. • Is the electric power steering oil pump installed properly? 	Yes	Inspect the mount rubber condition. If the mount rubber is deterioration, replace the bracket.
		No	Install the electric power steering oil pump properly. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)

06-10 GENERAL PROCEDURES

GENERAL PROCEDURES

(STEERING) 06-10-1
 Wheel and Tire Installation 06-10-1
 Connector Disconnection..... 06-10-1
 Suspension Links
 Removal/Installation..... 06-10-1

Power Steering Related Parts
 Installation.....06-10-1
 Electro Hydraulic Power Assist Steering
 (EHPAS) Related Parts.....06-10-1

GENERAL PROCEDURES (STEERING)

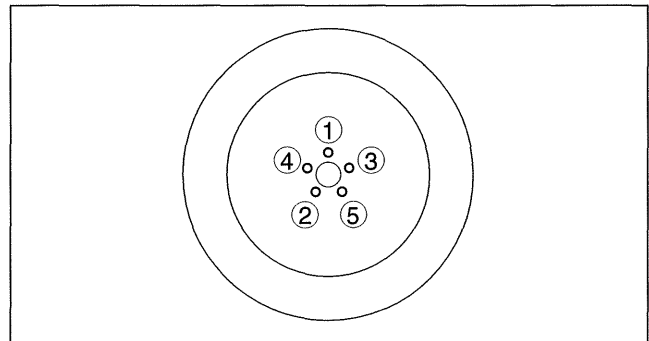
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Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.

Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}



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06-10

Connector Disconnection

1. Disconnect the negative battery cable before performing any work that requires handling of connectors. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)

Suspension Links Removal/Installation

1. For the joint sections with rubber bushings, raise the vehicle using a lift, and then temporarily tighten the installation bolts and nuts. Lower the vehicle to the ground and tighten them completely with the specified torque.

Power Steering Related Parts Installation

1. If any power steering fluid line has been disconnected, perform the following after installation of the power steering components. (See 04-11-3 AIR BLEEDING.) (See 06-14-6 POWER STEERING FLUID INSPECTION.)
 - Power steering fluid amount inspection
 - Power steering fluid leakage inspection
 - Air bleeding

Electro Hydraulic Power Assist Steering (EHPAS) Related Parts

Caution

- If the configuration procedure is not completed, the EHPAS will not operate properly and it might cause an unexpected accident. Therefore, when replacing or removing the electric power steering oil pump, make sure to perform the configuration procedure to ensure the proper EHPAS operation.

1. Make sure that there are no DTCs in the EHPAS memory after working on EHPAS related parts. If there are any codes in the memory, clear them.
2. When replacing or removing the electric power steering oil pump, perform the configuration procedures. (See 06-14-32 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION.)

06-14 POWER STEERING

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ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) SYSTEM

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Air bleeding
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POWER STEERING FLUID

INSPECTION 06-14-6

Fluid Level Inspection 06-14-6

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STEERING WHEEL AND COLUMN

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Looseness, Excessive Play
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Key Cylinder Removal Note 06-14-10

Steering Lock Mounting Bolt,
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Steering Lock, Steering Lock
Mounting Bolt Installation Note 06-14-10

Steering Shaft Component
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Joint Bolt Installation Note 06-14-11

Key Cylinder Installation Note 06-14-11

Steering Wheel Installation Note 06-14-11

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Key Slot Removal Note 06-14-13

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Steering Lock Mounting Bolt,
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Steering Lock, Steering Lock
Mounting Bolt Installation Note 06-14-14

Coil Attachment, Coil Attachment
Mounting Bolt Installation Note 06-14-15

Steering Shaft Component
Installation Note 06-14-15

Joint Bolt Installation Note 06-14-15

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Power Steering Pipe Component
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ELECTRIC POWER STEERING OIL PUMP

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Power Steering Pipe Component
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ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION 06-14-32

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE INSPECTION 06-14-32

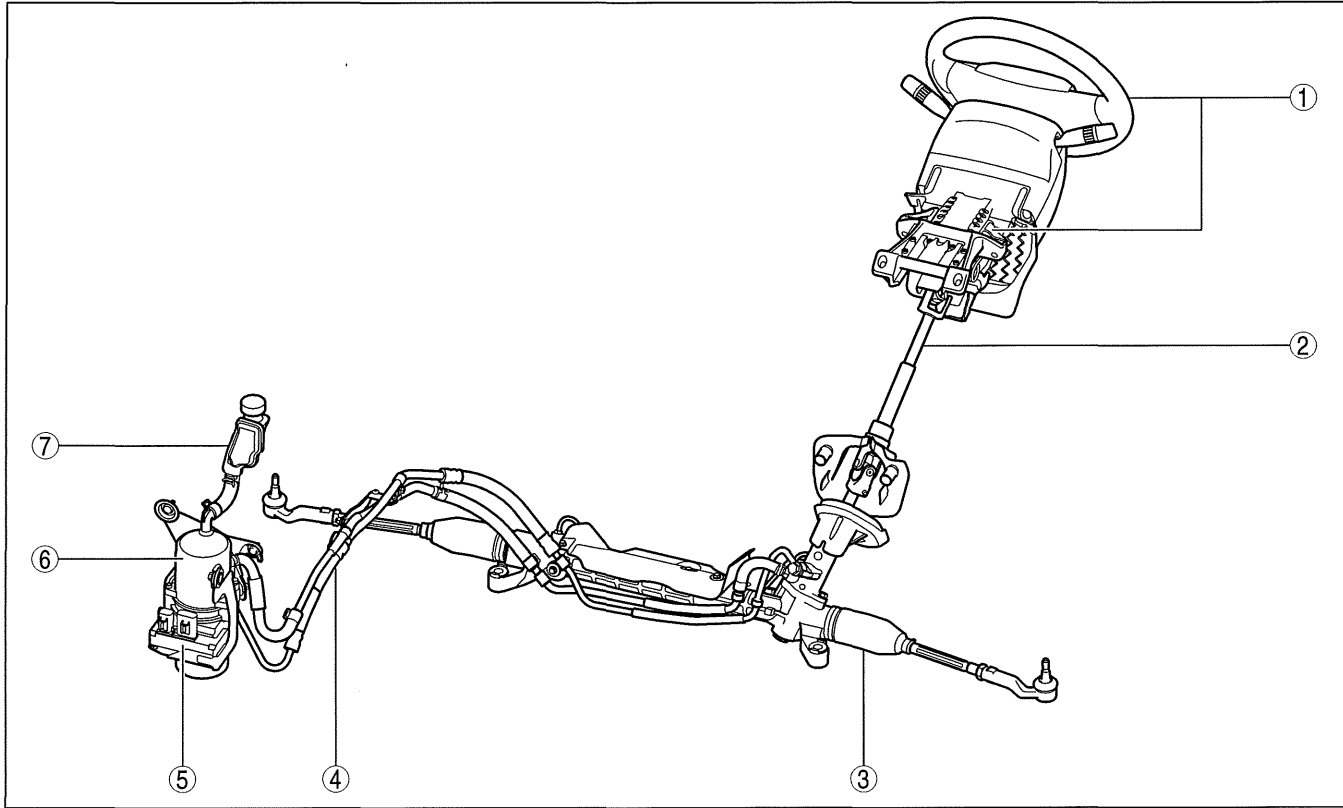
Terminal Voltage Table (Reference) 06-14-32

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POWER STEERING

STEERING LOCATION INDEX

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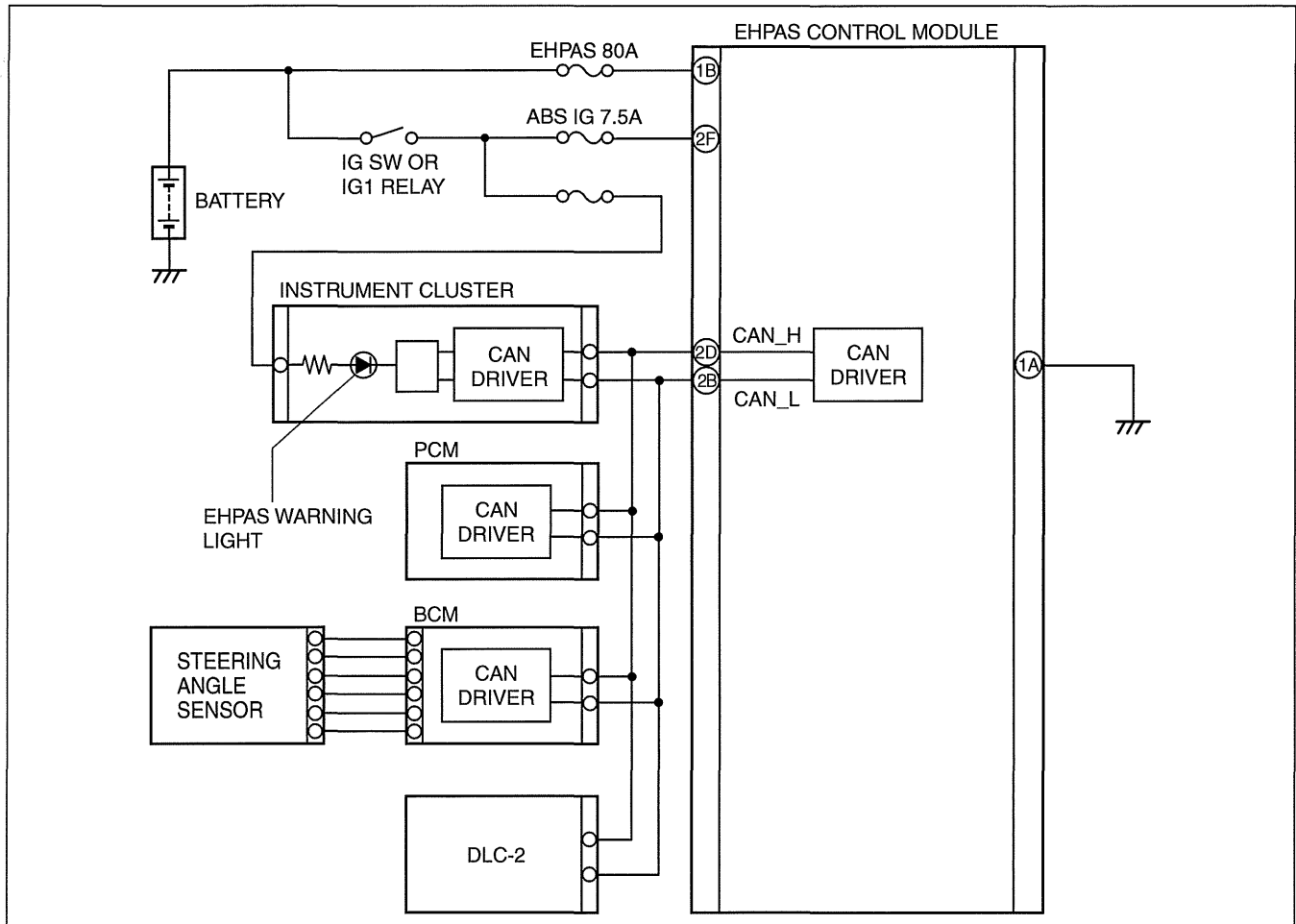
1	<p>Steering wheel and column (See 06-14-7 STEERING WHEEL AND COLUMN INSPECTION.) (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)</p>
2	<p>Steering shaft (See 06-14-16 STEERING SHAFT INSPECTION.)</p>
3	<p>Steering gear and linkage (See 06-14-16 STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.) (See 06-14-18 STEERING GEAR AND LINKAGE DISASSEMBLY.) (See 06-14-21 STEERING GEAR AND LINKAGE INSPECTION.) (See 06-14-22 STEERING GEAR AND LINKAGE ASSEMBLY.)</p>

4	<p>Power steering fluid line component (See 06-14-29 POWER STEERING FLUID LINE COMPONENT REMOVAL/INSTALLATION.)</p>
5	<p>EHPAS CM (See 06-14-32 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION.) (See 06-14-32 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE INSPECTION.)</p>
6	<p>Electric power steering oil pump (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)</p>
7	<p>Sub tank (See 06-14-3 AIR BLEEDING.) (See 06-14-6 POWER STEERING FLUID INSPECTION.)</p>

POWER STEERING

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) SYSTEM WIRING DIAGRAM

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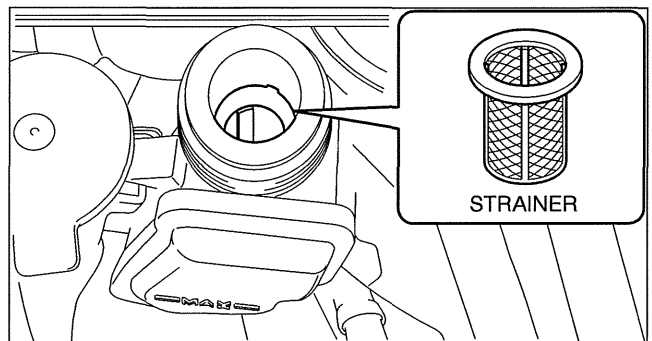
06-14

AIR BLEEDING

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Note

- Verify that the strainer is installed to the sub tank of the vehicle being serviced because the air bleeding procedure differs depending on whether it has a strainer or not.



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POWER STEERING

Air bleeding (vehicles without strainer)

Caution

- **Do not maintain the steering wheel fully turned for 5 s or more. The oil temperature could rise and negatively affect the oil pump.**

1. Inspect the fluid level. (See 06-14-6 POWER STEERING FLUID INSPECTION.)
2. Turn the steering wheel fully to the left and right several times.
3. Reinspect the fluid level.
 - If the fluid level has dropped, add fluid.
4. Repeat Steps 2—3 until the fluid level stabilizes.
5. Start the engine and idle it.
6. Turn the steering wheel fully to the left and right several times.
7. Repeat Step 6 until the fluid is no longer foamy and the fluid level has not dropped.
8. Inspect the fluid level and, if the fluid level has dropped, add fluid to a level between MAX and MIN on the sub tank.

Air bleeding (vehicles with strainer)

Caution

- **If the strainer is removed, impurities may penetrate the power steering system and damage it. To prevent this, always bleed air with the strainer installed.**
- **Do not maintain the steering wheel fully turned for 5 s or more. The oil temperature could rise and damage the oil pump.**

Note

- Add fluid and bleed air using the following procedure. Otherwise, additional time will be required to add fluid because of mesh resistance.

Fluid level adjustment

Note

- The following procedure is for adding (adjusting) fluid if the lack of fluid level has dropped as a result of fluid leakage.

1. Working with two people, one person protects the area around the sub tank using a cloth and adds fluid to the sub tank.

Caution

- **Do not spread a cloth near the drive belt, otherwise the cloth could get caught in the drive belt when starting the engine causing damage to parts in the engine compartment.**

2. The other person starts the engine and idles it.
3. Turn the steering wheel fully to the left and right slowly several times.
 - If the steering wheel operation speed is too fast, the fluid may spatter from the filler port. Do not exceed the steering wheel operation speed reference value.

Steering wheel operation speed (reference value)

90 °/s

4. Inspect the fluid level and, if the fluid level has dropped, repeat Step 1—3 until the level is between MAX and MIN on the sub tank while idling the engine.

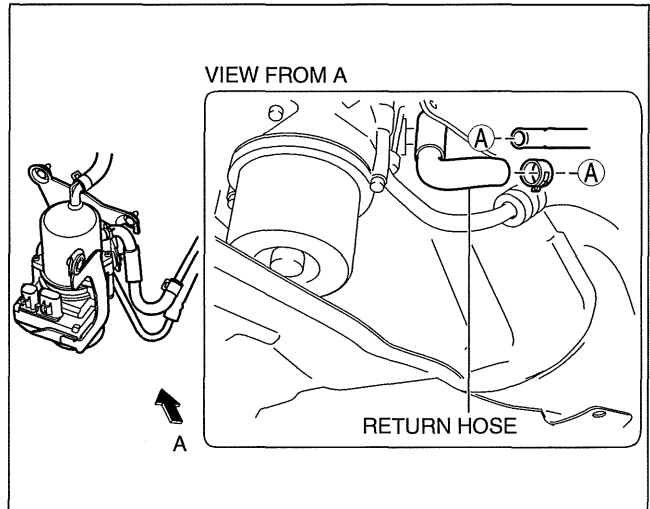
POWER STEERING

Power steering component parts replacement

Note

- The following procedure is for adding fluid to the tank (full amount) after replacing the electric power steering oil pump component or steering gear and linkage.

- Remove the aerodynamic undercover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
- Disconnect the return hose from the power steering pipe component.

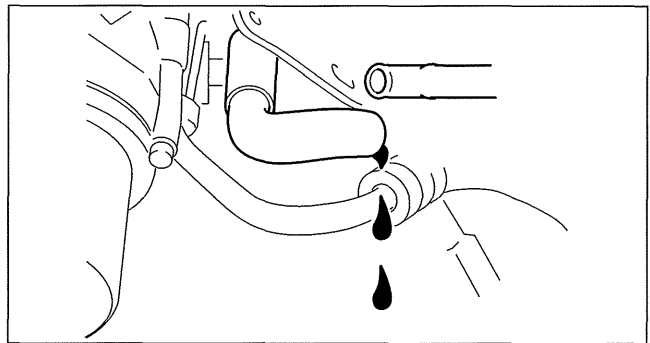


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- Add fluid until fluid escapes from the return hose.
- Assemble the return hose to the power steering pipe component.
- Working with two people, one person protects the area around the sub tank using a cloth and adds fluid to the sub tank.

Caution

- Do not spread a cloth near the drive belt, otherwise the cloth could get caught in the drive belt when starting the engine causing damage to parts in the engine compartment.



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- The other person starts the engine and idles it.
- Turn the steering wheel fully to the left and right slowly several times.
 - If the steering wheel operation speed is too fast, the fluid may spatter from the filler port. Do not exceed the steering wheel operation speed reference value.

Steering wheel operation speed (reference value)

90 °/s

- Inspect the fluid level and, if the fluid level has dropped, repeat Step 5—7 until the level is between MAX and MIN on the sub tank while idling the engine.

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POWER STEERING

POWER STEERING FLUID INSPECTION

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Fluid Level Inspection

1. Verify that the fluid level is between MAX and MIN of the sub tank when the engine is cold.
 - If the fluid is not at the specified level, adjust the fluid level (MIN-MAX on sub tank) by adding/draining the fluid.

Power steering fluid type

ATF M-III, M-V or equivalent (e.g. Dexron ® II)

Power steering fluid capacity (approx. quantity)

1.0 L {1.1 US qt, 0.88 Imp qt}

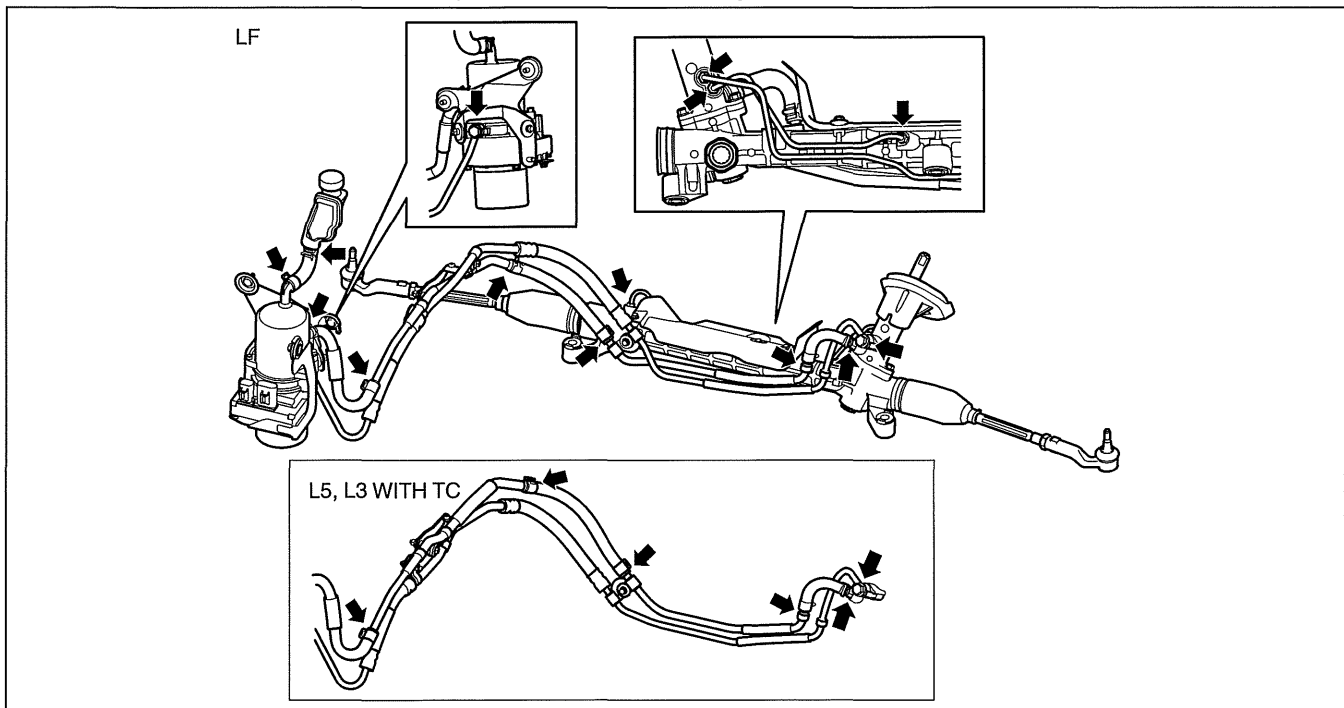
Fluid Leakage Inspection

1. Start the engine and idle it.
2. Turn the steering wheel fully to left or right, to generate the fluid pressure.

Caution

- Do not maintain the steering wheel fully turned for 5 s or more. It is possible that oil temperature can rise and this will negatively affect the oil pump.

3. Inspect for the fluid leakage at the points indicated in the figure.



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- If fluid leakage is found, repair or replace the related parts. (See 06-14-29 POWER STEERING FLUID LINE COMPONENT REMOVAL/INSTALLATION.)

POWER STEERING

STEERING WHEEL AND COLUMN INSPECTION

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Play Inspection

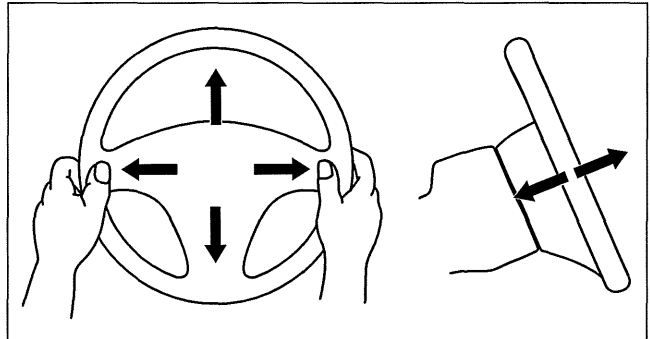
1. With the wheels in the straight-ahead position, start the engine.
2. Turn the steering wheel to the left and right gently, then verify that the steering wheel play is within the specification.

Steering wheel play

0—30 mm {0—1.18 in} (When hydraulic operating)

Looseness, Excessive Play Inspection

1. Inspect the steering wheel for looseness or excessive play in the axial direction of the shaft and four locations around the steering wheel.
 - If there is any malfunction, inspect the following, and repair or replace the applicable part.
 - Column bearing wear
 - Looseness of the steering wheel installation part
 - Looseness of the column installation area
 - Excessive play of the steering shaft joint
 - Excessive play of the steering gear



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06-14

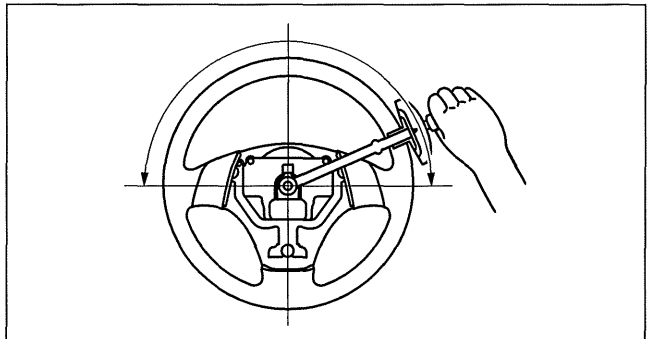
Steering Force Inspection

1. Verify that the equipped tire size and tire air pressure is as specified.
2. With the vehicle on a hard, level surface, put the wheels in the straight-ahead position.

Warning

- **Handling the air bag module improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)**

3. Remove the air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
4. Start the engine and idle it.
5. Verify that the EHPAS warning light does not illuminate.
6. Inspect the steering force using a torque wrench.
 - If not within the specification, verify the following:
 - No air in steering system
 - No fluid leakage at hose or connectors
 - Function of oil pump and steering gear



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Steering wheel force (reference value)

7.8 N·m {80 kgf·cm, 69 in·lbf} or less

Note

- Comparing another vehicle of the same model under the same conditions is an acceptable inspection method.
- The steering force varies with conditions indicated below.
 - Road conditions: Such as dry, wet, asphalt, or concrete
 - Tire condition: such as brand, wear, and tire pressure

POWER STEERING

STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

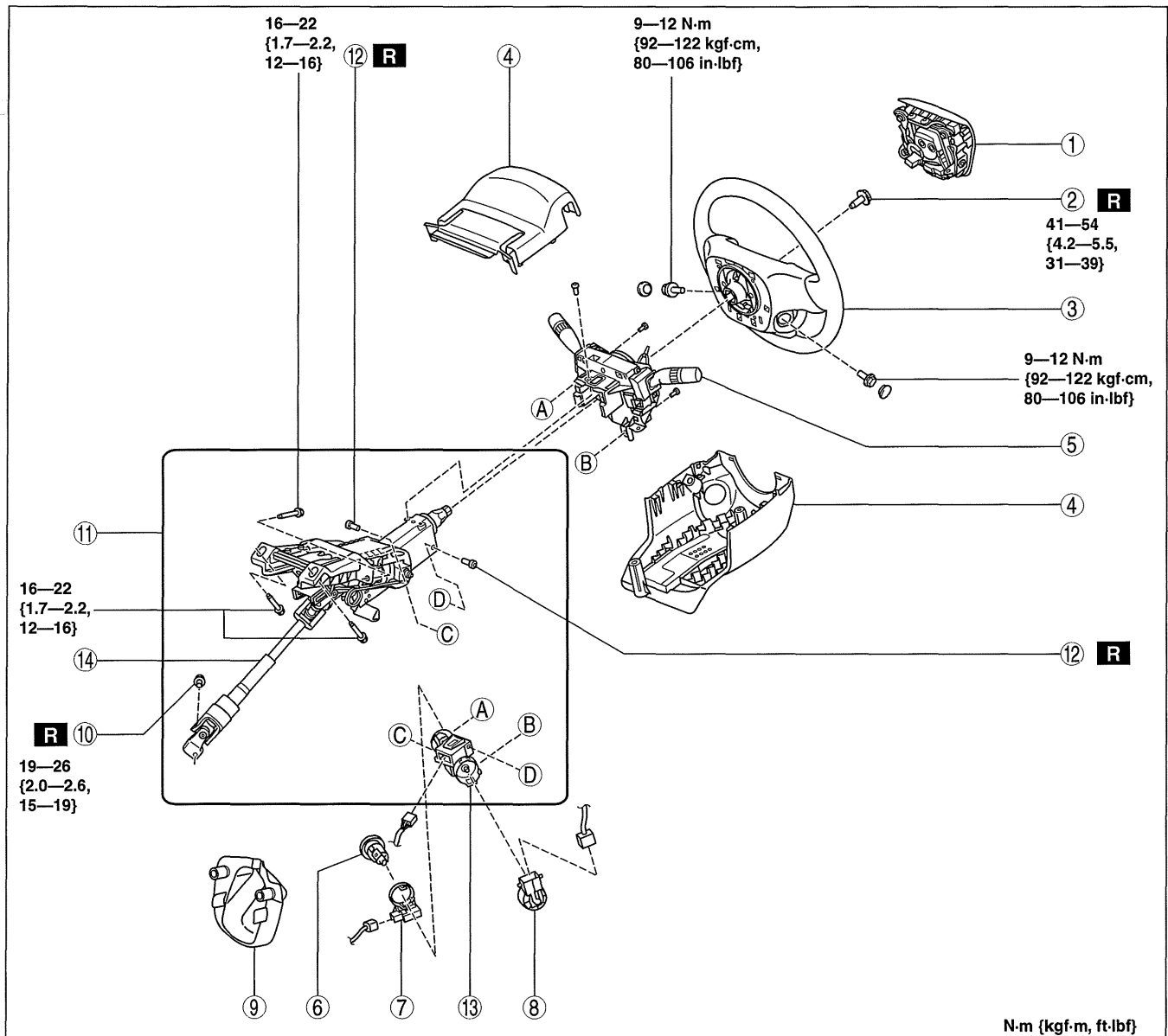
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Warning

- **Handling the air bag module improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)**

1. Remove the driver-side front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the driver-side front side trim. (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
3. Remove the hood release lever. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
5. Remove the shift knob (MTX). (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
6. Remove the selector lever knob (ATX). (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
7. Remove the shift panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
8. Remove the side wall. (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
9. Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
10. Remove the lower panel. (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
11. Remove in the order indicated in the table.
12. Install in the reverse order of removal.

POWER STEERING



06-14

1	Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
2	Lockbolt
3	Steering wheel (See 06-14-10 Steering Wheel Removal Note.) (See 06-14-11 Steering Wheel Installation Note.)
4	Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
5	Clock spring, combination switch (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.) (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
6	Key cylinder (See 06-14-10 Key Cylinder Removal Note.) (See 06-14-11 Key Cylinder Installation Note.)
7	Coil antenna (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)

8	Ignition switch (See 09-21-6 IGNITION SWITCH REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
9	Joint cover
10	Joint bolt (See 06-14-11 Joint Bolt Installation Note.)
11	Steering shaft component (See 06-14-11 Steering Shaft Component Installation Note.)
12	Steering lock mounting bolt (See 06-14-10 Steering Lock Mounting Bolt, Steering Lock Removal Note.) (See 06-14-10 Steering Lock, Steering Lock Mounting Bolt Installation Note.)
13	Steering lock (See 06-14-10 Steering Lock Mounting Bolt, Steering Lock Removal Note.) (See 06-14-10 Steering Lock, Steering Lock Mounting Bolt Installation Note.)
14	Steering shaft

POWER STEERING

Steering Wheel Removal Note

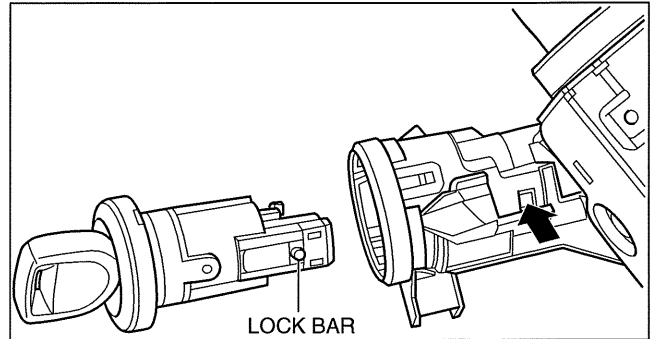
Caution

- Do not try to remove the steering wheel by hitting the shaft with a hammer. The column will be damaged.

1. Set the wheels in the straight-ahead position.
2. Remove the steering wheel using any commercially available puller.

Key Cylinder Removal Note

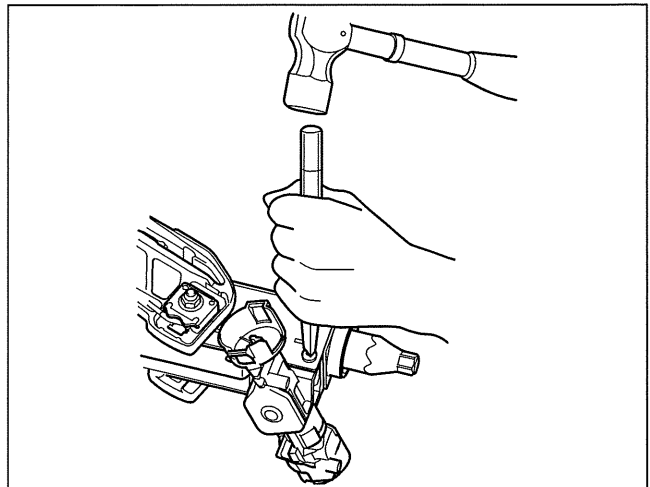
1. Insert the key into the key cylinder and turn it to the ACC position.
2. Insert a pin from the position indicated by the arrow in the figure, and while pressing the lock bar with the pin, remove the key cylinder from the steering lock component.



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Steering Lock Mounting Bolt, Steering Lock Removal Note

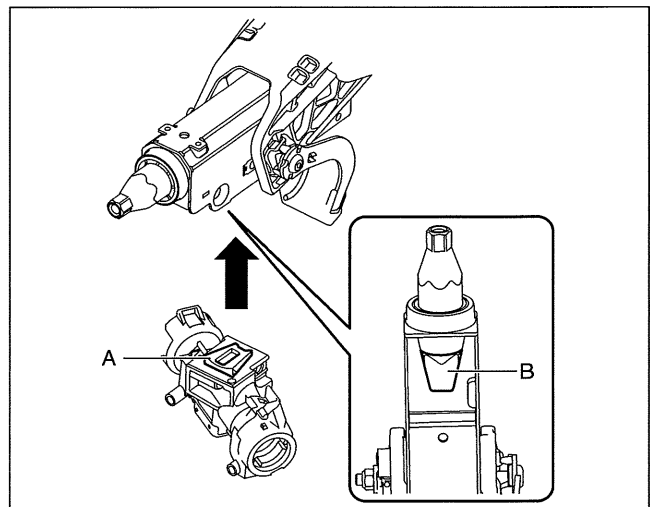
1. Make a groove in the heads of the steering lock mounting bolts using a chisel and hammer.
2. Remove the steering lock.



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Steering Lock, Steering Lock Mounting Bolt Installation Note

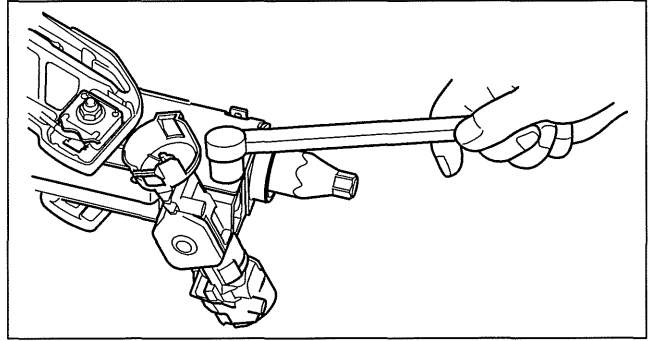
1. Assemble section A of the steering lock to the section B of the steering shaft.
2. Temporarily install the steering lock to the steering shaft using a new steering lock mounting bolt.



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POWER STEERING

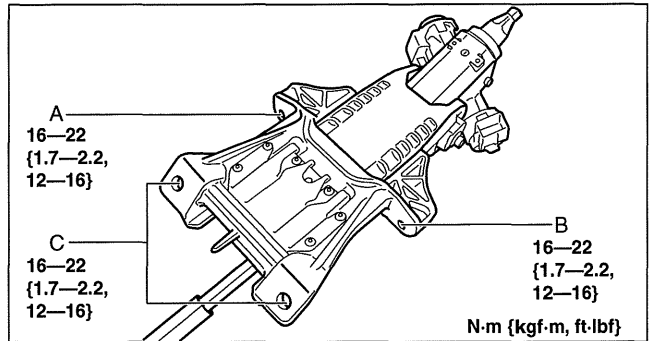
3. Tighten the steering lock mounting bolt until the head breaks off.



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Steering Shaft Component Installation Note

1. Verify that the adjusting lever is in the LOCK position.
2. Tighten the bolts in alphabetical order.

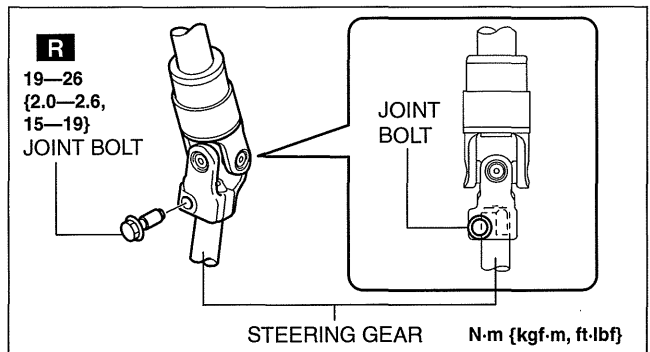


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06-14

Joint Bolt Installation Note

1. Install the steering shaft component to the steering gear.
2. After temporarily install the joint bolt to the intermediate shaft joint, verify that the joint bolt is installed to the groove of the steering gear.
3. Tighten the joint bolt to the specified torque.



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Key Cylinder Installation Note

1. Insert the key into the key cylinder and turn it to the ACC position.
2. Install the key cylinder to the steering lock.

Steering Wheel Installation Note

1. Set the wheels in the straight-ahead position and install the steering wheel.

STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0614008004h2

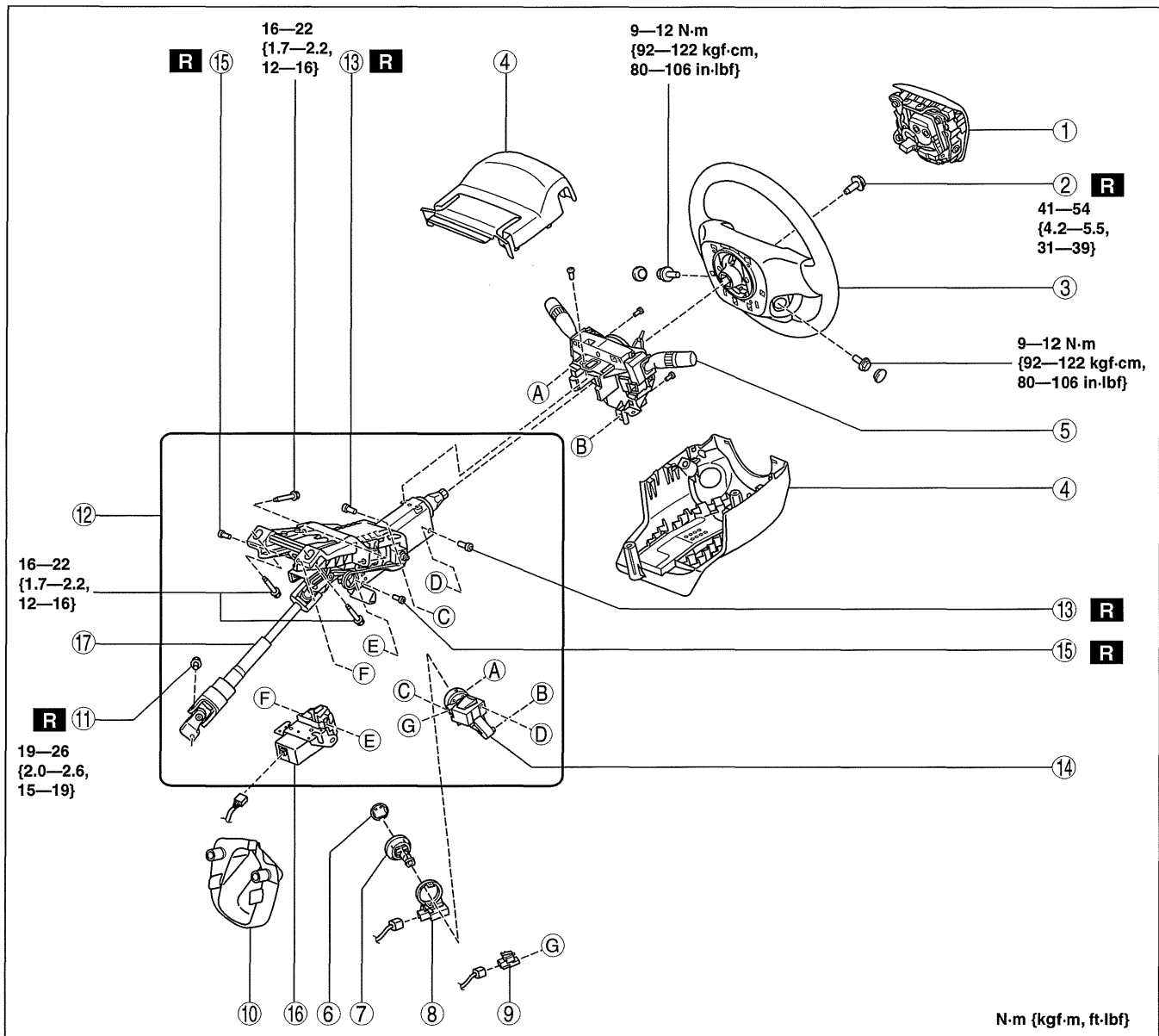
Warning

- Handling the air bag module improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)

1. Remove the driver-side front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the driver-side front side trim. (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)

POWER STEERING

3. Remove the hood release lever. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
5. Remove the shift knob (MTX). (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
6. Remove the selector lever knob (ATX). (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
7. Remove the shift panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
8. Remove the side wall. (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
9. Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
10. Remove the lower panel. (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
11. Remove in the order indicated in the table.
12. Install in the reverse order of removal.
13. If the steering lock component is replaced, perform programming for the immobilizer system related parts. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)



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1	Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
2	Lockbolt

3	Steering wheel (See 06-14-13 Steering Wheel Removal Note.) (See 06-14-16 Steering Wheel Installation Note.)
4	Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)

POWER STEERING

5	Clock spring, combination switch (See 08-10-21 CLOCK SPRING REMOVAL/ INSTALLATION.) (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
6	Hole cover
7	Key slot (See 06-14-13 Key Slot Removal Note.) (See 06-14-16 Key Slot Installation Note.)
8	Coil antenna (See 09-14-88 COIL ANTENNA REMOVAL/ INSTALLATION.)
9	Key reminder switch (See 09-21-12 KEY REMINDER SWITCH REMOVAL/INSTALLATION.)
10	Joint cover
11	Joint bolt (See 06-14-15 Joint Bolt Installation Note.)
12	Steering shaft component (See 06-14-15 Steering Shaft Component Installation Note.)
13	Coil attachment mounting bolt (See 06-14-14 Coil Attachment Mounting Bolt, Coil Attachment Removal Note.) (See 06-14-15 Coil Attachment, Coil Attachment Mounting Bolt Installation Note.)
14	Coil attachment (See 06-14-14 Coil Attachment Mounting Bolt, Coil Attachment Removal Note.) (See 06-14-15 Coil Attachment, Coil Attachment Mounting Bolt Installation Note.)
15	Steering lock mounting bolt (See 06-14-14 Steering Lock Mounting Bolt, Steering Lock Removal Note.) (See 06-14-14 Steering Lock, Steering Lock Mounting Bolt Installation Note.)

16	Steering lock (See 06-14-14 Steering Lock Mounting Bolt, Steering Lock Removal Note.) (See 06-14-14 Steering Lock, Steering Lock Mounting Bolt Installation Note.)
17	Steering shaft

06-14

Steering Wheel Removal Note

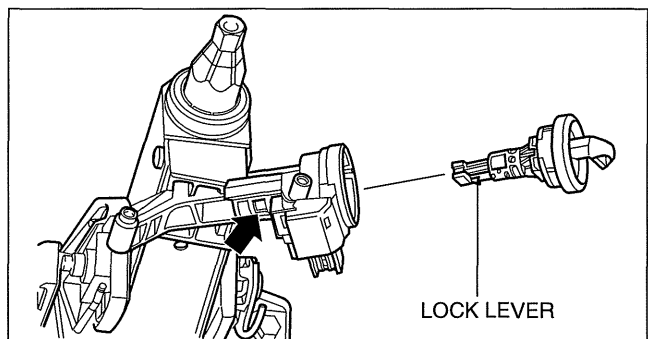
Caution

- Do not try to remove the steering wheel by hitting the shaft with a hammer. The column will be damaged.

1. Set the wheels in the straight-ahead position.
2. Remove the steering wheel using any commercially available puller.

Key Slot Removal Note

1. Insert the key into the key slot.
2. Insert a pin from the position indicated by the arrow in the figure, and while pressing the lock lever with the pin, remove the key slot from the steering lock component.

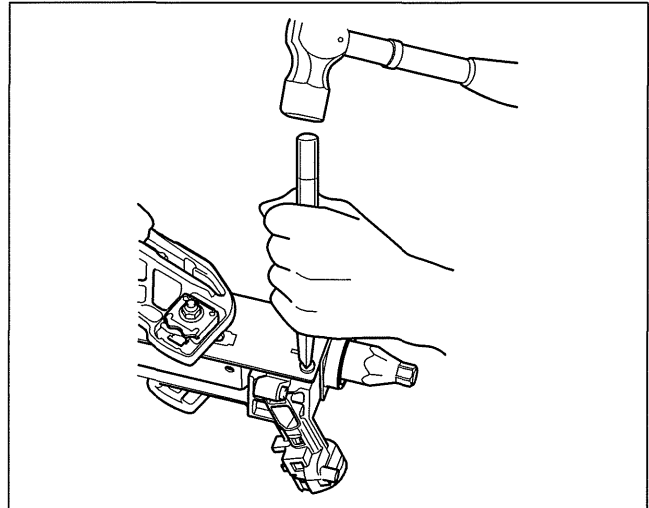


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POWER STEERING

Coil Attachment Mounting Bolt, Coil Attachment Removal Note

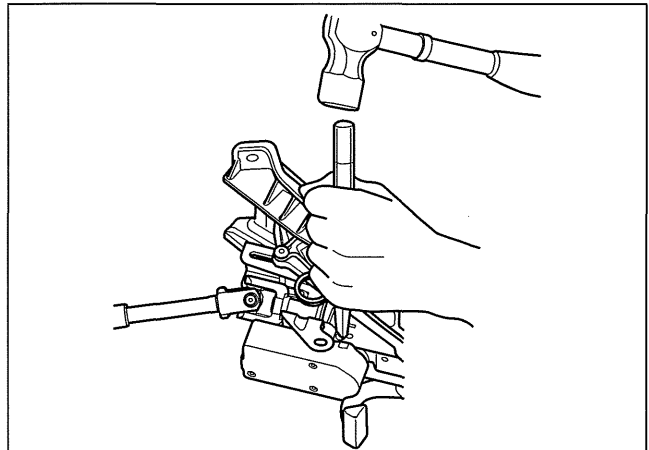
1. Make a groove in the heads of the coil attachment mounting bolts using a chisel and hammer.
2. Remove the coil attachment.



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Steering Lock Mounting Bolt, Steering Lock Removal Note

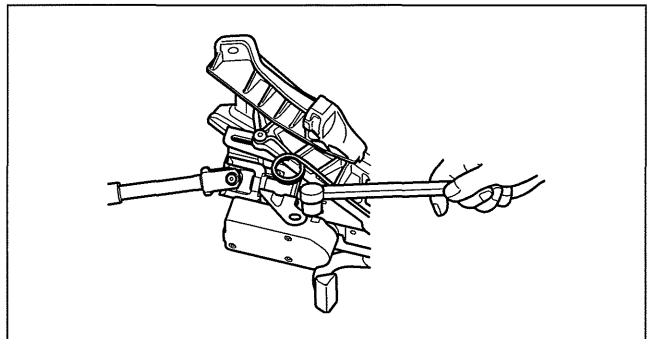
1. Make a groove in the heads of the steering lock mounting bolts using a chisel and hammer.
2. Remove the steering lock.



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Steering Lock, Steering Lock Mounting Bolt Installation Note

1. Temporarily install the steering lock to the steering shaft using a new steering lock mounting bolt.
2. Tighten the steering lock mounting bolt until the head breaks off.

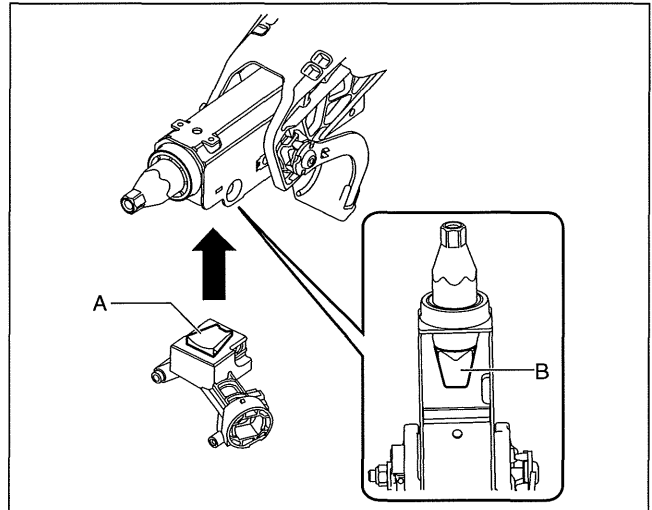


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POWER STEERING

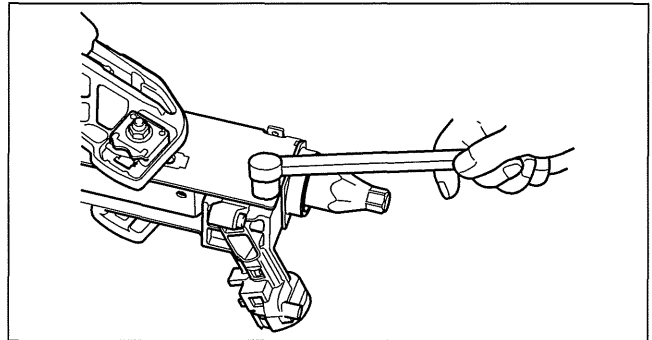
Coil Attachment, Coil Attachment Mounting Bolt Installation Note

1. Assemble section A of the coil attachment to the section B of the steering shaft.
2. Temporarily install the coil attachment to the steering shaft using a new coil attachment mounting bolt.



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3. Tighten the coil attachment mounting bolt until the head breaks off.

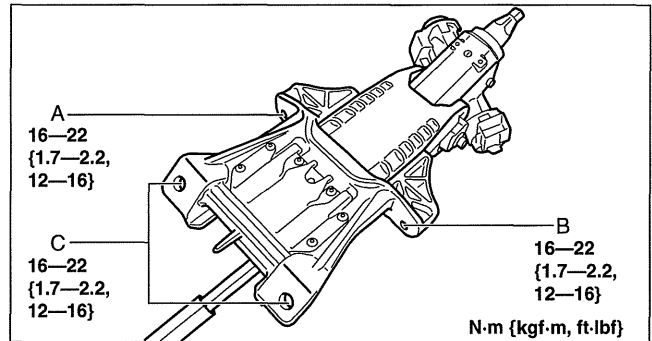


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06-14

Steering Shaft Component Installation Note

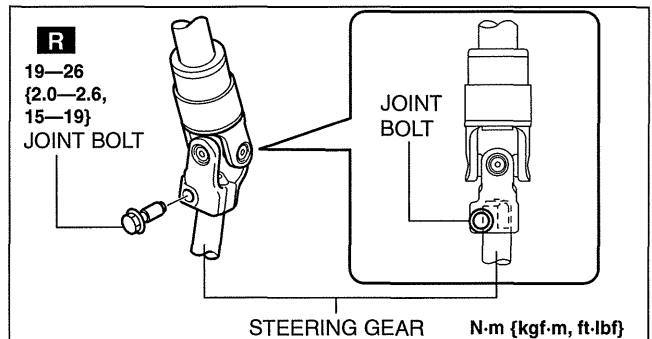
1. Verify that the adjusting lever is in the LOCK position.
2. Tighten the bolts in alphabetical order.



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Joint Bolt Installation Note

1. Install the steering shaft component to the steering gear.
2. After temporarily install the joint bolt to the intermediate shaft joint, verify that the joint bolt is installed to the groove of the steering gear.
3. Tighten the joint bolt to the specified torque.



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POWER STEERING

Key Slot Installation Note

1. Insert the key into the key slot.
2. Install the key slot to the steering lock.

Steering Wheel Installation Note

1. Set the wheels in the straight-ahead position and install the steering wheel.

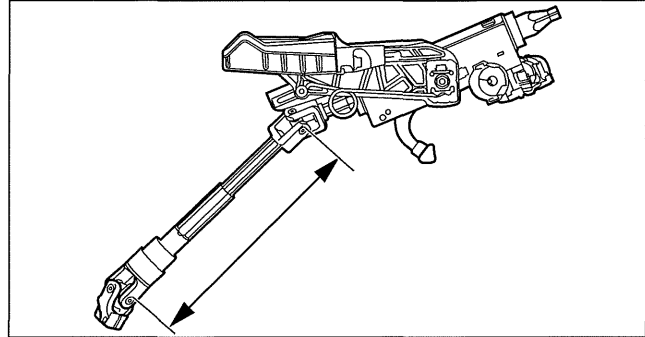
STEERING SHAFT INSPECTION

id061400800600

1. Inspect the column bearing for excessive play and damage.
2. Verify that the measurement of the steering shaft indicated in the figure is as specified.
 - If not within the specification replace the steering shaft component.

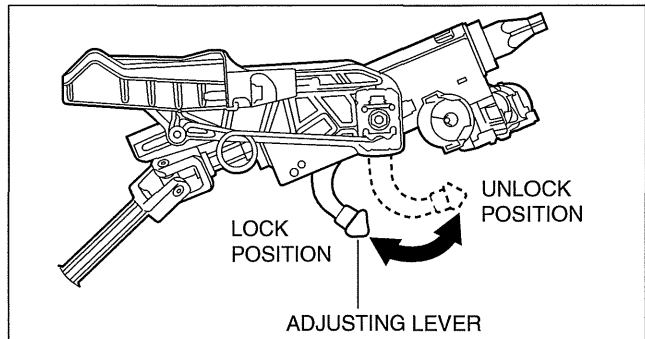
Steering shaft length

315—320 mm {12.41—12.59 in}



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3. Inspect the tilt/telescope mechanism operation for the following.
 - (1) Verify that the adjusting lever moves smoothly from the lock to the unlock position.
 - (2) Verify that the steering shaft is fixed firmly when the adjusting lever is locked.
 - If there is any malfunction, replace the steering shaft.



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STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION

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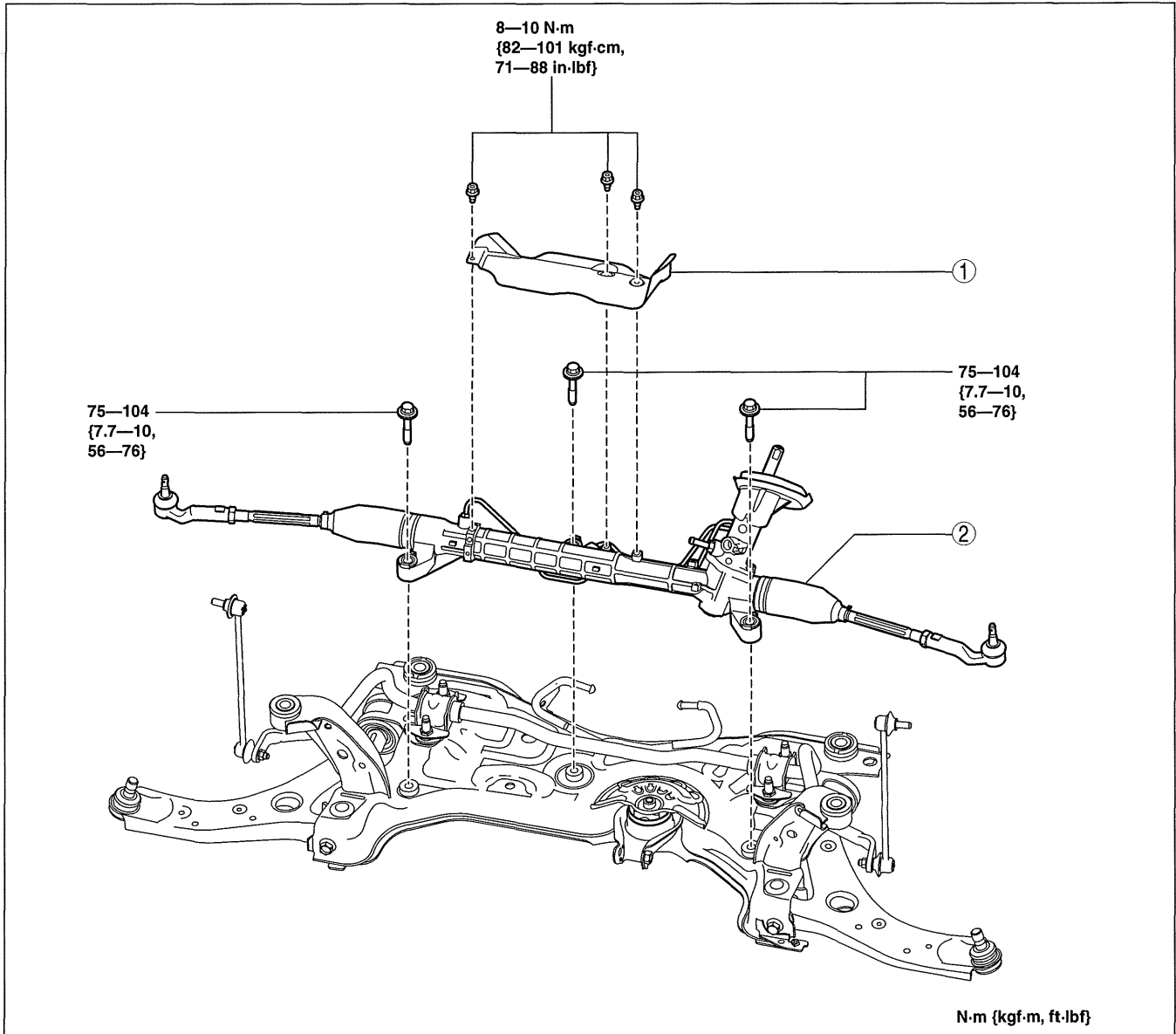
Caution

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor connector (axle side) and fix the wiring harness to an appropriate place where it will not be pulled by mistake while servicing the vehicle.
- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

1. Remove the joint cover. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2. Disconnect the steering shaft from the steering gear and linkage. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
3. Remove the front auto leveling sensor. (Vehicles with AFS) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
4. Remove the front crossmember component. (See 02-13-13 FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.

POWER STEERING

7. After installation, inspect the front wheel alignment and adjust it if necessary. (See 02-11-1 FRONT WHEEL ALIGNMENT.)



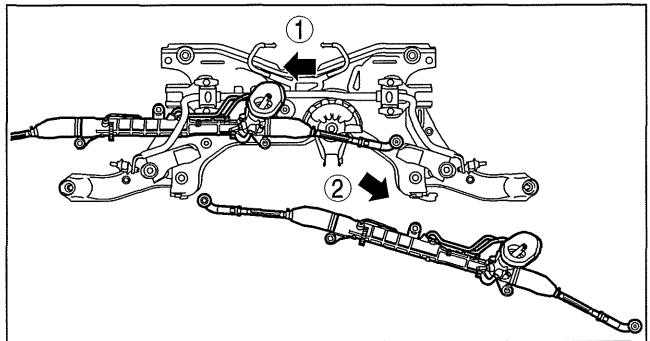
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1	Insulator
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2	Steering gear and linkage (See 06-14-17 Steering Gear and Linkage Removal Note.)
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Steering Gear and Linkage Removal Note

1. Remove the steering gear and linkage installation bolts, move the steering gear and linkage in the direction and order of the arrows shown in the figure, and then remove it.



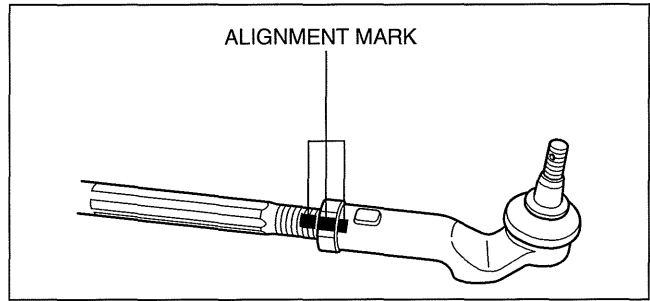
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06-14

POWER STEERING

Tie-rod End Disassembly Note

1. Place alignment marks as shown in the figure for proper installation.
2. Remove the tie-rod end.



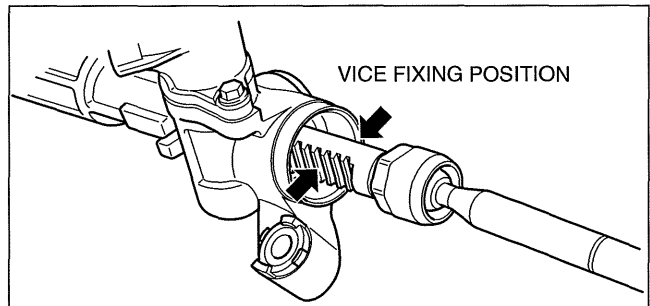
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Tie Rod Disassembly Note

Caution

- If the steering rack is secured to a vise without using a cloth, the sliding surface of the steering rack could be damaged. Always use a clean cloth when securing the steering rack to the vise.
- If the steering rack is secured to a vise in the incorrect position, the steering gear could fall off the vise and be damaged during the operation. Always secure the steering rack to the vise in the proper position.

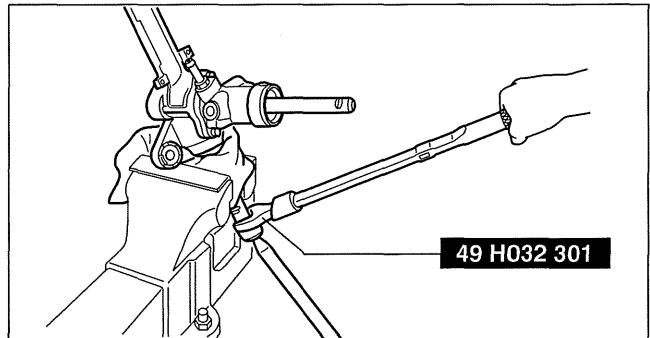
1. Protect the steering rack tooth surface using a clean cloth and secure it using a vise.



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06-14

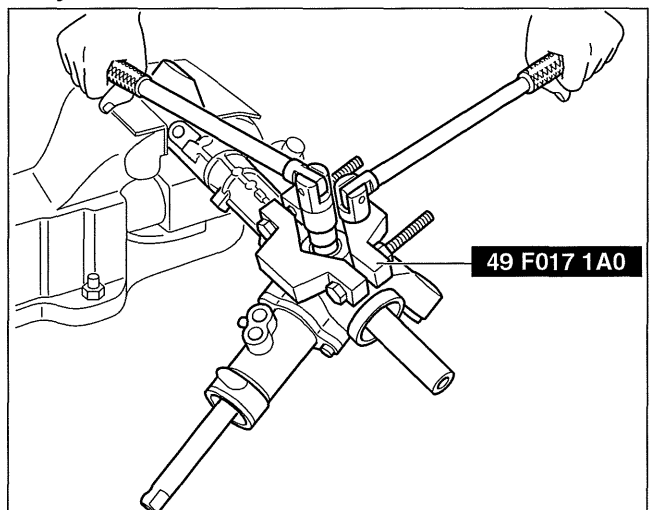
2. Remove the tie rod using the SST.



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Locknut (on Adjusting Cover), Adjusting Cover Disassembly Note

1. Remove the locknut using the SST.
2. Remove the adjusting cover.

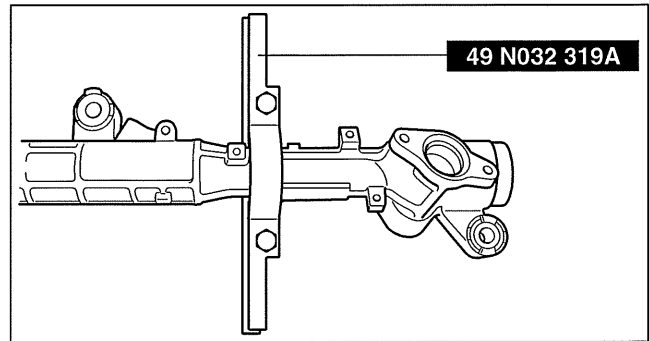


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POWER STEERING

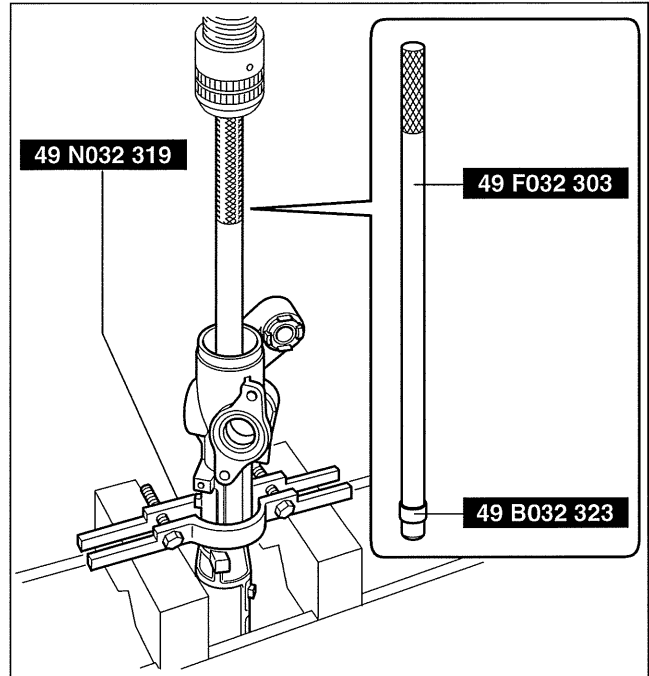
Oil Seal Disassembly Note

1. Install the **SST** (49 N032 319A) to the gear housing as shown in the figure.
2. Insert the **SSTs** (49 F032 303, 49 B032 323) into the valve housing side.



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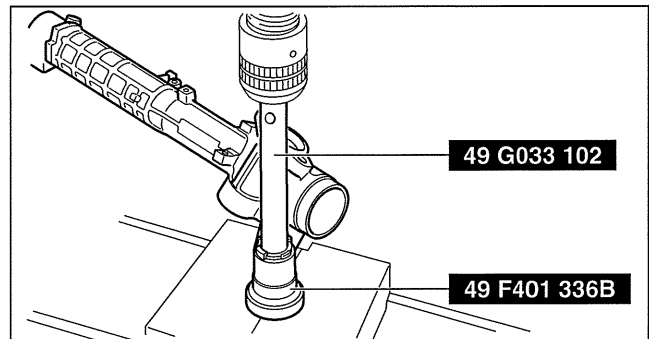
3. Remove the oil seal using the **SSTs** and a press.



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Mounting Rubber Disassembly Note

1. Remove the mounting rubber from the gear housing using the **SSTs** and a press.



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POWER STEERING

STEERING GEAR AND LINKAGE INSPECTION

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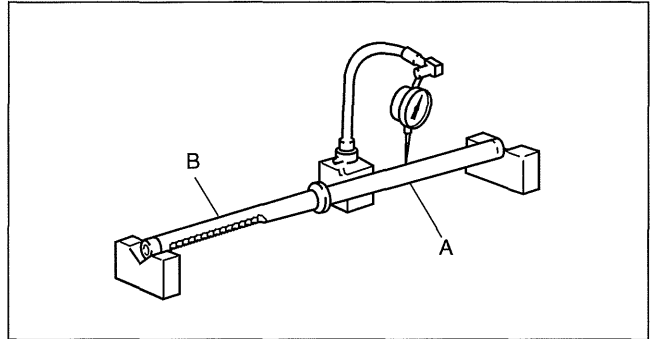
Steering Rack Inspection

1. Inspect for cracking, damage, and tooth wear.
 - If there is any malfunction, replace the steering rack.
2. Measure the steering rack warp.
 - If it exceeds the maximum specification, replace the steering rack.

Steering rack runout

Large diameter portion (near point A): 0.15 mm {0.006 in} max.

Small diameter portion (near point B): 0.20 mm {0.008 in} max.



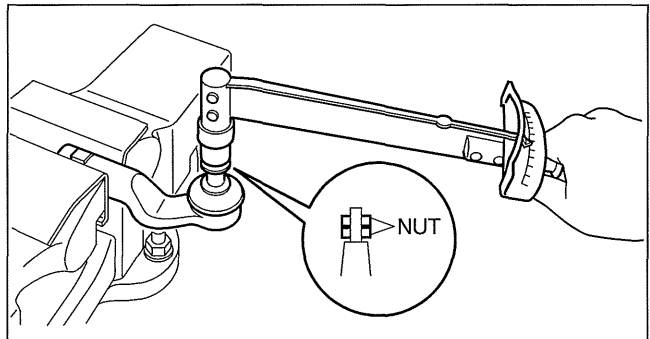
aprijw00001284

Tie-rod End Inspection

1. Inspect the tie-rod end for damage and the boot for cracks.
 - If there is any malfunction, replace the tie-rod end.
2. Inspect for excessive play.
 - If there is any malfunction, replace the tie-rod end.
3. Rotate the ball joint **5 times**.
4. Install two nuts to the ball joint and measure the tie-rod end rotational torque using a torque wrench.
 - If not within the specification, replace the tie-rod end.

Tie-rod end rotational torque

0.5—3.0 N·m {5.1—30 kgf·cm, 4.5—26 in·lbf}



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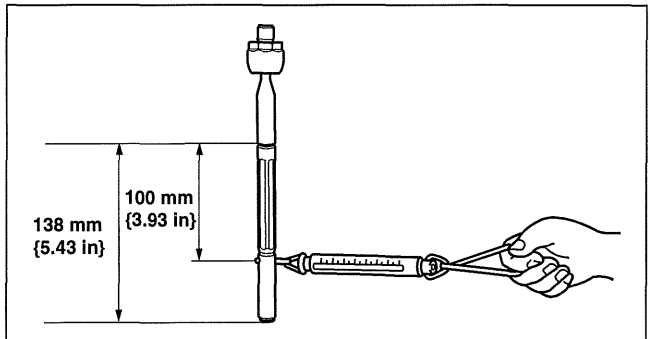
Tie rod Inspection

1. Inspect for bending and damage.
 - If there is any malfunction, replace the tie rod.
2. Inspect for excessive play.
 - If there is any malfunction, replace the tie rod.
3. Swing the ball joint **10 times**.
4. Measure the ball joint swing torque using a pull scale.
 - If it exceeds the specification, replace the tie rod.

Tie rod swing torque

0.4—4.0 N·m {4.1—40 kgf·cm, 3.6—35 in·lbf}

[Pull scale reading 0.6—29.3 N {0.06—2.98 kgf, 0.14—6.58 lbf}]



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POWER STEERING

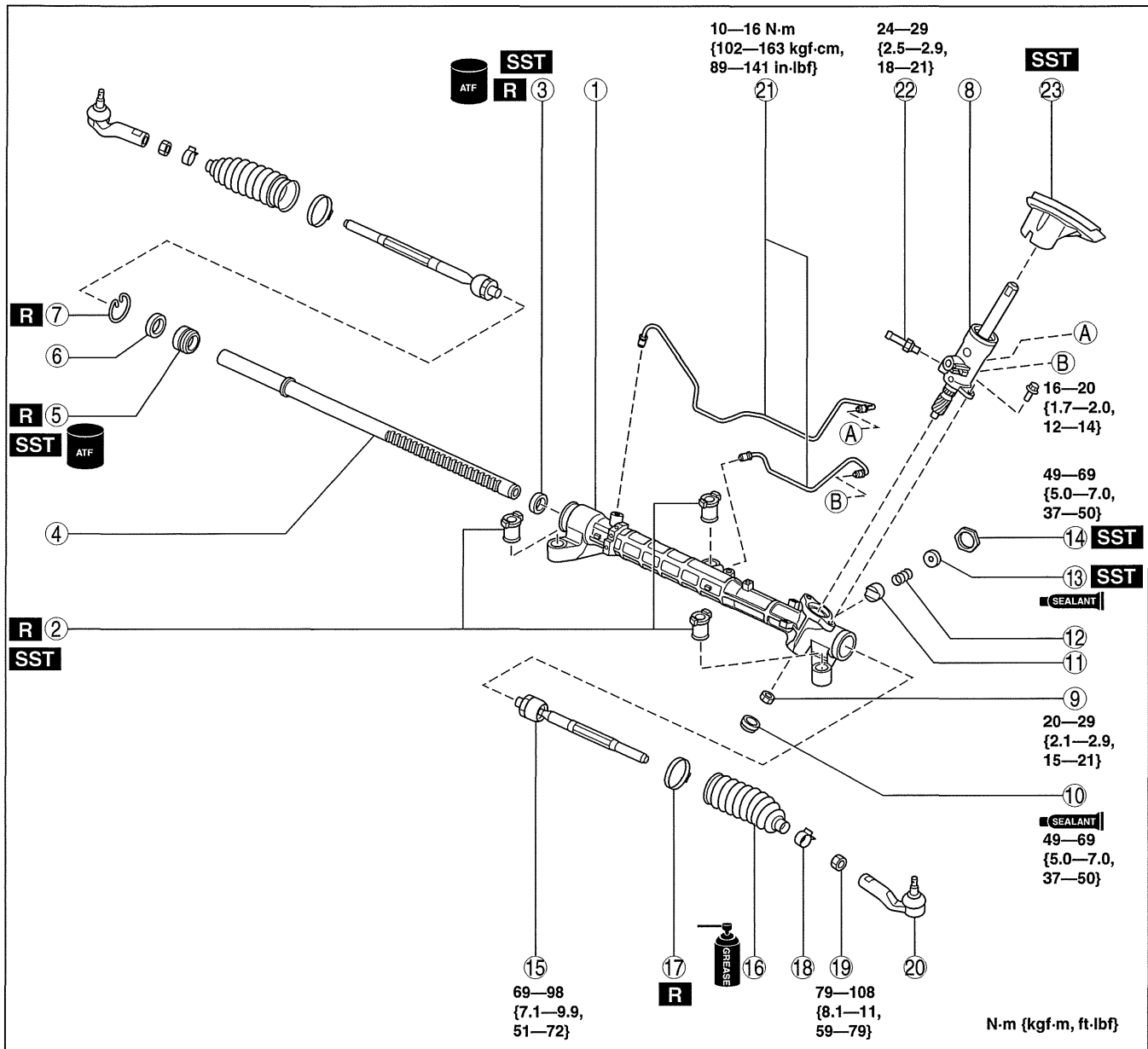
STEERING GEAR AND LINKAGE ASSEMBLY

id061400801200

Caution

- To prevent damage to the steering gear, secure it to the vise using a copper plate or clean cloth.

1. Assemble in the order indicated in the table.



am3zzw0000866

1	Gear housing
2	Mounting rubber (See 06-14-23 Mounting Rubber Assembly Note.)
3	Oil seal (See 06-14-24 Oil Seal Assembly Note.)
4	Steering rack (See 06-14-25 Steering Rack Assembly Note.)
5	Rack bushing (See 06-14-25 Rack Bushing, Stopper and Clip Assembly Note.)
6	Stopper (See 06-14-25 Rack Bushing, Stopper and Clip Assembly Note.)

7	Clip (See 06-14-25 Rack Bushing, Stopper and Clip Assembly Note.)
8	Pinion shaft and valve housing component (See 06-14-26 Pinion Shaft and Valve Housing Component Assembly Note.)
9	Locknut
10	Housing cover (See 06-14-26 Housing Cover Assembly Note.)
11	Support yoke
12	Yoke spring
13	Adjusting cover (See 06-14-27 Adjusting Cover, Locknut (on Adjusting Cover) Assembly Note.)

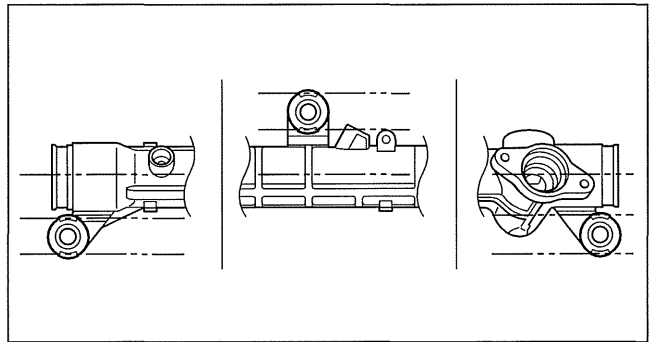
POWER STEERING

14	Locknut (on adjusting cover) (See 06-14-27 Adjusting Cover, Locknut (on Adjusting Cover) Assembly Note.)
15	Tie rod
16	Boot (See 06-14-28 Boot Assembly Note.)
17	Boot band
18	Boot clamp

19	Locknut
20	Tie-rod end (See 06-14-28 Tie-rod End Assembly Note.)
21	Oil pipe
22	Return pipe
23	Floor seal (See 06-14-28 Floor Seal Assembly Note.)

Mounting Rubber Assembly Note

1. Apply soapy water to the rubber part of the mounting rubber.
2. Install the mounting rubber so that two projections of the mounting rubber are parallel to the steering rack as shown in the figure.

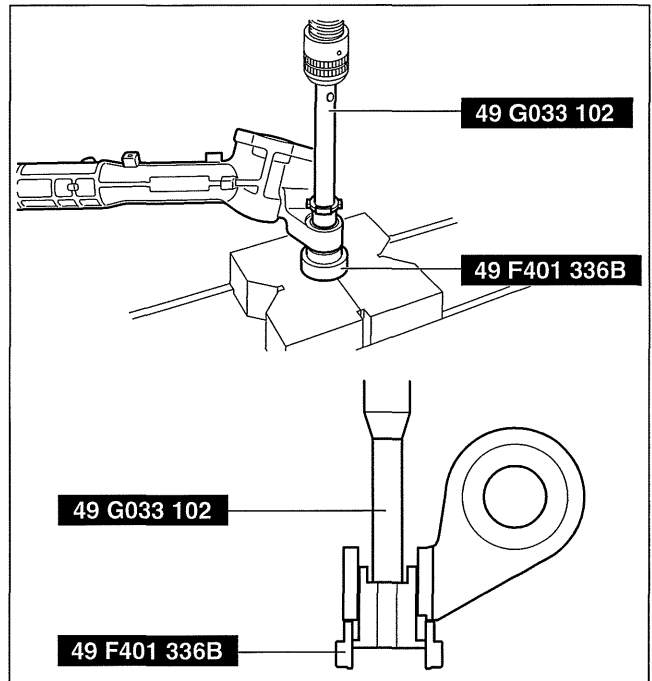


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3. Press fit the ear portion of the mounting rubber (lower side) using the **SSTs** until it projects from the gear housing as shown in the figure.

Note

- Press fit the ear portion of the mounting rubber (upper side) until it partially enters the gear housing.

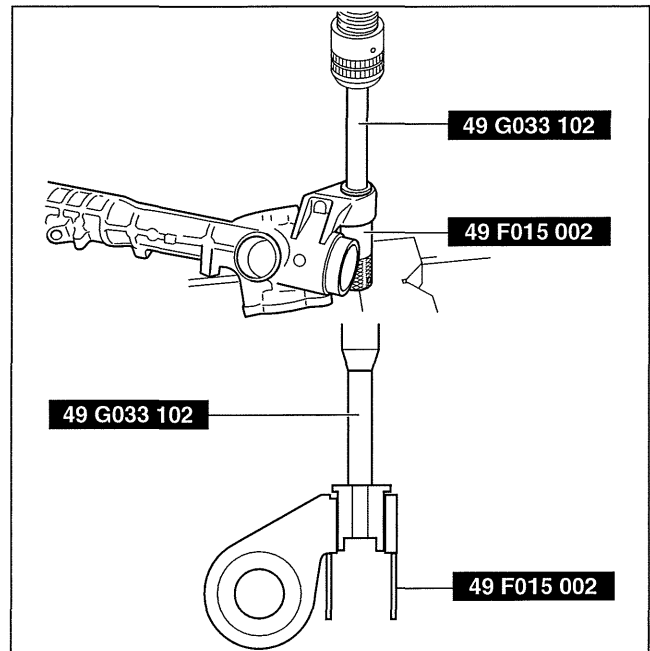


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06-14

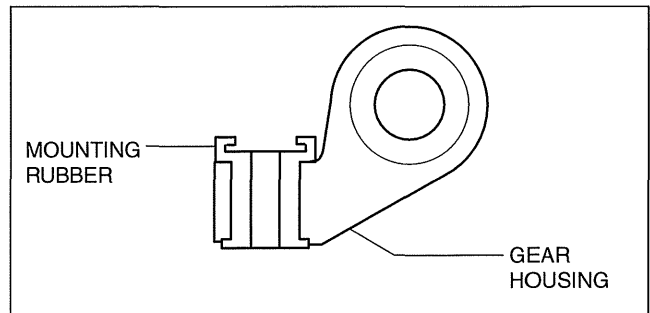
POWER STEERING

- Reverse the gear housing, then Press fit the mounting rubber using the **SSTs** and the press until the mounting rubber ear portion (upper side) contacts the gear housing.



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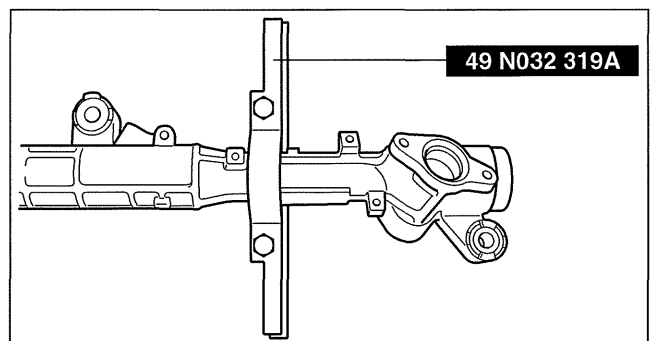
- Verify that both mounting rubber ears are correctly assembled with no gaps between them and the gear housing as shown in the figure.
 - If there are gaps, readjust their positions using the **SSTs** and the press.



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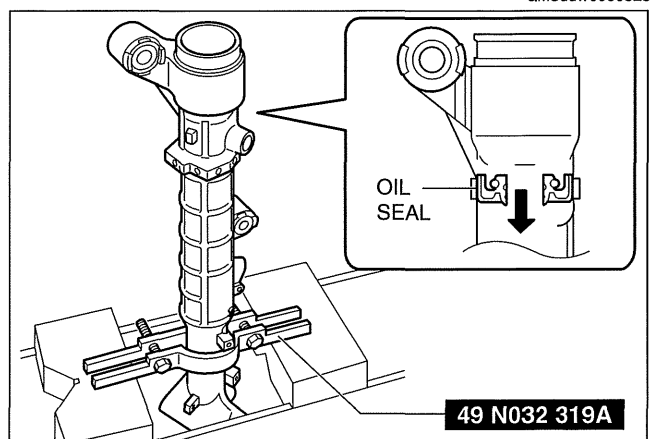
Oil Seal Assembly Note

- Apply ATF to the lip of a new oil seal.
- Install the **SST** (49 N032 319A) to the gear housing as shown in the figure.



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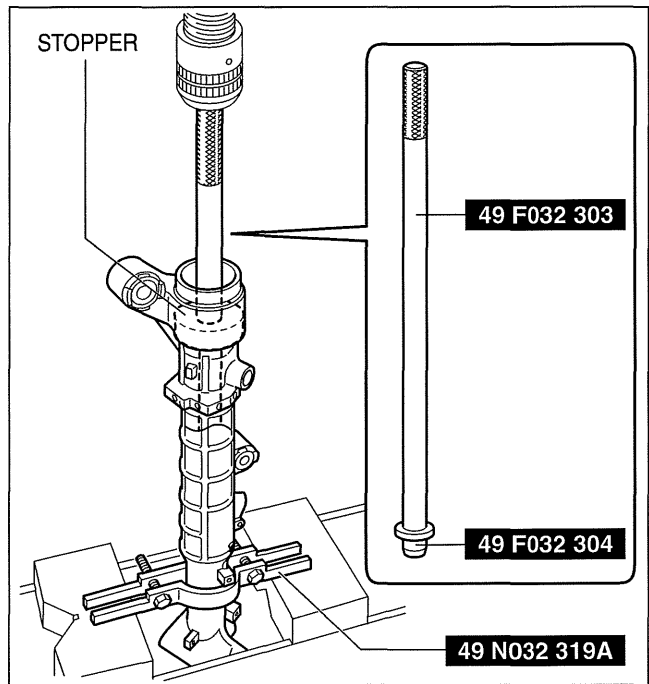
- Set the gear housing into the press and insert the oil seal in the gear housing so that groove area is facing up as shown in the figure.



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POWER STEERING

4. Set the stopper into the gear housing to hold the **SSTs** as shown in the figure.
5. Install the oil seal using the **SSTs** (49 F032 303, 49 F032 304) and a press.

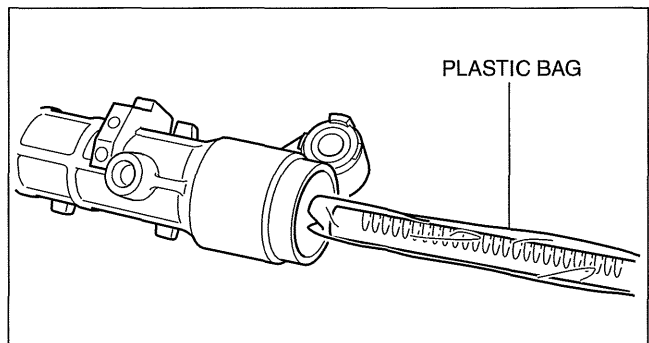


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06-14

Steering Rack Assembly Note

1. Apply multipurpose grease to the rack teeth.
2. Install a plastic bag to the rack teeth and insert the steering rack in the gear housing.



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Rack Bushing, Stopper and Clip Assembly Note

1. Apply ATF to the rack bushing.
2. After installing the **SST** to the steering rack end, assemble the rack bushing to the rack housing.

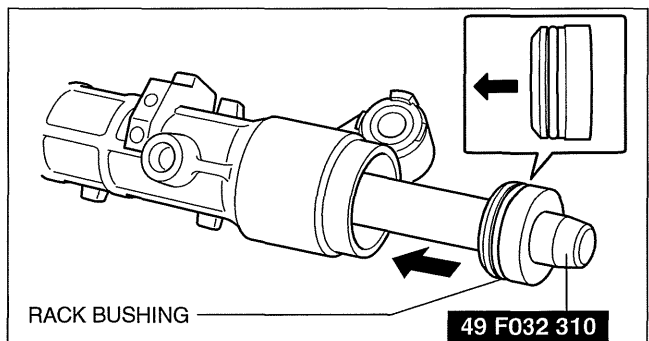
Note

- Assemble the rack bushing so that the taper side faces the piston side of the steering rack.

3. Insert the stopper together with the rack bushing to the rack housing so that the stopper extends past the installation groove on the rack housing.

Note

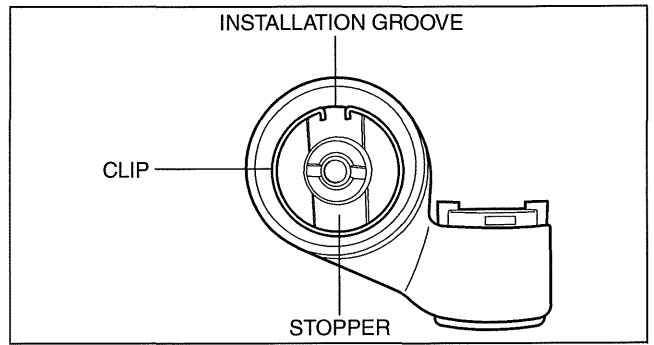
- Assemble the stopper so that the side with the groove is facing outward.



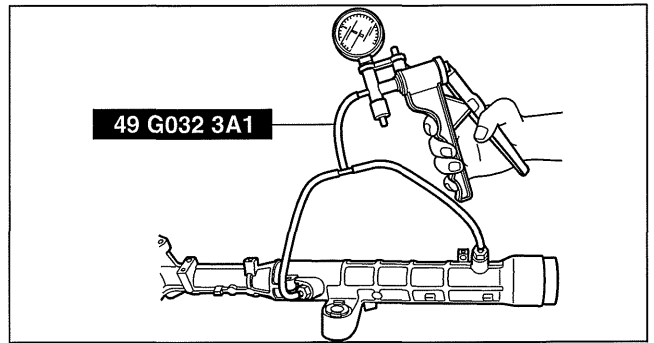
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POWER STEERING

4. Assemble the clip to the installation groove on the rack housing.

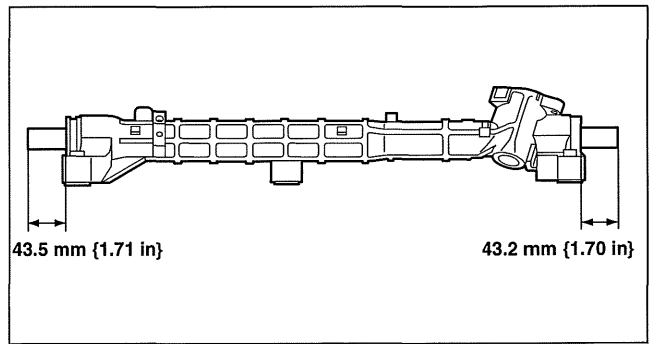


5. Perform the cylinder air tightness inspection using the following procedure.
6. Install the **SST** to the power cylinder section of the gear housing.
7. Apply **53.3 kPa {400 mmHg, 15.7 inHg}** of vacuum with a vacuum pump and verify that it holds for **30 s**.
 - If there is a malfunction, inspect the gear housing inner surface and the oil seal, and the rack bushing for damage, and repair or replace if necessary.

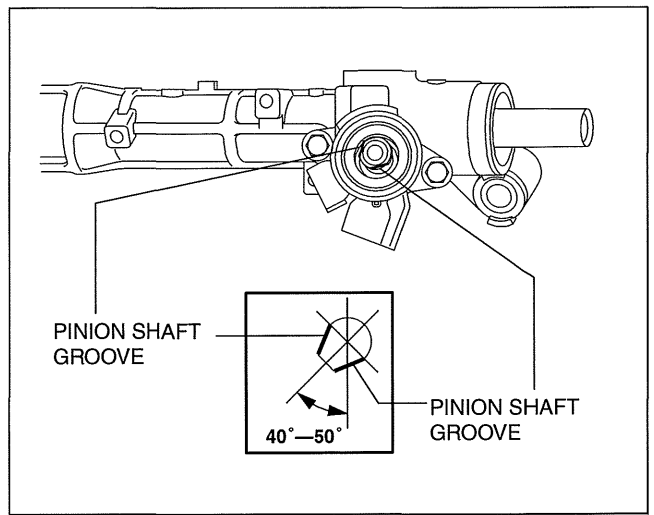


Pinion Shaft and Valve Housing Component Assembly Note

1. Set the rack in the center with the measurement between rack housing end and rack end as shown in the figure.



2. When the pinion shaft position is as shown in the figure with the rack in the center, insert the pinion shaft and valve housing component.



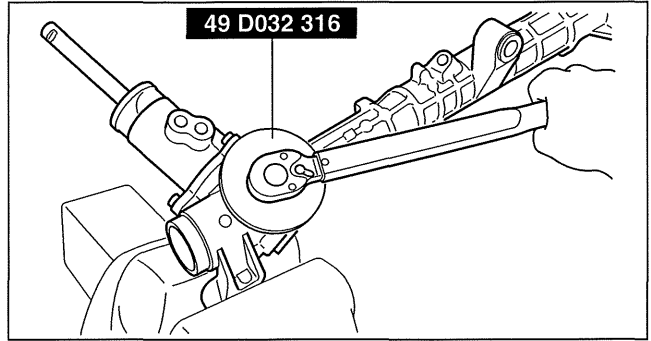
Housing Cover Assembly Note

1. Apply silicone sealant to the threads of the housing cover.
2. Assemble the housing cover.

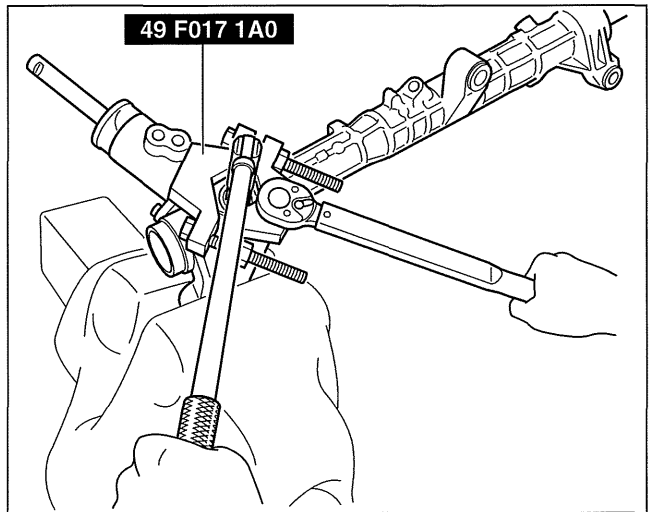
POWER STEERING

Adjusting Cover, Locknut (on Adjusting Cover) Assembly Note

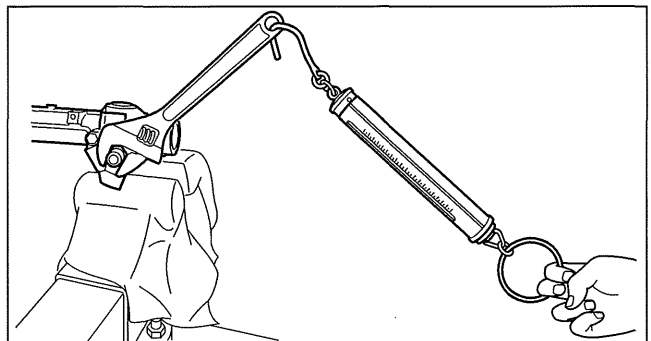
1. Apply sealant to the threads of the adjusting cover.
2. Tighten the adjusting cover with a tightening torque of 20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}.
3. Using the **SST**, loosen the adjusting cover to 25—35°.



4. Fix the adjusting cover and tighten the locknut using the **SST**.



5. Measure the rotation torque of the pinion shaft using a crescent wrench and pull scale.
 - (1) Install the crescent wrench to the steering gear.



- (2) Measure the length from the pinion shaft center to the crescent wrench end (application point of pull scale) as shown in the figure. This is dimension A.
 - (3) The rotation torque of the pinion shaft can be calculated using the following formula:
 Measured value using pull scale (N {kgf, lbf}) = rotation torque of the pinion shaft (N·m {kgf·cm, in·lbf})/length A (m {cm, in})

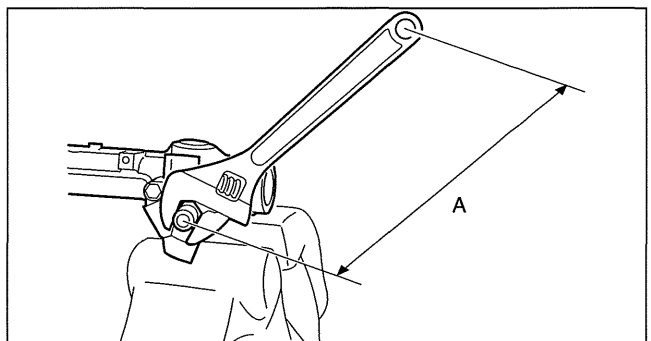
Pinion shaft rotation torque (center of rack ± 90°)

LF, L5: 0.93—1.53 N·m {9.49—15.7 kgf·cm, 8.24—13.5 in·lbf}

[Pull scale reading: 0.93—1.53 N·m {9.49—15.7 kgf·cm, 8.24—13.5 in·lbf}/A (m {cm, in})]

L3 WITH TC: 1.45—2.05 N·m {14.8—20.9 kgf·cm, 12.9—18.1 in·lbf}

[Pull scale reading: 1.45—2.05 N·m {14.8—20.9 kgf·cm, 12.9—18.1 in·lbf}/A (m {cm, in})]



6. If not as specified, remove the locknut and adjust the adjust cover.

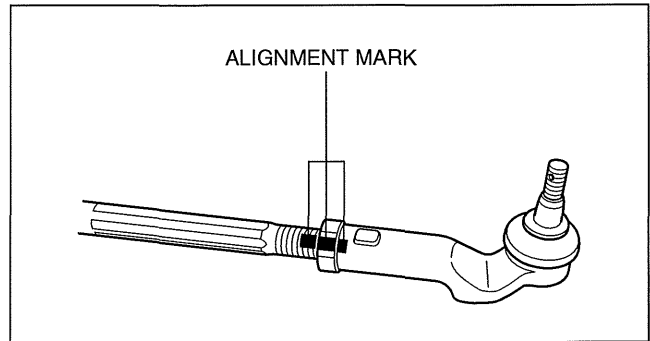
POWER STEERING

Boot Assembly Note

1. Apply silicone grease to the rubber lip groove.
2. Assemble the boot.

Tie-rod End Assembly Note

1. Align the alignment marks made before removing the tie-rod end, and then assemble it to the tie-rod.
 - If there are no alignment marks, go to the following procedure.

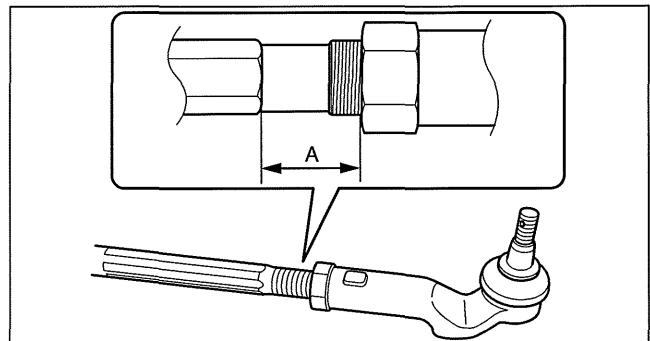


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2. Adjust dimension A shown in the figure to the standard, and assemble.

Standard Dimension A

- 13—31 mm {0.6—1.2 in}



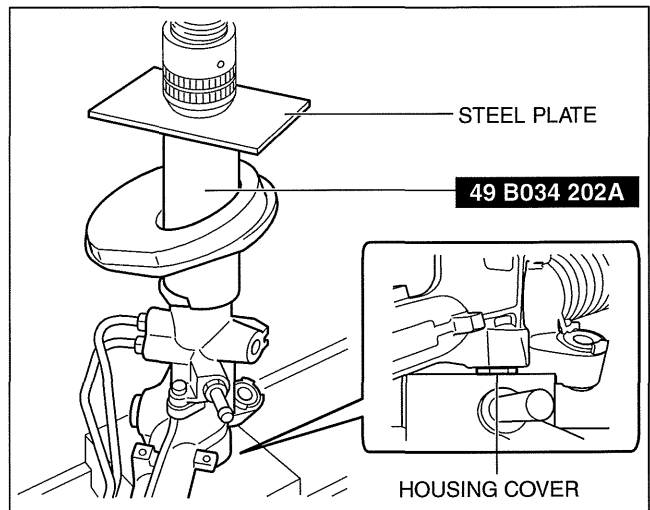
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Floor Seal Assembly Note

1. Assemble the floor seal using the **SST** and a press, steel plate.

Note

- Set the steering gear and linkage to the press with the housing cover facing down as shown in the figure.



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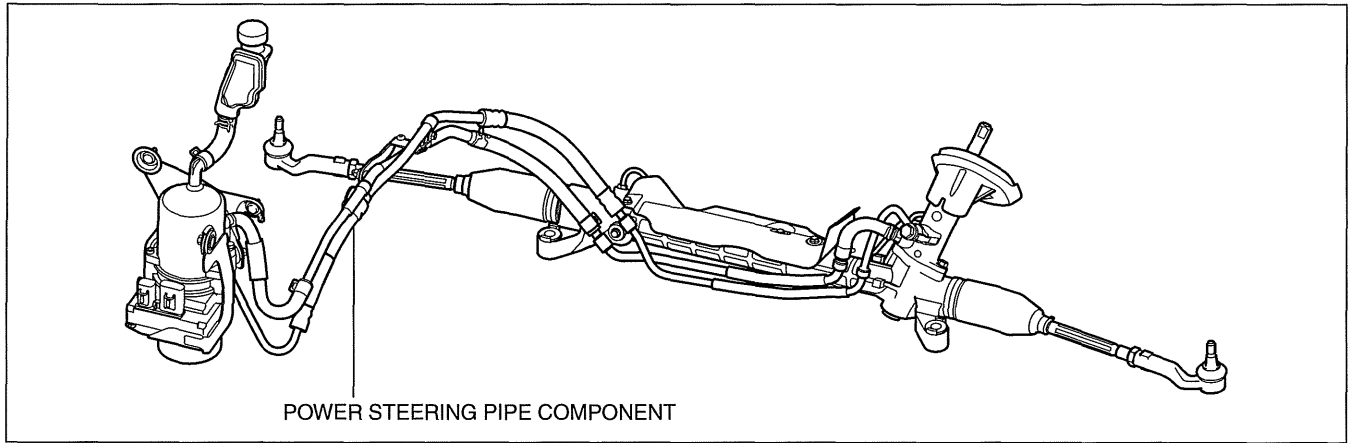
POWER STEERING

POWER STEERING FLUID LINE COMPONENT REMOVAL/INSTALLATION

id061400807000

Note

- The following procedure is for replacement of the parts shown in the figure. Regarding replacement of the suction hose and return hose, refer to the electric power steering oil pump removal/installation. (See 06-14-31 ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION.)



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06-14

Power Steering Pipe Component Removal/Installation

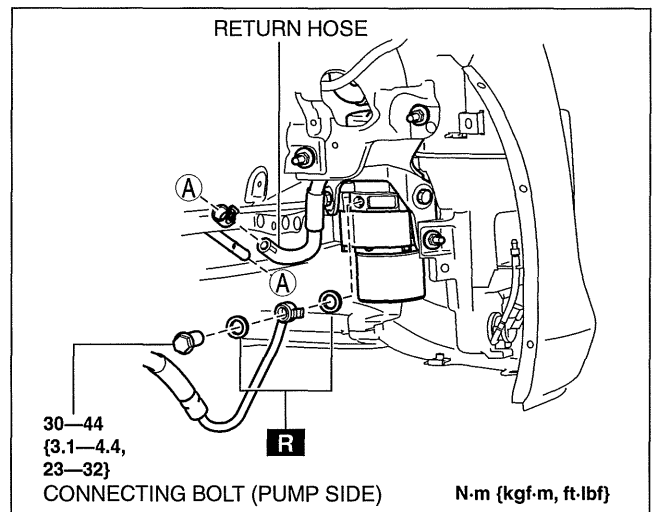
Note

- The pressure pipe and return pipe are integrated with the power steering pipe component. Therefore, if any one of the pipes has a malfunction, replace the power steering pipe component.

1. Remove the front mudguard (RH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
2. Remove the splash shield and aerodynamic under cover NO.2 as a single unit. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the connecting bolt (pump side) from the electric power steering oil pump and disconnect the return hose from the power steering pipe component (return pipe).

Note

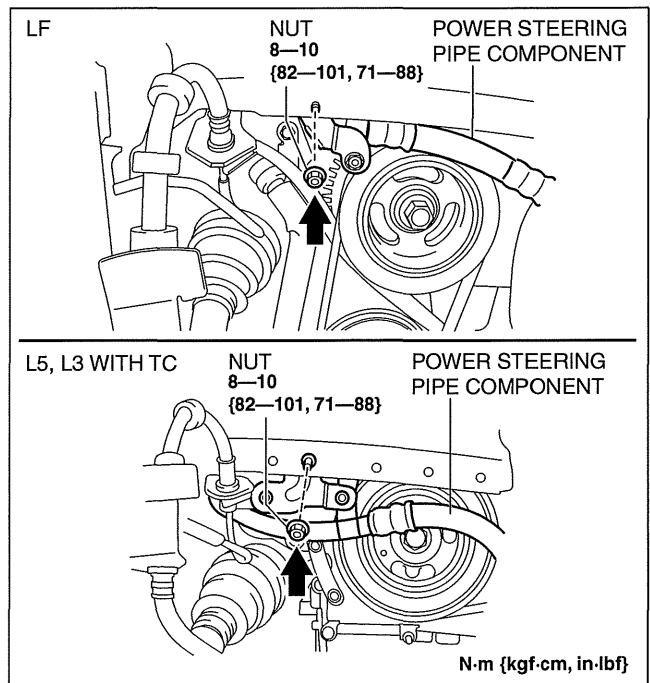
- Drain the power steering fluid.



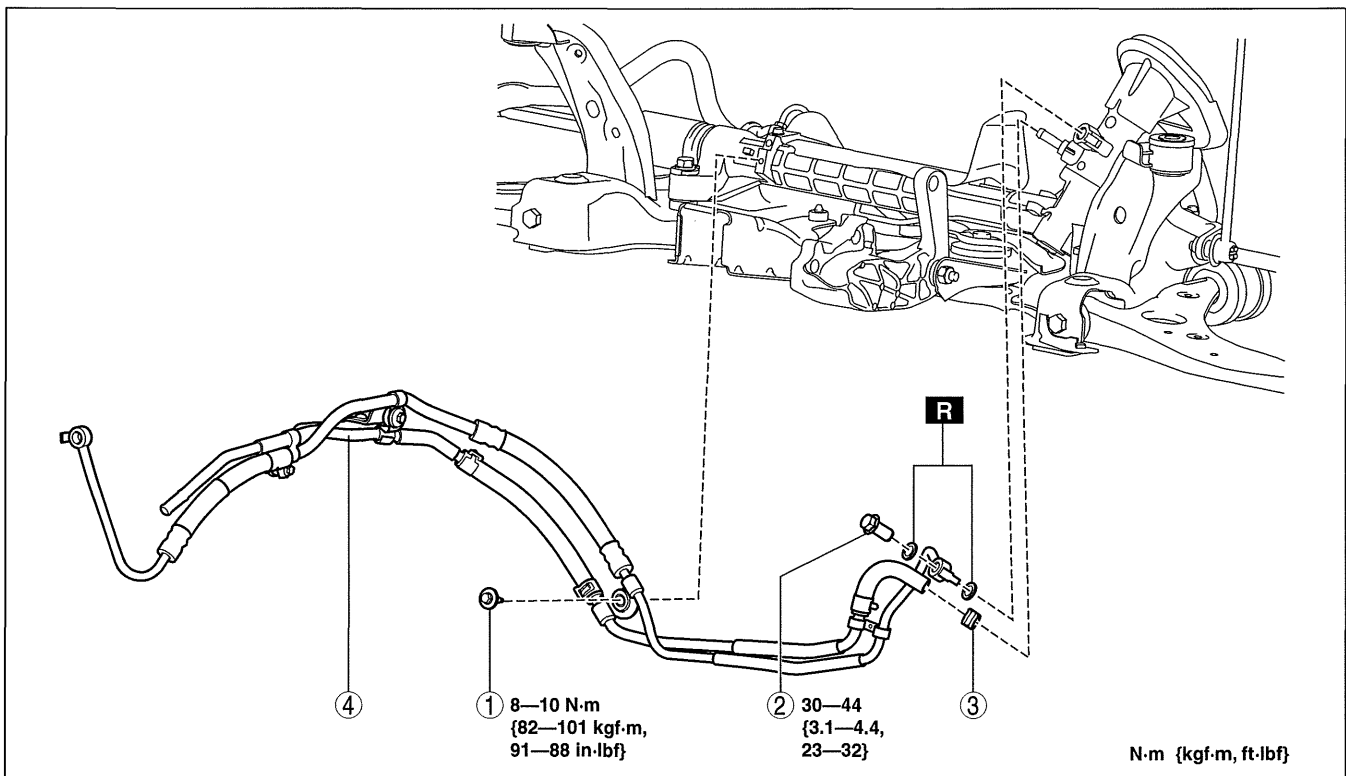
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POWER STEERING

4. Remove the nut shown in the figure.
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.



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am3uuw0000268

1	Bolt
2	Connecting bolt (steering gear side)

3	Hose clips
4	Power steering pipe component

POWER STEERING

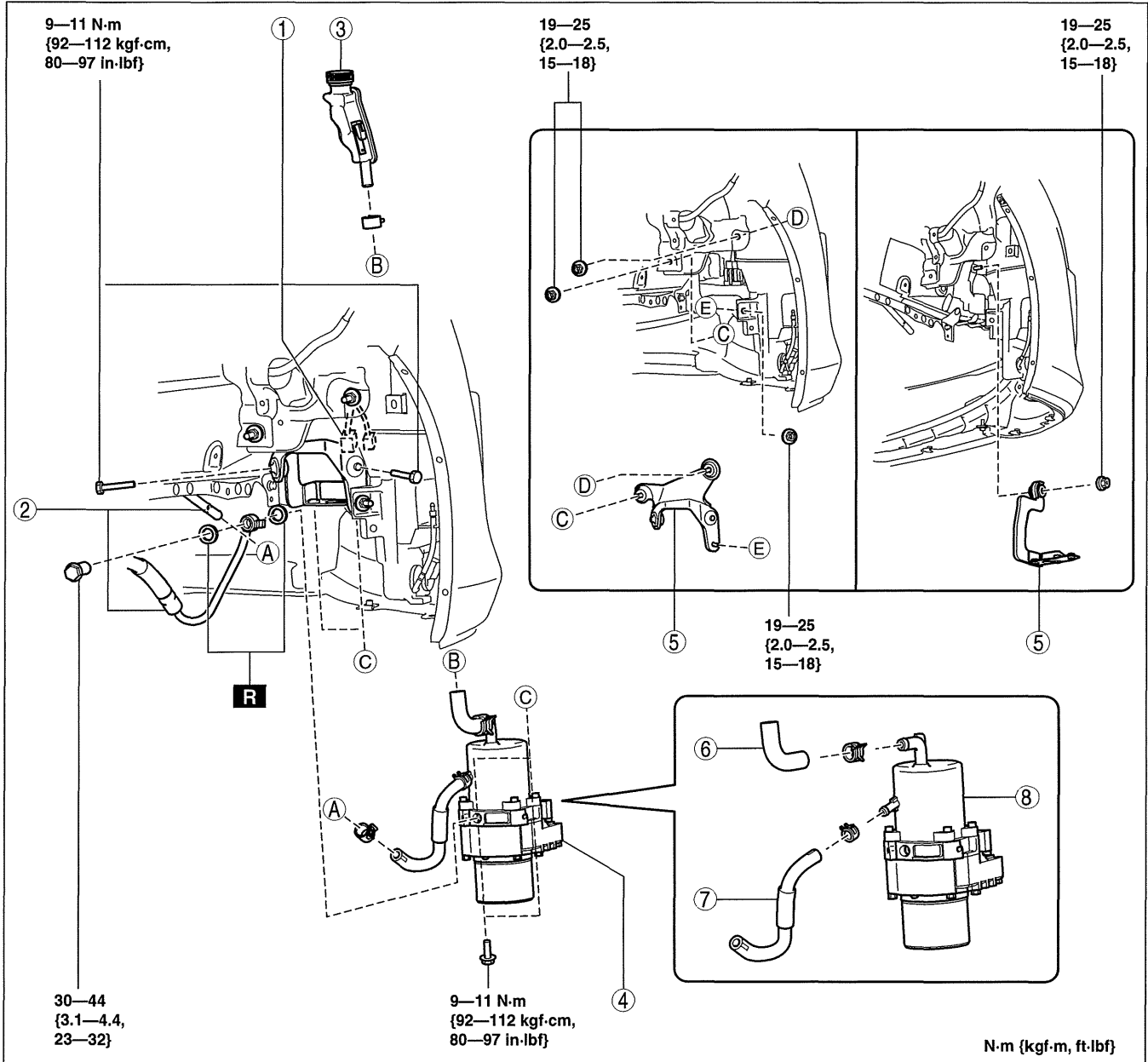
ELECTRIC POWER STEERING OIL PUMP REMOVAL/INSTALLATION

id061400803200

Caution

- Be careful not to drop the electric power steering oil pump as the internal parts of the EHPAS CM could be damaged. Replace the electric power steering oil pump if it is subjected to an impact.

1. Remove the front mudguard (RH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
2. Remove the aerodynamic under cover NO.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
3. Remove the splash shield (RH).
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.
6. After installation, perform the EHPAS CM configuration procedure. (See 06-14-32 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION.)



06-14

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1	Connector
2	Power steering pipe component (See 06-14-32 Power Steering Pipe Component Removal Note.)
3	Sub tank

4	Electric power steering oil pump component
5	Brackets
6	Suction hose
7	Return hose
8	Electric power steering oil pump

POWER STEERING

Power Steering Pipe Component Removal Note

1. Disconnect the power steering pipe component and then drain the power steering fluid.

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE CONFIGURATION

id061400802400

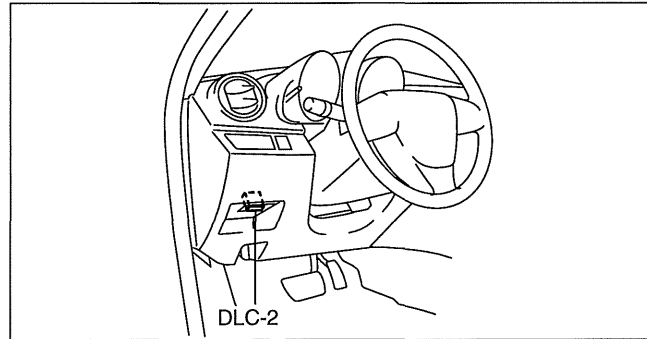
Caution

- If the EHPAS CM configuration is not completed, the EHPAS will not operate properly. If the EHPAS CM is replaced, always carry out the EHPAS CM configuration so that the EHPAS operates properly.

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the EHPAS CM configuration.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "EPS".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See 06-02-2 ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) ON-BOARD DIAGNOSIS.)



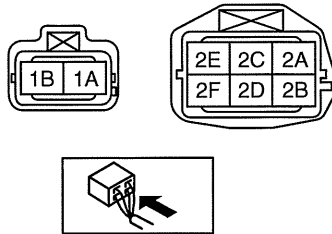
am3uuw0000250

ELECTRO HYDRAULIC POWER ASSIST STEERING (EHPAS) CONTROL MODULE INSPECTION

id061400802500

Terminal Voltage Table (Reference)

EHPAS CONTROL MODULE HARNESS-SIDE CONNECTOR



am3uuw0000273

Terminal	Signal name	Connected to	Measured item	Measured terminal (measured condition)	Standard	Inspection item(s)
1A	Ground	Ground point	Voltage	Under any condition	1 V or less	<ul style="list-style-type: none"> • Wiring harness (1A—ground point)
1B	Battery power supply	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none"> • Wiring harness (1B—battery) • Fuse (EHPAS 80A)
2A	—	—	—	—	—	—
2B	CAN_L	—	Inspect under DTC inspection.			—
2C	—	—	—	—	—	—
2D	CAN_H	—	Inspect under DTC inspection.			—
2E	—	—	—	—	—	—
2F	Ignition power supply	Ignition switch or IG1 relay	Voltage	Switch the ignition to ON	B+	<ul style="list-style-type: none"> • Wiring harness (2F—ignition switch or IG1 relay—battery) • Fuse (ABS IG 7.5A)
				Switch the ignition to off	1 V or less	

TECHNICAL DATA

06-50 TECHNICAL DATA

STEERING TECHNICAL DATA 06-50-1

STEERING TECHNICAL DATA

id065000800200

Item	Specification
Power steering fluid type	ATF M-III, M-V or equivalent (e.g. Dexron ® II)
Power steering fluid capacity (approx. quantity)	1.0 L {1.1 US qt, 0.88 Imp qt}
Steering wheel play	0—30 mm {0—1.18 in} (When hydraulic operating)
Steering wheel force (reference value)	7.8 N·m {80 kgf·cm, 69 in·lbf} or less
Steering shaft length	315—320 mm {12.41—12.59 in}
Steering rack runout	Large diameter portion (near point A): 0.15 mm {0.006 in} max. Small diameter portion (near point B): 0.20 mm {0.008 in} max.
Tie-rod end rotational torque	0.5—3.0 N·m {5.1—30 kgf·cm, 4.5—26 in·lbf}
Tie rod swing torque	0.4—4.0 N·m {4.1—40 kgf·cm, 3.6—35 in·lbf} [Pull scale reading 0.6—29.3 N {0.06—2.98 kgf, 0.14—6.58 lbf}]
Pinion shaft rotation torque (center of rack ± 90°)	LF, L5: 0.93—1.53 N·m {9.49—15.7 kgf·cm, 8.24—13.5 in·lbf} [Pull scale reading: 0.93—1.53 N·m {9.49—15.7 kgf·cm, 8.24—13.5 in·lbf}/A (m {cm, in})] L3 WITH TC: 1.45—2.05 N·m {14.8—20.9 kgf·cm, 12.9—18.1 in·lbf} [Pull scale reading: 1.45—2.05 N·m {14.8—20.9 kgf·cm, 12.9—18.1 in·lbf}/A (m {cm, in})] A: Length from the pinion shaft center to application point of pull scale

06-50

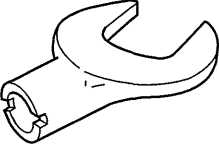
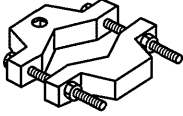

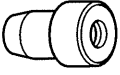
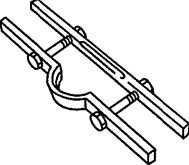

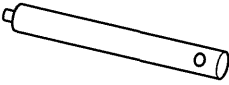
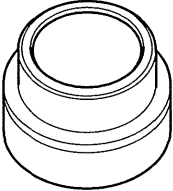
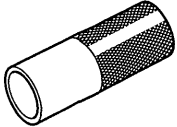
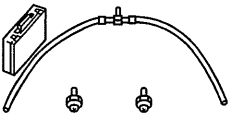
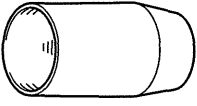
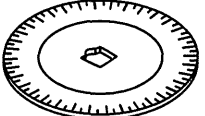
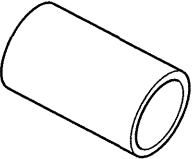
SERVICE TOOLS

06-60 SERVICE TOOLS

STEERING SST..... 06-60-1

STEERING SST

id066000800100

<p>49 H032 301 Wrench</p> 	<p>49 F017 1A0 Universal wrench</p> 	<p>49 F032 303 Handle</p> 
<p>49 B032 323 Rod seal remover body</p> 	<p>49 N032 319A Support plate</p> 	<p>49 F032 304 Body</p> 
<p>49 G033 102 Handle</p> 	<p>49 F401 336B Attachment (Part of 49 F401 330B)</p> 	<p>49 F015 002 Water seal installer</p> 
<p>49 G032 3A1 Joint hose set</p> 	<p>49 F032 310 Protector</p> 	<p>49 D032 316 Protractor</p> 
<p>49 B034 202A Support block</p> 	<p style="text-align: center;">—</p>	<p style="text-align: center;">—</p>

06-60

HEATER, VENTILATION & AIR CONDITIONING (HVAC)

07

SECTION

ON-BOARD DIAGNOSTIC07-02	BASIC SYSTEM 07-11
SYMPTOM	CONTROL SYSTEM
TROUBLESHOOTING	[FULL-AUTO
[FULL-AUTO	AIR CONDITIONER] 07-40A
AIR CONDITIONER]07-03A	CONTROL SYSTEM
SYMPTOM	[MANUAL AIR
TROUBLESHOOTING	CONDITIONER] 07-40B
[MANUAL AIR	TECHNICAL DATA 07-50
CONDITIONER]07-03B	SERVICE TOOLS 07-60
REFRIGERANT SYSTEM07-10	

07-02

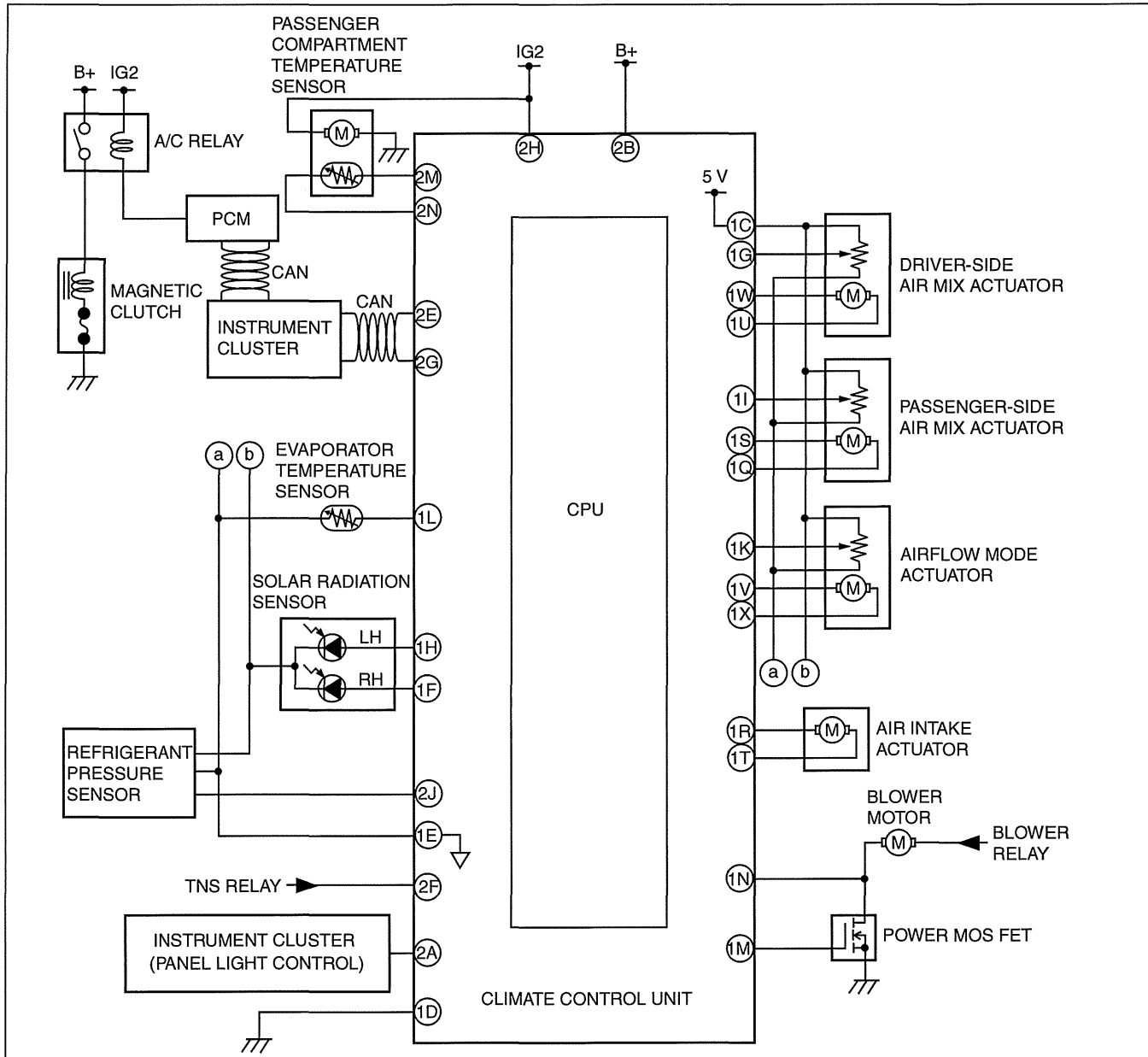
07-02 ON-BOARD DIAGNOSTIC

HVAC SYSTEM WIRING DIAGRAM07-02-2	DTC B1C1C:11, B1C1C:13 07-02-17
FOREWORD07-02-2	DTC P0530:12, P0530:13 07-02-18
Outline07-02-2	DTC U0423:68 07-02-20
FLOWCHART07-02-2	DTC U3003:16, U3003:17 07-02-20
DTC DISPLAY07-02-4	PID/DATA MONITOR DISPLAY 07-02-22
CLEARING DTC07-02-4	PID/DATA MONITOR TABLE 07-02-22
DTC TABLE07-02-5	ACTIVE COMMAND MODES
DTC B1081:71, B1082:7107-02-6	DISPLAY 07-02-22
DTC B1086:7107-02-8	ACTIVE COMMAND MODES TABLE 07-02-23
DTC B1A61:11, B1A61:1307-02-9	A/C OPERATION CHECK MODE
DTC B1A63:12, B1A63:13, B1A64:12,	DISPLAY 07-02-23
B1A64:1307-02-11	A/C OPERATION CHECK MODE
DTC B1B71:11, B1B71:1307-02-13	TABLE 07-02-23
DTC B1C1A:11, B1C1A:13, B1C1B:11,	
B1C1B:1307-02-15	

ON-BOARD DIAGNOSTIC

HVAC SYSTEM WIRING DIAGRAM

id070200800100



am3uuw0000418

FOREWORD

id070200820100

Outline

- The OBD (on-board diagnostic) system has the following functions:
 - Malfunction detection function: Detects malfunctions in the climate control unit and outputs DTCs (Diagnostic Trouble Codes).
 - PID/data monitor function: Reads out specific input/output signals and the system status.
- DTCs can be read/cleared using the M-MDS.

FLOWCHART

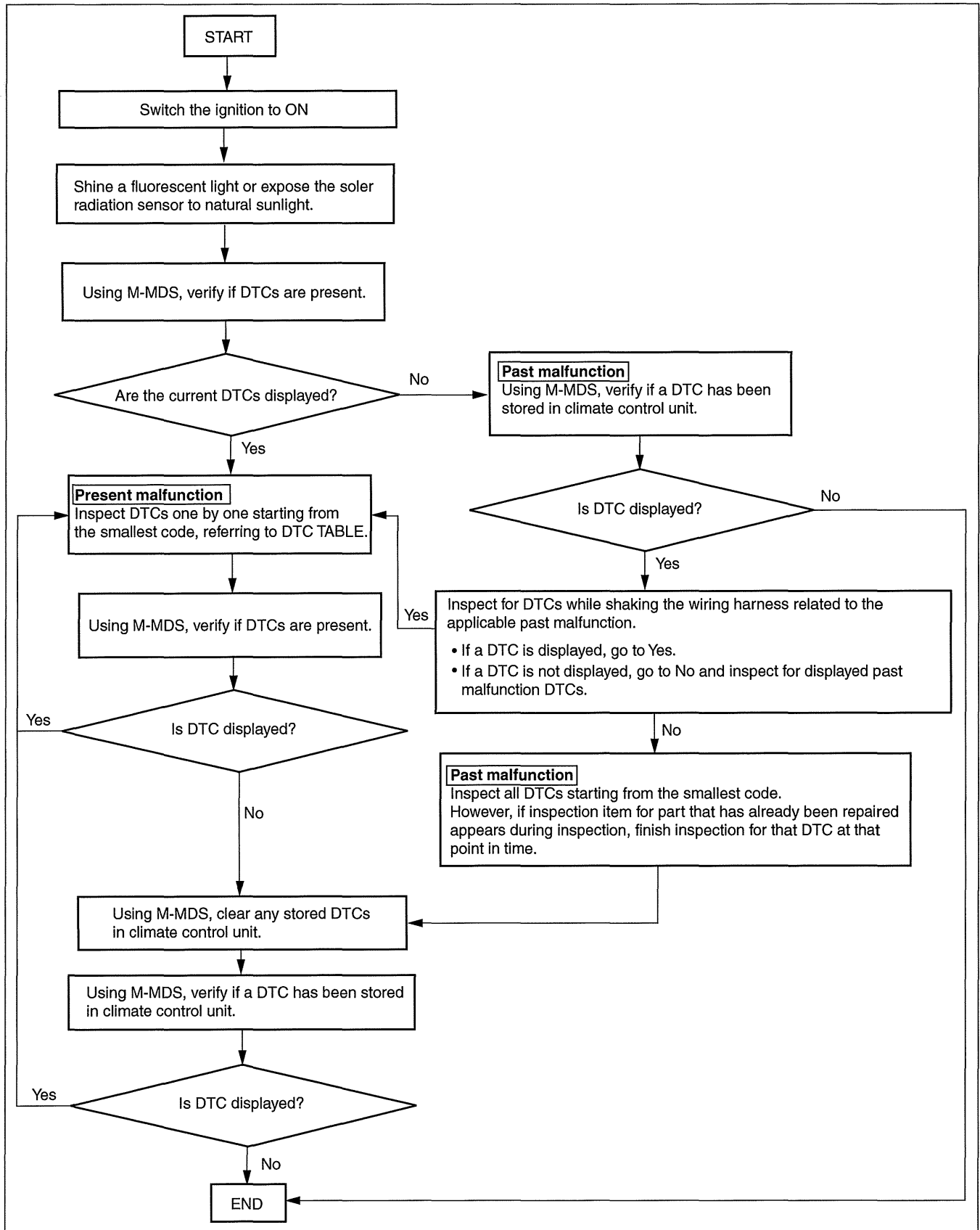
id070200820200

- Use the following flowchart to verify the cause of the trouble.

Note

- When inspecting past malfunction codes, inspect only the DTCs that were indicated before beginning the inspection. A mis-diagnosis could occur as a result of new DTCs being added while performing an inspection by disconnecting related parts or connectors.
- When DTCs of the present malfunction are no longer output after present or past malfunctions or both have been repaired, be sure to clear the past malfunction from memory to prevent repair of malfunctions that have already been repaired.

ON-BOARD DIAGNOSTIC



07-02

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ON-BOARD DIAGNOSTIC

DTC DISPLAY

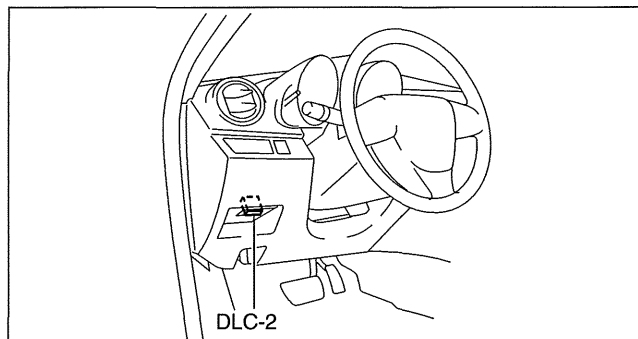
id070200801500

1. Connect the M-MDS to the DLC-2.
2. Expose the solar radiation sensor to natural sunlight.

Note

- If natural sunlight is not shone on the solar radiation sensor, the climate control unit determines a malfunction and indicates DTC "B1A63:12, B1A63:13, B1A64:12, B1A64:13".

3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "EATC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EATC".
 3. Select "Self Test".
4. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
5. After completion of repairs, clear all DTCs stored in the climate control unit. (See 07-02-4 CLEARING DTC.)

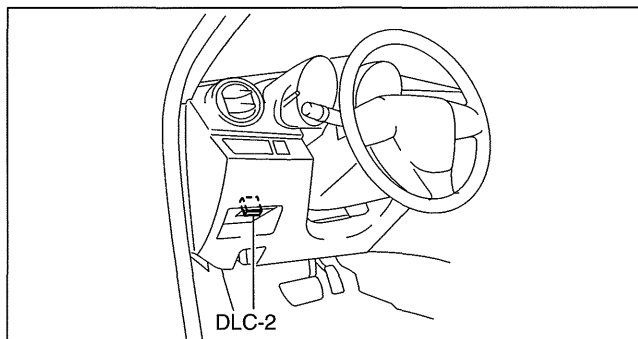


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CLEARING DTC

id070200801600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "EATC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EATC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Press the retest button on the DTC screen.
8. Verify that no DTCs are displayed.



am3uuw0000396

ON-BOARD DIAGNOSTIC

DTC TABLE

id070200801700

DTC	Malfunction location	Detected condition	Memory function	Page
B1081:71	Driver-side air mix actuator	Motor lock	X	(See 07-02-6 DTC B1081:71, B1082:71.)
B1082:71	Passenger-side air mix actuator	Motor lock	X	(See 07-02-6 DTC B1081:71, B1082:71.)
B1086:71	Airflow mode actuator	Motor lock	X	(See 07-02-8 DTC B1086:71.)
B1A61:11	Passenger compartment temperature sensor	Circuit short to ground	X	(See 07-02-9 DTC B1A61:11, B1A61:13.)
B1A61:13		Circuit open	X	
B1A63:12	Solar radiation sensor (RH)	Circuit short to power supply	—	(See 07-02-11 DTC B1A63:12, B1A63:13, B1A64:12, B1A64:13.)
B1A63:13		Circuit open	—	
B1A64:12	Solar radiation sensor (LH)	Circuit short to power supply	—	(See 07-02-11 DTC B1A63:12, B1A63:13, B1A64:12, B1A64:13.)
B1A64:13		Circuit open	—	
B1B71:11	Evaporator temperature sensor	Circuit short to ground	X	(See 07-02-13 DTC B1B71:11, B1B71:13.)
B1B71:13		Circuit open	X	
B1C1A:11	Driver-side air mix actuator (potentiometer)	Circuit short to ground	X	(See 07-02-15 DTC B1C1A:11, B1C1A:13, B1C1B:11, B1C1B:13.)
B1C1A:13		Circuit open	X	
B1C1B:11	Passenger-side air mix actuator (potentiometer)	Circuit short to ground	X	(See 07-02-15 DTC B1C1A:11, B1C1A:13, B1C1B:11, B1C1B:13.)
B1C1B:13		Circuit open	X	
B1C1C:11	Airflow mode actuator (potentiometer)	Circuit short to ground	X	(See 07-02-17 DTC B1C1C:11, B1C1C:13.)
B1C1C:13		Circuit open	X	
P0530:12	Refrigerant pressure sensor	Circuit short to power supply	X	(See 07-02-18 DTC P0530:12, P0530:13.)
P0530:13		Circuit open	X	
U0010:88	CAN communication system	Bus off	X	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0155:00	Lost communication with instrument cluster	No sub type information	—	
U0156:00	Lost communication with information display	No sub type information	—	
U0423:68	Invalid date received from Instrument cluster	Event information	—	(See 07-02-20 DTC U0423:68.)
U3003:16	Climate control unit power supply voltage (B+)	Power supply voltage decreases (9.7 V or less)	X	(See 07-02-20 DTC U3003:16, U3003:17.)
U3003:17	Climate control unit power supply voltage (B+, IG2, TNS)	Power supply voltage increases (16.4 V or more (B+)) (16.8 V or more (IG2, TNS))	X	

07-02

ON-BOARD DIAGNOSTIC

DTC B1081:71, B1082:71

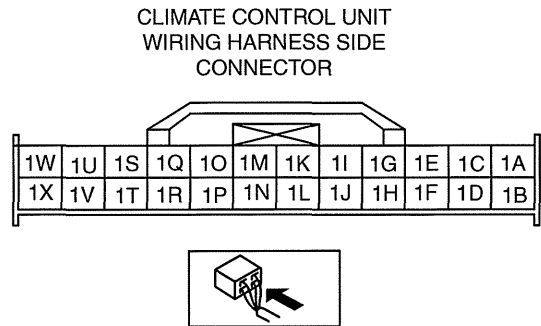
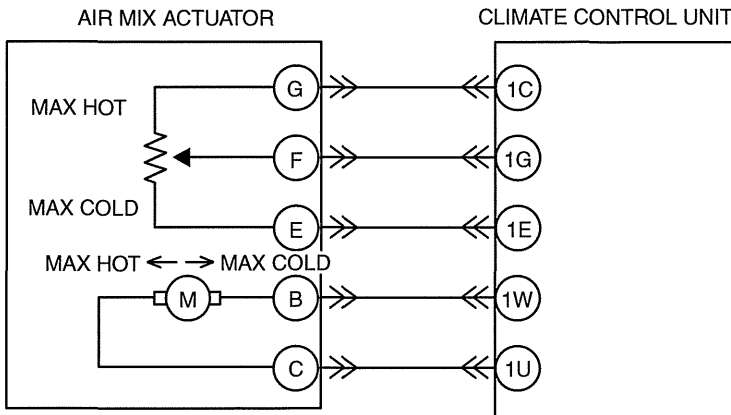
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Note

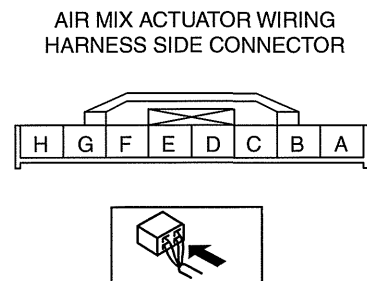
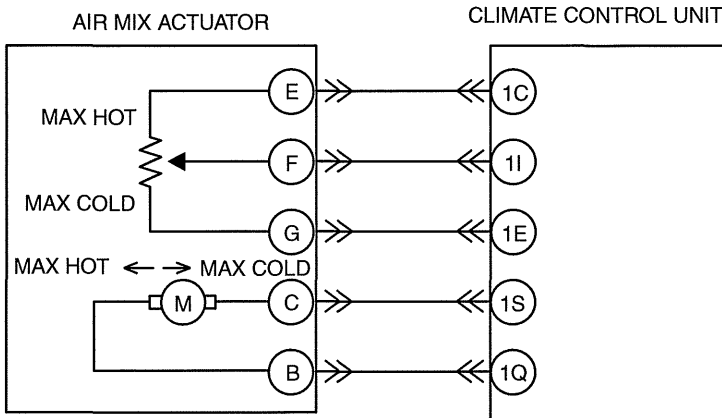
- DTC B1081:71, B1082:71 will be detected when switch the ignition to ON and approx. 30 s have passed since the air mix actuator is operated.

DTC B1081:71	Driver-side air mix actuator motor lock
DTC B1082:71	Passenger-side air mix actuator motor lock
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air mix actuator malfunction • A/C unit (air mix link and air mix crank) malfunction • Connector or terminal malfunction • Open circuit in wiring harness between climate control unit connector terminal 1U and 1W (Driver-side) • Open or short circuit in wiring harness between climate control unit connector terminal 1S and 1Q (Passenger-side) • Short to ground in wiring harness between climate control unit connector terminal 1U and 1W (Driver-side) • Short to ground in wiring harness between climate control unit connector terminal 1S and 1Q (Passenger-side)

DRIVER-SIDE



PASSENGER-SIDE



ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT AIR MIX ACTUATOR CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the air mix actuator connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT AIR MIX ACTUATOR OPERATION <ul style="list-style-type: none"> • Disconnect the air mix actuator connector. • Apply battery positive voltage and connect the ground to the air mix actuator terminals B and C, and then inspect the air mix actuator. • Does the air mix actuator operate? 	Yes	Connect the connector, then go to Step 4.
		No	Go to the next step.
3	INSPECT AIR MIX LINK OPERATION <ul style="list-style-type: none"> • Remove the air mix actuator. • Operate the air mix link manually. • Does the air mix link operate smoothly? 	Yes	Replace the air mix actuator. (See 07-40A-4 AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Go to the next step.
		No	Replace the air mix link and the air mix crank. Go to the next step.
4	INSPECT AIR MIX ACTUATOR CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Disconnect the climate control unit connector. • Apply battery positive voltage and connect the ground to the climate control unit terminal 1W and 1U, and then inspect the air mix actuator. (Driver-side) • Apply battery positive voltage and connect the ground to the climate control unit terminal 1S and 1Q, and then inspect the air mix actuator. (Passenger-side) • Does the air mix actuator operate? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness. After repair procedure, go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> • Reconnect the disconnected connectors. • Clear the past malfunction from memory. • Verify DTCs. • Is DTC B1081:71 or B1082:71 output? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

07-02

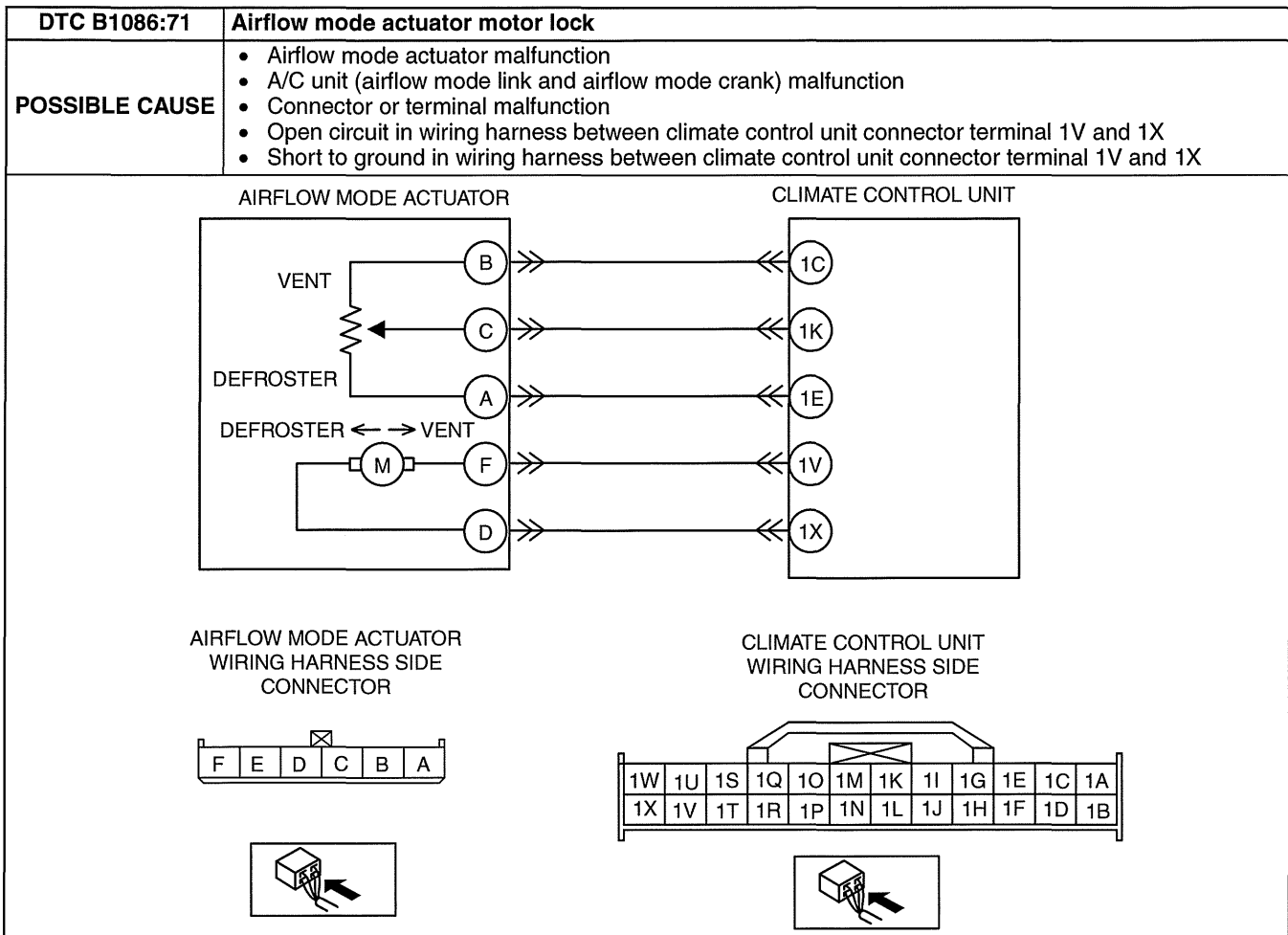
ON-BOARD DIAGNOSTIC

DTC B1086:71

id070200816700

Note

- DTC B1086:71 will be detected when switch the ignition to ON and approx. 30 s have passed since the airflow mode actuator is operated.



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT AIRFLOW MODE ACTUATOR CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the airflow mode actuator connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT AIRFLOW MODE ACTUATOR OPERATION <ul style="list-style-type: none"> • Disconnect the airflow mode actuator connector. • Apply battery positive voltage and connect the ground to the airflow mode actuator terminals F and D, and then inspect the airflow mode actuator. • Does the airflow mode actuator operate? 	Yes	Connect the connector, then go to Step 4.
		No	Go to the next step.
3	INSPECT AIRFLOW MODE MAIN LINK OPERATION <ul style="list-style-type: none"> • Remove the airflow mode actuator. • Operate the airflow mode main link manually. • Does the airflow mode main link operate smoothly? 	Yes	Replace the airflow mode actuator. (See 07-40A-8 AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Go to the next step.
		No	Replace the airflow mode main link, airflow mode sub link, and the airflow mode crank. Go to the next step.

ON-BOARD DIAGNOSTIC

STEP	INSPECTION		ACTION
4	INSPECT AIRFLOW MODE ACTUATOR CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the climate control unit connector. Apply battery positive voltage and connect the ground to the climate control unit connector terminals 1V and 1X, and then inspect the airflow mode actuator. Does the airflow mode actuator operate? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness. After repair procedure, go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> Inspect the connector and terminals (corrosion, damage, pin disconnection). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> Reconnect the disconnected connectors. Clear the past malfunction from memory. Verify DTCs. Is DTC B1086:71 output? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> If the malfunction does not recur, go to the next step. If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Verify other DTCs displayed. Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

07-02

DTC B1A61:11, B1A61:13

id070200816800

DTC B1A61:11	Passenger compartment temperature sensor circuit short to ground
DTC B1A61:13	Passenger compartment temperature sensor circuit open
POSSIBLE CAUSE	<ul style="list-style-type: none"> Passenger compartment temperature sensor malfunction Open or short circuit in wiring harness between climate control unit connector terminal 2M and passenger compartment temperature sensor connector terminal D Open or short circuit in wiring harness between climate control unit connector terminal 2N and passenger compartment temperature sensor connector terminal B Short to ground in wiring harness between climate control unit connector terminal 2M and passenger compartment temperature sensor connector terminal D Connector or terminal malfunction
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>CLIMATE CONTROL UNIT</p> </div> <div style="text-align: center;"> <p>PASSENGER COMPARTMENT TEMPERATURE SENSOR</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>PASSENGER COMPARTMENT TEMPERATURE SENSOR WIRING HARNESS SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>CLIMATE CONTROL UNIT WIRING HARNESS SIDE CONNECTOR</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> </div>	

ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the passenger compartment temperature sensor connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the passenger compartment temperature sensor. (See 07-40A-23 PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the passenger compartment temperature sensor. (See 07-40A-23 PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Go to the next step.
3	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the climate control unit connector and the passenger compartment temperature sensor connector. • Is there an open circuit in the wiring harness between the following terminals of the climate control unit and the passenger compartment temperature sensor? — 2M—D — 2N—B 	Yes	Repair the wiring harness. Go to the next step.
		No	Go to the next step.
4	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between climate control unit terminal 2M and passenger compartment temperature sensor terminal D? 	Yes	Repair the wiring harness. Go to the next step.
		No	Connect the climate control unit connector, then go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT <ul style="list-style-type: none"> • Connect the climate control unit connector. • Switch the ignition to ON. • Inspect the voltage at the following climate control unit terminal (wiring harness-side). — Terminal 2M (passenger compartment temperature sensor input signal) • Is the voltage normal? (Approx. 5 V) 	Yes	The system is normal at present. Go to the next step.
		No	Go to the next step.
7	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> • Reconnect the disconnected connectors. • Clear the past malfunction from memory. • Verify DTCs. • Is DTC B1A61:11 or B1A61:13 output? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

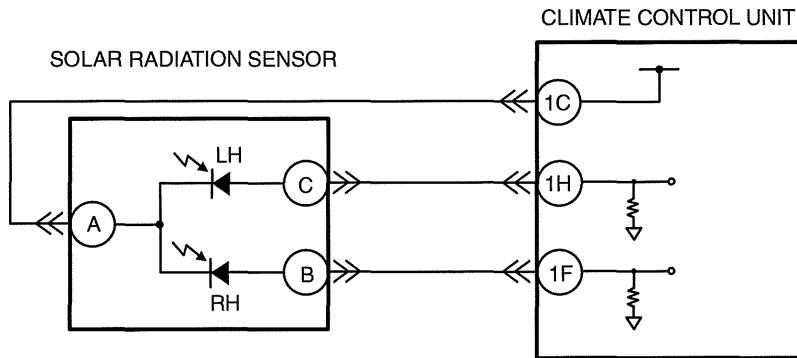
DTC B1A63:12, B1A63:13, B1A64:12, B1A64:13

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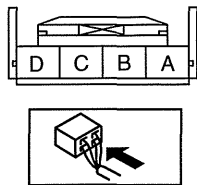
DTC B1A63:12	Solar radiation sensor (RH) circuit short to power supply
DTC B1A63:13	Solar radiation sensor (RH) circuit open
DTC B1A64:12	Solar radiation sensor (LH) circuit short to power supply
DTC B1A64:13	Solar radiation sensor (LH) circuit open

POSSIBLE CAUSE

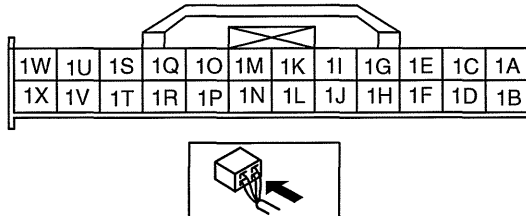
- Light amount shone on the solar radiation sensor is insufficient (Circuit is normal)
- Solar radiation sensor malfunction
- Open circuit in wiring harness between climate control unit connector terminal 1H and solar radiation sensor connector terminal C
- Open circuit in wiring harness between climate control unit connector terminal 1F and solar radiation sensor connector terminal B
- Open circuit in wiring harness between climate control unit connector terminal 1C and solar radiation sensor connector terminal A
- Short to power supply in wiring harness between climate control unit connector terminal 1H and solar radiation sensor connector terminal C
- Short to power supply in wiring harness between climate control unit connector terminal 1F and solar radiation sensor connector terminal B
- Connector or terminal malfunction



SOLAR RADIATION SENSOR WIRING HARNESS SIDE CONNECTOR



CLIMATE CONTROL UNIT WIRING HARNESS SIDE CONNECTOR



07-02

ON-BOARD DIAGNOSTIC

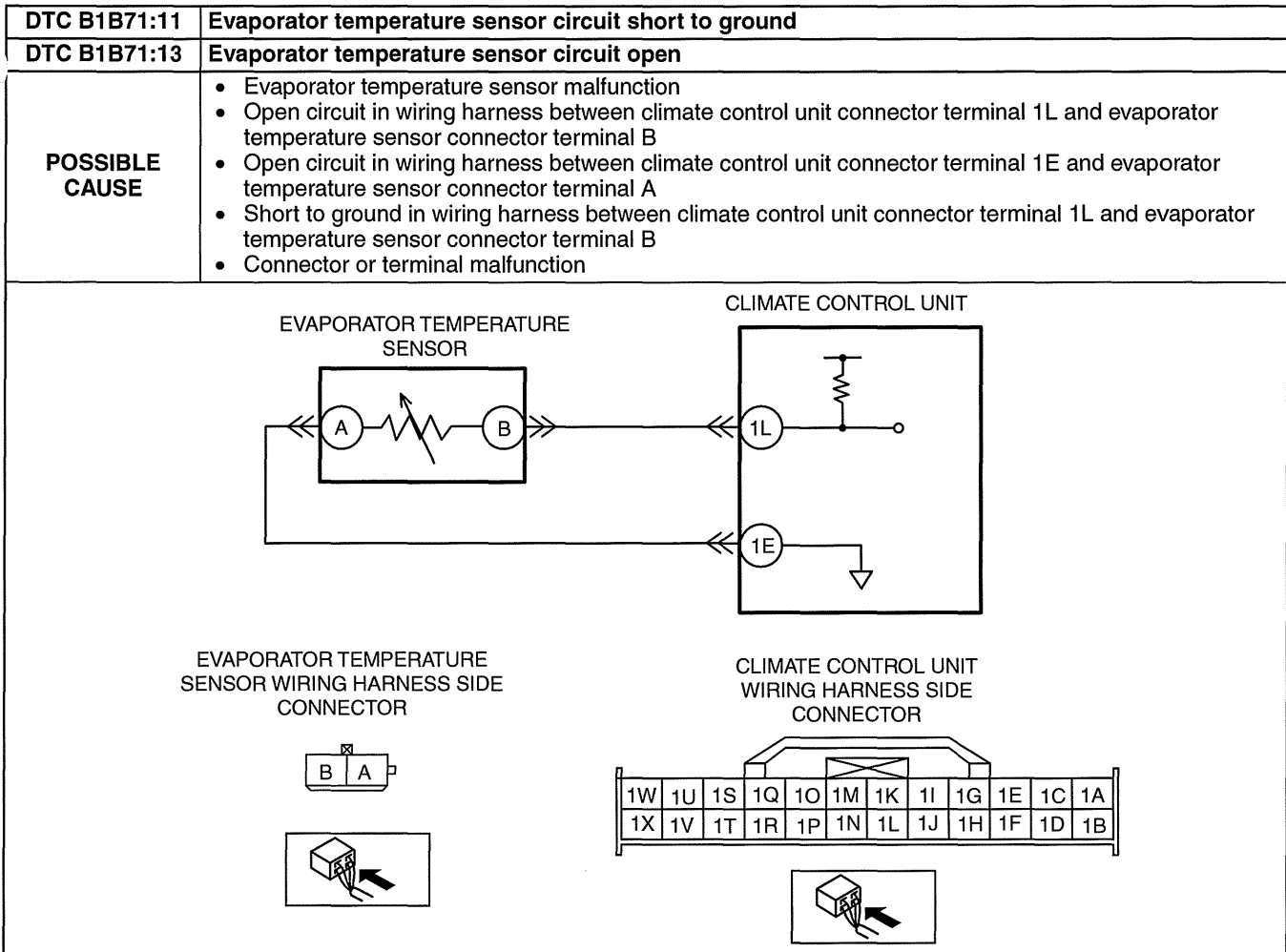
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT SOLAR RADIATION SENSOR CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the solar radiation sensor connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT SOLAR RADIATION SENSOR <ul style="list-style-type: none"> • Inspect the solar radiation sensor. (See 07-40A-22 SOLAR RADIATION SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the solar radiation sensor. (See 07-40A-20 SOLAR RADIATION SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Go to the next step.
3	INSPECT SOLAR RADIATION SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the climate control unit connector and the solar radiation sensor connector. • Is there continuity between the following terminals of the climate control unit and the solar radiation sensor? <ul style="list-style-type: none"> — 1H—C — 1F—B — 1C—A 	Yes	Go to the next step.
		No	Repair the wiring harness. Go to the next step.
4	INSPECT SOLAR RADIATION SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Is there a short circuit to power supply in the wiring harness between the following terminals of the climate control unit terminal and solar radiation sensor? <ul style="list-style-type: none"> — 1H—C — 1F—B 	Yes	Repair the wiring harness. Go to the next step.
		No	Go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> • Reconnect the disconnected connectors. • Clear the past malfunction from memory. • Verify DTCs. • Is DTC B1A63:12, B1A63:13, B1A64:12 or B1A64:13 output? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B1B71:11, B1B71:13

id070200817100



07-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT EVAPORATOR TEMPERATURE SENSOR CONNECTOR <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the evaporator temperature sensor connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> Inspect the evaporator temperature sensor. (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	Yes	Go to the next step.
		No	Replace the evaporator temperature sensor. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.) Go to the next step.
3	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the climate control unit connector and the evaporator temperature sensor connector. Is there an open circuit in the wiring harness between the following terminals of the climate control unit and the evaporator temperature sensor? <ul style="list-style-type: none"> — 1E—A — 1L—B 	Yes	Repair the wiring harness. Go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION
4	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between climate control unit terminal 1L and evaporator temperature sensor terminal B? 	Yes Repair the wiring harness. Go to the next step.
		No Connect the climate control unit connector, then go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes Go to the next step.
		No Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT <ul style="list-style-type: none"> • Connect the climate control unit connector. • Switch the ignition to ON. • Inspect the voltage at the following climate control unit terminal (wiring harness-side). <ul style="list-style-type: none"> — Terminal 1L (evaporator temperature sensor input signal) • Is the voltage normal? (Approx. 5 V) 	Yes The system is normal at present. Go to the next step.
		No Go to the next step.
7	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> • Reconnect the disconnected connectors. • Clear the past malfunction from memory. • Verify DTCs. • Is DTC B1B71:11 or B1B71:13 output? 	Yes Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes Perform the corresponding DTC inspection.
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B1C1A:11, B1C1A:13, B1C1B:11, B1C1B:13

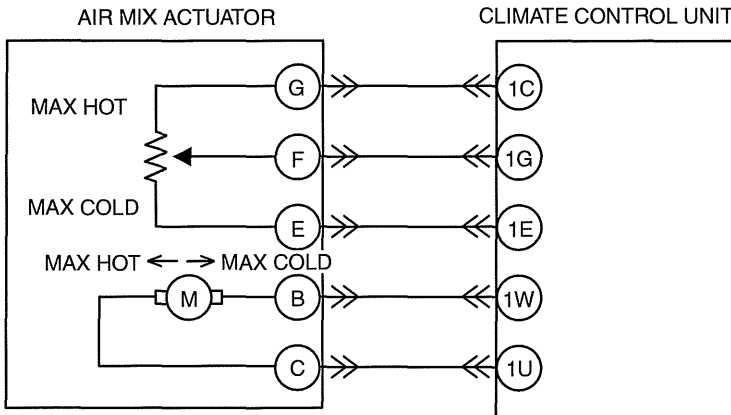
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DTC B1C1A:11	Driver-side air mix actuator (potentiometer) circuit short to ground
DTC B1C1A:13	Driver-side air mix actuator (potentiometer) circuit open
DTC B1C1B:11	Passenger-side air mix actuator (potentiometer) circuit short to ground
DTC B1C1B:13	Passenger-side air mix actuator (potentiometer) circuit open

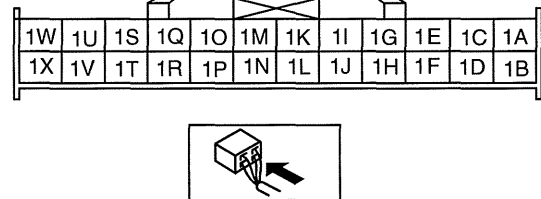
POSSIBLE CAUSE

- Air mix actuator malfunction
- Open circuit in wiring harness between climate control unit connector terminal 1C and air mix actuator connector terminal G (Driver-side)
- Open circuit in wiring harness between climate control unit connector terminal 1G and air mix actuator connector terminal F (Driver-side)
- Open circuit in wiring harness between climate control unit connector terminal 1E and air mix actuator connector terminal E (Driver-side)
- Open circuit in wiring harness between climate control unit connector terminal 1C and air mix actuator connector terminal E (Passenger-side)
- Open circuit in wiring harness between climate control unit connector terminal 1I and air mix actuator connector terminal F (Passenger-side)
- Open circuit in wiring harness between climate control unit connector terminal 1E and air mix actuator connector terminal G (Passenger-side)
- Short to ground in wiring harness between climate control unit connector terminal 1G and air mix actuator connector terminal F (Driver-side)
- Short to ground in wiring harness between climate control unit connector terminal 1I and air mix actuator connector terminal F (Passenger-side)

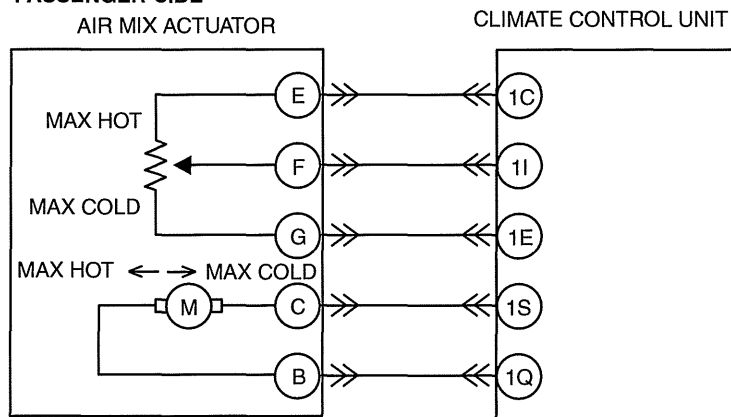
DRIVER-SIDE



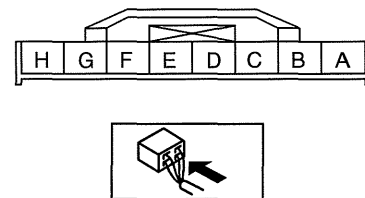
CLIMATE CONTROL UNIT WIRING HARNESS SIDE CONNECTOR



PASSENGER-SIDE



AIR MIX ACTUATOR WIRING HARNESS SIDE CONNECTOR



07-02

ON-BOARD DIAGNOSTIC

Diagnostic procedure

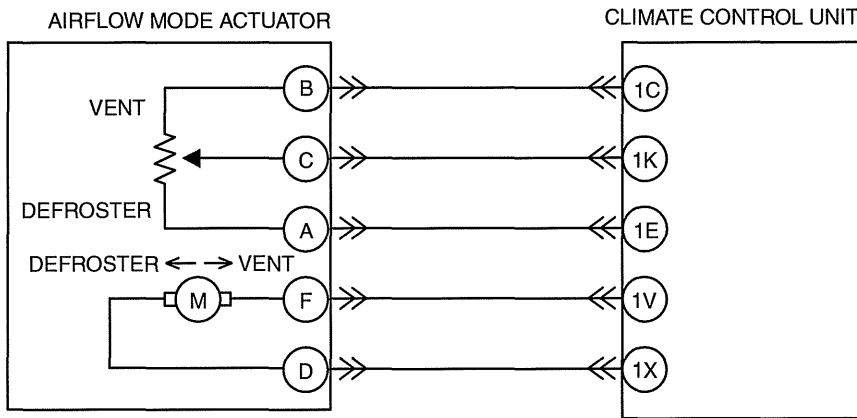
STEP	INSPECTION	ACTION	
1	INSPECT AIR MIX ACTUATOR CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the air mix actuator connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT AIR MIX ACTUATOR <ul style="list-style-type: none"> • Inspect the air mix actuator. (See 07-40A-5 AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the air mix actuator. (See 07-40A-4 AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Go to the next step.
3	INSPECT AIR MIX ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN <ul style="list-style-type: none"> • Disconnect the climate control unit connector and the air mix actuator connector. • Is there an open circuit in the wiring harness between the following terminals of the climate control unit and the air mix actuator? Driver-side <ul style="list-style-type: none"> — 1C—G — 1G—F — 1E—E Passenger-side <ul style="list-style-type: none"> — 1C—E — 1I—F — 1E—G 	Yes	Repair the wiring harness. Go to the next step.
		No	Go to the next step.
4	INSPECT AIR MIX ACTUATOR (POTENTIOMETER) SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between the following terminals of the climate control unit terminal and air mix actuator terminal? Driver-side <ul style="list-style-type: none"> — 1G—F Passenger-side <ul style="list-style-type: none"> — 1I—F 	Yes	Repair/replace the malfunctioning vehicle wiring harness. After repair procedure, go to the next step.
		No	The system is normal at present. Go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> • Reconnect the disconnected connectors. • Clear the past malfunction from memory. • Verify DTCs. • Is DTC B1C1A:11, B1C1A:13, B1C1B:11, B1C1B:13 output? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

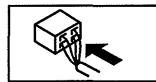
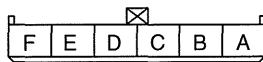
DTC B1C1C:11, B1C1C:13

id070200817200

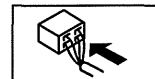
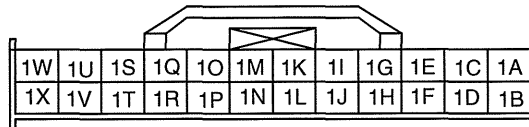
DTC B1C1C:11	Airflow mode actuator (potentiometer) circuit short to ground
DTC B1C1C:13	Airflow mode actuator (potentiometer) circuit open
POSSIBLE CAUSE	<ul style="list-style-type: none"> Airflow mode actuator malfunction Open circuit in wiring harness between climate control unit connector terminal 1C and airflow mode actuator connector terminal B Open circuit in wiring harness between climate control unit connector terminal 1K and airflow mode actuator connector terminal C Open circuit in wiring harness between climate control unit connector terminal 1E and airflow mode actuator connector terminal A Short to ground in wiring harness between climate control unit connector terminal 1K and airflow mode actuator connector terminal C



AIRFLOW MODE ACTUATOR WIRING HARNESS SIDE CONNECTOR



CLIMATE CONTROL UNIT WIRING HARNESS SIDE CONNECTOR



07-02

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT AIRFLOW MODE ACTUATOR CONNECTOR <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the airflow mode actuator connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to the next step.
2	INSPECT AIRFLOW MODE ACTUATOR <ul style="list-style-type: none"> Inspect the airflow mode actuator. (See 07-40A-8 AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	Yes	Go to the next step.
		No	Replace the airflow mode actuator. (See 07-40A-7 AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Go to the next step.
3	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the climate control unit connector and the airflow mode actuator connector. Is there an open circuit in the wiring harness between the following terminals of the climate control unit and the airflow mode actuator? <ul style="list-style-type: none"> — 1C—B — 1K—C — 1E—A 	Yes	Repair the wiring harness. Go to the next step.
		No	Go to the next step.

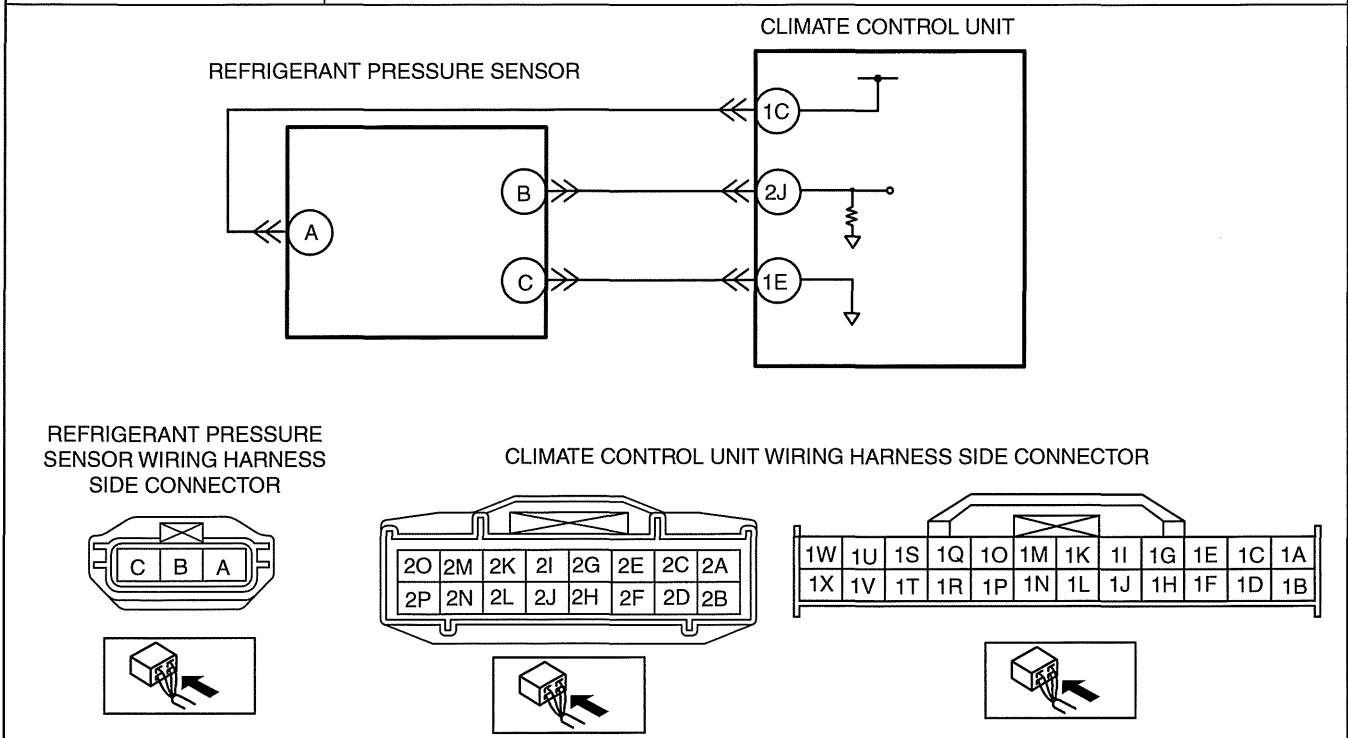
ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION
4	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) SHORT TO GROUND <ul style="list-style-type: none"> Is there a short circuit to ground in the wiring harness between climate control unit terminal 1K and airflow mode actuator terminal C? 	Yes Repair/replace the malfunctioning vehicle wiring harness. After repair procedure, go to the next step.
		No The system is normal at present. Go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> Inspect the connector and terminals (corrosion, damage, pin disconnection). Are the connector and terminals normal? 	Yes Go to the next step.
		No Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> Reconnect the disconnected connectors. Clear the past malfunction from memory. Verify DTCs. Is DTC B1C1C:11, B1C1C:13 output? 	Yes Repeat the inspection from Step 1. <ul style="list-style-type: none"> If the malfunction does not recur, go to the next step. If the malfunction recurs, replace the climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) then go to the next step.
		No Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Verify other DTCs displayed. Are any other DTCs output? 	Yes Perform the corresponding DTC inspection.
		No DTC troubleshooting completed.

DTC P0530:12, P0530:13

id070200073500

DTC P0530:12	Refrigerant pressure sensor circuit short to power supply
DTC P0530:13	Refrigerant pressure sensor circuit open
POSSIBLE CAUSE	<ul style="list-style-type: none"> Refrigerant pressure sensor malfunction Open circuit in wiring harness between climate control unit connector terminal 1C and refrigerant pressure sensor connector terminal A Open circuit in wiring harness between climate control unit connector terminal 1E and refrigerant pressure sensor connector terminal C Open circuit in wiring harness between climate control unit connector terminal 2J and refrigerant pressure sensor connector terminal B Short to power supply in wiring harness between climate control unit connector terminal 2J and refrigerant pressure sensor connector terminal B Connector or terminal malfunction



ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT REFRIGERANT PRESSURE SENSOR CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the refrigerant pressure sensor connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the connector or terminal. After repair procedure, go to Step 5.
2	INSPECT REFRIGERANT PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the refrigerant pressure sensor. (See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the refrigerant pressure sensor. (See 07-40A-24 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
3	INSPECT REFRIGERANT PRESSURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the climate control unit connector and the refrigerant pressure sensor connector. • Is there continuity between the following terminals of the climate control unit and the refrigerant pressure sensor? <ul style="list-style-type: none"> — 1C—A — 1E—C — 2J—B 	Yes	Go to the next step.
		No	Repair the wiring harness.
4	INSPECT REFRIGERANT PRESSURE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Is there a short circuit to power supply in the wiring harness between the following terminals of the climate control unit terminal and refrigerant pressure sensor? <ul style="list-style-type: none"> — 2J—B 	Yes	Repair the wiring harness.
		No	Go to the next step.
5	VERIFY CLIMATE CONTROL UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair/replace the malfunctioning vehicle wiring harness, connector, or terminal. After repair procedure, go to the next step.
6	VERIFY THAT SAME DTC IS NOT OUTPUT AGAIN <ul style="list-style-type: none"> • Reconnect the disconnected connectors. • Clear the past malfunction from memory. • Verify DTCs. • Is DTC P0530:12 or P0530:13 output? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

07-02

ON-BOARD DIAGNOSTIC

DTC U0423:68

id070200730600

DTC U0423:68	Invalid data received from instrument cluster
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Climate control unit malfunction

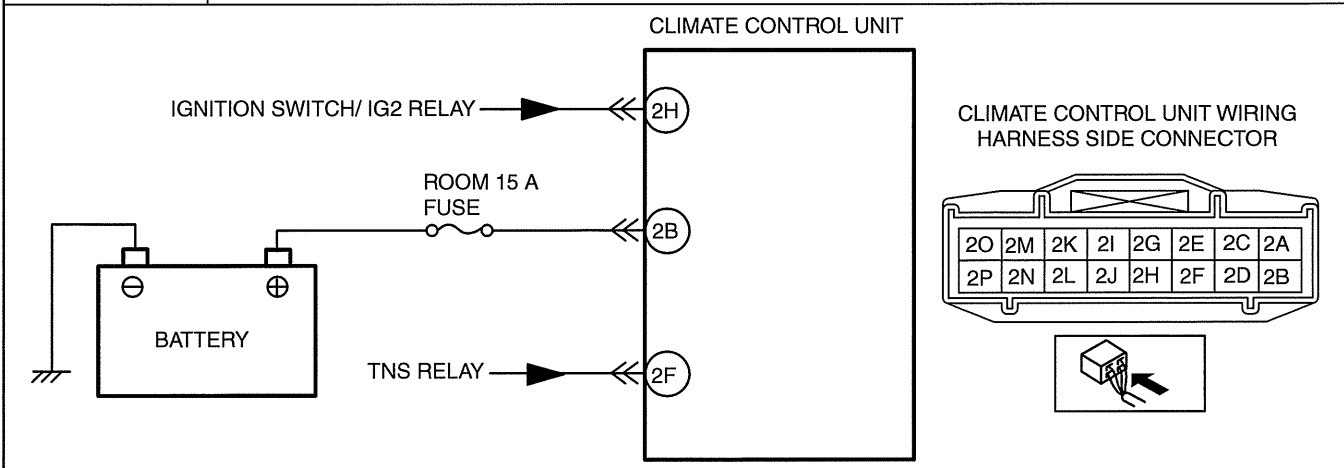
Diagnostic Procedure

Step	Inspection		Action
1	PERFORM INSTRUMENT CLUSTER DTC INSPECTION <ul style="list-style-type: none"> Perform the instrument cluster DTC inspection using the M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
2	PERFORM CLIMATE CONTROL UNIT DTC INSPECTION <ul style="list-style-type: none"> Clear the DTC from the climate control unit memory using the M-MDS. (See 07-02-4 CLEARING DTC.) Perform the climate control unit DTC inspection using the M-MDS. (See 07-02-4 DTC DISPLAY.) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the climate control unit memory using the M-MDS. (See 07-02-4 CLEARING DTC.) Perform the climate control unit DTC inspection using the M-MDS. (See 07-02-4 DTC DISPLAY.) Is the same DTC present? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> If the malfunction does not recur, go to the next step. If the malfunction recurs, replace the climate control unit. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/ INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Verify other DTCs displayed. Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

DTC U3003:16, U3003:17

id070200731000

DTC U3003:16	Power supply circuit voltage below threshold (9.7 V or less (B+))
DTC U3003:17	Power supply circuit voltage above threshold (16.4 V or more (B+)), (16.8 V or more (IG2, TNS))
POSSIBLE CAUSE	<ul style="list-style-type: none"> Generator system malfunction ROOM 15 A fuse malfunction Battery malfunction Open or short circuit to ground in wiring harness between battery positive terminal and climate control unit terminal 2B. Climate control unit malfunction



ON-BOARD DIAGNOSTIC

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT PCM DTC (INSPECT GENERATOR CIRCUIT) <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the M-MDS to the DLC-2. • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT FUSE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the ROOM 15 A fuse. • Is the fuse normal? 	Yes	Install the ROOM 15 A fuse, then go to the next step.
		No	Replace the ROOM 15 A fuse, then go to Step 6.
3	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is the battery normal? 	Yes	Go to the next step.
		No	Replace/charge the battery, then go to Step 6.
4	INSPECT CLIMATE CONTROL UNIT POWER SUPPLY CIRCUIT FOR SHORT CIRCUIT TO GROUND <ul style="list-style-type: none"> • Disconnect the climate control unit connector. • Inspect for continuity between climate control unit terminal 2B and body ground. • Is there continuity? 	Yes	Repair the wiring harness, then go to Step 6.
		No	Go to the next step.
5	INSPECT CLIMATE CONTROL UNIT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between climate control unit terminal 2B and battery positive terminal. • Is there continuity? 	Yes	Go to the next step.
		No	Repair the wiring harness, then go to the next step.
6	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Clear DTCs using the M-MDS. • Perform the climate control unit DTC inspection using the M-MDS. (See 07-02-4 DTC DISPLAY.) • Are DTCs U3003:16 or U3003:17 displayed? 	Yes	Repeat the inspection from Step 1. <ul style="list-style-type: none"> • If the malfunction does not recur, go to the next step. • If the malfunction recurs, replace the climate control unit. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Verify other DTCs displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

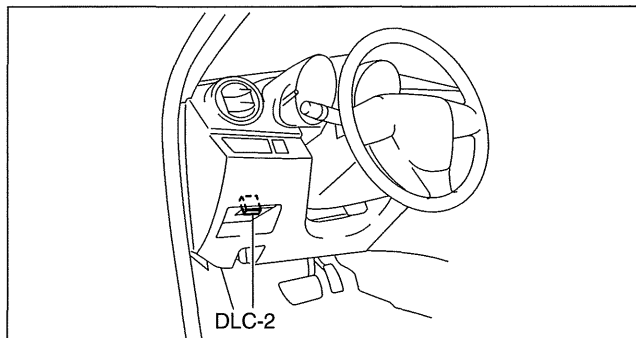
07-02

ON-BOARD DIAGNOSTIC

PID/DATA MONITOR DISPLAY

id070200801800

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "EATC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EATC".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



am3uuw0000396

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE

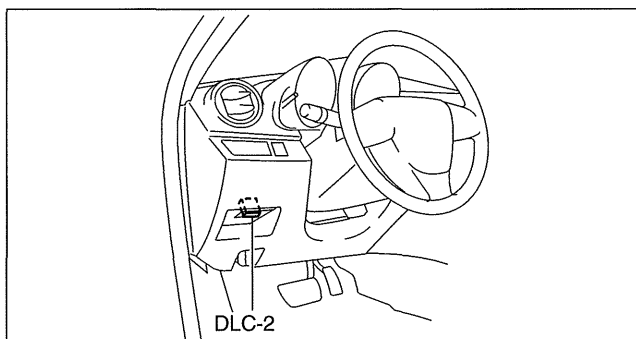
id070200801900

PID name (definition)	Input part	Unit/Condition	Terminal
AC_PRES	Refrigerant pressure sensor	Pa	2J
CABIN_TEMP	Passenger compartment temperature sensor	°C	2M
EVAP_TEMP	Evaporator temperature sensor	°C	1L
SOLAR_SSR_L	Solar radiation sensor (LH)	W	1H
SOLAR_SSR_R	Solar radiation sensor (RH)	W	1F

ACTIVE COMMAND MODES DISPLAY

id070200809400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "EATC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EATC".
 3. Select "DataLogger".
3. Select the active command modes from the PID table.
4. Perform the active command modes, inspect the operations for each parts.
 - If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.



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ON-BOARD DIAGNOSTIC

ACTIVE COMMAND MODES TABLE

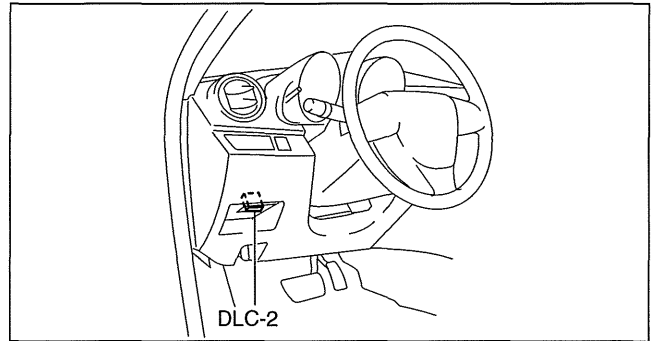
id070200809500

Command name	Output part	Operation
MIX_ACT	Air mix actuator	Off/On
REC/FRESH	REC switch	
DISPLAY	Information display	
BLOWER	Blower motor	
MODE_ACT	Airflow mode actuator	

A/C OPERATION CHECK MODE DISPLAY

id070200801400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Body".
 2. Select the "EATC Operation Check".
 - When using the PDS (Pocket PC)
 1. Select the "All Tests and Calibrations".
 2. Select the "EATC Operation Check".
3. Select the "EATC Operation Check" from the screen menu.
4. Verify the A/C operation check mode according to the directions on the screen.



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07-02

A/C OPERATION CHECK MODE TABLE

id070200801300

M-MDS display	Target part	Operation condition
Illumination of All Indicator Lights	Climate control unit	All A/C indicator lights illuminated
Blower Motor Speed	Blower motor	OFF → 1ST → 3RD → 5TH → 7TH
Air Mix Actuator	Air mix door	0% → 50% → 100% → 50%
Air Flow Mode Actuator	Airflow mode door	VENT → BI-LEVEL → HEAT → DEF/HEAT → DEFROSTER
Air Intake Actuator / Air Conditioning Compressor	Air intake door A/C compressor	FRESH ↔ REC ON ↔ OFF

* : Shown on the information display (at the set temperature display) according to each M-MDS display.

07-03A SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

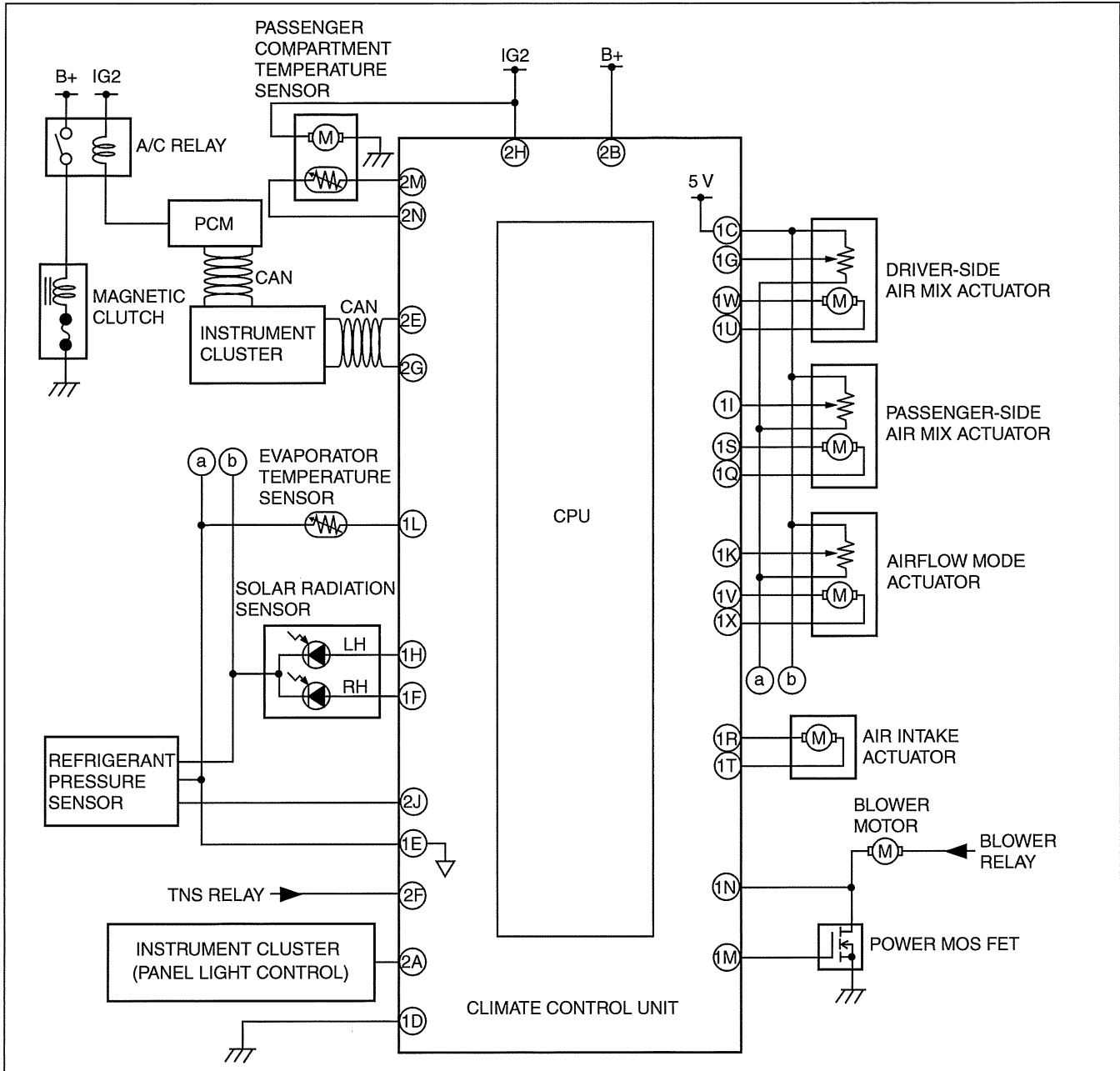
HVAC SYSTEM WIRING DIAGRAM
[FULL-AUTO AIR CONDITIONER] 07-03A-2
FOREWORD
[FULL-AUTO AIR CONDITIONER] 07-03A-2
TROUBLESHOOTING INDEX
[FULL-AUTO AIR CONDITIONER] 07-03A-3
NO.1 INSUFFICIENT AIR (OR NO AIR)
BLOWN FROM VENTS
[FULL-AUTO AIR CONDITIONER] 07-03A-3
NO.2 AMOUNT OF AIR BLOWN FROM
VENTS DOES NOT CHANGE
[FULL-AUTO AIR CONDITIONER] 07-03A-7
NO.3 AIR INTAKE MODE FROM VENT
DOES NOT CHANGE
[FULL-AUTO AIR CONDITIONER] 07-03A-9

NO.4 NO TEMPERATURE CONTROL
WITH CLIMATE CONTROL UNIT
[FULL-AUTO AIR CONDITIONER]07-03A-11
NO.5 WINDSHIELD FOGGED
[FULL-AUTO AIR CONDITIONER]07-03A-15
NO.6 AIR FROM VENTS NOT
COLD ENOUGH
[FULL-AUTO AIR CONDITIONER]07-03A-17
NO.7 NO COOL AIR
[FULL-AUTO AIR CONDITIONER]07-03A-20
NO.8 NOISE WHILE OPERATING
A/C SYSTEM
[FULL-AUTO AIR CONDITIONER]07-03A-22
NO.9 DUAL A/C CONTROL
DOES NOT OPERATE
[FULL-AUTO AIR CONDITIONER]07-03A-24

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

HVAC SYSTEM WIRING DIAGRAM [FULL-AUTO AIR CONDITIONER]

id0703c1800100



am3uuw0000418

FOREWORD [FULL-AUTO AIR CONDITIONER]

id0703c1800200

- The areas for inspection (steps) are given according to various circuit malfunctions. Use the following chart to verify the symptoms of the trouble in order to diagnose the appropriate area.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

TROUBLESHOOTING INDEX [FULL-AUTO AIR CONDITIONER]

id0703c1800300

No.	TROUBLESHOOTING ITEM	DESCRIPTION
1	Insufficient air (or no air) blown from vents	<ul style="list-style-type: none"> • Problem with each vent and/or duct • Airflow mode does not change
2	Amount of air blown from vents does not change	<ul style="list-style-type: none"> • Malfunction in blower system
3	Air intake mode from front vent does not change	<ul style="list-style-type: none"> • Air intake mode does not change when switching REC/FRESH mode
4	No temperature control with climate control unit	<ul style="list-style-type: none"> • Temperature does not change when operating temperature dial. • Malfunction in A/C unit and/or climate control unit air mix system
5	Windshield fogged	<ul style="list-style-type: none"> • A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes • Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes
6	Air from vents not cold enough	<ul style="list-style-type: none"> • Magnetic clutch operates but A/C system malfunctions
7	No cool air	<ul style="list-style-type: none"> • Magnetic clutch does not operate
8	Noise while operating A/C system	<ul style="list-style-type: none"> • Noise from magnetic clutch, A/C compressor, hose or refrigerant line
9	Dual A/C control function does not operate	<ul style="list-style-type: none"> • Driver or passenger side temperature control dial does not operate individually • Temperature control operates normally expect for dual A/C control function

07-03A

NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [FULL-AUTO AIR CONDITIONER]

id0703c1800400

1	Insufficient air (or no air) blown from vents
DESCRIPTION	<ul style="list-style-type: none"> • Problem with each vent and/or duct. • Airflow mode does not change.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in airflow mode actuator • Malfunction in VENT mode system • Malfunction in HEAT mode system • Malfunction in DEFROSTER mode system

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions.
If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1*	INSPECT CLIMATE CONTROL UNIT POWER SUPPLY FUSE FOR B+ SIGNAL <ul style="list-style-type: none"> • Is the climate control unit power supply fuse for B+ signal normal? 	Yes Go to the next step.
		No Inspect for short to GND in blown fuse circuit Repair or replace as necessary. Install appropriate amperage fuse.
2*	INSPECT TO SEE WHETHER MALFUNCTION (OPEN CIRCUIT) IS IN B+ SIGNAL WIRING HARNESS (BETWEEN FUSE BLOCK AND CLIMATE CONTROL UNIT) OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the climate control unit connector (16-pin). • Switch the ignition to ON. • Measure the voltage at climate control unit harness-side connector (16-pin) terminal 2B (B+ signal). • Is the voltage approx. 12V? 	Yes Go to the next step.
		No Repair wiring harness between fuse block and climate control unit, then go to Step 20.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
3*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND GND) OR ELSE ELSEWHERE <ul style="list-style-type: none"> • Climate control unit connector (24-pin) disconnected. • Verify that continuity between climate control unit harness-side connector (24-pin) terminal 1D and GND. • Is there continuity? 	Yes	Go to the next step
		No	Repair wiring harness between climate control unit and GND. Inspect GND point condition. Then go to Step 20.
4*	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C UNIT OR AIRFLOW MODE ACTUATOR <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1K (24-pin) when temperature controls dial at VENT and DEFROSTER. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is voltage normal? 	Yes	Go to Step 16.
		No	Go to the next step.
5*	INSPECT TO SEE WHETHER MALFUNCTION IS IN POSITION OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1I and 1G (24-pin) when airflow mode change to MAX HOT and MAX COLD. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) • Are voltages normal? 	Yes	Go to Step 8.
		No	Go to the next step.
6*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY OR SHORT TO BATTERY POWER OR GND) IS IN POSITION SENSOR POWER SUPPLY (CLIMATE CONTROL UNIT TERMINAL 1C) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1C (24-pin). • Is voltage approx. 5V? 	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit terminal 1C and follows: <ul style="list-style-type: none"> • Airflow mode actuator terminal B • Driver side air mix actuator terminal G • Passenger side air mix actuator terminal E Then go to Step 20.
7*	INSPECT TO SE WHETHER MAL FUNCTION (LACK OF CONTINUITY OR OPEN) IS IN POSITION SENSOR GND (CLIMATE CONTROL UNIT TERMINAL 1E) OR ELSEWHERE <ul style="list-style-type: none"> • Measure voltage at climate control unit terminal 1E (24-pin). • Is voltage below 1.0V? 	Yes	Go to Step 11.
		No	Repair wiring harness between climate control unit terminal 1E and follows: <ul style="list-style-type: none"> • Airflow mode actuator terminal A • Driver side air mix actuator terminal E • Passenger side air mix actuator terminal G Then go to Step 20.
8*	INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO POWER) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR ELSEWHERE <ul style="list-style-type: none"> • Is climate control unit terminal 1K voltage approx. 12V, at Step 4? 	Yes	Repair wiring harness between climate control unit terminal 1K and airflow mode actuator terminal C. Then go to Step 20.
		No	Go to the next step.
9*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect climate control unit and airflow mode actuator connectors. • Verify continuity between climate control unit terminal 1K (24-pin) and airflow mode actuator terminal C at harness-side connector. • Is there continuity? 	Yes	Go to next step.
		No	Repair wiring harness between climate control unit terminal 1K and airflow mode actuator terminal C. Then go to Step 20.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
10*	INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO GND) IS IN WIRING HARNESS (AIRFLOW MODE POSITION SIGNAL) OR POSITION SENSOR COMMON (POWER SUPPLY OR GND) HARNESS <ul style="list-style-type: none"> • Verify continuity between climate control unit harness-side connector terminal 1K (24-pin) and GND. • Is there continuity? 	Yes	Repair wiring harness between climate control unit terminal 1K and airflow mode actuator terminal C. Then go to Step 20.
		No	Inspection and repair for open circuit following: <ul style="list-style-type: none"> • Between airflow mode actuator terminal B and junction point to each air mix actuator (position sensor power supply). • Between airflow mode actuator terminal A and junction point to each air mix actuator (position sensor GND). Then go to Step 20.
11*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIRFLOW MODE ACTUATOR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIR FLOW MODE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure voltage at the following terminals of climate control unit. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) — Terminal 1V (24-pin, DEFROSTER mode motor drive signal) — Terminal 1X (24-pin, VENT mode motor drive signal) • Are voltages okay? 	Yes	Go to the next step.
		No	Go to Step 13.
12*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR FLOW MODE ACTUATOR OR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIR FLOW MODE ACTUATOR) <ul style="list-style-type: none"> • Airflow mode actuator connector disconnected. • Disconnect the airflow mode actuator. • Verify continuity at following terminals between airflow mode actuator and climate control unit. — Climate control unit terminal 1V — airflow mode actuator terminal F (DEFROSTER mode motor drive signal) — Climate control unit terminal 1X — airflow mode actuator terminal D (24-pin, VENT mode motor drive signal) • Is there continuity? 	Yes	Go to Step 17.
		No	Repair wiring harness between climate control unit and airflow mode actuator. Then go to Step 20.
13*	INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR FLOW MODE ACTUATOR OR ELSEWHERE <ul style="list-style-type: none"> • Airflow mode actuator and climate control unit connectors disconnected. • Measure voltage at the following terminals of climate control unit. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) — Terminal 1V (24-pin, DEFROSTER mode motor drive signal) — Terminal 1X (24-pin, VENT mode motor drive signal) • Are voltage okay? 	Yes	Go to Step 16.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
14*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN CLIMATE CONTROL UNIT AND FLOW MODE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Airflow mode actuator and climate control unit connectors disconnected. • Measure voltage at the following terminal of the climate control unit harness-side connector. <ul style="list-style-type: none"> — Terminal 1V (24-pin, DEFROSTER mode motor drive signal) — Terminal 1X (24-pin, VENT mode motor drive signal) • Are voltages approx. 0V? 	Yes	Go to the next step.
		No	Repair wiring between climate control unit and airflow mode actuator. Then go to the Step 20.
15*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GND BETWEEN CLIMATE CONTROL UNIT AND AIRFLOW MODE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Verify that continuity at the following harness-side connector terminals between climate control unit and GND. <ul style="list-style-type: none"> — Terminal 1V (24-pin, DEFROSTER mode motor drive signal) — Terminal 1X (24-pin, VENT mode motor drive signal) • Is there continuity? 	Yes	Repair wiring harness between climate control unit and airflow mode actuator. Then go to the Step 20.
		No	Go to the next step.
16	INSPECT AIRFLOW MODE ACTUATOR <ul style="list-style-type: none"> • Inspect airflow mode actuator. (See 07-40A-8 AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is airflow mode actuator normal? 	Yes	Go to the next step.
		No	Replace the airflow mode actuator. (See 07-40A-7 AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Then go to the Step 20.
17	INSPECT AIRFLOW MODE LINK <ul style="list-style-type: none"> • Inspect airflow mode links. <ul style="list-style-type: none"> — Is grease on link? — Are links securely and properly installed? — Are links free of obstructions and hindrances? • Are above items okay? 	Yes	Go to the next step.
		No	Apply grease to links. If any links are damaged, replace malfunctioning part. Then go to the Step 20.
18	INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR AIRFLOW MODE DOOR <ul style="list-style-type: none"> • Inspect blower unit airflow mode door. <ul style="list-style-type: none"> — Is door free of obstructions, cracks and damage? — Are door securely and properly installed? • Are above items okay? 	Yes	Go to the next step.
		No	Remove the obstruction, or install door in proper position. If any doors are cracked or damaged, replace them. Then go to the Step 20.
19	VERIFY THAT DUCTS INSTALLATION CONDITION <ul style="list-style-type: none"> • Are following ducts installed properly? <ul style="list-style-type: none"> — Dashboard ducts — Defroster ducts 	Yes	Inspect ducts for clogging, deformity, and air leakage, then go to the next step.
		No	Install the suspected ducts properly, then go to the next step.
20	CONFIRM THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does air blow out? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE [FULL-AUTO AIR CONDITIONER]

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2	Amount of air blown from vents does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in blower system
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/C unit malfunction • Blower motor malfunction • Malfunction in power MOS FET system • Climate control unit malfunction

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT HEATER 40 A FUSE <ul style="list-style-type: none"> • Inspect the HEATER 40 A fuse. • Is it normal? 	Yes	Go to the next step.
		No	Replace the fuse, then go to Step 15. If the fuse burns out immediately, go to the next step.
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C UNIT OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Turn the fan dial clockwise. • Recirculate air inside the vehicle. • Does the blower motor rotate smoothly? 	Yes	Go to the next step.
		No	Go to Step 4.
3	INSPECT A/C UNIT INTAKE VENT <ul style="list-style-type: none"> • Is A/C unit intake vent clogged? 	Yes	Remove obstruction, then go to Step 15.
		No	Inspect if there are any obstruction in the A/C unit passage, then go to Step 15.
4*	INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER RELAY SYSTEM OR POWER MOS FET SYSTEM <ul style="list-style-type: none"> • Switch the ignition to ON. • Push OFF switch. • Measure the voltage at the following blower motor terminal. <ul style="list-style-type: none"> — Terminal B (blower motor operation signal) • Is voltage approx. 12 V? 	Yes	Go to Step 8.
		No	Go to the next step.
5*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN FUSE BLOCK AND BLOWER RELAY) OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the following blower relay terminals. <ul style="list-style-type: none"> — Terminal D (IG2 signal) — Terminal C (B+ signal) • Is the voltage approx. 12 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the blower relay and HEATER 40 A fuse / HEATER 10 A fuse, then go to Step 15.
6*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER RELAY AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the following blower relay terminal. <ul style="list-style-type: none"> — Terminal B (GND signal) • Is the voltage approx. 0 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the blower relay and ground, then go to Step 15.
7*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER RELAY AND BLOWER MOTOR) OR BLOWER RELAY <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure the voltage at the following blower relay terminal. <ul style="list-style-type: none"> — Terminal A (blower motor operation signal) • Is the voltage approx. 12 V? 	Yes	Repair the wiring harness between the blower relay and blower motor, then go to Step 15.
		No	Replace the blower relay, then go to Step 15.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
8*	INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER MOTOR OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the following blower motor terminal. <ul style="list-style-type: none"> — Terminal B (blower motor operation signal) • Is the voltage approx. 12 V? 	Yes	Go to the next step.
		No	Inspect the blower motor, then go to Step 15. (See 07-40A-15 BLOWER MOTOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
9*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER MOTOR AND POWER MOS FET) OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the following terminal of power MOS FET. <ul style="list-style-type: none"> — Terminal B (blower motor operation signal) • Is voltage approx. 12 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the blower motor and power MOS FET, then go to Step 15.
10*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN POWER MOS FET AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the following power MOS FET terminal. <ul style="list-style-type: none"> — Terminal A (GND) • Is the voltage approx. 0 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the power MOS FET and ground, then go to Step 15.
11	INSPECT A/C UNIT <ul style="list-style-type: none"> • Inspect the fan in A/C unit. <ul style="list-style-type: none"> — Is the fan free of interference with the A/C unit case? — Is the fan free of foreign material and obstruction? • Is the fan normal? 	Yes	Go to the next step.
		No	Remove obstruction, repair or replace the fan and A/C unit case, then go to Step 15.
12*	INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER MOS FET OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect power MOS FET connector. • Turn the fan switch to 1st position from off. • Measure the voltage at the following power MOS FET terminal. <ul style="list-style-type: none"> — Terminal C (blower motor speed control signal) • Is voltage approx. 10 V? 	Yes	Replace the power MOS FET, then go to Step 15. (See 07-40A-16 POWER METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR (POWER MOS FET) REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
13*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN POWER MOS FET AND CLIMATE CONTROL UNIT) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect climate control unit connector. • Inspect for continuity at the following terminals between the power MOS FET and climate control unit. <ul style="list-style-type: none"> — Terminal C—1M(blower motor speed control signal) — Terminal B—1N(blower motor speed feedback signal) • Is there continuity? 	Yes	Go to the next step.
		No	Repair the wiring harness between the power MOS FET and climate control unit, then go to Step 15.
14*	INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR WIRING HARNESS (SHORT TO GROUND IN WIRING HARNESS BETWEEN POWER MOS FET AND CLIMATE CONTROL UNIT) <ul style="list-style-type: none"> • Inspect for continuity at the following terminal between the power MOS FET and ground. <ul style="list-style-type: none"> — Terminal C (blower motor control signal)—ground — Terminal B (blower motor feedback signal)—ground • Is there continuity? 	Yes	Repair the wiring harness between the power MOS FET and ground, then go to the next step.
		No	Replace the climate control unit, then go to the next step.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION		ACTION
15	CONFIRM THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Is air discharged from vent? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

NO.3 AIR INTAKE MODE FROM VENT DOES NOT CHANGE [FULL-AUTO AIR CONDITIONER]

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3	Air intake mode from vent does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Air intake mode does not change when switching REC/FRESH mode.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air intake actuator malfunction • Air intake door malfunction

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> • Inspect the air intake actuator. • Is the air intake actuator normal? 	Yes	Go to the next step.
		No	Replace the air intake actuator, then go to Step 9.
2*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR INTAKE ACTUATOR, WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure the voltages at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1R (24-pin, FRESH motor drive signal) — Terminal 1T (24-pin, RECIRCULATE motor drive signal) (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) • Are voltages normal? 	Yes	Go to the next step.
		No	Go to Step 4.
3*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR INTAKE ACTUATOR OR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) <ul style="list-style-type: none"> • Measure the voltages at the following air intake actuator terminals. <ul style="list-style-type: none"> — Terminal C (FRESH motor drive signal) — Terminal B (RECIRCULATE motor drive signal) • Are voltages as shown below? <ul style="list-style-type: none"> — Terminal C: approx. 0.5 V during RECIRCULATE and approx. 10 V during FRESH — Terminal B: approx. 10 V during RECIRCULATE and approx. 0.5 V during FRESH 	Yes	Go to Step 7.
		No	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 9.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
4*	INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR INTAKE ACTUATOR OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the air intake actuator connector. • Measure the voltages at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1R (FRESH motor drive signal) — Terminal 1T (RECIRCULATE motor drive signal) (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) • Are voltages normal? 	Yes	Inspect the air intake actuator, then go to Step 9.
		No	Go to the next step.
5*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the climate control unit connector. • Measure the voltages at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1R (FRESH motor drive signal) — Terminal 1T (RECIRCULATE motor drive signal) • Are voltages approx. 0 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 9.
6*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GROUND BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect for continuity at the following terminals between the climate control unit and ground. <ul style="list-style-type: none"> — Terminal 1R (FRESH motor drive signal) — Terminal 1T (RECIRCULATE motor drive signal) • Is there continuity? 	Yes	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 9.
		No	Go to the next step.
7	INSPECT AIR INTAKE LINK <ul style="list-style-type: none"> • Inspect the air intake links. <ul style="list-style-type: none"> — Is there grease on link? — Are the links securely and properly installed? — Are the links free of obstructions and hindrances? • Are the above items normal? 	Yes	Go to the next step.
		No	Apply grease to the links. If any the links are damaged, replace the air intake actuator, then go to Step 9.
8	INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR AIR INTAKE DOOR <ul style="list-style-type: none"> • Inspect the blower unit air intake door. <ul style="list-style-type: none"> — Is the door free of obstructions, cracks, and damage? — Are the doors securely and properly installed? • Are the above items normal? 	Yes	Replace the climate control unit, then go to the next step.
		No	Remove obstruction, or install the doors in the proper position. If any doors are cracked or damaged, replace them, then go to the next step.
9	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does the air intake mode change smoothly? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

NO.4 NO TEMPERATURE CONTROL WITH CLIMATE CONTROL UNIT [FULL-AUTO AIR CONDITIONER]

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4	No temperature control with climate control unit
DESCRIPTION	<ul style="list-style-type: none"> Temperature does not change when operating temperature dial Malfunction in A/C unit and/or climate control unit air mix system Malfunction in driver and/or passenger side air mix actuator or related wiring harness
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C unit air mix link, air mix crank, air mix rod, malfunction Climate control unit rack-and-pinion, malfunction A/C unit air mix door malfunction Heater piping malfunction

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COOLANT TEMPERATURE <ul style="list-style-type: none"> Is the coolant sufficiently warmed up? 	Yes	Go to the next step.
		No	Warm up the engine, then go to Step 9.
2*	INSPECT CLIMATE CONTROL UNIT POWER SUPPLY FUSE FOR B+ SIGNAL <ul style="list-style-type: none"> Is the climate control unit power supply fuse for B+ signal normal?. 	Yes	Go to the next step.
		No	Inspect for short to GND in blown fuse circuit. Repair or replace as necessary. Install appropriate amperage fuse then go to Step 21.
3*	INSPECT TO SEE WHETHER MALFUNCTION (OPEN CIRCUIT) IS IN B+ SIGNAL WIRING HARNESS (BETWEEN FUSE BLOCK AND CLIMATE CONTROL UNIT) OR ELSEWHERE. <ul style="list-style-type: none"> Disconnect the climate control unit connector (16-pin). Switch the ignition to ON. Measure voltage at climate control unit harness-side connector (16-pin) terminal 2B (B+ signal). Is the voltage approx. 12V? 	Yes	Go to the next step.
		No	Repair wiring harness between fuse block and climate control unit, then go to Step 21.
*4	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND GND) OR ELSEWHERE <ul style="list-style-type: none"> Climate control unit connector (24-pin) disconnected. Verify that continuity between climate control unit harness-side connector (24-pin) terminal 1D and GND. Is the continuity? 	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit and GND. Inspect GND point condition. Then go to Step 21.
*5	INSPECT TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT OR AIR MIX ACTUATOR <ul style="list-style-type: none"> Switch the ignition to ON. Measure the voltage at climate control unit terminal 1G (drive-side) and 1I (passenger-side) (24-pin) when temperature control dial at MAX HOT and MAX COLD. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) Is voltage normal? 	Yes	Go to Step 17.
		No	Go to the next step.
*6	INSPECT TO SEE WHETHER MALFUNCTION IS IN POSITION SENSOR OR ELSEWHERE <ul style="list-style-type: none"> Switch the ignition to ON. Measure voltage at climate control unit terminal 1K (24-pin) when airflow mode change to DEF and VENT (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].) Is voltage normal? 	Yes	Go to Step 9.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
*7	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY OR SHORT TO BATTERY POWER OR GND) IS IN POSITION SENSOR POWER SUPPLY (CLIMATE CONTROL UNIT TERMINAL 1C) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure voltage at climate control unit terminal 1C (24-pin). • Is voltage approx. 5V? 	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit terminal 1C and follows: <ul style="list-style-type: none"> • Driver side air mix actuator terminal G • Passenger side air mix actuator terminal E • Airflow mode actuator terminal B Then go to Step 21.
*8	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY OR OPEN) IS IN POSITION SENSOR GND (CLIMATE CONTROL UNIT TERMINAL 1E) OR ELSEWHERE <ul style="list-style-type: none"> • Measure voltage at climate control unit terminal 1E (24-pin). • Is the voltage below. 1.0V? 	Yes	Go to Step 12.
		No	Repair wiring harness between climate control unit terminal 1E and follows: <ul style="list-style-type: none"> • Driver side air mix actuator terminal E • Passenger side air mix actuator terminal G • Airflow mode actuator terminal A Then go to Step 21.
*9	INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO POWER) IS IN WIRING HARNESS (AIR MIX POSITION SIGNAL) OR ELSEWHERE <ul style="list-style-type: none"> • Is climate unit terminal 1G (driver-side) and 1I (passenger-side) voltage approx. 12V, at Step 5? 	Yes	Repair wiring harness between climate control unit terminal 1G (driver-side) and 1I (passenger-side) and each side air mix actuator terminal F. Then go to Step 21.
		No	Go to the next step.
*10	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (AIR MIX POSITION SIGNAL) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the climate control and air mix actuator connectors. • Verify continuity between climate control unit terminal 1G (driver-side) and 1I (passenger-side) (24-pin) and each side air mix actuator terminal F at harness-side connector. • Is there continuity? 	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit terminal 1G (driver-side) and 1I (passenger-side) and each side air mix actuator terminal F. Then go to Step 21.
*11	INSPECT TO SEE WHETHER MALFUNCTION (SHORT TO GND) IS IN WIRING HARNESS (AIR MIX POSITION SIGNAL) OR POSITION SENSOR COMMON (POWER SUPPLY OR GND) HARNESS <ul style="list-style-type: none"> • Verify continuity between climate control unit harness-side connector terminal 1G (driver-side) and 1I (passenger-side) (24-pin) and GND. • Is there continuity? 	Yes	Repair wiring harness between climate control unit terminal 1G (driver-side) and 1I (passenger-side) and each side air mix actuator terminal F. Then go to Step 21.
		No	Inspect and repair for open circuit following: <ul style="list-style-type: none"> • Between driver side air mix actuator terminal G and junction point to airflow mode actuator (position sensor power supply). • Between passenger side air mix actuator terminal E and junction point to airflow mode actuator (position sensor power supply). • Between driver side air mix actuator terminal E and junction point to airflow mode actuator (position sensor GND). • Between passenger side air mix actuator terminal G and junction point to airflow mode actuator (position sensor GND). Then go to Step 21.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
*12	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR MIX ACTUATOR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIR MIX ACTUATOR) OR ELSEWHERE</p> <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure voltage at the following terminals of climate control unit. <p>Driver-side:</p> <ul style="list-style-type: none"> — Terminal 1U (24-pin, COLD motor drive signal) — Terminal 1W (24-pin, HOT motor drive signal) <p>Passenger-side</p> <ul style="list-style-type: none"> — Terminal 1Q (24-pin, COLD motor drive signal) — Terminal 1S (24-pin, HOT motor drive signal) <p>(See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)</p> <ul style="list-style-type: none"> • Are voltages okay? 	Yes	Go to the next step.
		No	Go to Step 14.
*13	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR MIX ACTUATOR OR WIRING HARNESS (BETWEEN CLIMATE CONTROL UNIT AND AIR MIX ACTUATOR)</p> <ul style="list-style-type: none"> • Measure voltage at the following terminals of air mix actuator. — Terminal C (driver-side)/B (passenger-side) (COLD motor drive signal) — Terminal B (driver-side)/C (passenger-side) (HOT motor drive signal) <ul style="list-style-type: none"> • Are voltage s as shown below? — COLD motor drive signal: approx. 10V during COLD and approx. 0.5V during HOT — HOT motor drive signal: approx. 0.5V during HOT and approx. 10V during HOT 	Yes	Go to Step 14.
		No	Repair wiring harness between climate control unit and air mix actuator. Then go to Step 21.
*14	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR MIX ACTUATOR OR ELSEWHERE</p> <ul style="list-style-type: none"> • Disconnect the air mix actuator. • Measure voltage at the following terminals of climate control unit. <p>Driver-side:</p> <ul style="list-style-type: none"> — Terminal 1U (24-pin, COLD motor drive signal) — Terminal 1W (24-pin, HOT motor drive signal) <p>Passenger-side</p> <ul style="list-style-type: none"> — Terminal 1Q (24-pin, COLD motor drive signal) — Terminal 1S (24-pin, HOT motor drive signal) <p>(See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)</p> <ul style="list-style-type: none"> • Are voltages okay? 	Yes	Go to the next step.
		No	Repair wiring between climate control unit and air mix actuator. Then go to Step 21.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
*15	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN CLIMATE CONTROL UNIT AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the climate control unit connector. • Measure voltage at the following terminals of the climate control unit harness-side connector. <p>Driver-side:</p> <ul style="list-style-type: none"> — Terminal 1U (24-pin, COLD motor drive signal) — Terminal 1W (24-pin, HOT motor drive signal) <p>Passenger-side</p> <ul style="list-style-type: none"> — Terminal 1Q (24-pin, COLD motor drive signal) — Terminal 1S (24-pin, HOT motor drive signal) • Are voltages approx. 0V? 	Yes	Go to the next step.
		No	Repair wiring harness between climate control unit and air mix actuator. Then go to Step 21.
*16	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GND BETWEEN CLIMATE CONTROL UNIT AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Verify that continuity at the following harness-side connector terminals between climate control unit and GND. <p>Driver-side:</p> <ul style="list-style-type: none"> — Terminal 1U (24-pin, COLD motor drive signal) — Terminal 1W (24-pin, HOT motor drive signal) <p>Passenger-side:</p> <ul style="list-style-type: none"> — Terminal 1Q (24-pin, COLD motor drive signal) — Terminal 1S (24-pin, HOT motor drive signal) • Is there continuity? 	Yes	Repair wiring harness between climate control unit and air mix actuator. Then go to Step 21.
		No	Go to the next step.
17	INSPECT AIR MIX ACTUATOR <ul style="list-style-type: none"> • Inspect the air mix actuator. (See 07-40A-5 AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is air mix actuator normal? 	Yes	Go to the next step.
		No	Replace the suspected side air mix actuator. Then go to 21. (See 07-40A-4 AIR MIX ACTUATOR REMOVAL/ INSTALLATION [FULL-AUTO AIR CONDITIONER].)
18	INSPECT AIR MIX LINK <ul style="list-style-type: none"> • Inspect air mix links for each-side. <ul style="list-style-type: none"> — Is grease on link? — Are links securely and properly installed? — Are links free of obstructions and hindrances? • Are above items okay? 	Yes	Go to the next step.
		No	Apply grease to links. If any links are damaged. replace malfunctioning part. Then go to Step 21.
19	INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR AIR MIX DOOR ELSEWHERE <ul style="list-style-type: none"> • Inspect blower unit and each-side air mix door. <ul style="list-style-type: none"> — Is door free of unit and obstruction, and damage? — Are doors securely and properly installed? • Are above items okay? 	Yes	Go to the next step.
		No	Remove the obstruction, or install door in proper position. If any door are cracked, replace them. Then go to the next step.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION
20	INSPECT HEATER LINES <ul style="list-style-type: none"> Inspect heater lines for followings: <ul style="list-style-type: none"> Is heater piping free if damage and cracks? Are heater piping connections free of engine coolant leakage? Are heater piping installation points on A/C unit free of engine coolant leakage? Are above items okay? 	Yes Replace the climate control unit. Then go to the next step. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No If heater piping connections is loosed, tighten connections with specified torque. Repair or replace heater piping. Then go to the next step.
21	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Does the unit operate in every temperature setting? 	Yes Trouble shooting completed. Explain repairs customer.
		No Recheck malfunction symptoms, then repeat from Step1 if the malfunction recurs.

NO.5 WINDSHIELD FOGGED [FULL-AUTO AIR CONDITIONER]

id0703c1801900

5	Windshield fogged.
DESCRIPTION	<ul style="list-style-type: none"> A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes. Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Climate control unit (B+ signal) system malfunction Air intake actuator malfunction Climate control unit (RECIRCULATE, FRESH signal) system malfunction A/C unit air intake door malfunction

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- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	COOL AIR BLOW OUT INSPECTION <ul style="list-style-type: none"> When both the A/C and fan switch in the climate control unit are on, does cool air blow out from the front vent? 	Yes Go to the next step.
		No Go to Step 1 of troubleshooting index No.7.
2	INSPECT CLIMATE CONTROL UNIT POWER SUPPLY FUSE FOR B+ SIGNAL <ul style="list-style-type: none"> Is the climate control unit power supply fuse for B+ signal normal? 	Yes Go to the next step.
		No Inspect for a short to ground on blown fuse circuit. <ul style="list-style-type: none"> Repair or replace if necessary. Install appropriate amperage fuse.
3	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> Inspect the air intake actuator. <ul style="list-style-type: none"> Is there grease on the link? Is the link securely and properly positioned? Is the link free of obstructions? Are the above items normal? 	Yes Go to the next step.
		No Apply grease or install the link properly and securely, remove obstruction, then go to Step 14.
*4	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND CLIMATE CONTROL UNIT FOR CONTINUITY <ul style="list-style-type: none"> Disconnect the climate control unit connector (16-pin). Switch the ignition to ON. Measure the voltage at climate control unit terminal 2B (B+ signal). Is the voltage approx. 12 V? 	Yes Go to the next step.
		No Repair the wiring harness between the fuse block and climate control unit, then go to Step 14.
*5	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND GROUND FOR VOLTAGE <ul style="list-style-type: none"> Measure the voltage at climate control unit terminal 1D (Ground). Is the voltage approx. 0V? 	Yes Go to the next step.
		No Repair the wiring harness between the climate control unit and ground, then go to Step 14.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
6	VERIFY WHETHER MALFUNCTION IS IN A/C UNIT AIR INTAKE DOOR OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Connect the climate control unit connector (24-pin and 16-pin). • Remove the air intake actuator. • Switch the ignition to ON. • Set the fan switch to MAX position. • Does the air intake mode (RECIRCULATE, FRESH) change smoothly when the air intake link is operated by hand? 	Yes	Go to the next step.
		No	Go to Step 12.
7	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> • Inspect the air intake actuator. (See 07-40A-4 AIR INTAKE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the air intake actuator, go to Step 14.
8	INSPECT AIR INTAKE SELECTOR SWITCH AND DEFROSTER SWITCH IN CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Measure the voltage at climate control unit connector (24-pin) terminals 1R and 1T. • Is it normal? 	Yes	Go to the next step.
		No	Replace the climate control unit, then go to Step 14.
*9	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR FOR CONTINUITY <ul style="list-style-type: none"> • Switch the ignition off. • Is there continuity between the following climate control unit terminals and air intake actuator terminals? <ul style="list-style-type: none"> — Terminal 1R —Terminal C (FRESH signal) — Terminal 1T —Terminal B (RECIRCULATE signal) 	Yes	Go to the next step.
		No	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 14.
*10	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there continuity between the following climate control unit terminals and ground? <ul style="list-style-type: none"> — Terminal 1R (FRESH signal) — Terminal 1T (RECIRCULATE signal) 	Yes	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 14.
		No	Go to the next step.
*11	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR FOR SHORT TO B+ <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure the voltage at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1R (FRESH signal) — Terminal 1T (RECIRCULATE signal) • Is the voltage approx. 12 V? 	Yes	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 14.
		No	Replace the climate control unit, then go to Step 14.
12	INSPECT A/C UNIT AIR INTAKE DOOR <ul style="list-style-type: none"> • Is there any foreign material or obstruction in the A/C unit air intake door? 	Yes	Remove obstruction, then go to Step 14.
		No	Go to the next step.
13	VERIFY THAT A/C UNIT AIR INTAKE DOOR IS POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none"> • Is the A/C unit air intake door securely and properly positioned? 	Yes	Inspect the air intake door for cracks or damage, then go to the next step.
		No	Install the air intake door securely in the proper position, then go to the next step.
14	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> • Does the malfunction disappear? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

NO.6 AIR FROM VENTS NOT COLD ENOUGH [FULL-AUTO AIR CONDITIONER]

id0702c1812500

6	Air from vents not cold enough.
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch operates but A/C system malfunctions.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Drive belt malfunction • A/C pressure sensor malfunction • Malfunction in blower unit or condenser • Cooling fan system malfunction • Condenser or related part malfunction • A/C unit or condenser malfunction • Receiver/drier or expansion valve malfunction (valve closes too mach) • Malfunction in refrigerant lines • A/C compressor system malfunction, insufficient compressor oil • Over filling of compressor oil, malfunction in expansion valve or A/C unit air mix link system • Evaporative temperature sensor malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT REFRIGERANT SYSTEM PERFORMANCE <ul style="list-style-type: none"> • Perform refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.) • Is the operation normal? 	Yes	Operation is normal. (Recheck malfunction symptoms.)
		No	Go to the next step.
2	INSPECT DRIVE BELT <ul style="list-style-type: none"> • Inspect the drive belt. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) • (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) • Is it normal? 	Yes	Go to the next step.
		No	Adjust or replace the drive belt, then the next step. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
3	INSPECT REFRIGERANT PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the refrigerant pressure sensor. (See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes	Go to the next step.
		No	Replace the refrigerant pressure sensor, then go to Step 24. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
4	INSPECT REFRIGERANT PRESSURE SENSOR RELATED HARNESS <ul style="list-style-type: none"> • Inspect following refrigerant pressure sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins) <ul style="list-style-type: none"> — Climate control unit terminal 1C and refrigerant pressure sensor terminal A — Climate control unit terminal 1E and refrigerant pressure sensor terminal C — Climate control unit terminal 2J and refrigerant pressure sensor terminal B • Is it normal? 	Yes	Replace the refrigerant pressure sensor, then go to Step 24. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Repair wiring harness between climate control unit and refrigerant pressure sensor. Go to the next step.
5	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT INTAKE AND CONDENSER OR ELSEWHERE <ul style="list-style-type: none"> • Perform refrigerant pressure check. (See 07-10-6 REFRIGERANT PRESSURE CHECK.) • Are the refrigerant high-pressure and low-pressure values both high? 	Yes	Go to the next step.
		No	After recording the inspection results, go to Step 10.
6	INSPECT COOLING FAN OPERATION <ul style="list-style-type: none"> • Verify the cooling fan operation. (See 01-12A-15 COOLING FAN COMPONENT INSPECTION [LF, L5].) • (See 01-12B-15 COOLING FAN COMPONENT INSPECTION [L3 WITH TC].) • Is the cooling fan operation normal? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning location according to the inspection results. Then go to Step 24.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION
7	VISUALLY INSPECT CONDENSER <ul style="list-style-type: none"> • Is the condenser fin clogged or obstructed by foreign material? 	Yes Remove the foreign material. Repair the condenser fin. Then go to Step 24.
		No Go to the next step.
8	CHECK TO SEE WHETHER MALFUNCTION IS IN EXPANSION VALVE OR ELSEWHERE <ul style="list-style-type: none"> • Verify the condition of the low pressure hose while the A/C is operating. • Is there frost or condensation adhering? 	Yes Replace the expansion valve. After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> • Adjust the compressor oil to the specified level. • After discharging, charge with new refrigerant to the specified level.
		No Go to the next step.
9	INSPECT AIR MIX DOOR RELATED PART INSTALLATION <ul style="list-style-type: none"> • Remove the A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.) • Are the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions? 	Yes Adjust the compressor oil to the specified amount, then go to Step 24. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No Repair or install the links, cranks and rods securely in the proper position, then go to Step 24.
10	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT AND REFRIGERANT PRESSURE LINE OR ELSEWHERE <ul style="list-style-type: none"> • Are the refrigerant high-pressure and low-pressure values low? 	Yes Go to the next step.
		No Go to Step 17.
11	INSPECT BLOWER UNIT FOR BLOCKAGE <ul style="list-style-type: none"> • Is the blower unit intake and air filter clogged? 	Yes Remove the cause of the clogging. Replace the air filter if it is clogged. (See 07-11-3 AIR FILTER REMOVAL/INSTALLATION.) Then go to Step 24.
		No Go to the next step.
12	CHECK TO SEE WHETHER MALFUNCTION IS REFRIGERANT LINE LEAKAGE OR ELSEWHERE <ul style="list-style-type: none"> • Verify if there is gas leakage from the system hoses using the gas leak tester. • Is there gas leakage? 	Yes If there is leakage from a system hose connection area, go to Step 14. If there is leakage other than from a system hose connection area, go to Step 16.
		No Go to the next step.
13	VISUALLY INSPECT REFRIGERANT LINE <ul style="list-style-type: none"> • Is a system hose crushed? 	Yes Replace the crushed system hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> • Adjust the compressor oil to the specified level. • After discharging, charge with new refrigerant to the specified level.
		No Go to Step 23.
14	CHECK TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT LINE JOINT LOOSE OR O-RING <ul style="list-style-type: none"> • Tighten the system hose connection area to the specified torque. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) • Has the leakage stopped? 	Yes Go to the next step.
		No Go to Step 16.
15	VISUALLY INSPECT REFRIGERANT LINE <ul style="list-style-type: none"> • Is a system hose crushed? 	Yes Replace the crushed system hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> • Adjust the compressor oil to the specified level. • After discharging, charge with new refrigerant to the specified level.
		No Adjust the compressor oil to the specified amount, then go to Step 24. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION
16	VISUALLY INSPECT REFRIGERANT LINE <ul style="list-style-type: none"> Is a system hose crushed? 	Yes Replace the O-ring of the leaking area. Replace the crushed system hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Replace the O-ring of the leaking area. After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
17	CHECK TO SEE WHETHER MALFUNCTION IS IN CONDENSER AND EXPANSION VALVE OR ELSEWHERE <ul style="list-style-type: none"> Do the results of the refrigerant pressure inspection in Step 4 indicate vacuum on the low pressure side and extremely low pressure on the high pressure side? 	Yes Go to the next step.
		No Go to Step 21.
18	CHECK TO SEE WHETHER MALFUNCTION IS IN EXPANSION VALVE AND RECEIVER/DRIER OR ELSEWHERE <ul style="list-style-type: none"> Is there is no refrigerant pressure on the low pressure side, or is it normal? 	Yes Replace the condenser. (See 07-11-20 CONDENSER REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Go to the next step.
19	CHECK TO SEE WHETHER MALFUNCTION IS IN CONDENSER OR EXPANSION VALVE <ul style="list-style-type: none"> Verify the condition of the outlet hose on the condenser high pressure side. Is there condensation in the hose? 	Yes Replace the condenser. (See 07-11-20 CONDENSER REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Go to the next step.
20	INSPECT EXPANSION VALVE <ul style="list-style-type: none"> Remove the expansion valve and verify its condition. Is there refrigerant leakage or valve clogging? 	Yes If there is foreign matter clogging the valve, remove the foreign matter.If there is refrigerant leakage or clogging, replace the expansion valve.Perform discharge, charge with new refrigerant, and then go to Step 24.
		No Install the expansion valve, then go to Step 23.
21	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> Do the results of the refrigerant pressure inspection in Step 4 indicate low pressure on the high pressure side and high pressure on the low pressure side? 	Yes Replace the A/C compressor, then go to Step 24. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No Go to the next step.
22	INSPECT EVAPORATIVE TEMPERATURE SENSOR <ul style="list-style-type: none"> Inspect the evaporator temperature sensor. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.) Is it normal? 	Yes Verify the evaporator temperature sensor position. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.) Then go to Step 24.
		No Replace the evaporator temperature sensor, then go to Step 24. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)
23	INSPECT AIR MIX DOOR RELATED PART INSTALLATION <ul style="list-style-type: none"> Remove the A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.) Are the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions? 	Yes Go to the next step.
		No Repair or install the links, cranks and rods securely in the proper position, then go to the next step. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
24	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> If the refrigerant discharged during inspection has not been recharged, discharge and charge with new refrigerant to the specified level. Does cool air blow out? (Are results of refrigerant system performance test normal?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO.7 NO COOL AIR [FULL-AUTO AIR CONDITIONER]

id0702c1812600

7	No cool air
DESCRIPTION	<ul style="list-style-type: none"> Magnetic clutch does not operate.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in PCM A/C cut control system Malfunction in climate control unit Malfunction in refrigerant pressure sensor Malfunction in PCM (A/C signal) Malfunction in PCM (IG1 signal) Malfunction in A/C compressor Malfunction in A/C relay Malfunction in evaporator temperature sensor Malfunction in BCM Malfunction in instrument cluster Malfunction in CAN communication Improper refrigerant charging amount

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT AIR BLOW OUT <ul style="list-style-type: none"> Does air blow out? 	Yes	Go to the next step.
		No	Go to Step 1 of troubleshooting indexes No.1 and 2.
2	INSPECT A/C COMPRESSOR OPERATION <ul style="list-style-type: none"> Start engine. Turn A/C switch and fan switch on. Does A/C compressor operate? 	Yes	Go to Step 1 of troubleshooting index No.6.
		No	Go to the next step.
3	INSPECT FOR DTC IN PCM <ul style="list-style-type: none"> Inspect for DTCs related to the PCM on-board diagnostic system. Are any DTCs displayed? 	Yes	Go to appropriate inspection procedure.
		No	Go to the next step.
4	CONFIRM DTC U0010:88, U0001:88, U0100:00 AND U0164:00 USING M-MDS <ul style="list-style-type: none"> Retrieve DTC from climate control unit and Instrument cluster. Are DTCs (U0010:88, U0001:88, U0100:00, U0164:00) retrieved? 	Yes	Network communication, for related system is malfunction. Go to appropriate DTC inspection procedure.
		No	Go to the next step.
5	DETERMINE IF MALFUNCTION CAUSE IS A/C REQUEST SIGNAL OR A/C RELAY OPERATIONAL MALFUNCTION <ul style="list-style-type: none"> Access PCM PID ACCS using the M-MDS. Start the engine and idle it. Turn the PID ACCS to ON from OFF using the M-MDS simulation function. Is the A/C magnetic clutch engaged? 	Yes	Go to the next step.
		No	Go to Step 12.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
6	DETERMINE IF MALFUNCTION CAUSE IS A/C PRESSURE SENSOR SIGNAL OR ELSEWHERE <ul style="list-style-type: none"> • Access climate control unit PID AC_PRES. • Monitor the AC_PRES PID while turning on and off the air conditioner by switching the control panel. • Is the PID normal? (See 07-02-22 PID/DATA MONITOR DISPLAY.) 	Yes	Go to Step 8.
		No	Go to the next step.
7	INSPECT TO SEE MALFUNCTION IS IN REFRIGERANT PRESSURE SENSOR OR A/C SYSTEM <ul style="list-style-type: none"> • Inspect refrigerant pressure sensor. (See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is the refrigerant pressure sensor normal? 	Yes	Inspect for following and repair or replace if necessary. <ul style="list-style-type: none"> • Refrigerant charging amount • A/C compressor for seizure Then go to Step 18.
		No	Repair or replace malfunctioning part according to inspection result. Then go to Step 18.
8	DETERMINE IF MALFUNCTION CAUSE IS EVAPORATOR TEMPERATURE SENSOR OPERATIONAL SIGNAL OR ELSEWHERE <ul style="list-style-type: none"> • Access climate control unit PID EVAP_TEMP. • Monitor the EVAP_TEMP PID while turning on and off the air conditioner by switching the control panel. • Is the PID normal? (See 07-02-22 PID/DATA MONITOR DISPLAY.) 	Yes	Go to Step 10.
		No	Go to the next step.
9	INSPECT EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the evaporator temperature sensor. (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is the evaporator temperature sensor normal? 	Yes	Inspect and repair for open or short circuit between evaporator temperature sensor and climate control unit. Then go to Step 18.
		No	Replace the evaporator temperature sensor. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.) Then go to Step 18.
10	DETERMINE IF MALFUNCTION CAUSE IS INSTRUMENT CLUSTER OR CAN COMMUNICATION SIGNAL <ul style="list-style-type: none"> • Verify the information display indication of A/C system while turning on and off the air conditioner by switching the control panel. • Does the information display indicate properly? 	Yes	Replace the instrument cluster. (Instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM.) (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.) Then go to Step 18.
		No	Go to the next step.
11	INSPECT THE INFORMATION DISPLAY <ul style="list-style-type: none"> • Inspect the information display. • Is the information display normal? (See 09-22-14 INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE.) 	Yes	Replace the climate control unit. (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal.) (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) Then go to Step 18.
		No	Repair or replace malfunctioning part according to inspection result.
12	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/C CONTROL SIGNAL CIRCUIT (BETWEEN A/C RELAY AND PCM) OR ELSEWHERE <ul style="list-style-type: none"> • Does cool air blow out when terminal E of A/C relay connector (A/C control signal) is grounded? 	Yes	Release short, then go to the next step.
		No	Go to Step 14.
13*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN PCM OR WIRING HARNESS (BETWEEN A/C RELAY AND PCM) <ul style="list-style-type: none"> • Test voltage at the A/C relay control signal terminal of PCM. • Is voltage approx. 12 V? 	Yes	Inspect PCM, then go to Step 18.
		No	Repair wiring harness between A/C relay and PCM, then go to Step 18.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
14*	INSPECT TO SEE WHETHER MALFUNCTION IS IN MAGNETIC CLUTCH OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at the following terminal of magnetic clutch thermal protector. <ul style="list-style-type: none"> Terminal A (magnetic clutch operation signal) Is voltage approx. 12 V? 	Yes	Inspect magnetic clutch, then go to Step 18.
		No	Go to the next step.
15	INSPECT FUSE <ul style="list-style-type: none"> Are A/C relay power supply fuses okay? 	Yes	Go to the next step.
		No	Replace fuse, then go to Step 18. If fuse burns out immediately, go to the next step.
16*	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C RELAY FOR LACK OF CONTINUITY <ul style="list-style-type: none"> Test voltages at following terminals of A/C relay. <ul style="list-style-type: none"> Terminal A (A/C relay control signal) Terminal C (A/C control signal) Are voltages approx. 12 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between fuse block and A/C relay, then go to Step 18.
17	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (BETWEEN A/C RELAY AND MAGNETIC CLUTCH) <ul style="list-style-type: none"> Test voltage at the following terminal of A/C relay. <ul style="list-style-type: none"> Terminal D (magnetic clutch operation signal) Is voltage approx. 12 V? 	Yes	Inspect wiring harness between A/C relay and magnetic clutch. <ul style="list-style-type: none"> If above wiring harness is OK, go to the next step. If above wiring harness malfunctions, repair wiring harness, then go to the next step.
		No	Replace the A/C relay, then go to the next step.
18	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does cool air blow out? (Are the results of refrigerant system performance test okay?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO.8 NOISE WHILE OPERATING A/C SYSTEM [FULL-AUTO AIR CONDITIONER]

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8	Noise while operating A/C system.
DESCRIPTION	<ul style="list-style-type: none"> Noise from magnetic clutch, A/C compressor, hose or refrigerant line.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Magnetic clutch operation noise A/C compressor vane noise A/C compressor slippage noise Hose or refrigerant line interference noise

* : If there is gas leakage, air enters into the A/C system. The desiccant within the receiver/drier absorbs the moisture from the air and becomes saturated. If the A/C system is used in this condition, the inside of the A/C compressor will begin to rust due to this moisture, which may cause lock up or noise to occur. Therefore, replacement of the receiver/drier is necessary.

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CHECK A/C COMPRESSOR VANE NOISE <ul style="list-style-type: none"> Is there a jingling, popping, beeping, or buzzing sound (A/C compressor vane noise)? 	Yes	Go to Step 5.
		No	Go to the next step.
2	INSPECT A/C COMPRESSOR SLIPPAGE NOISE <ul style="list-style-type: none"> Is there a squeaking or whirling sound (A/C compressor slippage noise)? 	Yes	Go to Step 14.
		No	Go to the next step.
3	INSPECT A/C COMPRESSOR INTERFERENCE NOISE <ul style="list-style-type: none"> Is there a rattling or vibrating sound (interference noise)? 	Yes	Go to Step 18.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
4	INSPECT MAGNETIC CLUTCH OPERATION NOISE <ul style="list-style-type: none"> • Is there a clicking sound (magnetic clutch operation noise)? 	Yes	Adjust clearance between pressure plate of magnetic clutch and A/C compressor pulley, then go to Step 19. (See 07-40A-19 MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].)
		No	Condition is normal. (Recheck malfunction symptoms.)
5	INSPECT A/C COMPRESSOR NOISE TIME <ul style="list-style-type: none"> • Is noise heard continuously for more than 3 s after A/C compressor comes on? 	Yes	Go to the next step.
		No	Condition is normal. (Noise occurs for 2—3 s immediately after A/C compressor turns on.)
6	INSPECT IDLE SPEED <ul style="list-style-type: none"> • Inspect idle speed. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].) (See 01-10B-3 ENGINE TUNE-UP [L3 WITH TC].) • Is it okay? 	Yes	Go to the next step.
		No	Follow the repair instruction described in section 01, then go to Step 19.
7	INSPECT REFRIGERANT AMOUNT <ul style="list-style-type: none"> • Inspect refrigerant amount. • Is it okay? 	Yes	Go to Step 10.
		No	Go to the next step.
8	INSPECT REFRIGERANT LINES <ul style="list-style-type: none"> • Inspect refrigerant lines. <ul style="list-style-type: none"> — Is piping free of damage and cracks? — Are piping connections free of oil grime? (Visual inspection) — Are piping connections free of gas leakage? — Are piping installation points on condenser free of gas leakage? — Are piping installation points on receiver/drier free of gas leakage? — Are piping installation points on A/C compressor free of gas leakage? — Are piping installation points on A/C unit free of gas leakage? — Perform gas leak inspection using gas leak tester. • Are above items okay? 	Yes	Go to the next step.
		No	If piping or A/C component(s) is damaged or cracked, replace then go to Step 19. If there is gas leakage, repair or replace connection and replace condenser*, then go to Step 19.
9	INSPECT EVAPORATOR PIPING CONNECTIONS IN A/C UNIT FOR GAS LEAKAGE <ul style="list-style-type: none"> • Are piping connections for evaporator in A/C unit free of gas leakage? 	Yes	Adjust refrigerant amount to specified level, then go to Step 19.
		No	If piping is damaged or cracked, replace then go to Step 19. If there is gas leakage, repair or replace connection and replace condenser*, then go to Step 19.
10	CHECK TO SEE WHETHER MALFUNCTION IS IN COMPRESSOR OIL OR ELSEWHERE <ul style="list-style-type: none"> • Add 20 ml {20 cc, 0.8 fl oz} of compressor oil. • Is noise heard when racing engine? 	Yes	Go to the next step.
		No	Troubleshooting completed. Explain repair to customer.
11	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> • Drain compressor oil. • Is it contaminated with metal particles? 	Yes	Go to the next step.
		No	Replace A/C compressor, then go to Step 19.
12	CHECK TO SEE WHETHER MALFUNCTION IS SOMEWHERE IN A/C SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> • Is compressor oil whitish and mixed with water? 	Yes	Replace entire A/C system (excluding heater), then go to Step 19.
		No	Go to the next step.
13	INSPECT A/C COMPRESSOR OIL <ul style="list-style-type: none"> • Is compressor oil darker than normal and contaminated with aluminum chips? 	Yes	Replace A/C compressor and condenser, then go to Step 19. (Since A/C compressor may be worn and receiver/drier may be clogged, replacement of receiver/drier is necessary.)
		No	Condition is normal. Recheck malfunction symptoms.
14	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> • Is noise heard immediately after A/C compressor is stopped? 	Yes	Replace A/C compressor, then go to Step 19. (A/C compressor discharge valve left open)
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
15	INSPECT DRIVE BELT <ul style="list-style-type: none"> Inspect the drive belt. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) Is it okay? 	Yes	Go to the next step.
		No	Adjust or replace drive belt, then go to Step 19. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].) (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
16	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> Is drive belt worn? Does it have foreign material imbedded in it, or have oil on it? 	Yes	Remove obstruction, remove oil, or replace drive belt, then go to Step 19.
		No	Go to the next step.
17	INSPECT MAGNETIC CLUTCH <ul style="list-style-type: none"> Inspect magnetic clutch. (See 07-40A-20 MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it okay? 	Yes	Replace A/C compressor (excluding pressure plate, A/C compressor pulley, and stator), then go to Step 19.
		No	Replace magnetic clutch, then go to Step 19.
18	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR REFRIGERANT LINES <ul style="list-style-type: none"> Is noise emitted from A/C compressor? 	Yes	Visually inspect A/C compressor, replace appropriate parts if necessary, then go to the next step.
		No	If noise is due to refrigerant lines, repair detached or missing clips, tighten loose bolts, then go to the next step.
19	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Has A/C compressor noise stopped? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO.9 DUAL A/C CONTROL DOES NOT OPERATE [FULL-AUTO AIR CONDITIONER]

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9	Dual A/C control function does not operate
DESCRIPTION	<ul style="list-style-type: none"> Driver or passenger side temperature control does not operate individually. Temperature control operates normally except for dual A/C control function.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Driver-side air mix door malfunction (stuck) Passenger-side air mix door malfunction (stuck) Driver-side air mix actuator malfunction Passenger-side air mix actuator malfunction Driver-side air mix actuator position sensor malfunction Passenger-side air mix actuator position sensor malfunction Open, short circuit in wiring or poor connection between climate control unit and driver-side air mix actuator Open, short circuit in wiring or poor connection between climate control unit and passenger-side air mix actuator Open, short circuit in wiring or poor connection between climate control unit and driver-side air mix actuator position sensor Open, short circuit in wiring or poor connection between climate control unit and passenger-side air mix actuator position sensor Climate control unit malfunction

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CHECK SYMPTOM <ul style="list-style-type: none"> • Turn on the A/C. • Perform the dual A/C control function for driver and passenger side individually. • Is it either of cannot the temperature control on driver side or passenger side? 	Yes	Go to the next step.
		No	Go to Step 8.
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR MIX DOOR OR ELSEWHERE <ul style="list-style-type: none"> • Turn on the A/C. • Change temperature control for suspect side seat at the dual mode. • Does the suspect side air mix door move smoothly? 	Yes	Go to the next step.
		No	Go to Step 6.
3	INSPECT AIR MIX DOOR <ul style="list-style-type: none"> • Inspect the suspect side air mix door. <ul style="list-style-type: none"> — Is the fan free of interfere with the suspect side A/C unit case? — Is the fan free of foreign material and obstruction? • Is the air mix door normal? 	Yes	Go to the next step.
		No	Remove the obstruction or replace the suspect side A/C unit case, then go to Step 9.
4	INSPECT AIR MIX ACTUATOR <ul style="list-style-type: none"> • Inspect the suspect side air mix actuator. • Is the air mix actuator normal? 	Yes	Go to the next step.
		No	Replace the suspect air mix actuator, then go to Step 9.
5*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (OPEN, SHORT OR POOR CONNECTION OF TERMINALS BETWEEN AIR MIX ACTUATOR AND CLIMATE CONTROL UNIT) OR ELSEWHERE <ul style="list-style-type: none"> • Inspect for open, short or poor connection of terminals between the suspect air mix actuator and climate control unit. <ul style="list-style-type: none"> — Terminal 1W (climate control unit) - terminal B (driver-side air mix actuator) — Terminal 1U (climate control unit) - terminal C (driver-side air mix actuator) — Terminal 1S (climate control unit) - terminal C (passenger-side air mix actuator) — Terminal 1Q (climate control unit) - terminal B (passenger-side air mix actuator) • Is there any open, short or poor connection of terminals? 	Yes	Repair or replace malfunction part, then go to Step 9.
		No	Replace the climate control unit, then go to Step 9.
6*	INSPECT AIR MIX ACTUATOR POSITION SENSOR <ul style="list-style-type: none"> • Inspect the suspect side air mix actuator position sensor. • Is the air mix actuator position sensor normal? 	Yes	Go to the next step.
		No	Replace the suspect air mix actuator, then go to Step 9.

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SYMPTOM TROUBLESHOOTING [FULL-AUTO AIR CONDITIONER]

STEP	INSPECTION	ACTION	
7*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (OPEN, SHORT OR POOR CONNECTION OF TERMINALS BETWEEN AIR MIX ACTUATOR POSITION SENSOR AND CLIMATE CONTROL UNIT) OR ELSEWHERE <ul style="list-style-type: none"> • Inspect for open, short or poor connection of terminals between the suspect air mix actuator position sensor and climate control unit. <ul style="list-style-type: none"> — Terminal 1G (climate control unit) - terminal F (driver-side air mix actuator) — Terminal 1I (climate control unit) - terminal F (passenger-side air mix actuator) — Terminal 1C (climate control unit) - terminal G (driver-side air mix actuator) — Terminal 1C (climate control unit) - terminal E (passenger-side air mix actuator) — Terminal 1E (climate control unit) - terminal E (driver-side air mix actuator) — Terminal 1E (climate control unit) - terminal G (passenger-side air mix actuator) • Is there any open, short or poor connection of terminals? 	Yes	Repair or replace malfunction part, then go to Step 9.
		No	Replace the climate control unit, then go to Step 9.
8*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (OPEN, SHORT OR POOR CONNECTION OF TERMINALS BETWEEN CLIMATE CONTROL UNIT AND AIR MIX ACTUATOR POSITION SENSOR) OR ELSEWHERE <ul style="list-style-type: none"> • Inspect for open, short or poor connection of terminals between the climate control unit and air mix actuator position sensor. <ul style="list-style-type: none"> — Terminal 1C (climate control unit) - terminal G (driver-side air mix actuator) — Terminal 1C (climate control unit) - terminal E (passenger-side air mix actuator) — Terminal 1E (climate control unit) - terminal E (driver-side air mix actuator) — Terminal 1E (climate control unit) - terminal G (passenger-side air mix actuator) • Is there any open, short or poor connection of terminals? 	Yes	Repair or replace malfunction part, then go to the next step.
		No	Replace the climate control unit, then go to the step.
9	CONFIRM THAT MALFUNCTION SYMPTOMS DOES NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does the temperature adjust individually for driver seat and passenger seat? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

07-03B SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

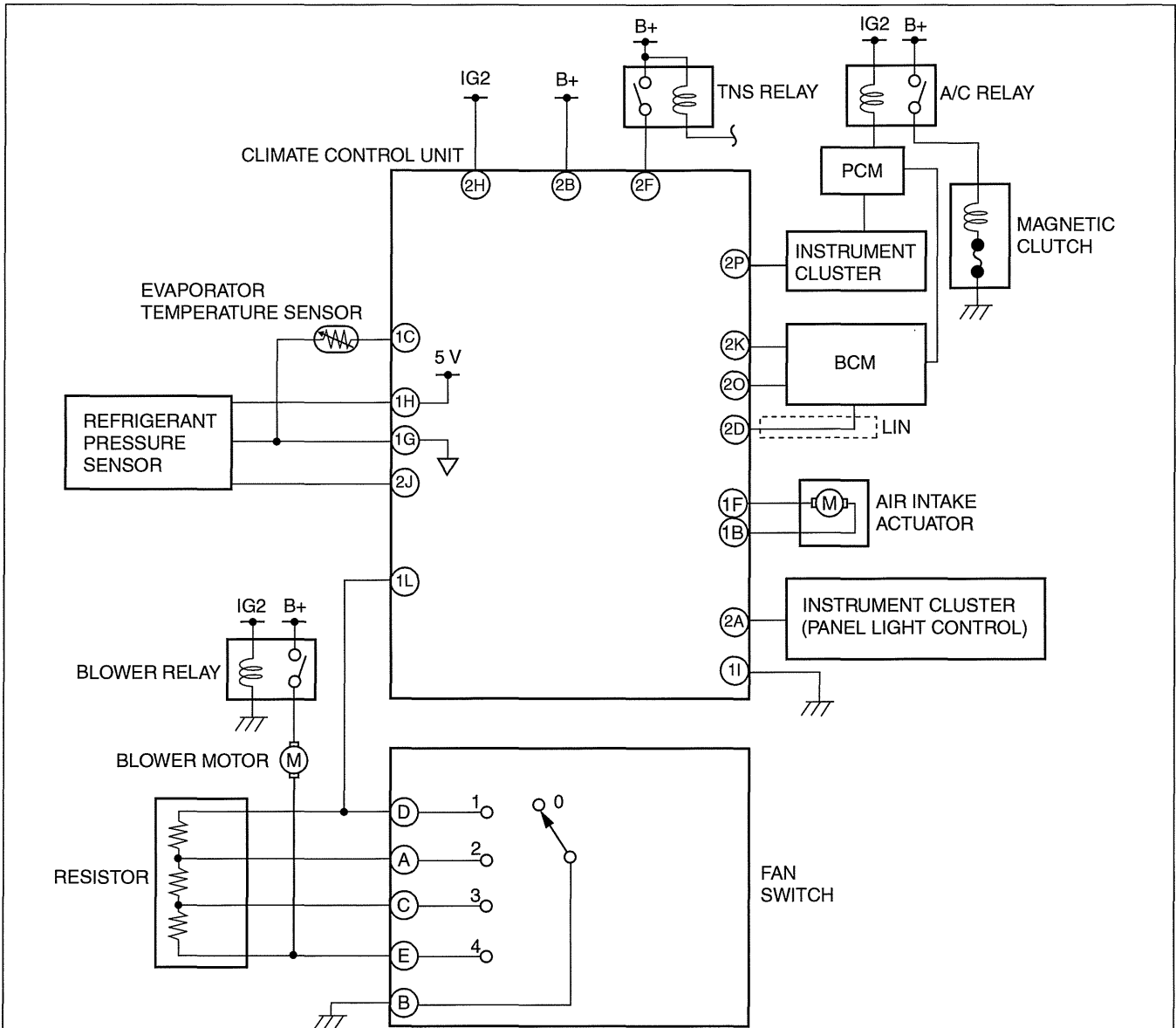
HVAC SYSTEM WIRING DIAGRAM [MANUAL AIR CONDITIONER] 07-03B-1
 FOREWORD [MANUAL AIR CONDITIONER] 07-03B-2
 TROUBLESHOOTING INDEX [MANUAL AIR CONDITIONER] 07-03B-2
 NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [MANUAL AIR CONDITIONER] 07-03B-2
 NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE [MANUAL AIR CONDITIONER] 07-03B-3
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 NO.8 NOISE WHILE OPERATING A/C SYSTEM [MANUAL AIR CONDITIONER] 07-03B-14

HVAC SYSTEM WIRING DIAGRAM [MANUAL AIR CONDITIONER]

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07-03B



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SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

FOREWORD [MANUAL AIR CONDITIONER]

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- The areas for inspection (steps) are given according to various circuit malfunctions. Use the following chart to verify the symptoms of the trouble in order to diagnose the appropriate area.

TROUBLESHOOTING INDEX [MANUAL AIR CONDITIONER]

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No.	TROUBLESHOOTING ITEM	DESCRIPTION
1	Insufficient air (or no air) blown from vents	<ul style="list-style-type: none"> Problem with each vent and/or duct Airflow mode does not change
2	Amount of air blown from vents does not change	<ul style="list-style-type: none"> Malfunaction in blower system
3	Air intake mode does not change	<ul style="list-style-type: none"> Air intake mode does not change when switching REC/FRESH mode
4	No temperature control with climate control unit	<ul style="list-style-type: none"> Temperature does not change when operating temperature dial Malfunaction in A/C unit and/or climate control unit air mix system
5	Windshield fogged	<ul style="list-style-type: none"> A/C compressor does not operate while airflow mode is in DEFROSTER mode Air intake mode does not change to FRESH while airflow mode is in DEFROSTER mode
6	Air from vents not cold enough	<ul style="list-style-type: none"> Magnetic clutch operates but A/C system malfunctions
7	No cool air	<ul style="list-style-type: none"> Magnetic clutch does not operate
8	Noise while operating A/C system	<ul style="list-style-type: none"> Noise from magnetic clutch, A/C compressor, hose or refrigerant line

NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [MANUAL AIR CONDITIONER]

id0703c2800400

1	Insufficient air (or no air) blown from vents
DESCRIPTION	<ul style="list-style-type: none"> Problem with each vent and/or duct. Airflow mode does not change.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunaction in airflow mode wire Malfunaction in VENT mode system Malfunaction in HEAT mode system Malfunaction in DEFROSTER mode system Malfunaction in next vent or duct (clogging, deformation, air leakage, improper operation)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT A/C UNIT AIRFLOW MODE SYSTEM <ul style="list-style-type: none"> Inspect the A/C unit and/or climate control unit airflow mode links, air airflow mode cranks, air airflow mode rods, and wire clamp. <ul style="list-style-type: none"> — Is there grease on links and cranks? — Are links, cranks, and rods securely installed in their proper positions? — Is wire clamp free of deformation? Are the above items normal? 	Yes Go to the next step.
		No Apply grease or airflow mode the links, cranks, and rods securely in their proper positions, repair or replace the airflow mode wire clamp, then go to Step 9.
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN VENT MODE OR OTHER MODES <ul style="list-style-type: none"> Does air blow out when in the VENT mode? 	Yes Go to Step 5.
		No Go to the next step.
3	INSPECT VENT <ul style="list-style-type: none"> Is the vent clogged? 	Yes Remove obstruction, then go to Step 9.
		No Go to the next step.
4	VERIFY THAT DUCT IN DASHBOARD IS INSTALLED <ul style="list-style-type: none"> Is the duct in the dashboard properly installed? 	Yes Inspect the duct for clogging, deformation and air leakage, then go to Step 9.
		No Install the duct securely in the proper position, then go to Step 9.
5	INSPECT TO SEE WHETHER MALFUNCTION IS IN HEAT MODE OR DEFROSTER MODE <ul style="list-style-type: none"> Does air blow out when in the HEAT mode? 	Yes Go to the next step.
		No Inspect the vent for clogging, then go to Step 9.

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION
6	INSPECT DEFROSTER MODE <ul style="list-style-type: none"> Does air blow out when in the DEFROSTER mode? 	Yes Operation is normal. Recheck malfunction symptoms.
		No Go to the next step.
7	INSPECT VENT <ul style="list-style-type: none"> Is the vent clogged? 	Yes Remove obstruction, then go to Step 9.
		No Go to the next step.
8	VERIFY THAT DEFROSTER DUCT IS INSTALLED <ul style="list-style-type: none"> Is the defroster duct properly installed? 	Yes Inspect the duct for clogging, deformation, and air leakage, then go to the next step.
		No Install the duct securely in proper position, then go to the next step.
9	CONFIRM THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does air blow out? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE [MANUAL AIR CONDITIONER]

id0703c2800500

2	Amount of air blown from vents does not change.
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in blower system
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C unit malfunction Blower motor malfunction Clogged in A/C unit passage

07-03B

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BLOWER SYSTEM <ul style="list-style-type: none"> Inspect the following systems and electrical parts. <ul style="list-style-type: none"> Blower relay Blower motor Resistor Fan switch Related wiring harnesses Are they normal? 	Yes Go to the next step.
		No Repair or replace the malfunctioning part, then go to Step 5.
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C UNIT OR ELSEWHERE <ul style="list-style-type: none"> Switch the ignition to ON. Turn the fan switch to ON position. Recirculate air inside the vehicle. Does the blower motor rotate smoothly? 	Yes Go to Step 4.
		No Go to the next step.
3	INSPECT A/C UNIT INTAKE VENT <ul style="list-style-type: none"> Inspect blower motor. <ul style="list-style-type: none"> Is the fan free of interference from the A/C unit case? Is the fan free of foreign material and obstructions? Is the fan normal? 	Yes Go to the next step.
		No Remove obstruction, repair or replace the fan and A/C unit case, then go to Step 5.
4	INSPECT A/C UNIT INTAKE VENT <ul style="list-style-type: none"> Is the A/C unit intake vent clogged? 	Yes Remove obstruction, then go to the next step.
		No Inspect it there are not any obstructions in the A/C unit passage, then go to the next step.
5	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Does air blow out? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

NO.3 AIR INTAKE MODE DOES NOT CHANGE [MANUAL AIR CONDITIONER]

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3	Air intake mode does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Air intake mode does not change when switching REC/FRESH mode.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air intake actuator malfunction • Air intake door malfunction

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Note

- The climate control unit controls the air intake mode when the airflow mode is in DEFROSTER or DEF/HEAT so that it is fixed at FRESH mode. At this time, the airflow mode cannot be changed from FRESH to REC even if the REC switch is pressed, but this does not indicate a malfunction.

Diagnostic procedure

STEP	INSPECTION		ACTION
1*	INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR INTAKE ACTUATOR OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the air intake actuator connector. • Measure the voltages at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1F (FRESH motor drive signal) — Terminal 1B (RECIRCULATE motor drive signal) (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) • Are voltages normal? 	Yes	Go to the next step.
		No	Go to Step 3.
2	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> • Inspect air intake actuator. (See 07-40B-3 AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER].) • Is it okay? 	Yes	Go to Step 6.
		No	Replace the air intake actuator, then go to Step 8. (See 07-40B-3 AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
3*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Air intake actuator and climate control unit disconnected. • Measure the voltages at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1F (FRESH motor drive signal) — Terminal 1B (RECIRCULATE motor drive signal) • Are voltages approx. 0 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 8.
4*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GROUND BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect for continuity at the following terminals between the climate control unit and ground. <ul style="list-style-type: none"> — Terminal 1F (FRESH motor drive signal) — Terminal 1B (RECIRCULATE motor drive signal) • Is there continuity? 	Yes	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 8.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
5*	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (OPEN CIRCUIT BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Air intake actuator and climate control unit connectors disconnected. • Switch the ignition to off. • Inspect for continuity at the following terminals between the climate control unit and air intake actuator. <ul style="list-style-type: none"> — Air intake actuator terminal B and climate control unit terminal 1F (FRESH motor drive signal) — Air intake actuator terminal C and climate control unit terminal 1B (RECIRCULATE motor drive signal) • Is there continuity? 	Yes	Go to the next step.
		No	Repair the wiring harness for open circuit between the climate control unit and air intake actuator, then go to Step 8.
6	INSPECT AIR INTAKE LINK <ul style="list-style-type: none"> • Inspect the air intake links. <ul style="list-style-type: none"> — Is there grease on link? — Are the links securely and properly installed? — Are the links free of obstructions and hindrances? • Are the above items normal? 	Yes	Go to the next step.
		No	Apply grease to the links. if any the links are damaged, replace the air intake actuator, then go to Step 8.
7	INSPECT TO SEE WHETHER MALFUNCTION IS IN CLIMATE CONTROL UNIT OR AIR INTAKE DOOR <ul style="list-style-type: none"> • Inspect the A/C unit air intake door. <ul style="list-style-type: none"> — Is the door free of obstructions, cracks, and damage? — Are the doors securely and properly installed? • Are the above items normal? 	Yes	Replace the climate control unit, then go to the next step.
		No	Remove obstruction, or install the doors in the proper position. If any doors are cracked or damaged, replace them, then go to the next step.
8	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does the air intake mode change smoothly? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

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SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

NO.4 NO TEMPERATURE CONTROL WITH CLIMATE CONTROL UNIT [MANUAL AIR CONDITIONER]

id0702c2812400

4	No temperature control with climate control unit
DESCRIPTION	<ul style="list-style-type: none"> • Temperature does not change when operating temperature dial • Malfunction in A/C unit and/or climate control unit air mix system
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/C unit air mix link, air mix crank, air mix rod, air mix wire, or wire clamp malfunction • Climate control unit rack-and-pinion, or air mix wire malfunction • A/C unit air mix door malfunction • Heater piping malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COOLANT TEMPERATURE <ul style="list-style-type: none"> • Is the coolant sufficiently warmed up? 	Yes Go to the next step.
		No Warm up the engine, then go to Step 8.
2	INSPECT A/C UNIT AIR MIX SYSTEM <ul style="list-style-type: none"> • Inspect the A/C unit air mix links, air mix cranks, air mix rods, air mix actuator, and wire clamp. <ul style="list-style-type: none"> — Is there grease on links and cranks? — Are links, cranks, and rods securely installed in their proper positions? — Is wire clamp free of deformation? • Are the above items normal? 	Yes Go to the next step.
		No Apply grease or install the links, cranks, and rods securely in their proper positions, repair or replace the wire clamp, then go to Step 8.
3	VERIFY THAT AIR MIX WIRE FROM A/C UNIT IS POSITIONED SECURELY AND CORRECTLY (IF AVAILABLE) <ul style="list-style-type: none"> • Is the air mix wire securely installed in the correct position in relation to the A/C unit air mix links? 	Yes Go to the next step.
		No Adjust the air mix wire or install securely in the correct position, then go to Step 8.
4	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Inspect the climate control unit. • Is the climate control unit normal? 	Yes Go to the next step.
		No Repair or replace the climate control unit, then go to Step 8.
5	INSPECT A/C UNIT <ul style="list-style-type: none"> • Is there any foreign material or obstruction in the A/C unit air mix doors? 	Yes Remove obstruction, then go to Step 8.
		No Go to the next step.
6	INSPECT A/C UNIT AIR MIX DOOR <ul style="list-style-type: none"> • Is the A/C unit air mix door securely and properly installed? 	Yes Inspect the air mix door for cracks or damage, then go to the next step.
		No Install the air mix door securely in the proper position, then go to the next step.
7	INSPECT HEATER LINE <ul style="list-style-type: none"> • Inspect the heater lines. <ul style="list-style-type: none"> — Is the heater piping free of damage and cracks? — Are the heater piping connections free of engine coolant leakage? — Are the heater piping connections securely tightened? — Are the heater piping installation points on A/C unit free of engine coolant leakage? • Are the above items normal? 	Yes Operation is normal. Recheck malfunction symptoms.
		No If heater piping connections are loose, tighten the connections to the specified torque. Repair or replace the heater piping, then go to the next step.
8	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> • Does the unit operate in every temperature setting? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

NO.5 WINDSHIELD FOGGED [MANUAL AIR CONDITIONER]

id0703c2801900

5	Windshield fogged.
DESCRIPTION	<ul style="list-style-type: none"> A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes. Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Climate control unit (B+ signal) system malfunction Air intake actuator malfunction Climate control unit (RECIRCULATE, FRESH signal) system malfunction A/C unit air intake door malfunction

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	COOL AIR BLOW OUT INSPECTION <ul style="list-style-type: none"> When both the A/C and fan switch in the climate control unit are on, does cool air blow out from the front vent? 	Yes	Go to the next step.
		No	Go to Step 1 of troubleshooting index No.8.
2	INSPECT CLIMATE CONTROL UNIT POWER SUPPLY FUSE FOR B+ SIGNAL <ul style="list-style-type: none"> Is the climate control unit power supply fuse for B+ signal normal? 	Yes	Go to the next step.
		No	Inspect for a short to ground on blown fuse circuit. <ul style="list-style-type: none"> Repair or replace if necessary. Install appropriate amperage fuse.
3	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> Inspect the air intake actuator. <ul style="list-style-type: none"> — Is there grease on the link? — Is the link securely and properly positioned? — Is the link free of obstructions? Are the above items normal? 	Yes	Go to the next step.
		No	Apply grease or install the link properly and securely, remove obstruction, then go to Step 14.
*4	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND CLIMATE CONTROL UNIT FOR CONTINUITY <ul style="list-style-type: none"> Disconnect the climate control unit connector (16-pin). Turn the ignition switch to the ON position. Measure the voltage at climate control unit terminal 2B (B+ signal). Is the voltage approx. 12 V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and climate control unit, then go to Step 14.
*5	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND GROUND FOR VOLTAGE <ul style="list-style-type: none"> Measure the voltage at climate control unit terminal 1I (Ground). Is the voltage approx. 0V? 	Yes	Go to the next step.
		No	Repair the wiring harness between the climate control unit and ground, then go to Step 14.
6	VERIFY WHETHER MALFUNCTION IS IN A/C UNIT AIR INTAKE DOOR OR ELSEWHERE <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Connect the climate control unit connector (16-pin). Remove the air intake actuator. Turn the ignition switch to the ON position. Set the fan switch to 4th position. Does the air intake mode (RECIRCULATE, FRESH) change smoothly when the air intake link is operated by hand? 	Yes	Go to the next step.
		No	Go to Step 12.
7	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> Inspect the air intake actuator. (See 07-40B-3 AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER].) Is it normal? 	Yes	Go to the next step.
		No	Replace the air intake actuator, go to Step 14.

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SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
8	INSPECT AIR INTAKE SELECTOR SWITCH AND DEFROSTER SWITCH IN CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Measure the voltage at climate control unit connector (12-pin) terminals 1F and 1B. • Is it normal? 	Yes	Go to the next step.
		No	Replace the climate control unit, then go to Step 14.
*9	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR FOR CONTINUITY <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Is there continuity between the following climate control unit terminals and air intake actuator terminals? <ul style="list-style-type: none"> — Terminal 1F —Terminal C (FRESH signal) — Terminal 1B —Terminal B (RECIRCULATE signal) 	Yes	Go to the next step.
		No	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 14.
*10	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there continuity between the following climate control unit terminals and ground? <ul style="list-style-type: none"> — Terminal 1F (FRESH signal) — Terminal 1B (RECIRCULATE signal) 	Yes	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 14.
		No	Go to the next step.
*11	INSPECT WIRING HARNESS BETWEEN CLIMATE CONTROL UNIT AND AIR INTAKE ACTUATOR FOR SHORT TO B+ <ul style="list-style-type: none"> • Turn the ignition switch to the ON position • Measure the voltage at the following climate control unit terminals. <ul style="list-style-type: none"> — Terminal 1F (FRESH signal) — Terminal 1B (RECIRCULATE signal) • Is the voltage approx. 12 V? 	Yes	Repair the wiring harness between the climate control unit and air intake actuator, then go to Step 14.
		No	Replace the climate control unit, then go to Step 14.
12	INSPECT A/C UNIT AIR INTAKE DOOR <ul style="list-style-type: none"> • Is there any foreign material or obstruction in the A/C unit air intake door? 	Yes	Remove obstruction, then go to Step 14.
		No	Go to the next step.
13	VERIFY THAT A/C UNIT AIR INTAKE DOOR IS POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none"> • Is the A/C unit air intake door securely and properly positioned? 	Yes	Inspect the air intake door for cracks or damage, then go to the next step.
		No	Install the air intake door securely in the proper position, then go to the next step.
14	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> • Does the malfunction disappear? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

NO.6 AIR FROM VENTS NOT COLD ENOUGH [MANUAL AIR CONDITIONER]

id0702c2812500

6	Air from vents not cold enough.
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch operates but A/C system malfunctions.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Drive belt malfunction • A/C pressure sensor malfunction • Malfunction in blower unit or condenser • Cooling fan system malfunction • Condenser or related part malfunction • A/C unit or condenser malfunction • Receiver/drier or expansion valve malfunction (valve closes too mach) • A/C compressor system malfunction, insufficient compressor oil • Over filling of compressor oil, malfunction in expansion valve or A/C unit air mix link system • Evaporative temperature sensor malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT REFRIGERANT SYSTEM PERFORMANCE <ul style="list-style-type: none"> • Perform refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.) • Is the operation normal? 	Yes	Operation is normal. (Recheck malfunction symptoms.)
		No	Go to the next step.
2	INSPECT DRIVE BELT <ul style="list-style-type: none"> • Inspect the drive belt. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) • (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) • Is it normal? 	Yes	Go to the next step.
		No	Adjust or replace the drive belt, then the next step. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].)
3	INSPECT REFRIGERANT PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the refrigerant pressure sensor. (See 07-40B-16 REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) • Is it normal? 	Yes	Go to the Step 5.
		No	Go to the next step.
4*	INSPECT REFRIGERANT PRESSURE SENSOR RELATED HARNESS <ul style="list-style-type: none"> • Inspect following refrigerant pressure sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins) <ul style="list-style-type: none"> — Climate control unit terminal 1H and refrigerant pressure sensor terminal A — Climate control unit terminal 1G and refrigerant pressure sensor terminal C — Climate control unit terminal 2J and refrigerant pressure sensor terminal B • Is it normal? 	Yes	Replace the refrigerant pressure sensor, then go to Step 24. (See 07-40B-15 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
		No	Repair wiring harness between climate control unit and refrigerant pressure sensor. Go to the next step.
5	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT INTAKE AND CONDENSER OR ELSEWHERE <ul style="list-style-type: none"> • Perform refrigerant pressure check. (See 07-10-6 REFRIGERANT PRESSURE CHECK.) • Are the refrigerant high-pressure and low-pressure values both high? 	Yes	Go to the next step.
		No	After recording the inspection results, go to Step 10.
6	INSPECT COOLING FAN OPERATION <ul style="list-style-type: none"> • Verify the cooling fan operation. (See 01-12A-15 COOLING FAN COMPONENT INSPECTION [LF, L5].) • (See 01-12B-15 COOLING FAN COMPONENT INSPECTION [L3 WITH TC].) • Is the cooling fan operation normal? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning location according to the inspection results. Then go to Step 24.

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SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION
7	VISUALLY INSPECT CONDENSER <ul style="list-style-type: none"> Is the condenser fin clogged or obstructed by foreign material? 	Yes Remove the foreign material. Repair the condenser fin. Then go to Step 24.
		No Go to the next step.
8	CHECK TO SEE WHETHER MALFUNCTION IS IN EXPANSION VALVE OR ELSEWHERE <ul style="list-style-type: none"> Verify the condition of the low pressure hose while the A/C is operating. Is there frost or condensation adhering? 	Yes Replace the expansion valve. After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Go to the next step.
9	INSPECT AIR MIX DOOR RELATED PART INSTALLATION <ul style="list-style-type: none"> Remove the A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.) Are the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions? 	Yes Adjust the compressor oil to the specified amount, then go to Step 23. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No Repair or install the links, cranks and rods securely in the proper position, then go to Step 24.
10	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT AND REFRIGERANT PRESSURE LINE OR ELSEWHERE <ul style="list-style-type: none"> Are the refrigerant high-pressure and low-pressure values low? 	Yes Go to the next step.
		No Go to Step 17.
11	INSPECT A/C UNIT FOR BLOCKAGE <ul style="list-style-type: none"> Is the A/C unit intake and air filter clogged? 	Yes Remove the cause of the clogging. Replace the air filter if it is clogged. (See 07-11-3 AIR FILTER REMOVAL/INSTALLATION.) Then go to Step 24.
		No Go to the next step.
12	CHECK TO SEE WHETHER MALFUNCTION IS REFRIGERANT LINE LEAKAGE OR ELSEWHERE <ul style="list-style-type: none"> Verify if there is gas leakage from the system hoses using the gas leak tester. Is there gas leakage? 	Yes If there is leakage from a system hose connection area, go to Step 14. If there is leakage other than from a system hose connection area, go to Step 16.
		No Go to the next step.
13	VISUALLY INSPECT REFRIGERANT LINE <ul style="list-style-type: none"> Is a system hose crushed? 	Yes Replace the crushed system hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Go to Step 23.
14	CHECK TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT LINE JOINT LOOSE OR O-RING <ul style="list-style-type: none"> Tighten the system hose connection area to the specified torque. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) Has the leakage stopped? 	Yes Go to the next step.
		No Go to Step 16.
15	VISUALLY INSPECT REFRIGERANT LINE <ul style="list-style-type: none"> Is a system hose crushed? 	Yes Replace the crushed system hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Adjust the compressor oil to the specified amount, then go to Step 24. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION
16	VISUALLY INSPECT REFRIGERANT LINE <ul style="list-style-type: none"> Is a system hose crushed? 	Yes Replace the O-ring of the leaking area. Replace the crushed system hose. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Replace the O-ring of the leaking area. After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
17	CHECK TO SEE WHETHER MALFUNCTION IS IN CONDENSER AND EXPANSION VALVE OR ELSEWHERE <ul style="list-style-type: none"> Do the results of the refrigerant pressure inspection in Step 4 indicate vacuum on the low pressure side and extremely low pressure on the high pressure side? 	Yes Go to the next step.
		No Go to Step 21.
18	CHECK TO SEE WHETHER MALFUNCTION IS IN EXPANSION VALVE AND RECEIVER/ DRIER OR ELSEWHERE <ul style="list-style-type: none"> Is there is no refrigerant pressure on the low pressure side, or is it normal? 	Yes Replace the condenser. (See 07-11-20 CONDENSER REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Go to the next step.
19	CHECK TO SEE WHETHER MALFUNCTION IS IN CONDENSER OR EXPANSION VALVE <ul style="list-style-type: none"> Verify the condition of the outlet hose on the condenser high pressure side. Is there condensation in the hose? 	Yes Replace the condenser. (See 07-11-20 CONDENSER REMOVAL/INSTALLATION.) After performing the following servicing, go to Step 24. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No Go to the next step.
20	INSPECT EXPANSION VALVE <ul style="list-style-type: none"> Remove the expansion valve and verify its condition. Is there refrigerant leakage or valve clogging? 	Yes If there is foreign matter clogging the valve, remove the foreign matter.If there is refrigerant leakage or clogging, replace the expansion valve.Perform discharge, charge with new refrigerant, and then go to Step 24.
		No Install the expansion valve, then go to Step 23.
21	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> Do the results of the refrigerant pressure inspection in Step 4 indicate low pressure on the high pressure side and high pressure on the low pressure side? 	Yes Replace the A/C compressor, then go to Step 24. (See 07-11-18 A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No Go to the next step.
22	INSPECT EVAPORATIVE TEMPERATURE SENSOR <ul style="list-style-type: none"> Inspect the evaporator temperature sensor. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.) Is it normal? 	Yes Verify the evaporator temperature sensor position. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.) Then go to Step 24.
		No Replace the evaporator temperature sensor, then go to Step 24. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)
23	INSPECT AIR MIX DOOR RELATED PART INSTALLATION <ul style="list-style-type: none"> Remove the A/C unit. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.) Are the air mix link, air mix crank, air mix wire and air mix rod of the A/C unit correctly and securely installed to their positions? 	Yes Go to the next step.
		No Repair or install the links, cranks, wire and rods securely in the proper position, then go to the next step. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)

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SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
24	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> If the refrigerant discharged during inspection has not been recharged, discharge and charge with new refrigerant to the specified level. Does cool air blow out? (Are results of refrigerant system performance test normal?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO.7 NO COOL AIR [MANUAL AIR CONDITIONER]

id0702c2812600

7	No cool air
DESCRIPTION	<ul style="list-style-type: none"> Magnetic clutch does not operate.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in PCM A/C cut control system Malfunction in climate control unit Malfunction in refrigerant pressure sensor Malfunction in PCM (A/C signal) Malfunction in PCM (IG1 signal) Malfunction in A/C compressor Malfunction in A/C relay Malfunction in evaporator temperature sensor Malfunction in instrument cluster Improper refrigerant charging amount Open circuit in wiring harness between instrument cluster and climate control unit Malfunction in CAN communication

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT FUSE <ul style="list-style-type: none"> Are A/C relay power supply fuses okay? 	Yes	Go to the next step.
		No	Replace fuse, then go to Step 17. If fuse burns out immediately, go to the next step.
2	INSPECT AIR BLOW OUT <ul style="list-style-type: none"> Does air blow out? 	Yes	Go to the next step.
		No	Go to Step 1 of troubleshooting indexes No.1 and 2.
3	INSPECT A/C COMPRESSOR OPERATION <ul style="list-style-type: none"> Start engine. Turn A/C switch and fan switch on. Does A/C compressor operate? 	Yes	Go to Step 1 of troubleshooting index No.6.
		No	Go to the next step.
4	INSPECT FOR DTC IN PCM <ul style="list-style-type: none"> Inspect for DTCs related to the PCM on-board diagnostic system. Are any DTCs displayed? 	Yes	Go to appropriate inspection procedure.
		No	Go to the next step.
5	DETERMINE IF MALFUNCTION CAUSE IS A/C REQUEST SIGNAL OR A/C RELAY OPERATIONAL MALFUNCTION <ul style="list-style-type: none"> Access PCM PID ACCS using the M-MDS. Start the engine and idle it. Turn the PID ACCS to ON from OFF using the M-MDS simulation function. Is the A/C magnetic clutch engaged? 	Yes	Go to the next step.
		No	Go to Step 13.
6*	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none"> Remove the climate control unit. Reconnect the climate control unit connector. Measure the climate control unit terminal 1H (12-pin) voltage. Is the voltage within the specified? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) 	Yes	Go to Step 8.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
7	INSPECT REFRIGERANT PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect refrigerant pressure sensor. (See 07-40B-16 REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) • Is the refrigerant pressure sensor normal? 	Yes	Inspect for following and repair or replace if necessary. <ul style="list-style-type: none"> • Refrigerant charging amount • A/C compressor for seizure
		No	Repair or replace malfunctioning part according to inspection result.
8*	SIGNAL INSPECTION FROM EVAPORATOR TEMPERATURE SENSOR TO CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Remove the climate control unit. • Reconnect the climate control unit connector. • Measure the climate control unit terminal 1C (12-pin) voltage. • Is the voltage within the specified? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) 	Yes	Go to Step 10.
		No	Go to the next step.
9	INSPECT EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the evaporator temperature sensor. (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].) • Is the evaporator temperature sensor normal? 	Yes	Inspect and repair for open or short circuit between evaporator temperature sensor and climate control unit.
		No	Replace the evaporator temperature sensor. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)
10*	SIGNAL INSPECTION FROM INSTRUMENT CLUSTER TO CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Remove the climate control unit. • Reconnect the climate control unit connector. • Start the engine and idle it. • Measure the climate control unit terminal 2P (16-pin) voltage while turning on and off the air conditioner by switching the control panel. • Is the voltage change in specified according to air control panel switching? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) Specification — Turn on the A/C: Below 1.0 V — Turn off the A/C: Approx. 5 V	Yes	Replace the instrument cluster. (Instrument cluster does not receive A/C request signal from climate control unit or transmit it to PCM.) (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
11	CONTINUITY INSPECTION BETWEEN CLIMATE CONTROL UNIT AND INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Inspect for open or short circuit between climate control unit terminal 2P (16-pin) and instrument cluster terminal 2I. Is there any open or short circuit detected? 	Yes	Repair for open or short circuit.
		No	Replace the climate control unit. (A/C switch malfunction or climate control unit does not determine A/C request or transmit the A/C request signal.) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
12	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/C CONTROL SIGNAL CIRCUIT (BETWEEN A/C RELAY AND PCM) OR ELSEWHERE <ul style="list-style-type: none"> • Does cool air blow out when terminal E of A/C relay connector (A/C control signal) is grounded? 	Yes	Release short, then go to the next step.
		No	Go to Step 14.
13*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN PCM OR WIRING HARNESS (BETWEEN A/C RELAY AND PCM) <ul style="list-style-type: none"> • Test voltage at the A/C relay control signal terminal of PCM. • Is voltage approx. 12 V? 	Yes	Inspect PCM, then go to Step 17.
		No	Repair wiring harness between A/C relay and PCM, then go to Step 17.

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SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
14*	INSPECT TO SEE WHETHER MALFUNCTION IS IN MAGNETIC CLUTCH OR ELSEWHERE <ul style="list-style-type: none"> • Test voltage at the following terminal of magnetic clutch thermal protector. <ul style="list-style-type: none"> — Terminal A (magnetic clutch operation signal) • Is voltage approx. 12 V? 	Yes	Inspect magnetic clutch, then go to Step 17.
		No	Go to the next step.
15	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C RELAY FOR LACK OF CONTINUITY <ul style="list-style-type: none"> • Test voltages at following terminals of A/C relay. <ul style="list-style-type: none"> — Terminal A (A/C relay control signal) — Terminal C (A/C control signal) • Are voltages approx. 12 V? 	Yes	Go to the next step.
		No	Repair wiring harness between fuse block and A/C relay, then go to Step 17.
16	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (BETWEEN A/C RELAY AND MAGNETIC CLUTCH) AND EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Test voltage at the following terminal of A/C relay. <ul style="list-style-type: none"> — Terminal D (magnetic clutch operation signal) • Is voltage approx. 12 V? 	Yes	Inspect wiring harness between A/C relay and magnetic clutch. <ul style="list-style-type: none"> • If above wiring harness is OK, go to the next step. • If above wiring harness malfunctions, repair wiring harness, then go to the next step.
		No	Replace A/C relay, then go to the next step.
17	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does cool air blow out? (Are the results of refrigerant system performance test okay?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO.8 NOISE WHILE OPERATING A/C SYSTEM [MANUAL AIR CONDITIONER]

id0702c2812700

8	Noise while operating A/C system.
DESCRIPTION	<ul style="list-style-type: none"> • Noise from magnetic clutch, A/C compressor, hose or refrigerant line.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Magnetic clutch operation noise • A/C compressor vane noise • A/C compressor slippage noise • Hose or refrigerant line interference noise

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CHECK A/C COMPRESSOR VANE NOISE <ul style="list-style-type: none"> • Is there a jingling, popping, beeping, or buzzing sound (A/C compressor vane noise)? 	Yes	Go to Step 5.
		No	Go to the next step.
2	INSPECT A/C COMPRESSOR SLIPPAGE NOISE <ul style="list-style-type: none"> • Is there a squeaking or whirling sound (A/C compressor slippage noise)? 	Yes	Go to Step 14.
		No	Go to the next step.
3	INSPECT A/C COMPRESSOR INTERFERENCE NOISE <ul style="list-style-type: none"> • Is there a rattling or vibrating sound (interference noise)? 	Yes	Go to Step 18.
		No	Go to the next step.
4	INSPECT MAGNETIC CLUTCH OPERATION NOISE <ul style="list-style-type: none"> • Is there a clicking sound (magnetic clutch operation noise)? 	Yes	Adjust clearance between pressure plate of magnetic clutch and A/C compressor pulley, then go to Step 19. (See 07-40B-13 MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER].)
		No	Condition is normal. (Recheck malfunction symptoms.)
5	INSPECT A/C COMPRESSOR NOISE TIME <ul style="list-style-type: none"> • Is noise heard continuously for more than 3 s after A/C compressor comes on? 	Yes	Go to the next step.
		No	Condition is normal. (Noise occurs for 2—3 s immediately after A/C compressor turns on.)

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
6	INSPECT IDLE SPEED <ul style="list-style-type: none"> • Inspect idle speed. (See 01-10A-3 ENGINE TUNE-UP [LF, L5].) (See 01-10B-3 ENGINE TUNE-UP [L3 WITH TC].) • Is it okay? 	Yes	Go to the next step.
		No	Follow the repair instruction described in section 01, then go to Step 19.
7	INSPECT REFRIGERANT AMOUNT <ul style="list-style-type: none"> • Inspect refrigerant amount. • Is it okay? 	Yes	Go to Step 10.
		No	Go to the next step.
8	INSPECT REFRIGERANT LINES <ul style="list-style-type: none"> • Inspect refrigerant lines. <ul style="list-style-type: none"> — Is piping free of damage and cracks? — Are piping connections free of oil grime? (Visual inspection) — Are piping connections free of gas leakage? — Are piping installation points on condenser free of gas leakage? — Are piping installation points on receiver/drier free of gas leakage? — Are piping installation points on A/C compressor free of gas leakage? — Are piping installation points on A/C unit free of gas leakage? — Perform gas leak inspection using gas leak tester. • Are above items okay? 	Yes	Go to the next step.
		No	If piping or A/C component(s) is damaged or cracked, replace then go to Step 19. If there is gas leakage, repair or replace connection and replace condenser*, then go to Step 19.
9	INSPECT EVAPORATOR PIPING CONNECTIONS IN A/C UNIT FOR GAS LEAKAGE <ul style="list-style-type: none"> • Are piping connections for evaporator in A/C unit free of gas leakage? 	Yes	Adjust refrigerant amount to specified level, then go to Step 19.
		No	If piping is damaged or cracked, replace then go to Step 19. If there is gas leakage, repair or replace connection and replace condenser*, then go to Step 19.
10	CHECK TO SEE WHETHER MALFUNCTION IS IN COMPRESSOR OIL OR ELSEWHERE <ul style="list-style-type: none"> • Add 20 ml {20 cc, 0.8 fl oz} of compressor oil. • Is noise heard when racing engine? 	Yes	Go to the next step.
		No	Troubleshooting completed. Explain repair to customer.
11	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> • Drain compressor oil. • Is it contaminated with metal particles? 	Yes	Go to the next step.
		No	Replace A/C compressor, then go to Step 19.
12	CHECK TO SEE WHETHER MALFUNCTION IS SOMEWHERE IN A/C SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> • Is compressor oil whitish and mixed with water? 	Yes	Replace entire A/C system (excluding heater), then go to Step 19.
		No	Go to the next step.
13	INSPECT A/C COMPRESSOR OIL <ul style="list-style-type: none"> • Is compressor oil darker than normal and contaminated with aluminum chips? 	Yes	Replace A/C compressor and condenser, then go to Step 19. (Since A/C compressor may be worn and receiver/drier may be clogged, replacement of receiver/drier is necessary.)
		No	Condition is normal. Recheck malfunction symptoms.
14	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> • Is noise heard immediately after A/C compressor is stopped? 	Yes	Replace A/C compressor, then go to Step 19. (A/C compressor discharge valve left open)
		No	Go to the next step.
15	INSPECT DRIVE BELT <ul style="list-style-type: none"> • Inspect drive belt. (See 01-10A-5 DRIVE BELT INSPECTION [LF, L5].) (See 01-10B-4 DRIVE BELT INSPECTION [L3 WITH TC].) • Is it okay? 	Yes	Go to the next step.
		No	Replace drive belt, then go to Step 19. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].) (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
16	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> • Is drive belt worn? • Does it have foreign material imbedded in it, or have oil on it? 	Yes	Remove obstruction, remove oil, or replace drive belt, then go to Step 19.
		No	Go to the next step.

07-03B

SYMPTOM TROUBLESHOOTING [MANUAL AIR CONDITIONER]

STEP	INSPECTION	ACTION	
17	INSPECT MAGNETIC CLUTCH <ul style="list-style-type: none"> • Inspect magnetic clutch. (See 07-40B-14 MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER].) • Is it okay? 	Yes	Replace A/C compressor (excluding pressure plate, A/C compressor pulley, and stator), then go to Step 19.
		No	Replace magnetic clutch, then go to Step 19.
18	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR REFRIGERANT LINES <ul style="list-style-type: none"> • Is noise emitted from A/C compressor? 	Yes	Visually inspect A/C compressor, replace appropriate parts if necessary, then go to the next step.
		No	If noise is due to refrigerant lines, repair detached or missing clips, tighten loose bolts, then go to the next step.
19	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> • Has A/C compressor noise stopped? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

* : If there is gas leakage, air enters into the A/C system. The desiccant within the receiver/drier absorbs the moisture from the air and becomes saturated. If the A/C system is used in this condition, the inside of the A/C compressor will begin to rust due to this moisture, which may cause lock up or noise to occur. Therefore, replacement of the receiver/drier is necessary.

07-10 REFRIGERANT SYSTEM

REFRIGERANT SYSTEM SERVICE

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REFRIGERANT SYSTEM

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REFRIGERANT SYSTEM SERVICE WARNINGS

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Handling Refrigerant

- **Avoid breathing air conditioning refrigerant or lubricant vapor. Exposure may irritate eyes, nose and throat. Also, due to environmental concerns, we urge use of recovery/recycling/recharging equipment when draining HFC-134a from the air conditioning system. If accidental system discharge occurs, ventilate work area before resuming service.**
- **Do not perform pressure test or leak test for HFC-134a service equipment and/or vehicle air conditioning system using compressed air. Some mixtures of air and HFC-134a have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**
- **Do not allow the refrigerant to leak near fire or any kind of heat. A poisonous gas may be generated if the refrigerant gas contacts fire or heat such as from cigarettes and heaters. When carrying out any operation that can cause refrigerant leakage, extinguish or remove the above-mentioned heat sources and maintain adequate ventilation.**
- **Handling liquid refrigerant is dangerous. A drop of it on the skin can result in localized frostbite. When handling the refrigerant, wear gloves and safety goggles. If refrigerant splashes into the eyes, immediately wash them with clean water and consult a doctor.**

Storing Refrigerant

- **The refrigerant container is highly pressurized. If it is subjected to high heat, it could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Store the refrigerant at temperatures below 40 °C {104 °F}.**

07-10

REFRIGERANT SYSTEM

REFRIGERANT SYSTEM SERVICE CAUTIONS

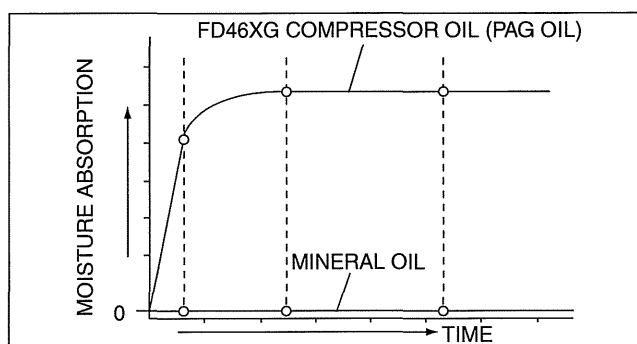
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Handling Insufficient Refrigerant Level

- If an insufficient refrigerant level is detected at troubleshooting, do not charge (add) the refrigerant. Because an accurate amount of refrigerant cannot be determined from the pressure indicated on the manifold gauge, never charge the refrigerant. If there is too much or too little refrigerant from the refilling, there may be secondary problems such as damage to the refrigerant cycle parts, or a decrease of cooling performance. Therefore, if it is determined that the refrigerant level is insufficient, completely remove refrigerant from the refrigerant cycle and refill with refrigerant to the specified amount.

Handling Compressor Oil

- Use only FD46XG compressor oil for this vehicle. Using a PAG oil other than FD46XG compressor oil can damage the A/C compressor.
- Do not spill ATMOS GU10 compressor oil on the vehicle. A drop of compressor oil on the vehicle surface can eat away at the paint. If oil gets on the vehicle, wipe it off immediately.
- FD46XG compressor oil (PAG oil) has a higher moisture absorption efficiency than the previously used mineral oil. If moisture mixes with the compressor oil, the refrigerant system could be damaged. Therefore, install caps immediately after using the compressor oil or removing refrigerant system parts to prevent moisture absorption.
- If the refrigerant gas is completely discharged from the system for reasons such as a malfunction during A/C operation, repair or replace the malfunctioning part, charge the refrigerant to the specified amount and always add 60 ml {60 cc, 2.03 fl oz} of compressor. If the compressor oil is not adequately replenished, the A/C compressor may quickly deteriorate, abnormal noise may develop, cooling performance may be affected or, in the worst case, the A/C compressor may seize.

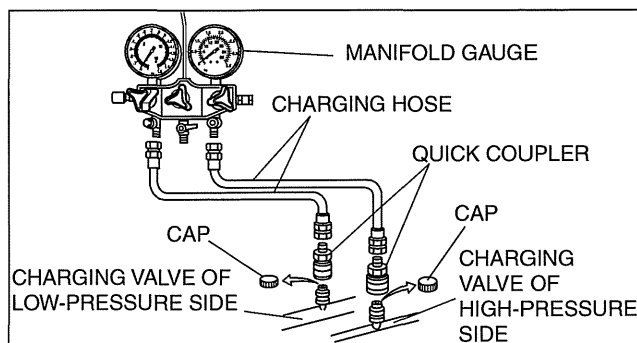


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REFRIGERANT SYSTEM GENERAL PROCEDURES

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1. Fully close the valves of the manifold gauge.
2. Connect the charging hoses to the high- and low-pressure side joints of the manifold gauge.
3. Connect the quick couplers to the ends of the charging hoses.
4. Connect the quick couplers to the charging valves.



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REFRIGERANT SYSTEM

REFRIGERANT CHARGING

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Caution

- Do not exceed the specification when charging the system with refrigerant. Doing so will decrease the efficiency of the air conditioner or damage the refrigeration cycle parts.

Charging Recycled HFC-134a Refrigerant

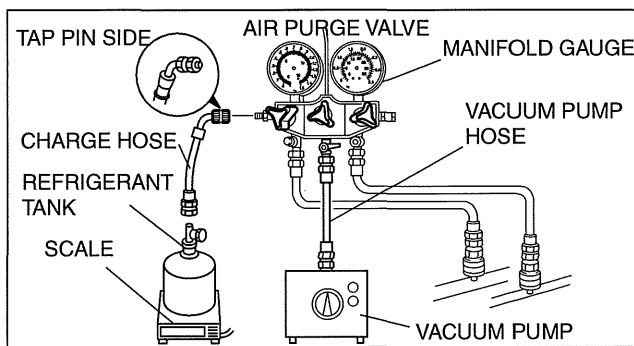
1. Connect an HFC-134a recovery/recycling/recharging device to the vehicle and follow the device manufacturer's instructions.

Charging Preparation

1. Install the manifold gauge set.
2. Connect the tap pin side of the charging hose to the air purge valve of the manifold gauge.
3. Connect the vacuum pump hose to the center joint of the manifold gauge.
4. Connect the vacuum pump hose to the vacuum pump.
5. Connect the charging hose to the refrigerant tank.
6. Place the refrigerant tank on the scale.

Regular amount of refrigerant (approx. quantity)

455—505 g {16.1—17.8 oz}



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07-10

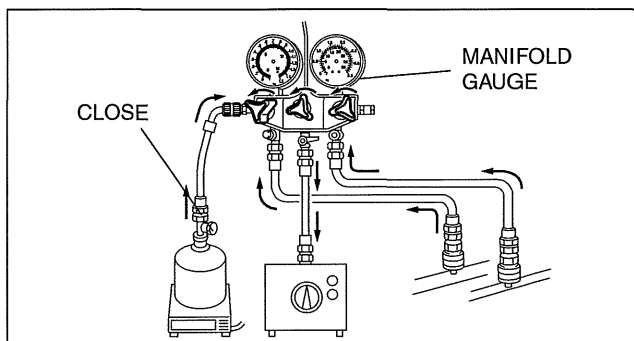
Evacuation

1. Open all the valves of the manifold gauge.

Caution

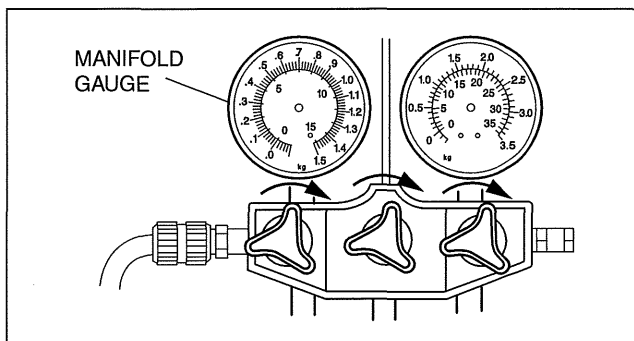
- Close the manifold gauge valve immediately after stopping the vacuum pump. If the valve is left open, the vacuum pump oil will back flow into the refrigeration cycle and cause a decrease in the efficiency of the air conditioner.

2. Start the vacuum pump and let it operate for 15 min.



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3. Verify that high- and low-pressure side readings of the manifold gauge are at **-101 kPa {-760 mmHg, -29.9 inHg}**. Close each valve of the manifold gauge.



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REFRIGERANT SYSTEM

Airtightness Check

1. Stop the vacuum pump and wait for **5 min.**
2. Check the high- and low-pressure side readings of the manifold gauge.
 - If the reading has changed, inspect for leakage and go to Evacuation. (See 07-10-3 Evacuation.)
 - If the reading has not changed, go to Charging New R-134a Refrigerant. (See 07-10-4 Charging New HFC-134a Refrigerant.)

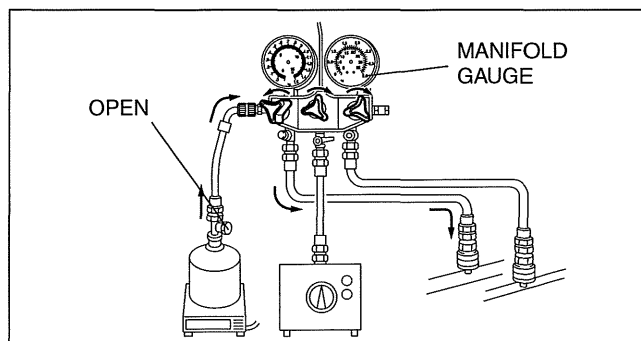
Charging New HFC-134a Refrigerant

1. Open the valve of the refrigerant tank.
2. Weigh the refrigerant tank to charge the suitable amount of refrigerant.

Warning

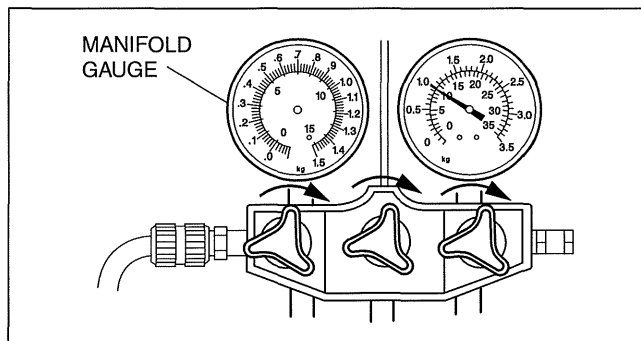
- If the refrigerant system is charged with a large amount of refrigerant when inspecting for gas leakage, and if any leakage should occur, the refrigerant will be released into the atmosphere. In order to prevent the accidental release of refrigerant which can destroy the ozone layer in the stratosphere, follow the proper procedures and charge with only a small amount of refrigerant when inspecting for gas leakage.
- If charging the system with refrigerant using service cans, running the engine with the high-pressure side valve open is dangerous. Pressure within the service cans will increase and the cans could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Therefore, do not open the high-pressure side valve while the engine is running.

3. Open the low-pressure side valve of the manifold gauge.



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4. When the high-pressure side reading increases to **0.098 MPa {1.0 kgf/cm², 14 psi}**, close the low-pressure side valve of the manifold gauge.
5. Inspect for leakage from the cooler pipe/hose connections using the gas leak tester.
 - If there is no leakage, go to Step 7.
 - If leakage is found at a loose joint, tighten the joint, then go to next step.
6. Inspect for leakage again.
 - If there is no leakage after tightening the joint, go to next step.
 - If there is still a leakage at the same joint, discharge the refrigerant and then repair the joint. Repeat the charging procedure from evacuation.



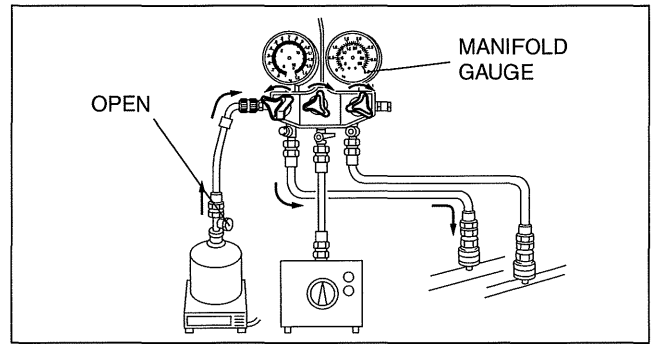
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Warning

- If charging the system with refrigerant using service cans, running the engine with the high-pressure side valve open is dangerous. Pressure within the service cans will increase and the cans could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Therefore, do not open the high-pressure side valve while the engine is running.

REFRIGERANT SYSTEM

- Open the low-pressure side valve of the manifold gauge and charge with refrigerant until the weight of refrigerant tank has decreased **250 g {8.82 oz}** from the amount in Step 2.

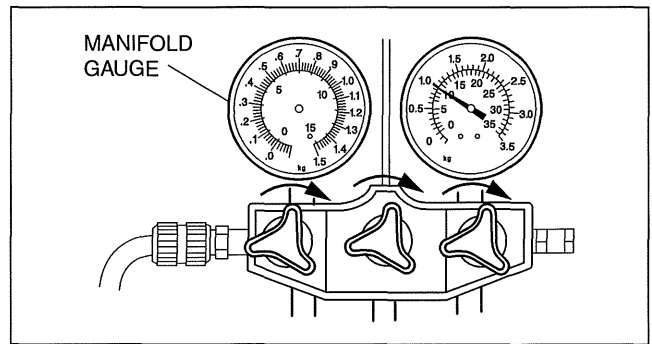


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- Close the low-pressure side valve of the manifold gauge.

Warning

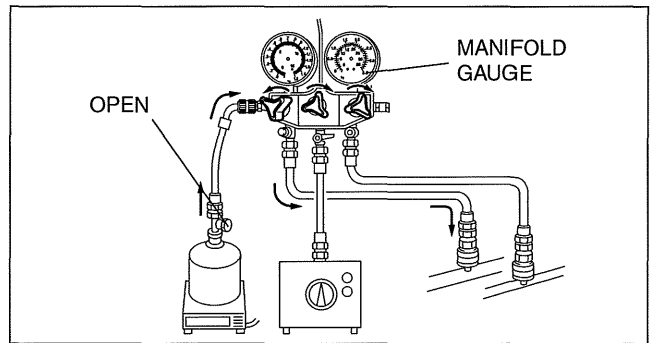
- If charging the system with refrigerant using service cans, running the engine with the high-pressure side valve open is dangerous. Pressure within the service cans will increase and the cans could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Therefore, do not open the high-pressure side valve while the engine is running.



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07-10

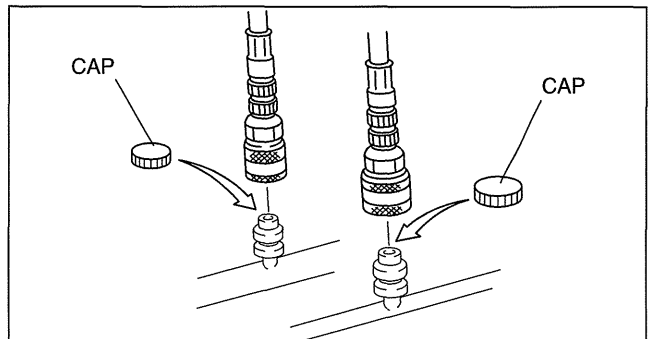
- Start the engine and actuate the A/C compressor.
- Open the low-pressure side valve of the manifold gauge and charge with refrigerant until the weight of the refrigerant tank has decreased regular amount from the amount in Step 2.
- Close the low-pressure side valve of the manifold gauge and the valve of the refrigerant tank.
- Stop the engine and A/C compressor.



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Leak Test

- Inspect for leakage using the gas leak tester.
 - If there is no leakage, go to Step 3.
 - If leakage is found at a loose joint, tighten the joint, then go to the next step.
- Inspect for leakage again.
 - If there is no leakage after tightening the joint, go to the next step.
 - If there is still leakage at the same joint, discharge the refrigerant and then repair the joint. Repeat the charging procedure from evacuation.
- Disconnect the quick couplers from the charging valves.
- Install the caps to the charging valves.



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REFRIGERANT SYSTEM

REFRIGERANT RECOVERY

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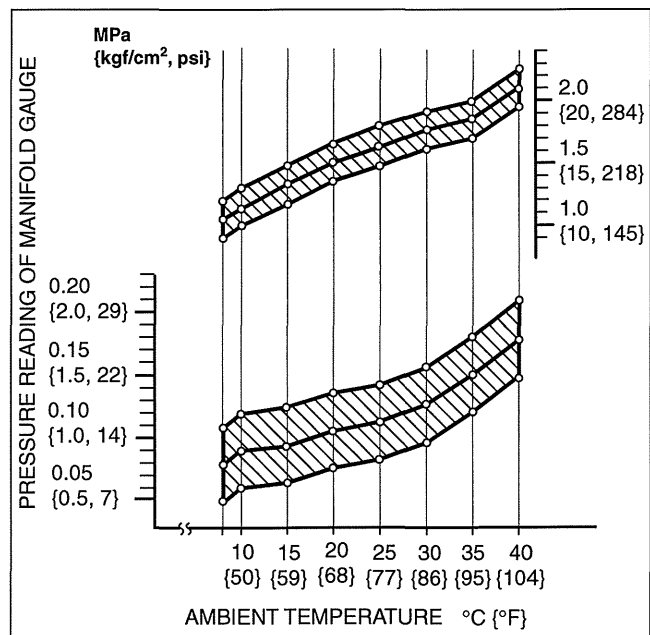
1. Connect an HFC-134a recovery/recycling/recharging device to the vehicle and follow the device manufacturer's instructions.

REFRIGERANT PRESSURE CHECK

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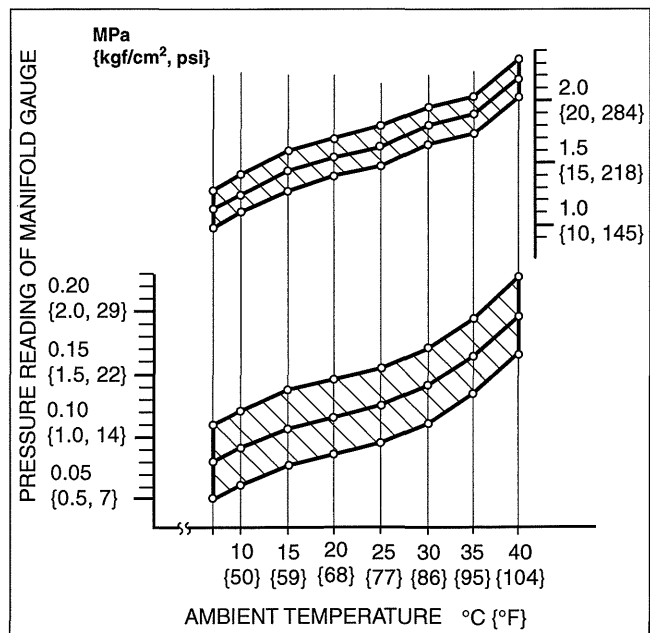
1. Install the manifold gauge. (See 07-10-2 REFRIGERANT SYSTEM GENERAL PROCEDURES.)
2. Start the engine and after it is warmed up, run it at a constant **1,500 rpm**.
3. Set the fan speed MAX HI.
4. Turn the A/C switch on.
5. Set to RECIRCULATE mode.
6. Set the temperature control to MAX COLD.
7. Set to VENT mode.
8. Close all the doors and all the windows.
9. Measure the ambient temperature and high- and low- pressure side reading of the manifold gauge.
10. Verify that the intersection of the pressure reading of the manifold gauge and ambient temperature is in the shaded zone.

4SD



5HB

- If there is any malfunction, inspect the refrigerant system according to the troubleshooting chart.

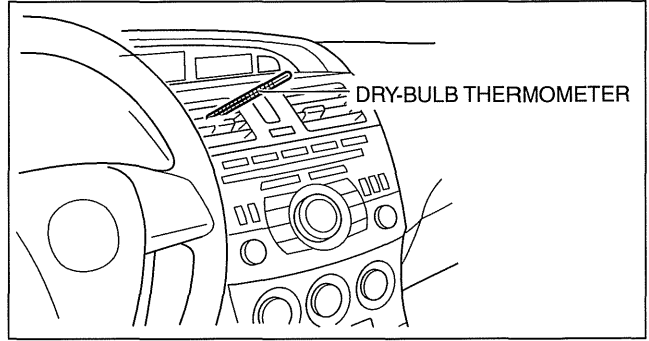


REFRIGERANT SYSTEM

REFRIGERANT SYSTEM PERFORMANCE TEST

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1. Inspect the refrigerant pressure. (See 07-10-6 REFRIGERANT PRESSURE CHECK.)
2. Place a dry-bulb thermometer in the driver-side center ventilator outlet.
3. Start the engine and after it is warmed up, run it at a constant **1,500 rpm**.
4. Set the fan speed to MAX HI.
5. Turn the A/C switch on.
6. Set to RECIRCULATE mode.
7. Set the temperature control to MAX COLD.
8. Set to VENT mode.
9. Close all the doors and windows.
10. Wait until the air conditioner output temperature stabilizes.



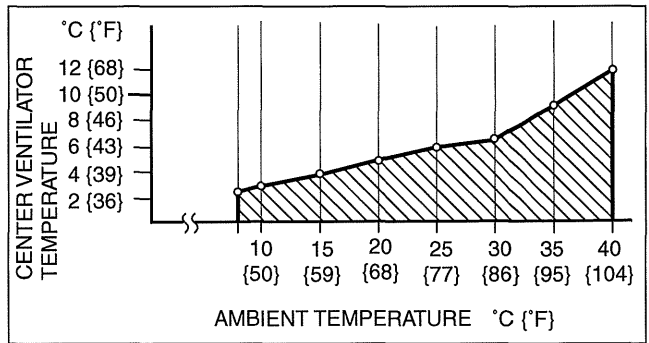
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Stabilized condition

- The A/C compressor repeatedly turns on and off at regular intervals.

11. After the blower air is stabilized, read the dry-bulb thermometer.
12. Verify the ambient temperature.
13. Verify that the temperature reading is in the shaded zone.

4SD

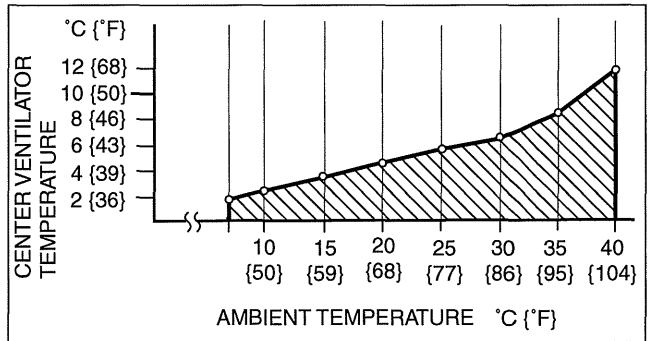


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07-10

5HB

- If there is any malfunction, inspect the refrigerant system according to the troubleshooting chart.



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07-11 BASIC SYSTEM

HVAC BASIC SYSTEM

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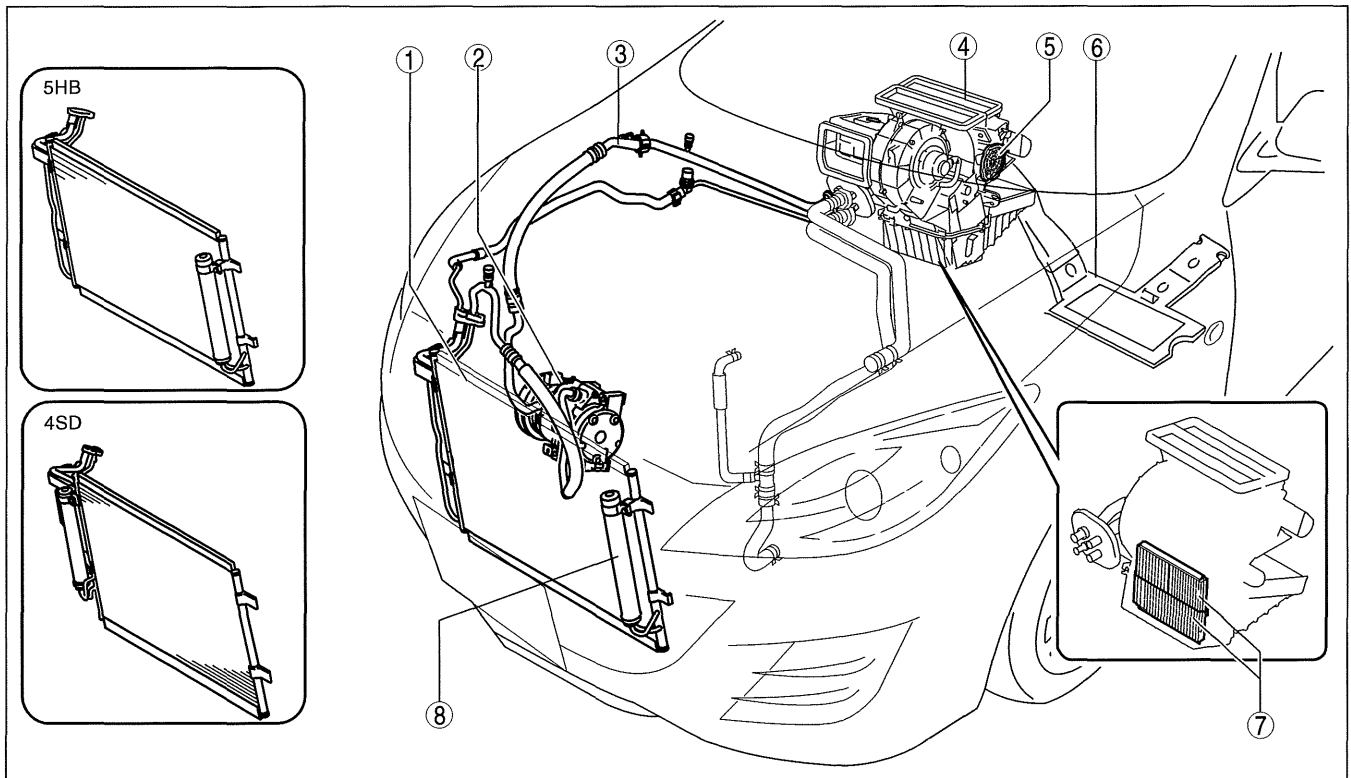
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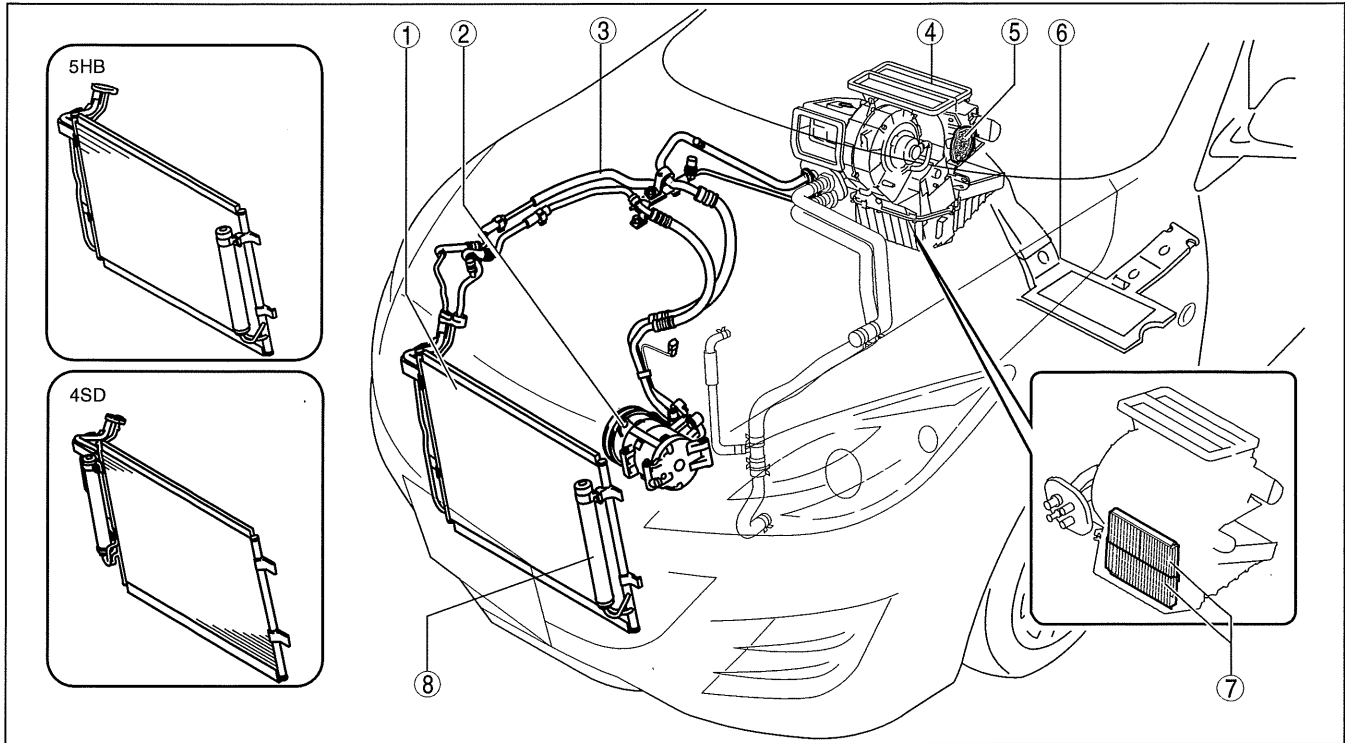
L5



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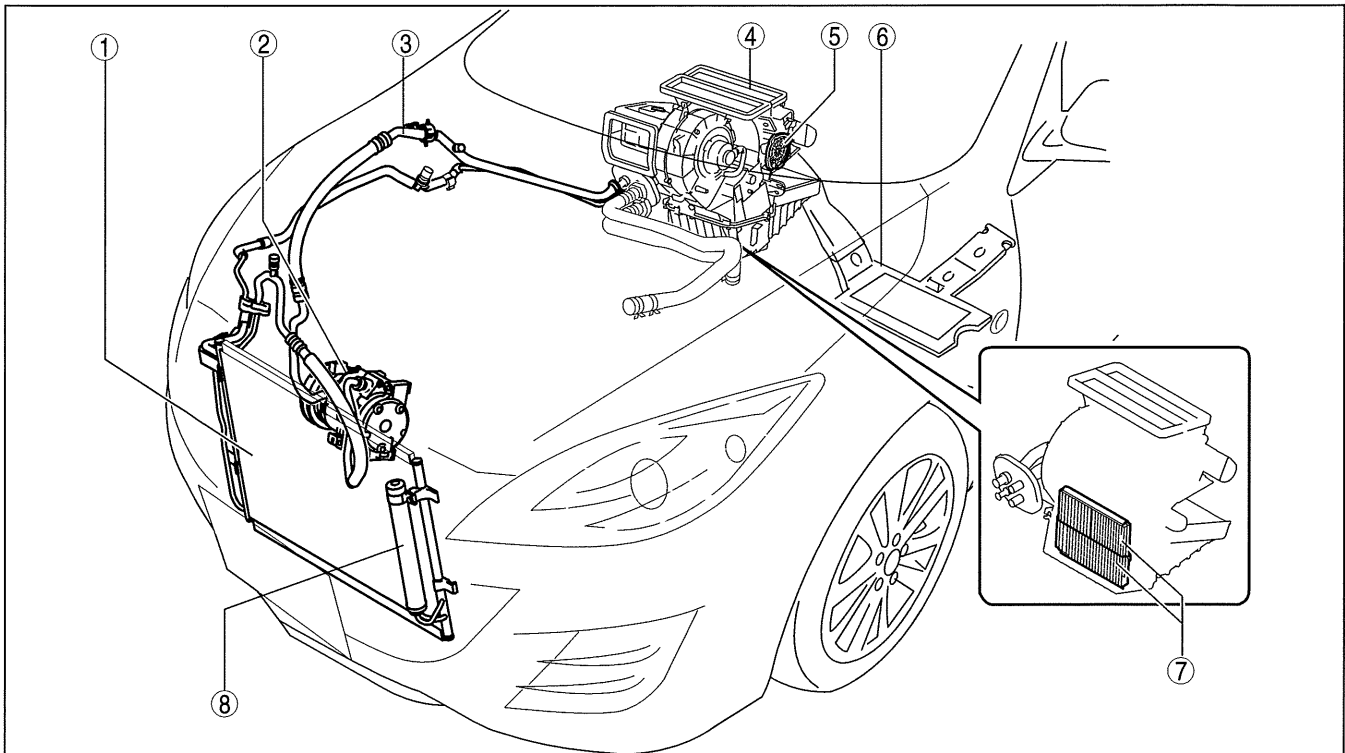
BASIC SYSTEM

LF



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L3 WITH TC



am3uuw0000571

1	Condenser (See 07-11-20 CONDENSER REMOVAL/ INSTALLATION.) (See 07-11-22 CONDENSER INSPECTION.)
2	A/C compressor (See 07-11-18 A/C COMPRESSOR REMOVAL/ INSTALLATION.)
3	Refrigerant line (See 07-11-24 REFRIGERANT LINE REMOVAL/ INSTALLATION.)

4	A/C unit (See 07-11-4 A/C UNIT REMOVAL/ INSTALLATION.) (See 07-11-10 A/C UNIT DISASSEMBLY/ ASSEMBLY.) (See 07-11-14 EXPANSION VALVE REMOVAL/ INSTALLATION.) (See 07-11-14 EVAPORATOR INSPECTION.) (See 07-11-14 HEATER CORE INSPECTION.)
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BASIC SYSTEM

5	Airflow mode main link (See 07-11-15 AIRFLOW MODE MAIN LINK REMOVAL/INSTALLATION.)
6	Rear heat duct (See 07-11-18 REAR HEAT DUCT REMOVAL/INSTALLATION.)

7	Air filter (See 07-11-3 AIR FILTER REMOVAL/INSTALLATION.) (See 07-11-4 AIR FILTER INSPECTION.)
8	Receiver/drier (See 07-11-22 RECEIVER/DRIER REMOVAL/INSTALLATION.)

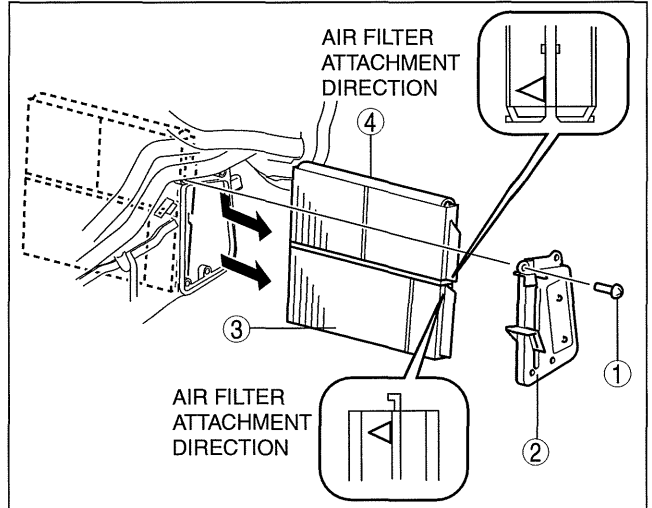
AIR FILTER REMOVAL/INSTALLATION

id071100360100

1. Disconnect the negative battery cable.
2. Remove the side wall. (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
3. Disconnect the evaporator temperature sensor connector.
4. Disconnect the power MOS FET connector. (Full-auto air conditioner)
5. Disconnect the resistor connector. (Manual air conditioner)
6. Remove in the order indicated in the table.

1	Screw
2	Air filter cover
3	Air filter (2) (See 07-11-3 Air Filter Installation Note.)
4	Air filter (1) (See 07-11-3 Air Filter Installation Note.)

7. Install in the reverse order of removal.

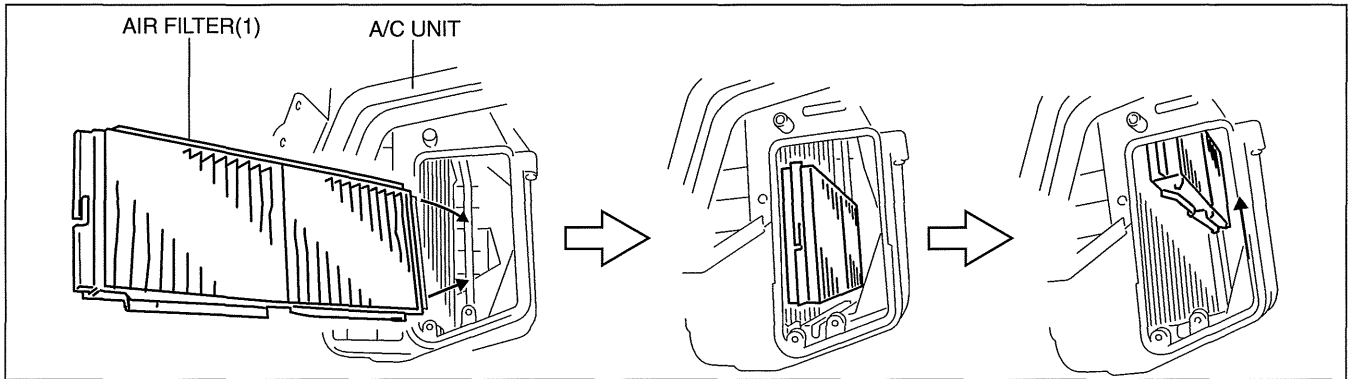


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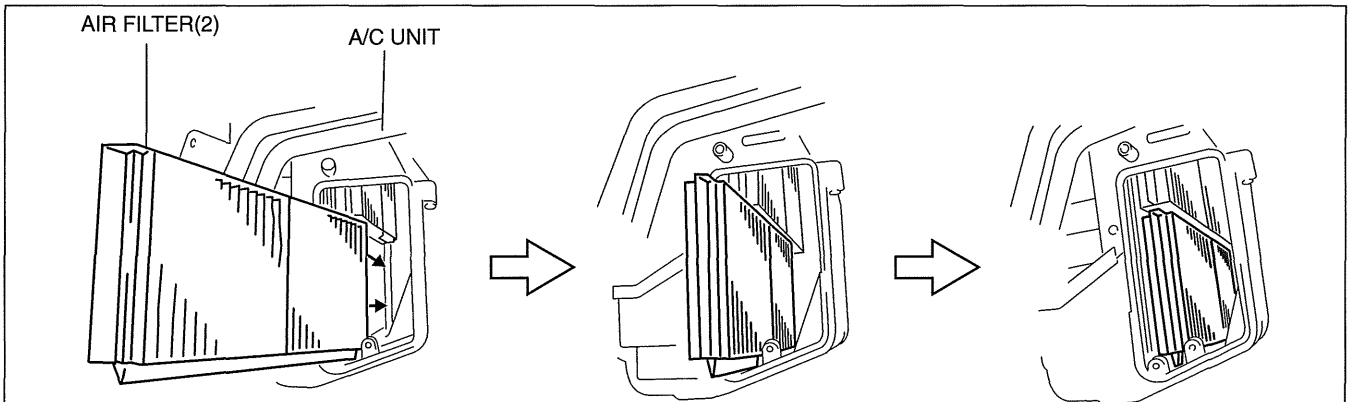
Air Filter Installation Note

1. Install the air filter (1) as shown in the figure.



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2. Install the air filter (2) as shown in the figure.



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BASIC SYSTEM

AIR FILTER INSPECTION

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1. Verify that there is no damage, excessive dirt, or abnormal odor on the air filter.
 - If there is any malfunction, replace the air filter.

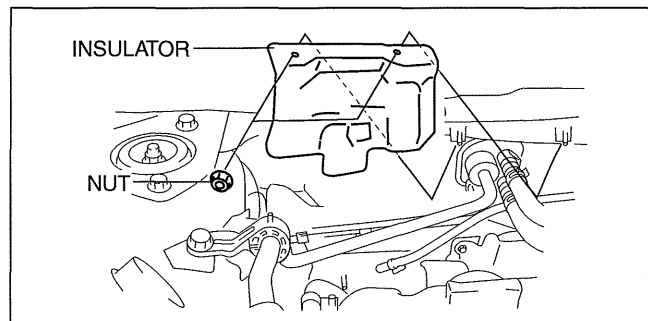
Note

- The air filter cannot be reused by cleaning it with water or compressed air.

A/C UNIT REMOVAL/INSTALLATION

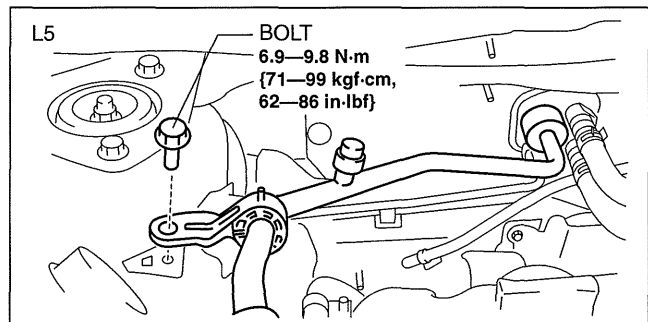
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1. Set the air mix mode to MAX COLD.
2. Disconnect the negative battery cable.
3. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
4. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].) (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
5. Remove the engine cover. (L3 WITH TC)
6. Remove the insulator. (L3 WITH TC)

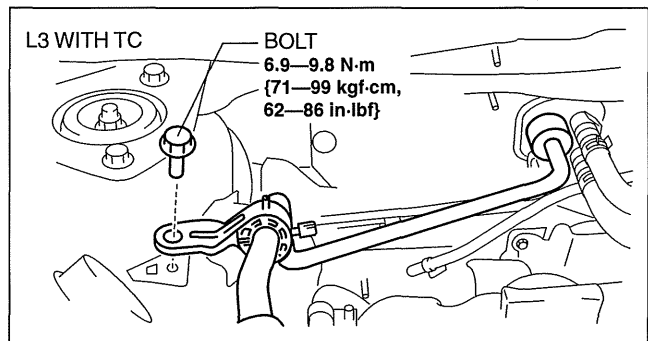


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7. Remove the bolt. (L5, L3 WITH TC)

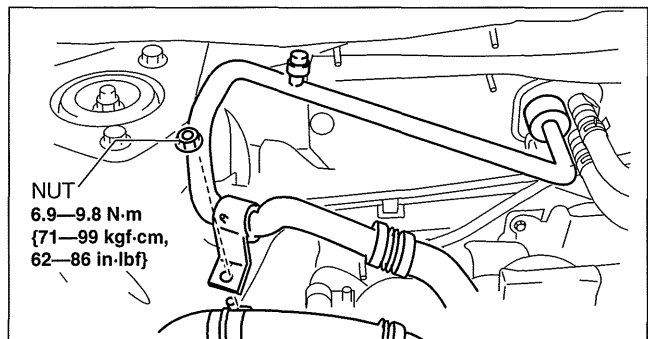


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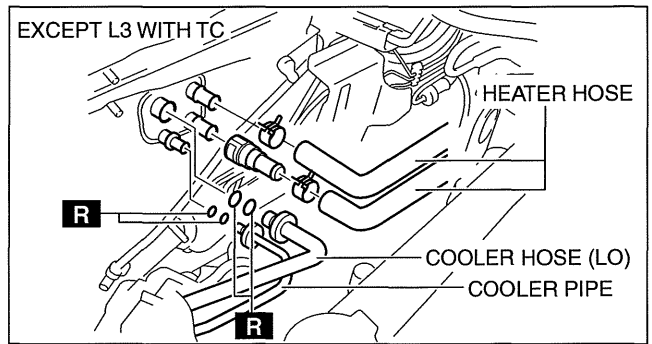
8. Remove the nut. (LF)



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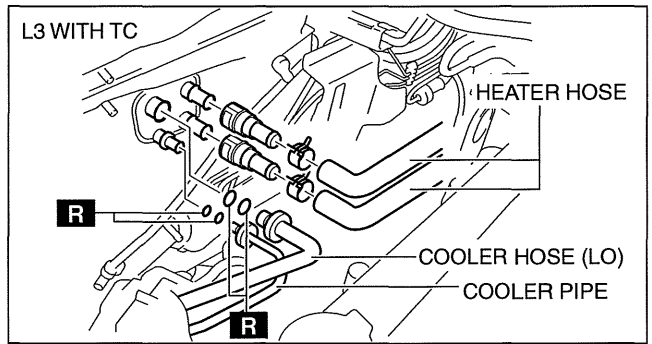
BASIC SYSTEM

9. Disconnect the following parts from the A/C unit.



Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



- (1) Cooler hose (LO) (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)
- (2) Cooler pipe (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)
- (3) Heater hose (See 07-11-9 Heater Hose Removal Note.) (See 07-11-9 Heater Hose Installation Note.)

10. Remove the following parts:

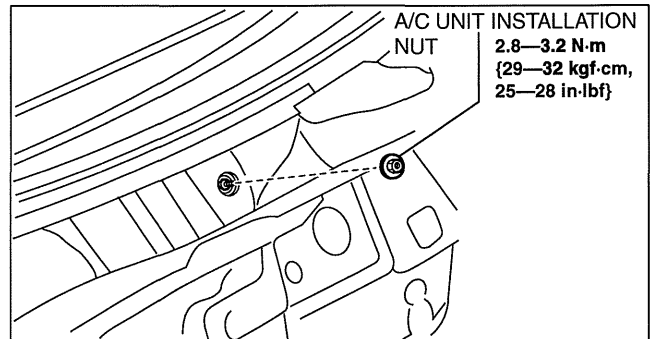
- (1) Front doors (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
- (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
- (3) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
- (4) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
- (5) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
- (6) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
- (7) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (8) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (9) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
- (10) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
- (11) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
- (12) Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (13) Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (14) Hood release lever from the lower panel (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
- (15) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
- (16) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
- (17) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
- (18) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (19) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
- (20) Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
- (21) Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (22) Steering shaft (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (23) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)

BASIC SYSTEM

- (24) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (25) Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
 - (26) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (27) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (28) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (29) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
 - (30) Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
 - (31) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (32) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (33) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (34) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (35) Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
11. Remove the A/C unit installation nut from the engine compartment, then remove the A/C unit.

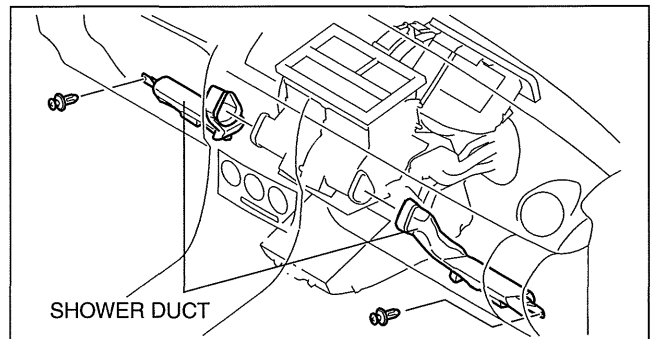
Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



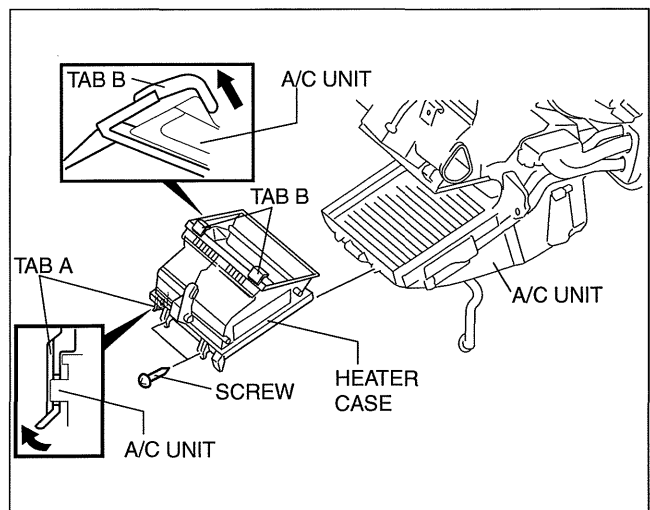
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12. Remove the shower ducts.
13. Remove the rear heat duct (1).



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14. Remove the heater case.
1. Remove the screws.
 2. Pull up tab A in the direction shown by the arrow in the figure and remove it from the A/C unit.
 3. Pull up tabs B in the direction shown by the arrow in the figure and remove it from the A/C unit.
15. Disconnect the drain hose connected to the A/C unit. (See 07-11-8 Drain Hose Installation Note.)
16. Remove the nuts and bolts for installing the dashboard to the body.
17. Remove the dashboard with A/C unit. (See 09-17-5 DASHBOARD REMOVAL/INSTALLATION.)

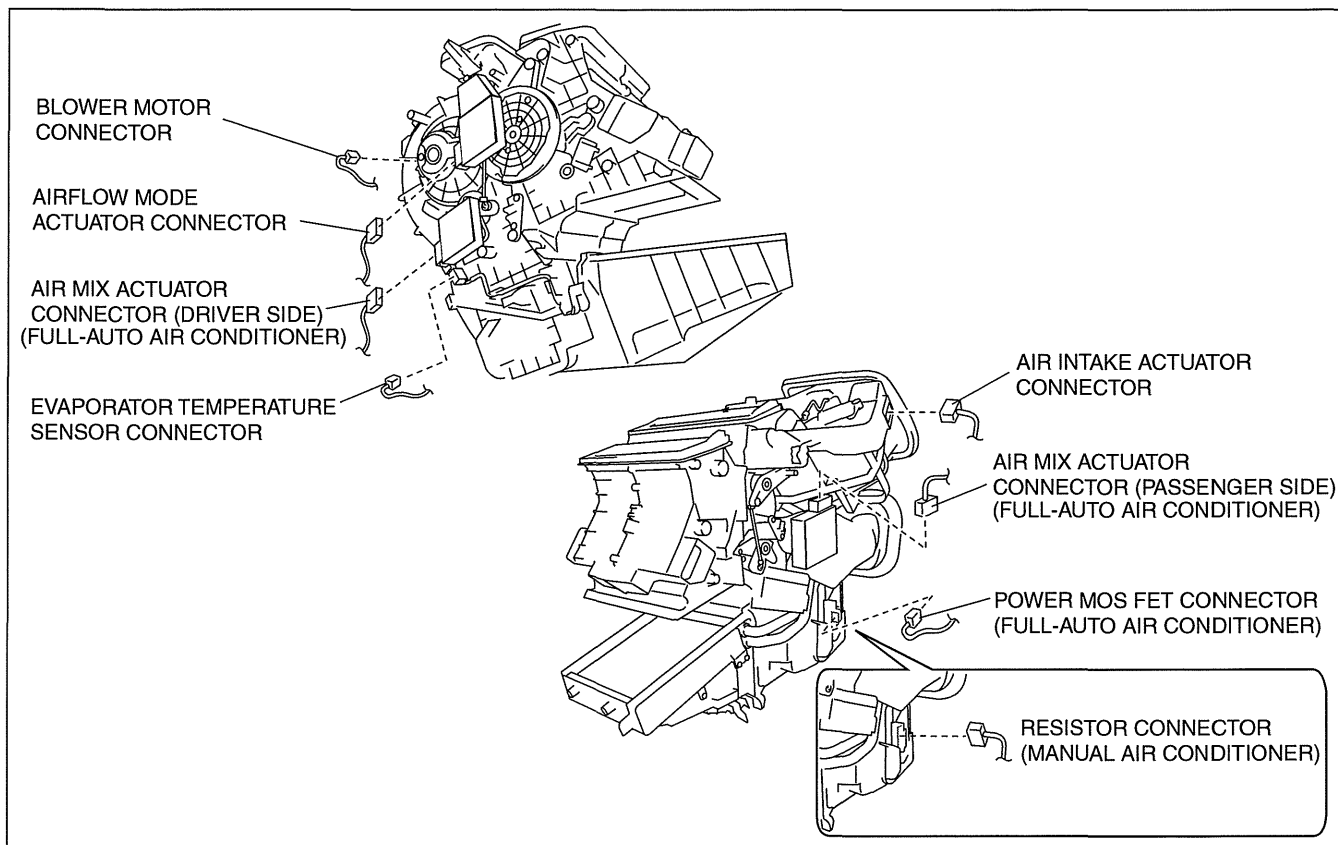


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BASIC SYSTEM

18. Disconnect the following connectors:

- Blower motor connector
- Power MOS FET connector (Full-auto air conditioner)
- Resistor connector (Manual air conditioner)
- Evaporator temperature sensor connector
- Air intake actuator connector
- Air mix actuator connector (Full-auto air conditioner)
- Airflow mode actuator connector (Full-auto air conditioner)



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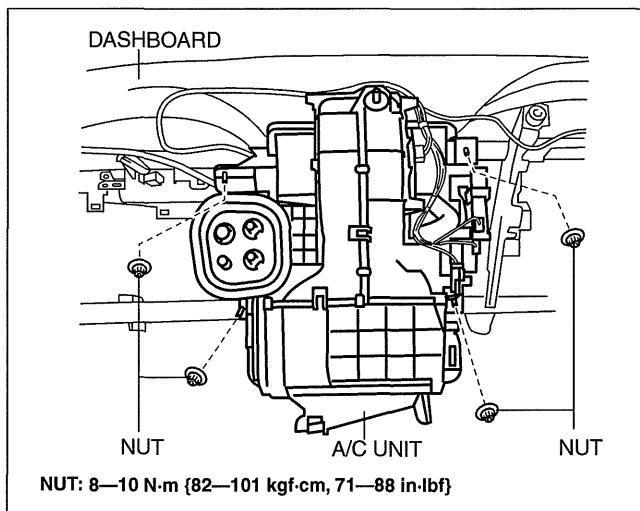
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19. Remove the nuts for installing the A/C unit to the dashboard.

20. Install in the reverse order of removal. (See 07-11-8 A/C Unit Installation Note.)

21. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].) (See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)

22. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)



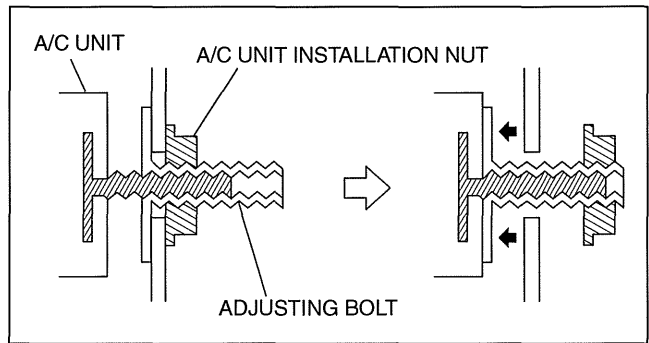
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BASIC SYSTEM

A/C Unit Installation Nut Removal Note

Note

- If the adjusting bolt rotates when removing the A/C unit nut, keep rotating the nut. The adjusting bolt stops rotating when it contacts the A/C unit and the nut can be removed.



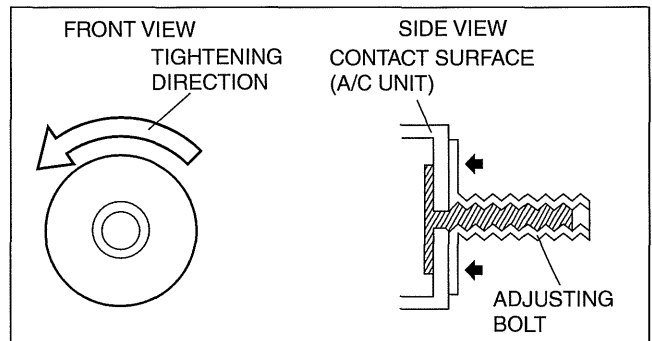
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A/C Unit Installation Note

1. When replacing the A/C unit or evaporator, add compressor oil to the refrigerant cycle.

Supplemental oil amount (approx. quantity)
25 ml {25 cc, 0.8 fl oz}

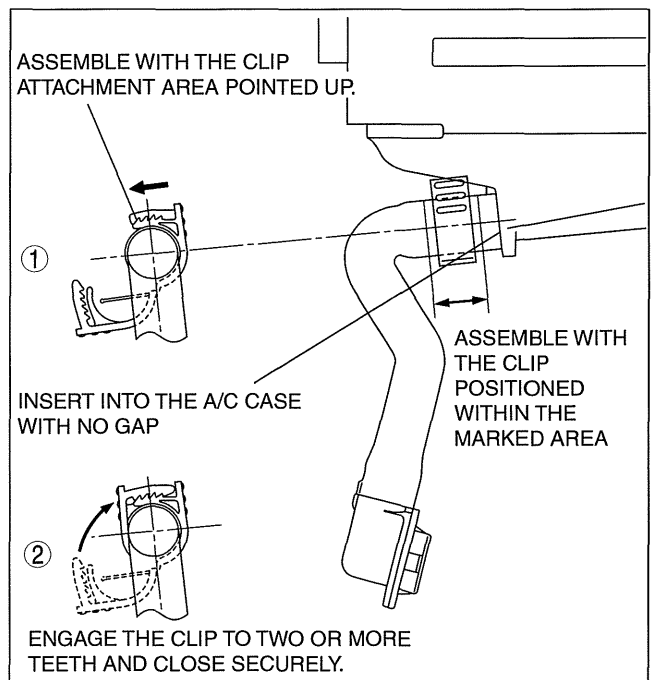
2. Tighten the A/C unit adjusting bolt until it lightly touches the A/C unit.



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Drain Hose Installation Note

1. Install the clip as shown in the figure.

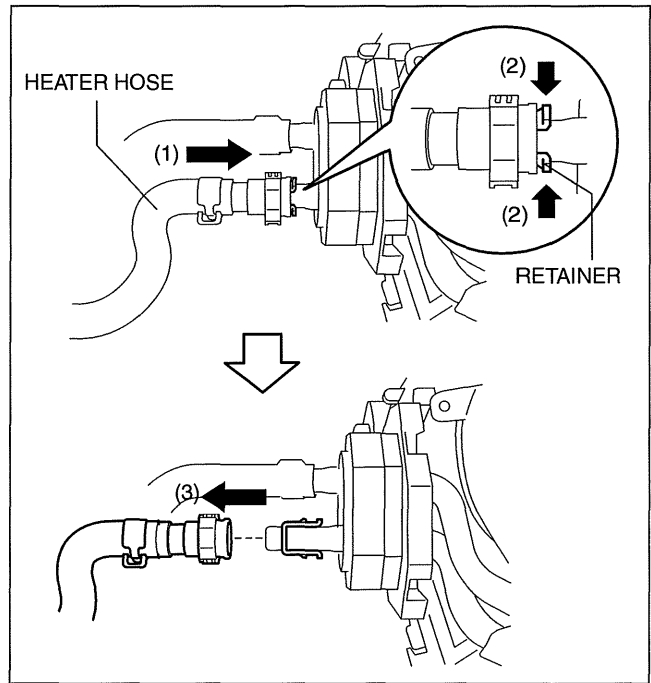


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BASIC SYSTEM

Heater Hose Removal Note

1. While pressing the heater hose into the A/C unit side (1), pinch the quick connector retainer (2), then disconnect the heater hose from the A/C unit (3).

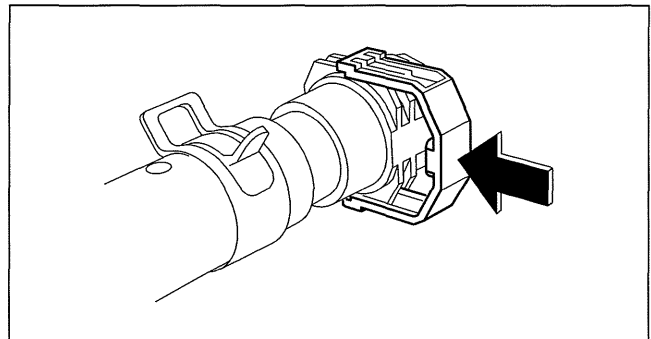


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Heater Hose Installation Note

1. Insert the heater hose into the pipe of the A/C unit until a click is heard.
2. While pressing the heater hose quick connector against the A/C unit side, press in the push tab.
3. Verify that the heater hose cannot be pulled out from the A/C unit by lightly pulling the heater hose.



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BASIC SYSTEM

A/C UNIT DISASSEMBLY/ASSEMBLY

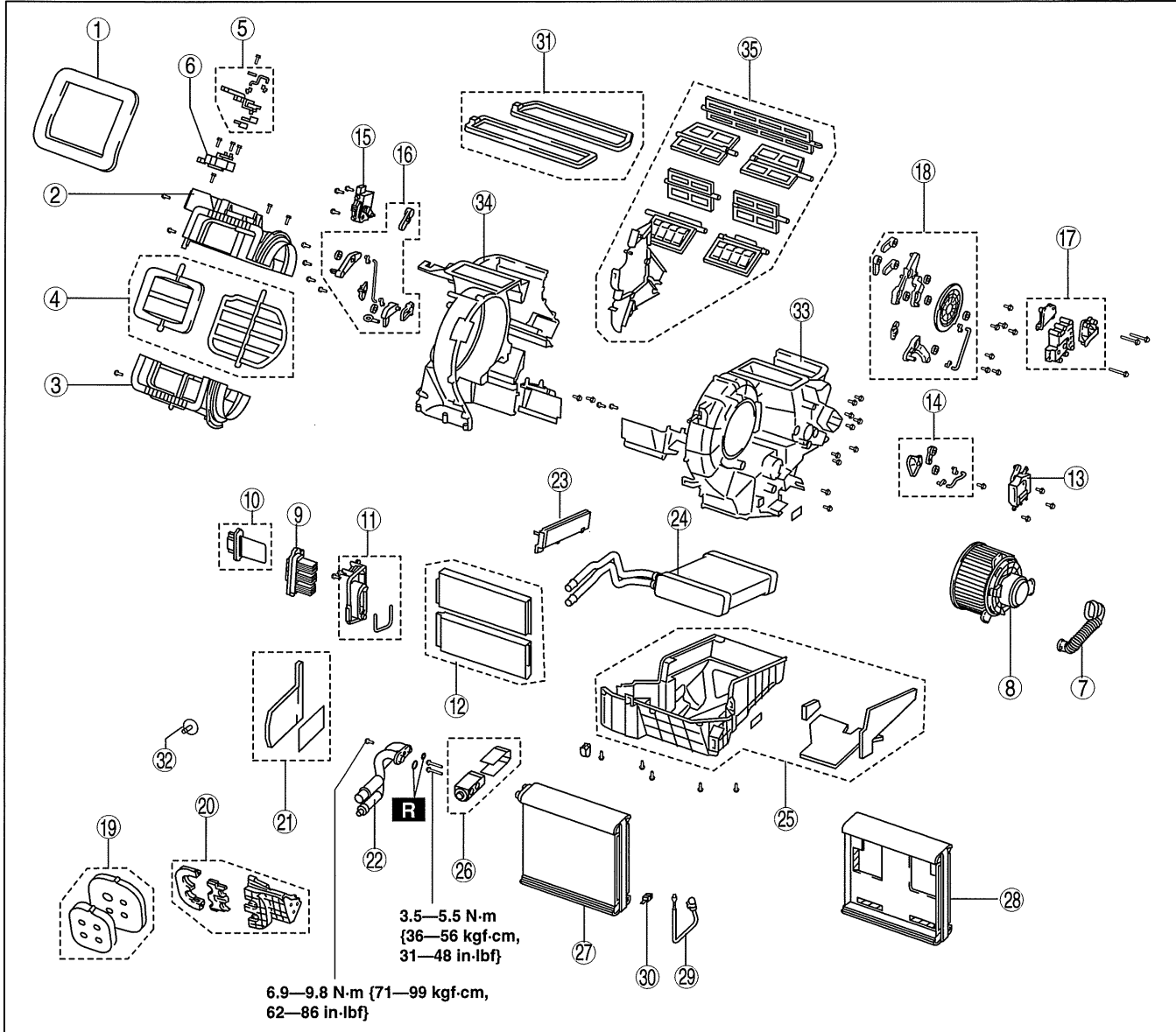
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1. Disassemble in the order indicated in the table.

Caution

- If a non-specified grease is used, it may result in abnormal noise or improper operation of the links. Apply only the specified grease to each link.

2. Assemble in the reverse order of disassembly.



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Step	Part name	Disassembly/assembly of main parts		
		Heater core	Evaporator temperature sensor	Evaporator
1	Adhesive polyurethane (1)	—	—	—
2	Blower case (1)	—	—	—
3	Blower case (2)	—	—	—
4	Air intake door	—	—	—
5	Air intake link set	—	—	—
6	Air intake actuator	—	—	—
7	Blower motor pipe	—	—	—
8	Blower motor	—	—	—
9	Power MOS FET (Full-auto air conditioner)	—	—	—

BASIC SYSTEM

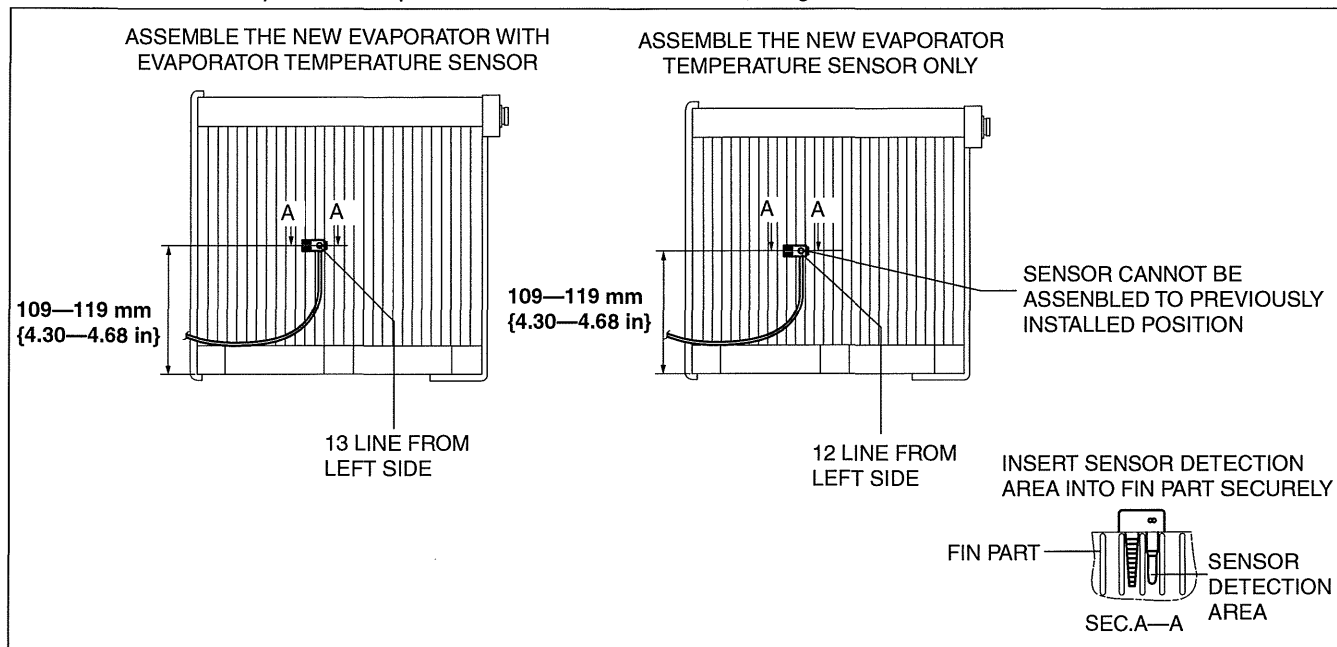
Step	Part name	Disassembly/assembly of main parts		
		Heater core	Evaporator temperature sensor	Evaporator
10	Resistor (Manual air conditioner)	-	-	-
11	Plate	-	X	X
12	Air filter	-	X	X
13	Driver-side air mix actuator (Full-auto air conditioner)	-	-	-
14	Driver-side air mix link set (Full-auto air conditioner)	-	-	-
15	Passenger-side air mix actuator (Full-auto air conditioner)	-	-	-
16	Passenger-side air mix link set (Full-auto air conditioner)	-	-	-
17	Airflow mode actuator (Full-auto air conditioner)	-	-	-
18	Airflow mode link set	-	-	-
19	Polyurethane foam (1)	X	X	X
20	Plate cover	X	X	X
21	Adhesive polyurethane (2) (See 07-11-12 Adhesive Polyurethane (2) Assembly Note.)	X	X	X
22	Evaporator pipe	X	X	X
23	Cover	X	X	X
24	Heater core	-	X	X
25	A/C case (1)	-	X	X
26	Expansion valve	-	X	X
27	Evaporator	-	-	-
28	A/C case (2)	-	-	-
29	Evaporator temperature sensor (See 07-11-12 Evaporator Temperature Sensor Assembly Note.)	-	-	-
30	Clip	-	-	-
31	Polyurethane foam (2)	-	-	-
32	Bolt	-	-	-
33	A/C case (3)	-	-	X
34	A/C case (4)	-	-	X
35	Door damper	-	-	-

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BASIC SYSTEM

Evaporator Temperature Sensor Assembly Note

1. Assemble the evaporator temperature sensor as shown in the figure.



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Caution

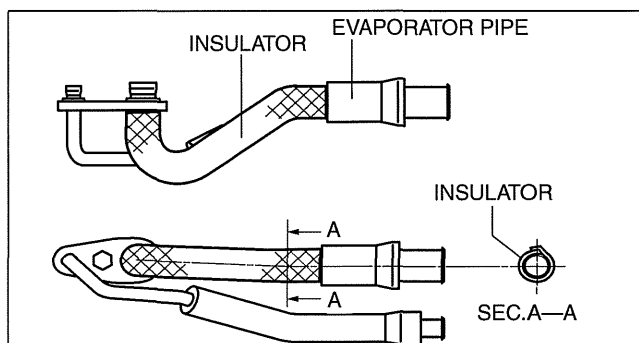
- When installing the evaporator temperature sensor without newly replacing the evaporator, assemble the evaporator temperature sensor with the installation position slid to the left of the previous position by 1 line. If the evaporator temperature sensor is assembled to the previously installed position, it may not function due to poor contact of the fin surface with the sensor detection area caused by fin deformation.

Note

- Newly replace an evaporator in which the evaporator temperature sensor cannot be correctly positioned.

Adhesive Polyurethane (2) Assembly Note

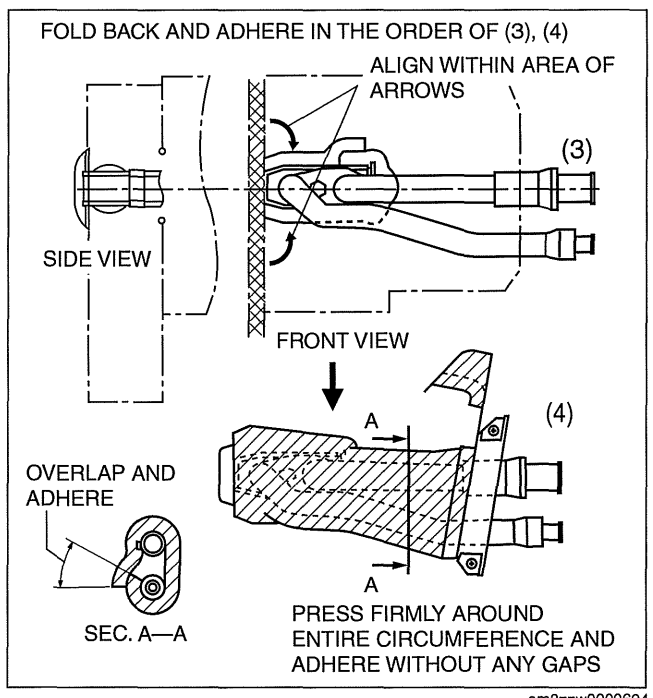
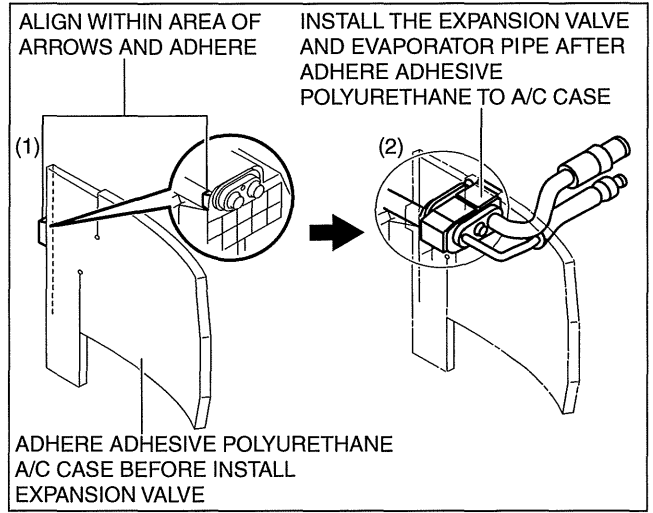
1. Wrap the low-pressure side of the evaporator pipe with insulator.



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BASIC SYSTEM

2. Assemble the adhesive polyurethane as shown in the figure.



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BASIC SYSTEM

EXPANSION VALVE REMOVAL/INSTALLATION

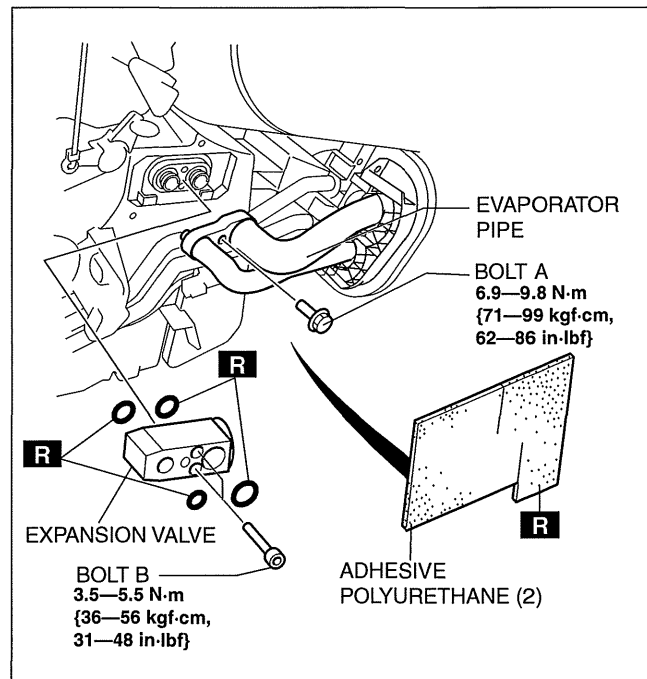
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1. Disconnect the negative battery cable.
2. Discharge the refrigerant from the system. (See 07-10-3 REFRIGERANT CHARGING.)

Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

3. Disconnect the cooler hose (LO) and cooler pipe. Do not allow compressor oil to spill. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)
4. Remove the following parts:
 - (1) Front side trim (RH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Lower panel (passenger-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) Side wall (RH) (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (7) Shower duct (RH) (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION)
5. Remove the adhesive polyurethane (2). (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)
6. Remove the bolt A.
7. Disconnect the evaporator pipe.
8. Remove the bolt B.
9. Remove the expansion valve. Do not allow compressor oil to spill.
10. Install in the reverse order of removal.
11. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)



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EVAPORATOR INSPECTION

id071100801500

1. Inspect the evaporator for damage, cracks, and oil leakage.
 - If there is any malfunction, replace the evaporator.
2. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten the fins.

HEATER CORE INSPECTION

id071100801600

1. Inspect the heater core for damage, cracks, and water leakage.
 - If there is any malfunction, replace the heater core.
2. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten the fins.
3. Visually inspect the heater hose for deformation.
 - Repair with pliers if there is deformation. If there is any malfunction, replace the heater core.

BASIC SYSTEM

AIRFLOW MODE MAIN LINK REMOVAL/INSTALLATION

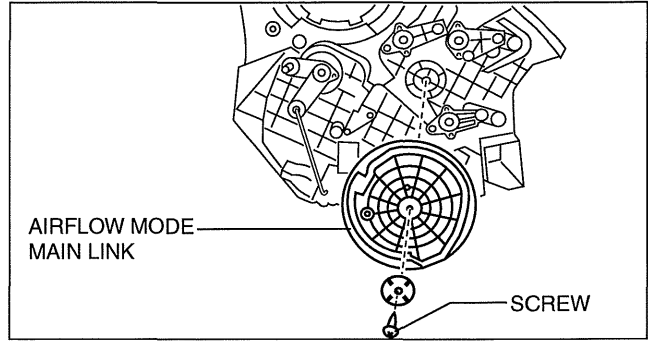
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1. Set the air intake mode to FRESH.
2. Set the air mix mode to MAX COLD.
3. Disconnect the negative battery cable.
4. Remove the following parts:
 - (1) Front doors (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (4) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (5) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (6) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (7) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (8) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (9) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (10) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (11) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (12) Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (13) Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (14) Hood release lever from the lower panel (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (15) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (16) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
 - (17) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
 - (18) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (19) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (20) Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
 - (21) Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (22) Steering shaft (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (23) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (24) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (25) Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
 - (26) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (27) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (28) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (29) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
 - (30) Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
 - (31) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (32) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (33) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (34) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (35) Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
 - (36) Rear heat duct (1) (See 07-11-18 REAR HEAT DUCT REMOVAL/INSTALLATION.)
 - (37) Shower ducts (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION)
 - (38) Heater case (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION)
5. Remove the nuts and bolts for installing the dashboard to the body.
6. Remove the nuts and bolts for installing the A/C unit to the dashboard.
7. Remove the accelerator pedal. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)

07-11

BASIC SYSTEM

8. Disconnect the following connectors:
 - Blower motor connector
 - Power MOS FET connector (Full-auto air conditioner)
 - Resistor connector (Manual air conditioner)
 - Evaporator temperature sensor connector
 - Air intake actuator connector
 - Air mix actuator connector (Full-auto air conditioner)
 - Airflow mode actuator connector (Full-auto air conditioner)
9. Remove the dashboard. (See 09-17-5 DASHBOARD REMOVAL/INSTALLATION.)
10. Remove the airflow mode actuator (Full-auto air conditioner).
11. Remove the airflow mode rod (Manual air conditioner).
12. Remove the airflow mode main link.
13. Install in the reverse order of removal.



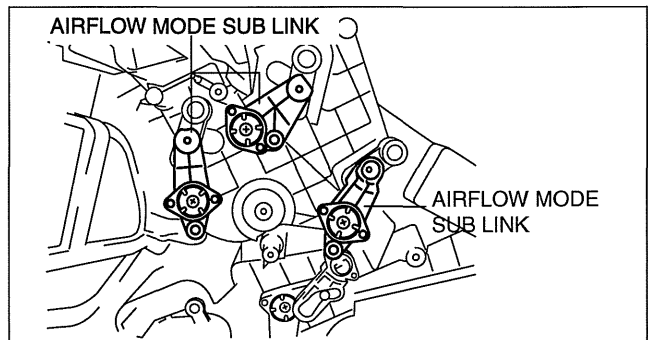
Airflow Mode Main Link Installation Note

Caution

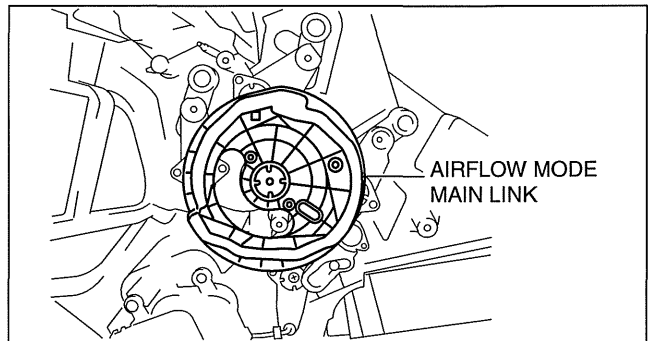
- Apply only the specified grease to links. Otherwise abnormal noise or improper operation may result.

Full-auto air conditioner

1. Set the airflow mode sub link to the A/C unit as shown in the figure.

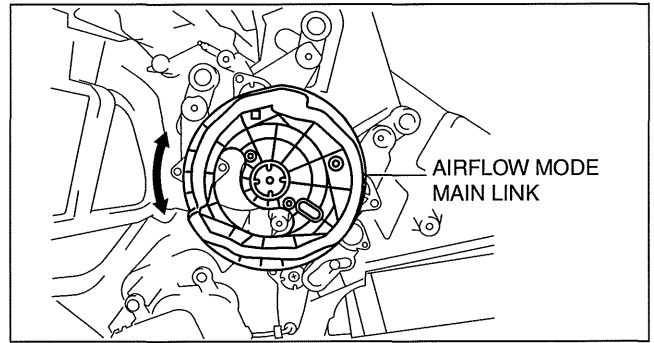


2. Set the airflow mode main link to the A/C unit as shown in the figure.
3. Press the airflow mode main link lightly to the A/C unit in the direction shown by the arrow, then set the projections of each airflow mode sub link into the grooves of the airflow mode main link.



BASIC SYSTEM

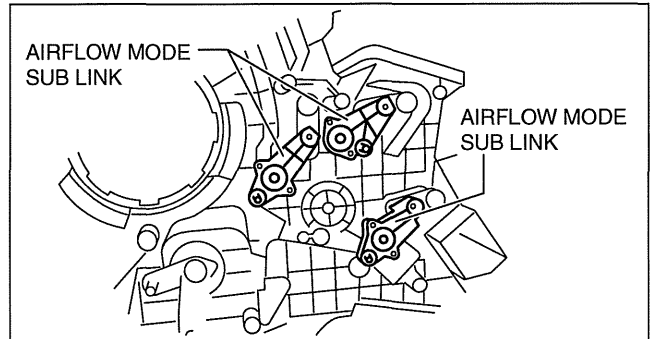
4. Rotate airflow mode main link and verify that each mode is accessed properly.



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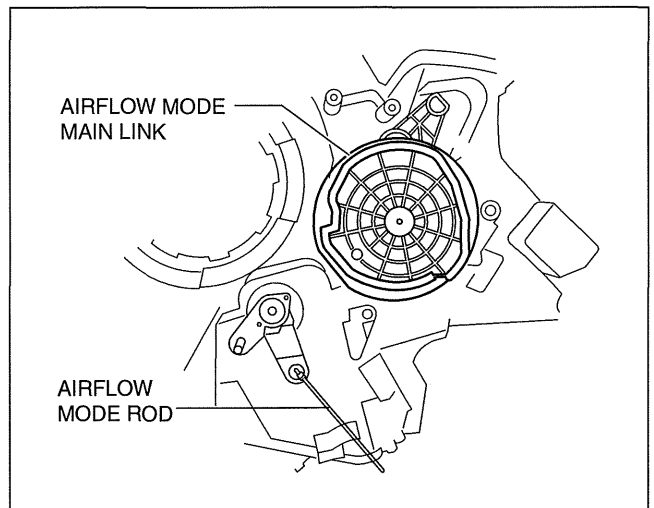
Manual air conditioner

1. Set the airflow mode sub link to the A/C unit as shown in the figure.



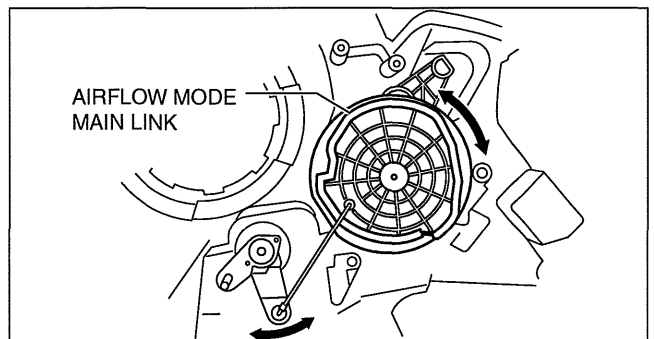
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2. Set the airflow mode main link to the A/C unit as shown in the figure.
3. Install the airflow mode rod.
4. Press the airflow mode main link lightly to the A/C unit in the direction shown by the arrow, then set the projections of each airflow mode sub link into the grooves of the airflow mode main link.



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5. Rotate airflow mode main link and verify that each mode is accessed properly.



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07-11

BASIC SYSTEM

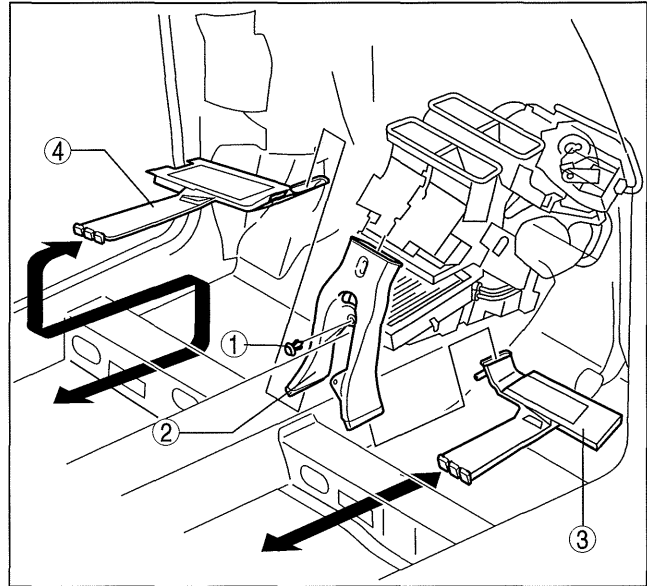
REAR HEAT DUCT REMOVAL/INSTALLATION

id071100800900

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (3) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (4) Fuel-filler lid opener lever cover (See 09-14-19 FUEL-FILLER LID OPENER AND LEVER REMOVAL/INSTALLATION.)
3. Turn the floor covering over.
4. Remove in the order indicated in the table.

1	Fastener
2	Rear heat duct (1)
3	Rear heat duct (2)
4	Rear heat duct (3)

5. Install in the reverse order of removal.



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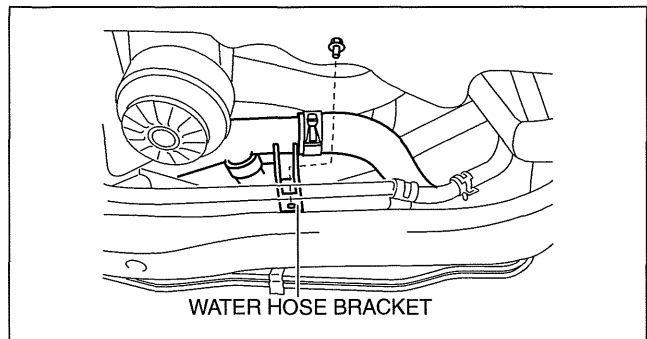
A/C COMPRESSOR REMOVAL/INSTALLATION

id071100801000

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Remove the front under cover.
4. Remove the drive belt. (See 01-10A-6 DRIVE BELT REMOVAL/INSTALLATION [LF, L5].) (See 01-10B-4 DRIVE BELT REMOVAL/INSTALLATION [L3 WITH TC].)
5. Remove the water hose bracket.

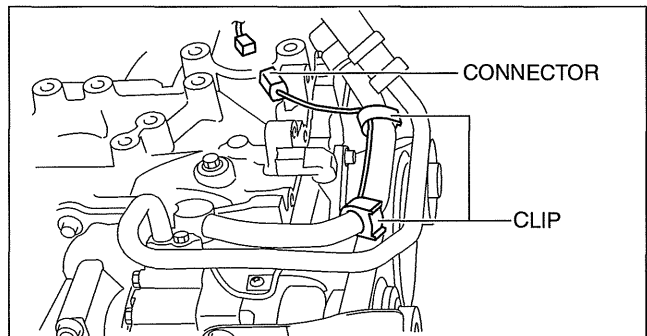
Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



am6xuw0000099

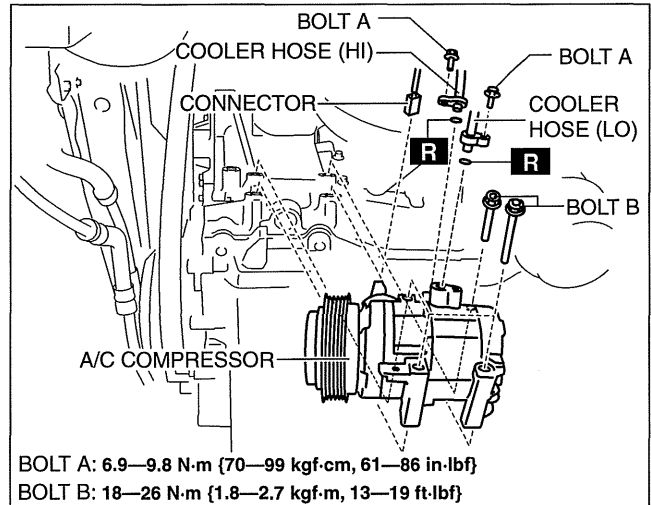
6. Remove the clip.
7. Disconnect the connector.



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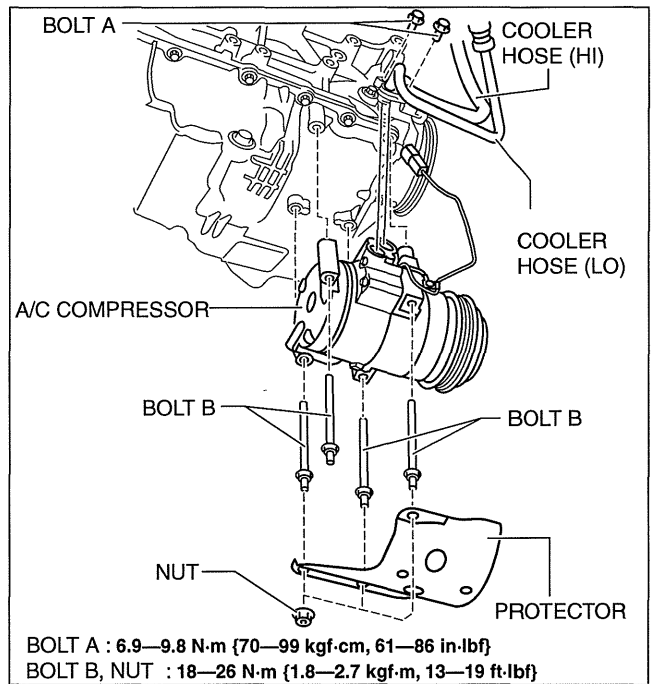
BASIC SYSTEM

8. Remove the bolt A.
L5, L3 WITH TC



am3uuw0000571

LF



am3uuw0000401

07-11

9. Remove the cooler hose (LO). (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)
10. Remove the cooler hose (HI). (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)
11. Remove the bolt B.
12. Remove the A/C compressor. Do not allow compressor oil to spill. (See 07-11-20 A/C Compressor Installation Note.)
13. Install in the reverse order of removal.
14. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

BASIC SYSTEM

A/C Compressor Installation Note

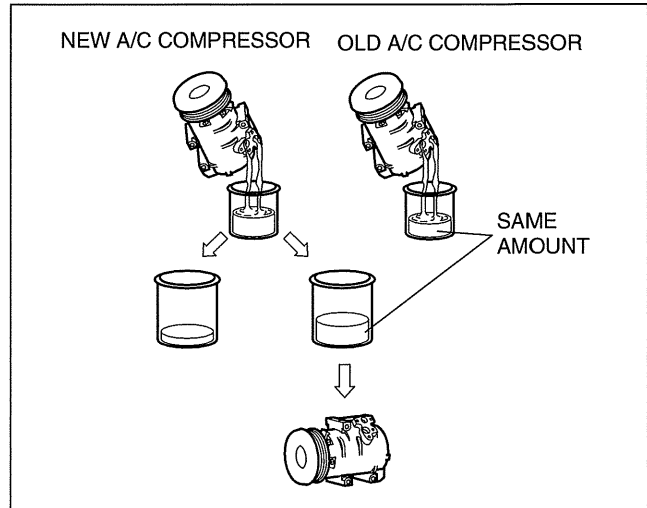
Caution

- Due to the high moisture-absorption characteristics of the compressor oil, it may absorb moisture if left over a long period of time thereby negatively affecting A/C operation. Drain the compressor oil and refill within 10 min. of each other.

1. Rotate new A/C compressor shaft six to eight revolutions while collecting refrigerant oil in a clean measuring device. Use this refrigerant oil to refill new compressor. Do not allow refrigerant oil to become contaminated.
2. Rotate old A/C compressor shaft six to eight revolutions while collecting refrigerant oil in a separate, clean measuring device.
3. Compare those oil amounts. The amount of the oil drained from the new A/C compressor should be greater than the old one.
4. Pour the same amount oil of drained from the old A/C compressor back into the new A/C compressor.

A/C compressor oil type
FD46XG

A/C compressor oil sealed volume (approx. quantity)
120 ml {120 cc, 4.06 fl oz}



am8rrw00000755

CONDENSER REMOVAL/INSTALLATION

id071100801200

1. Disconnect the negative battery cable.
2. Remove the under cover.
3. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
4. Drain the engine coolant. (See 01-12A-4 ENGINE COOLANT REPLACEMENT [LF, L5].) (See 01-12B-4 ENGINE COOLANT REPLACEMENT [L3 WITH TC].)
5. Remove the air cleaner. (See 01-13A-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-4 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [L3 WITH TC].)
6. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
7. Disconnect the radiator hose from the radiator.
8. Remove the cooling fan component. (See 01-12A-13 COOLING FAN COMPONENT REMOVAL/INSTALLATION [LF, L5].) (See 01-12B-14 COOLING FAN COMPONENT REMOVAL/INSTALLATION [L3 WITH TC].)
9. Remove the radiator. (See 01-12A-8 RADIATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-12B-8 RADIATOR REMOVAL/INSTALLATION [L3 WITH TC].)
10. Disconnect the cooler hose (HI) and cooler pipe. Do not allow remaining compressor oil in the refrigerant line to spill. (See 07-11-24 REFRIGERANT LINE REMOVAL/INSTALLATION.)

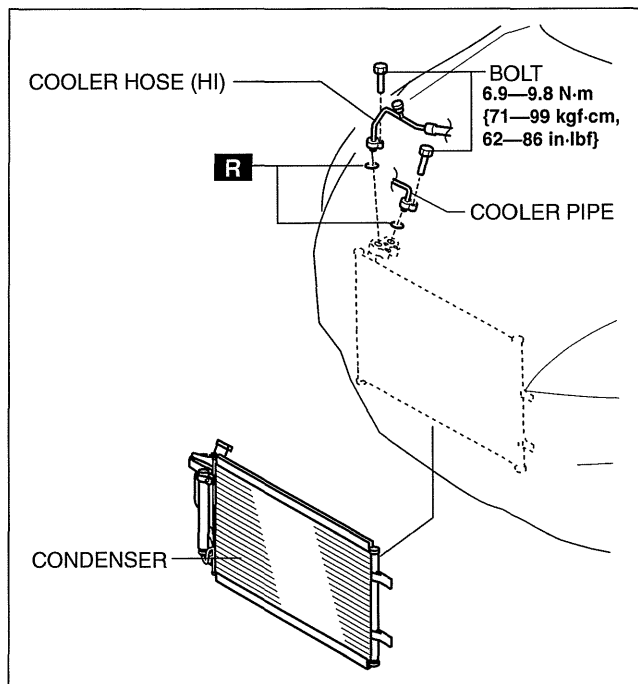
Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.

BASIC SYSTEM

11. Remove the condenser, being careful not to allow remaining compressor oil in the condenser to spill. (See 07-11-21 Condenser Installation Note.)

4SD



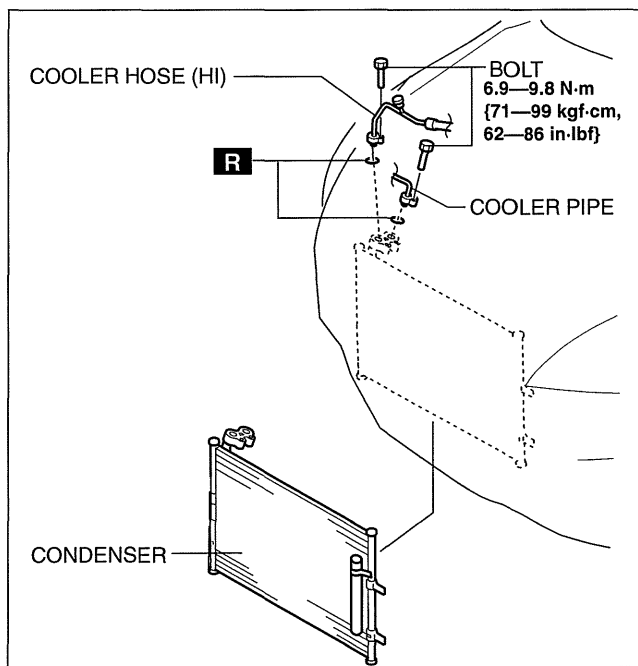
am3uuw000534

07-11

5HB

Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



am3uuw000401

12. Install in the reverse order of removal.
13. Inspect for engine coolant leakage. (See 01-12A-6 ENGINE COOLANT LEAKAGE INSPECTION [LF, L5].)
(See 01-12B-6 ENGINE COOLANT LEAKAGE INSPECTION [L3 WITH TC].)
14. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

Condenser Installation Note

1. After replacing the condenser, add compressor oil to the refrigeration cycle.

Supplemental oil amount (approx. quantity)
35 ml {35 cc, 1.12 fl oz}

BASIC SYSTEM

id071100801300

CONDENSER INSPECTION

1. Inspect the condenser for cracks, damage, and oil leakage.
 - If there is any malfunction, replace the condenser.
2. Visually inspect the fins for clogging of foreign material.
 - If any fins are clogged, remove the foreign material.
3. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten fins.

RECEIVER/DRIER REMOVAL/INSTALLATION

id071100801400

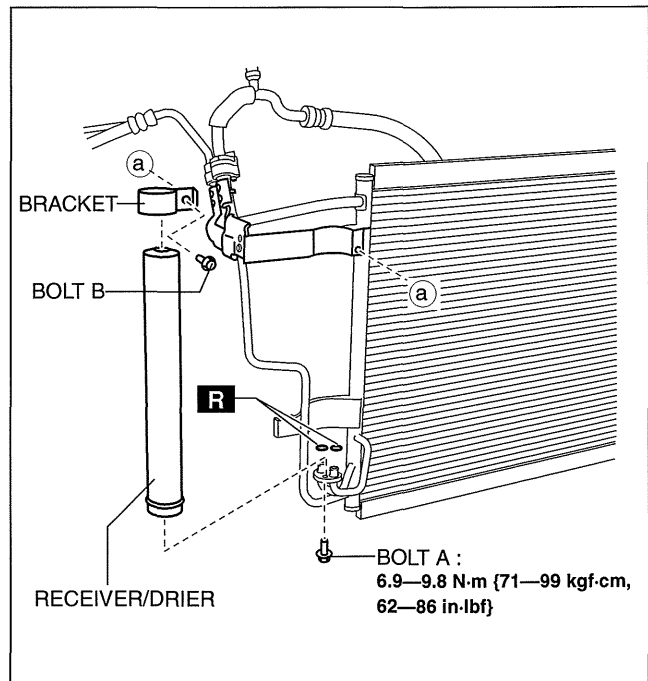
4SD

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Remove the under cover.
4. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
5. Disconnect the block joint type pipes by grasping female side of the block with hand holding firmly then loosen the connection bolt A.
6. Remove the bolt B.
7. Remove the bracket.
8. Remove the receiver/drier. Do not allow compressor oil to spill.

Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

9. Install in the reverse order of removal.
10. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

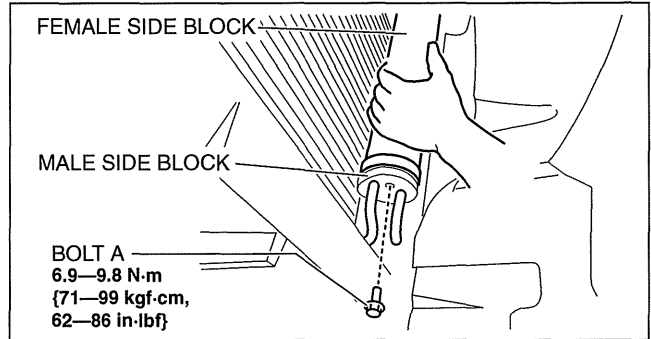


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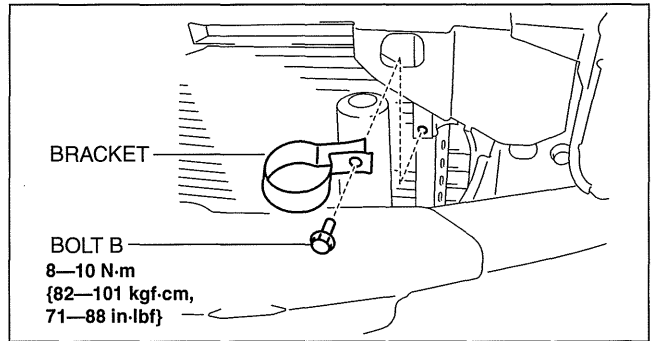
BASIC SYSTEM

5HB

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Remove the under cover.
4. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
5. Disconnect the block joint type pipes by grasping female side of the block with hand holding firmly then loosen the connection bolt A.



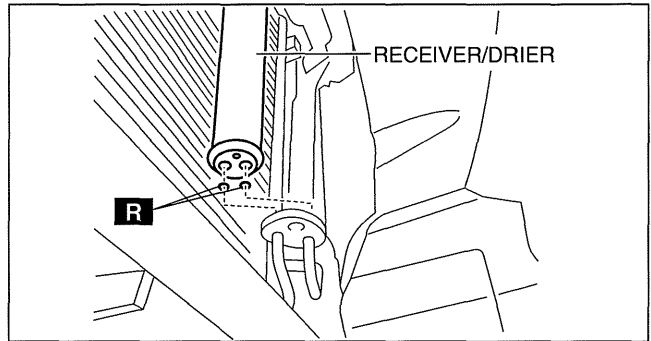
6. Remove the bolt B.
7. Remove the bracket.



8. Remove the receiver/drier. Do not allow compressor oil to spill.

Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.



9. Install in the reverse order of removal.
10. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

07-11

BASIC SYSTEM

id071100803000

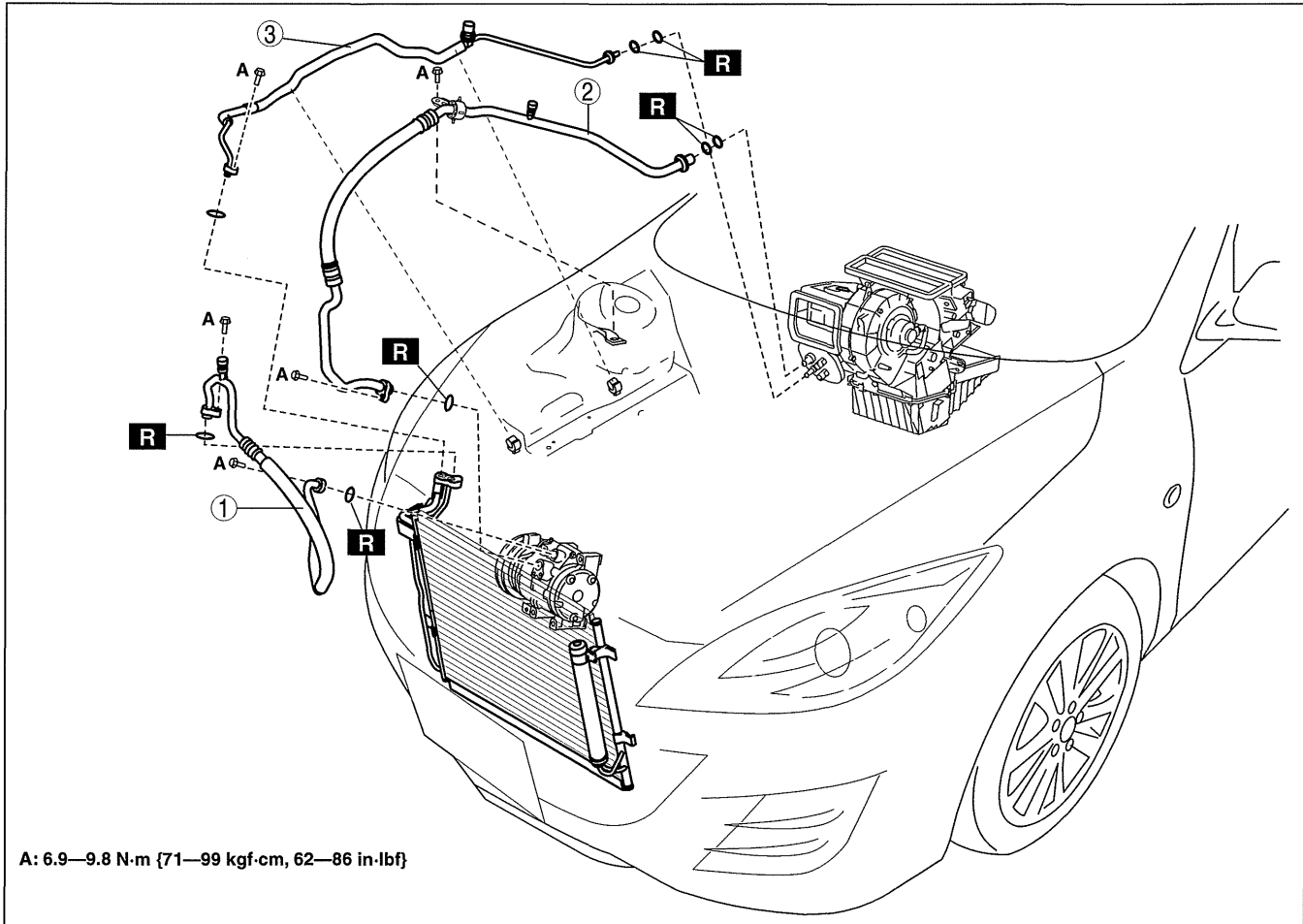
REFRIGERANT LINE REMOVAL/INSTALLATION

L5

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Remove the coolant reserve tank. (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/INSTALLATION [LF, L5].)
4. Remove the refrigerant pressure sensor connector.
5. Remove in the order indicated in the table. Do not allow compressor oil to spill.

Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.



am3uuw0000571

1	Cooler hose (HI) (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.)
2	Cooler hose (LO) (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.) (See 07-11-28 Cooler Hose (LO) Installation Note.)

3	Cooler pipe (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.) (See 07-11-28 Cooler Pipe Installation Note.)
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6. Install in the reverse order of removal.
7. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

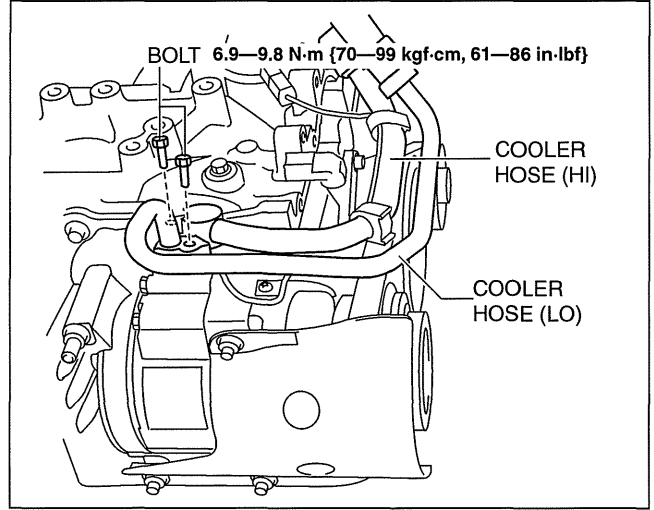
BASIC SYSTEM

LF

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Remove the bolt.
4. Remove the cooler hose (HI) and cooler hose (LO).
5. Remove the P/S fluid reserve tank.
6. Remove the coolant reserve tank. (See 01-12A-7 COOLANT RESERVE TANK REMOVAL/ INSTALLATION [LF, L5].)
7. Remove the splash shield.
8. Remove the charge air cooler cover.
9. Remove the insulator.
10. Remove in the order indicated in the table. Do not allow compressor oil to spill.

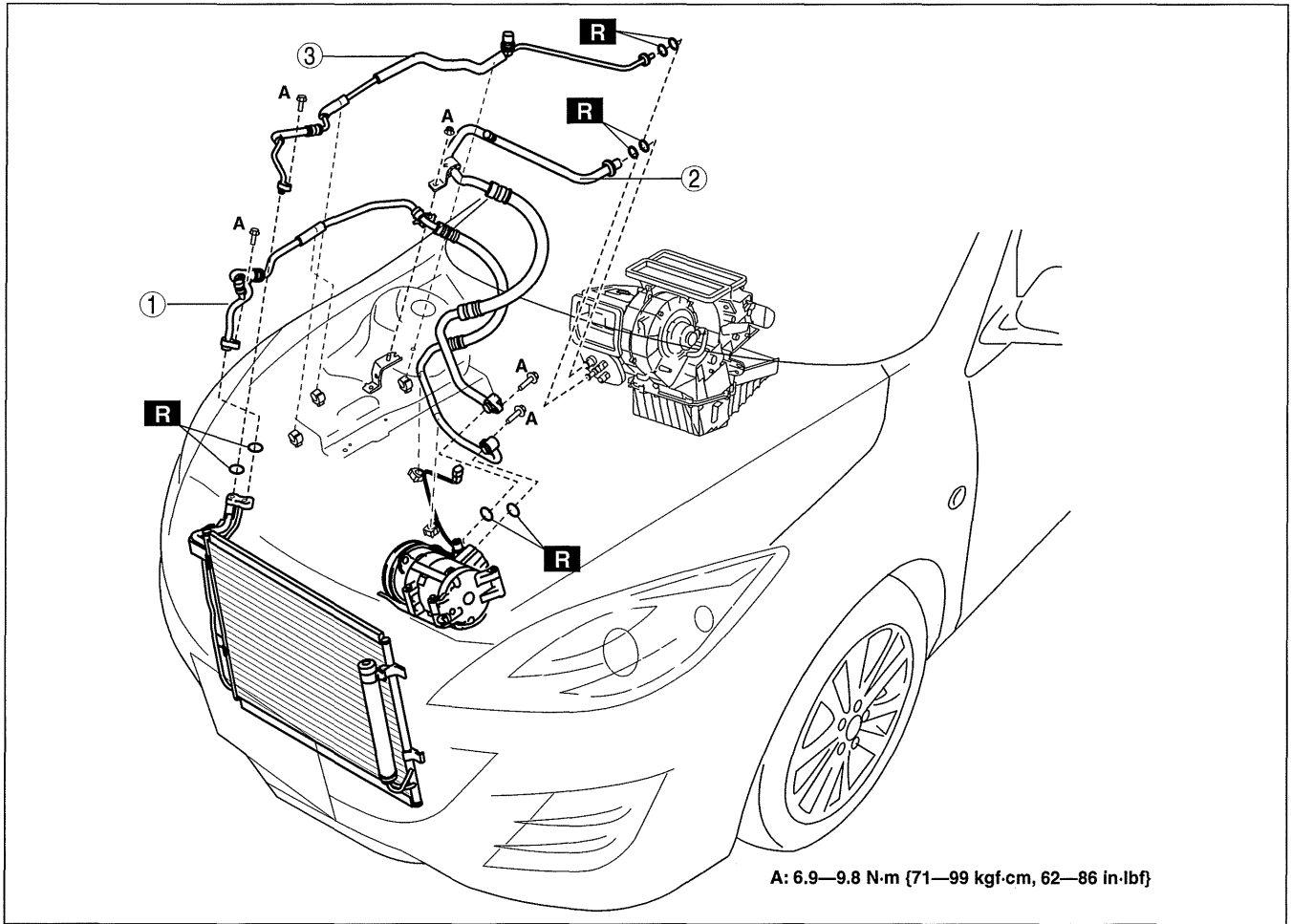
Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.



am3uuw000402

07-11



A: 6.9-9.8 N·m (71-99 kgf·cm, 62-86 in·lbf)

am3uuw000402

1	Cooler hose (HI) (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.)
2	Cooler hose (LO) (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.) (See 07-11-28 Cooler Hose (LO) Installation Note.)

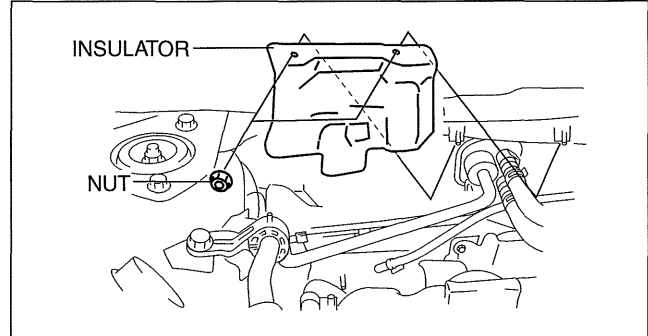
3	Cooler pipe (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.) (See 07-11-28 Cooler Pipe Installation Note.)
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BASIC SYSTEM

11. Install in the reverse order of removal.
12. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

L3 WITH TC

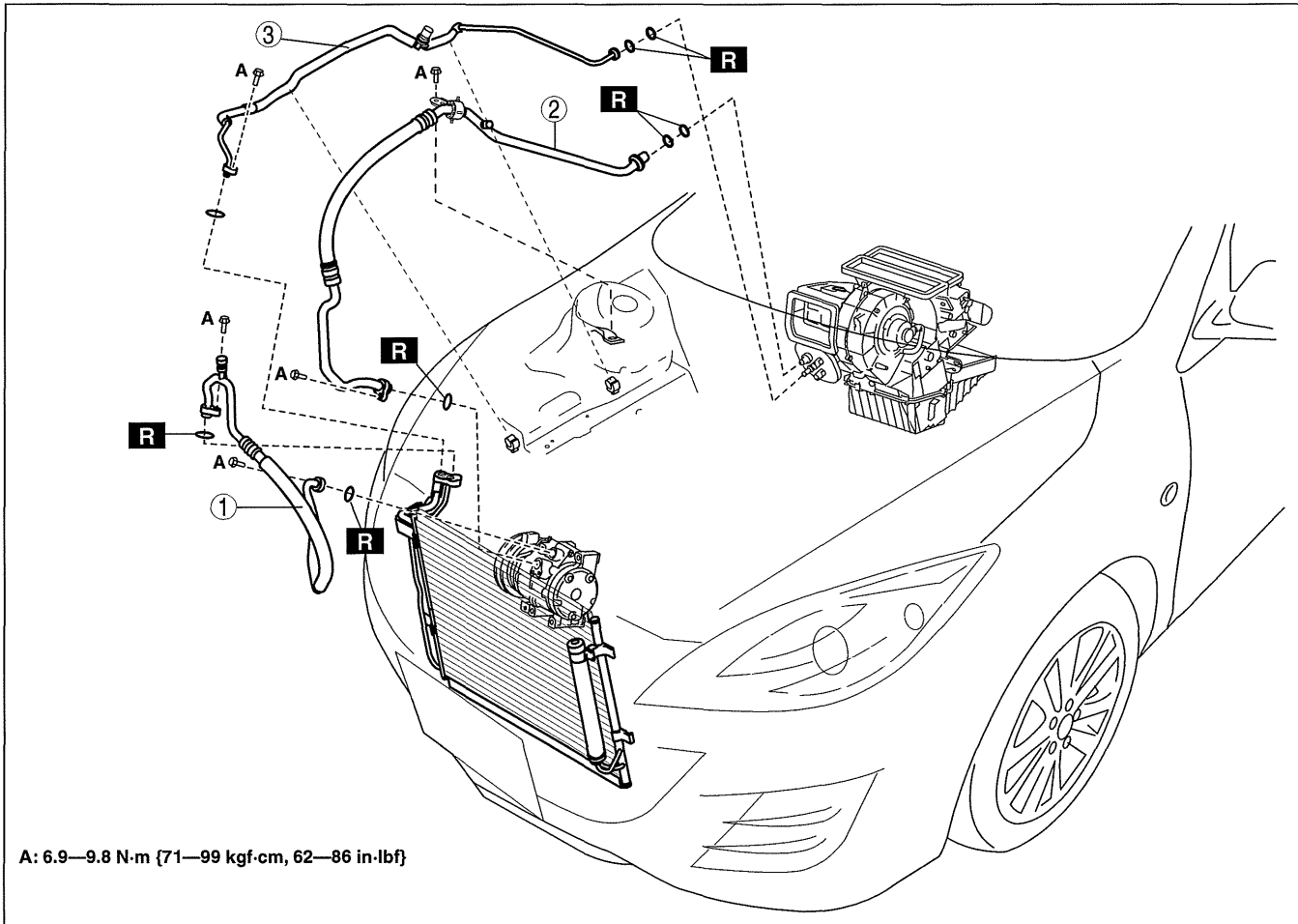
1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Remove the engine cover.
4. Remove the insulator.
5. Remove the coolant reserve tank. (See 01-12B-7 COOLANT RESERVE TANK REMOVAL/ INSTALLATION [L3 WITH TC].)
6. Remove the refrigerant pressure sensor connector.
7. Remove in the order indicated in the table. Do not allow compressor oil to spill.



am3uuw0000571

Caution

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.



am3uuw0000402

A: 6.9—9.8 N·m (71—99 kgf·cm, 62—86 in·lbf)

1	Cooler hose (HI) (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.)
2	Cooler hose (LO) (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.) (See 07-11-28 Cooler Hose (LO) Installation Note.)

3	Cooler pipe (See 07-11-27 Refrigerant Line Removal Note.) (See 07-11-28 Refrigerant Line Installation Note.) (See 07-11-28 Cooler Pipe Installation Note.)
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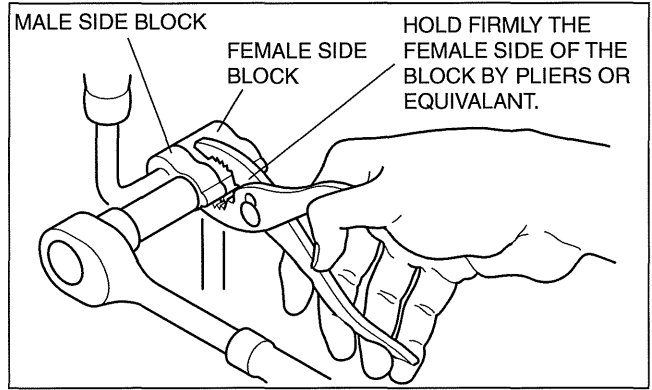
BASIC SYSTEM

8. Install in the reverse order of removal.
9. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)

Refrigerant Line Removal Note

Block joint type

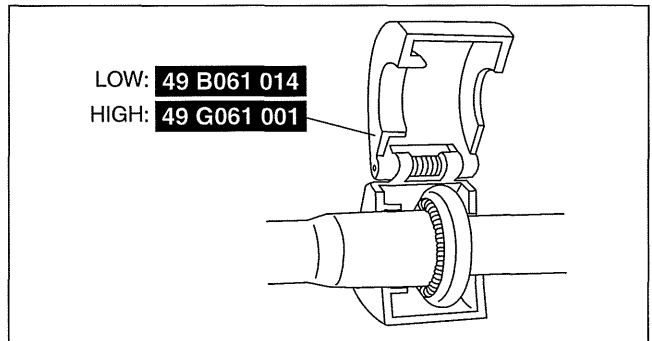
1. Disconnect the block joint type pipes by grasping female side of the block with pliers or similar tool and holding firmly, then remove the connection bolt or nut.



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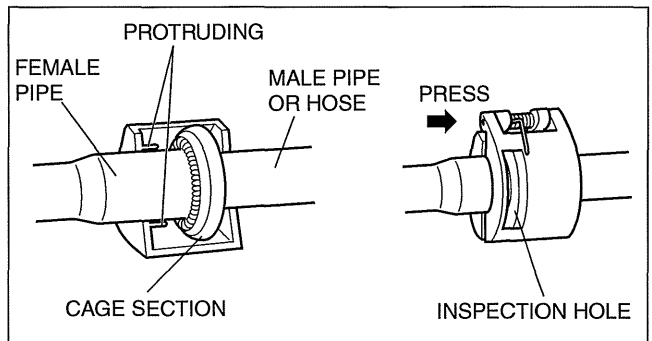
Spring-lock coupling type

1. Set the SST.



am3zzw000072

2. While looking through the inspection hole of the SST, insert the protruding part of the SST until it makes contact with the cage section.

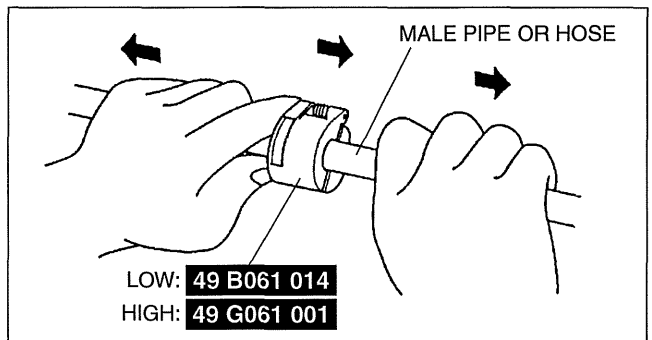


am3zzw000072

3. Use the SST to disconnect the male pipe or hose from the female by pulling the male pipe or hose.

Note

- The male pipe or hose can be disconnected easily from the female pipe by pulling from the male pipe or hose while maintaining the pressure of the protruding part of the SST.



am3uuw000061

07-11

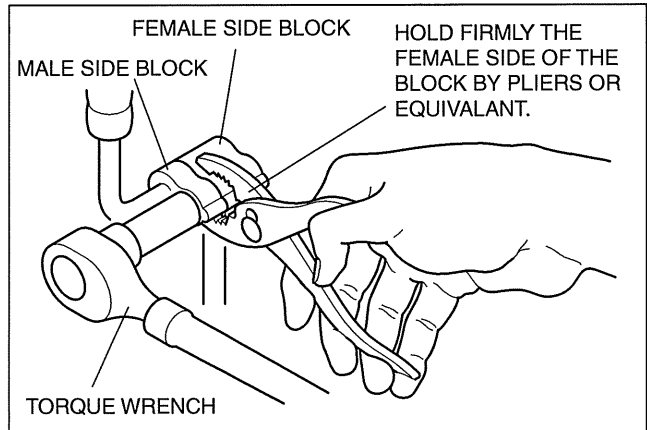
BASIC SYSTEM

Refrigerant Line Installation Note

1. Apply compressor oil to the O-rings and connect the joints.
2. Tighten the joints.

Block joint type

1. Tighten the bolt of joint by hand.
2. Connect the block joint type pipes by grasping the female side of the block with pliers or similar tool and holding firmly, then tighten the connection bolt or nut with a torque wrench.



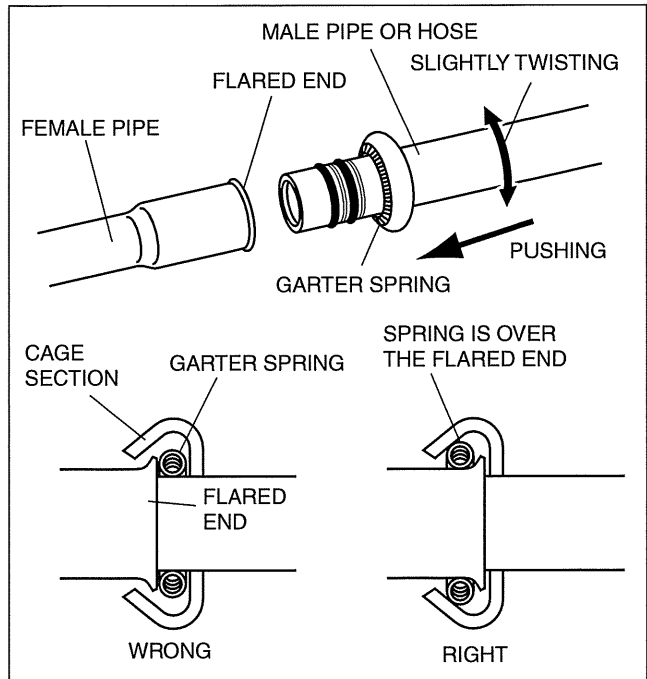
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Spring-lock coupling type

1. Connect the male pipe or hose by twisting it onto female pipe until the garter spring at the male pipe or hose is over the flared end of female pipe.

Note

- When the male pipe or hose is replaced, the indicator ring comes out after connecting to indicate that it is locked.



am3uuw000062

Cooler Hose (LO) Installation Note

1. After replacing the cooler hose (LO), add compressor oil to the refrigeration cycle.

Supplemental oil amount (approx. quantity)

10 ml {10 cc, 0.32 fl oz}

Cooler Pipe Installation Note

1. After replacing the cooler pipe, add compressor oil to the refrigeration cycle.

Supplemental oil amount (approx. quantity)

5 ml {5 cc, 0.16 fl oz}

07-40A CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

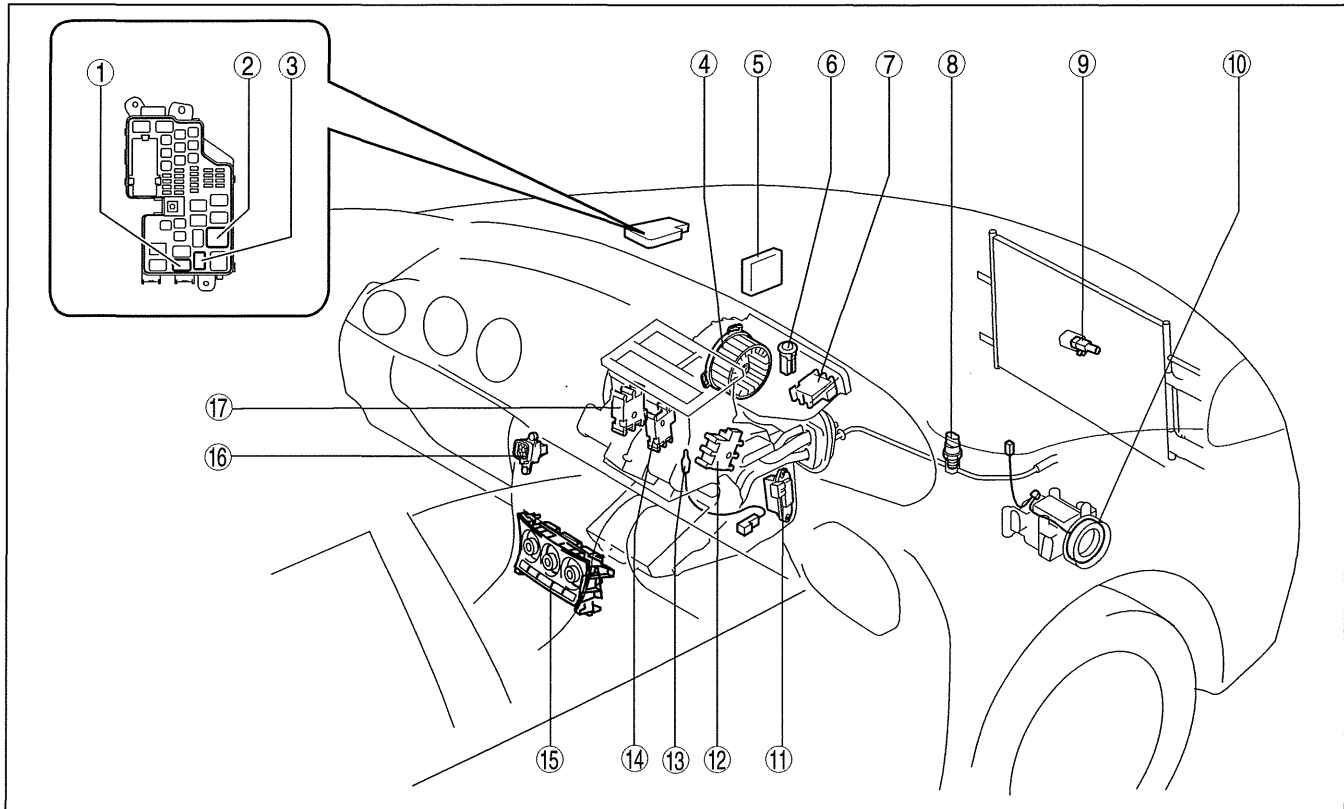
HVAC CONTROL SYSTEM	
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SEMICONDUCTOR FIELD EFFECT	
TRANSISTOR (POWER MOS FET)	
INSPECTION	
[FULL-AUTO AIR CONDITIONER]	07-40A-16
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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

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id0740a1803600



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1	Rear window defroster relay (See 09-21-16 RELAY LOCATION.) (See 09-21-17 RELAY INSPECTION.)
2	Blower relay (See 09-21-16 RELAY LOCATION.) (See 09-21-17 RELAY INSPECTION.)
3	A/C relay (See 09-21-16 RELAY LOCATION.) (See 09-21-17 RELAY INSPECTION.)
4	Blower motor (See 07-40A-9 BLOWER MOTOR REMOVAL [FULL-AUTO AIR CONDITIONER].) (See 07-40A-13 BLOWER MOTOR INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-15 BLOWER MOTOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
5	PCM (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40A-22 PCM CONFIGURATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) (See 01-40B-23 PCM CONFIGURATION [L3 WITH TC].)
6	Solar radiation sensor (See 07-40A-20 SOLAR RADIATION SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-22 SOLAR RADIATION SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)

7	Air intake actuator (See 07-40A-3 AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-4 AIR INTAKE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
8	Refrigerant pressure sensor (See 07-40A-24 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
9	Ambient temperature sensor (See 07-40A-22 AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-22 AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
10	Magnetic clutch (See 07-40A-16 MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [FULL-AUTO AIR CONDITIONER].) (See 07-40A-19 MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].) (See 07-40A-20 MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER].)
11	Power MOS FET (See 07-40A-16 POWER METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR (POWER MOS FET) REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-16 POWER METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR (POWER MOS FET) INSPECTION [FULL-AUTO AIR CONDITIONER].)

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

12	Passenger-side air mix actuator (See 07-40A-4 AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-5 AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
13	Evaporator temperature sensor (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-24 EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
14	Driver-side air mix actuator (See 07-40A-4 AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-5 AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)

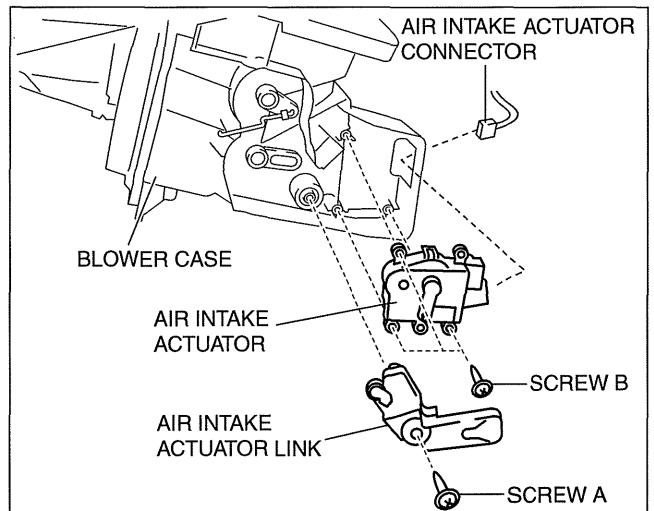
15	Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)
16	Passenger compartment temperature sensor (See 07-40A-23 PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-23 PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
17	Airflow mode actuator (See 07-40A-7 AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40A-8 AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)

AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

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07-40A

1. Set the air intake mode to FRESH.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Front scuff plate (Passenger side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Passenger side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Lower panel (Passenger side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) Shower duct (Passenger side) (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
4. Disconnect the harness clip from the blower case.
5. Disconnect the air intake actuator connector.
6. Remove the blower case. (See 07-40A-9 BLOWER MOTOR REMOVAL [FULL-AUTO AIR CONDITIONER].) (See 07-40A-13 BLOWER MOTOR INSTALLATION [FULL-AUTO AIR CONDITIONER].)
7. Remove the screw A.
8. Remove the air intake actuator link.
9. Remove the screw B.
10. Remove the air intake actuator.
11. Install in the reverse order of removal.



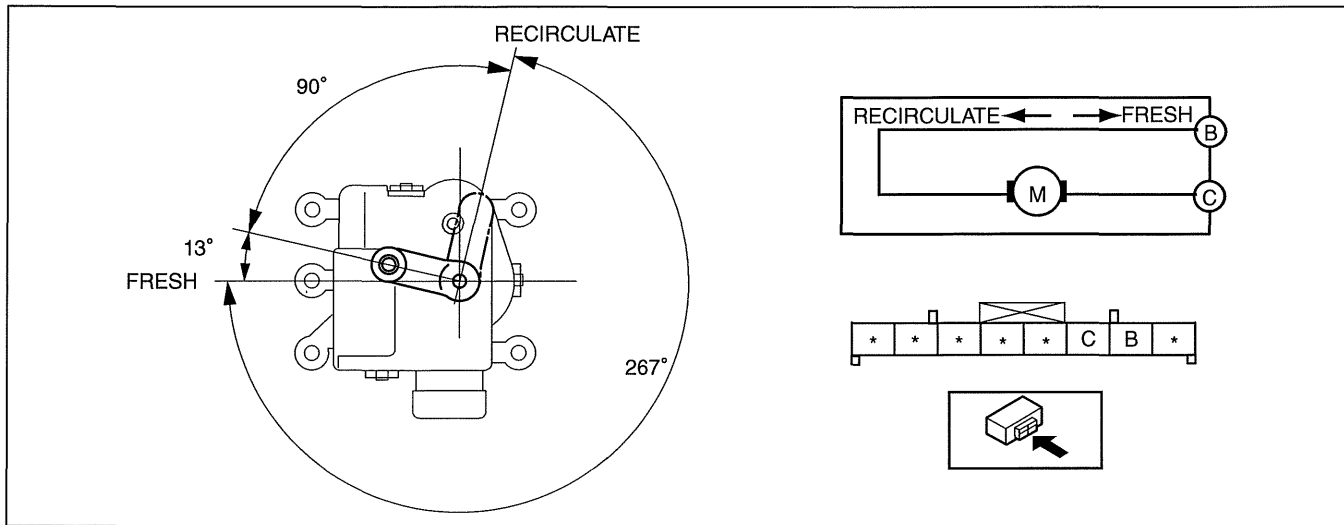
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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

AIR INTAKE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1801500

1. Connect battery positive voltage to air intake actuator terminal B (or C), connect terminal C (or B) to ground, and then verify that the air intake actuator operates as shown in the table.
 - If the operation condition is not normal, replace the air intake actuator.



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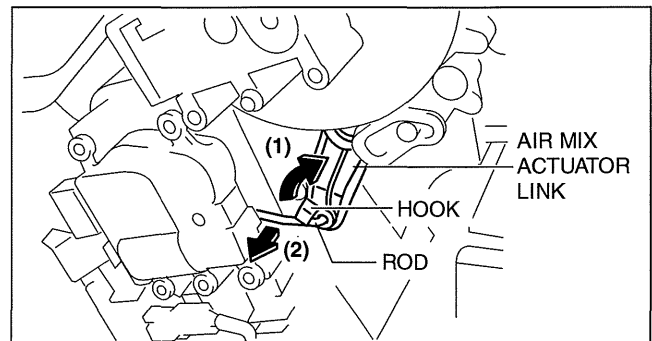
Terminal		Air intake actuator operation
B	C	
B+	Ground	FRESH → RECIRCULATE
Ground	B+	RECIRCULATE → FRESH

AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1802400

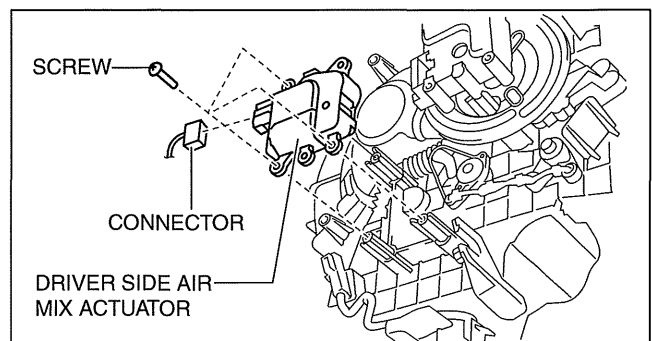
Driver Side

1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Remove the hook (1), remove the rod (2) from the air mix actuator link.



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4. Remove the screw.
5. Remove the driver side air mix actuator.
6. Install in the reverse order of removal.

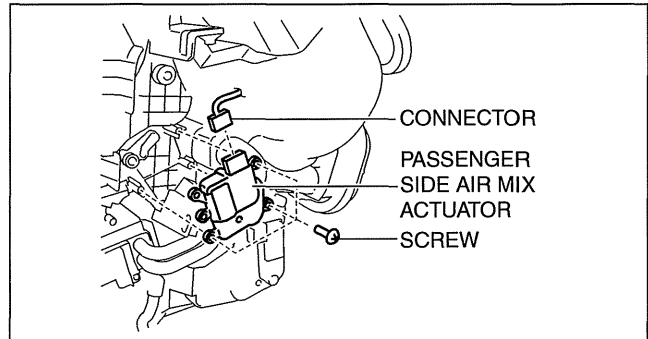


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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

Passenger Side

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (Passenger side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Passenger side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Lower panel (Passenger side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) Shower duct (Passenger side) (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the screw.
5. Remove the passenger side air mix actuator.
6. Install in the reverse order of removal.



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AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER]

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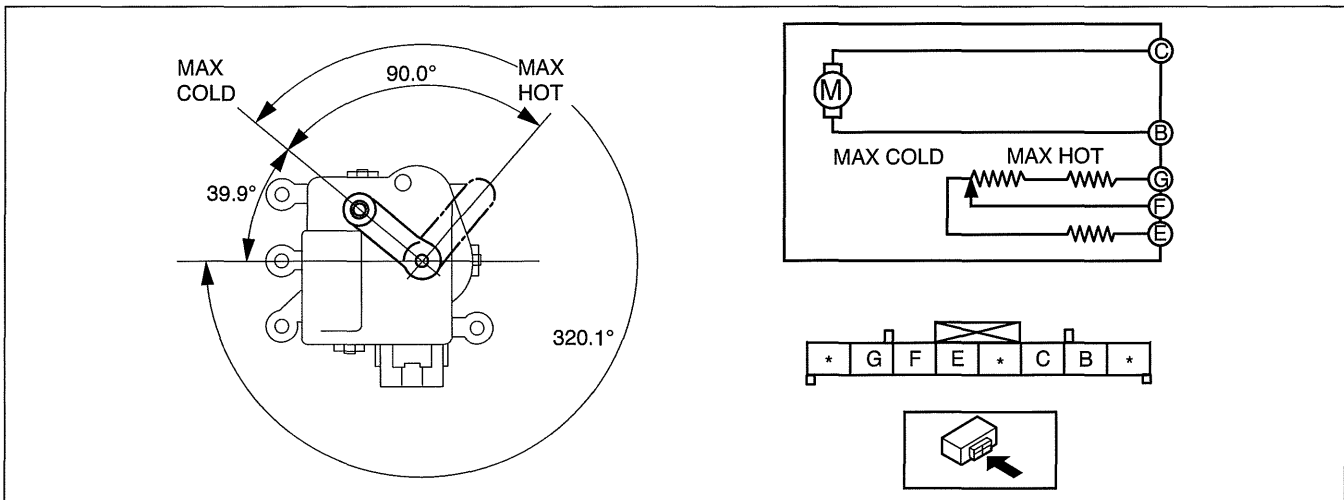
07-40A

Caution

- If the lever position exceeds the operation range shown in the figure, the circuit in the actuator could be damaged. Always perform an actuator operation inspection with the lever movement within the range shown in the figure.

Driver Side

1. Connect battery positive voltage to air mix actuator terminal C (or B), connect terminal B (or C) to ground, and then verify that the air mix actuator operates as shown in the table.
 - If the operation condition is not normal, replace the air mix actuator.

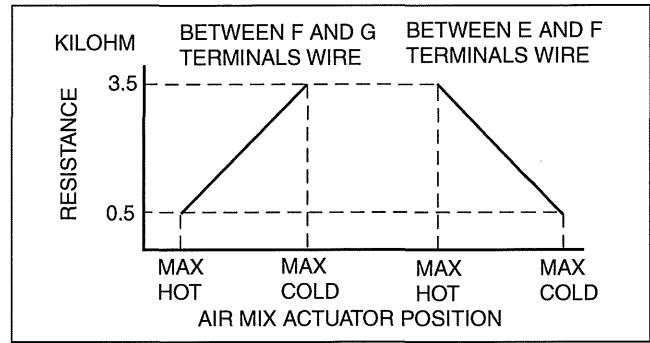


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Terminal		Air mix actuator operation
B	C	
B+	Ground	COLD → HOT
Ground	B+	HOT → COLD

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

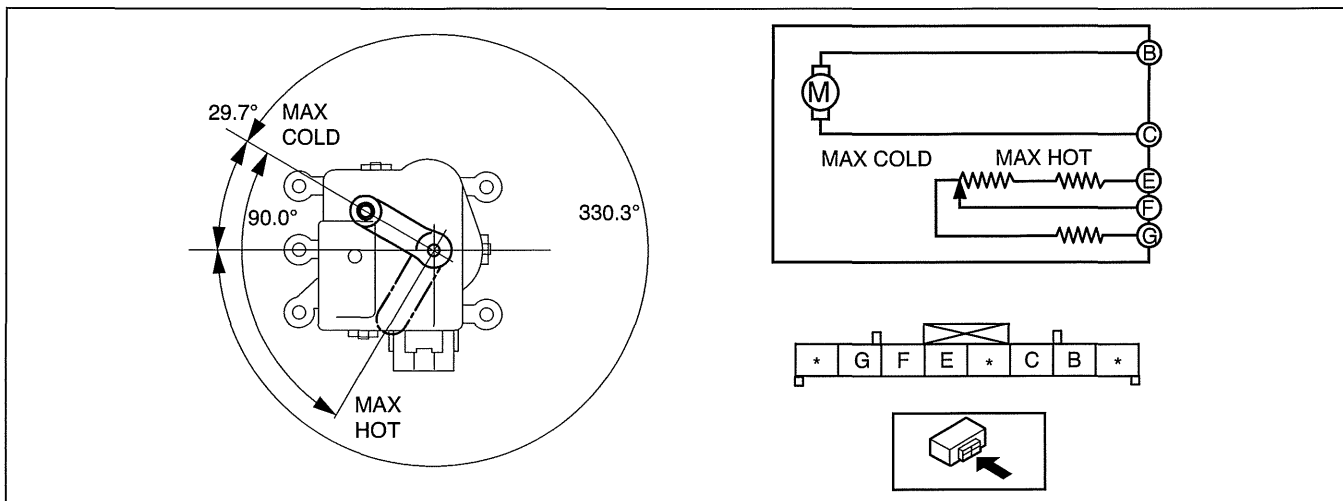
2. Verify that the resistance between terminals F and G, E and F matches the air mix actuator operation as shown in the graph.
 - If the operation condition and resistance are not normal, replace the the air mix actuator.



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Passenger Side

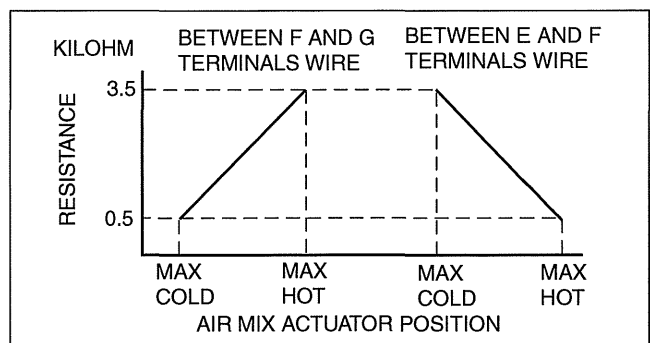
1. Connect battery positive voltage to air mix actuator terminal C (or B), connect terminal B (or C) to ground, and then verify that the air mix actuator operates as shown in the table.
 - If the operation condition is not normal, replace the air mix actuator.



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Terminal		Air mix actuator operation
B	C	
B+	Ground	HOT → COLD
Ground	B+	COLD → HOT

2. Verify that the resistance between terminals F and G, E and F matches the air mix actuator operation as shown in the graph.
 - If the operation condition and resistance are not normal, replace the air mix actuator.



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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

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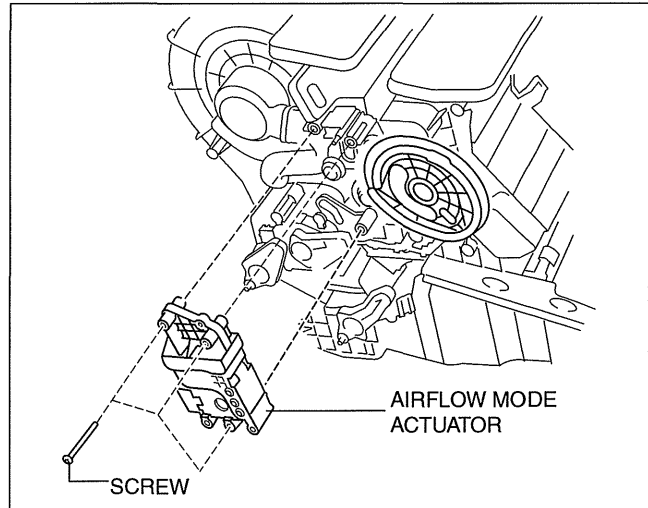
07-40A

1. Set the air intake mode to FRESH.
2. Set the air mix mode to MAX COLD.
3. Disconnect the negative battery cable.
4. Remove the following parts:
 - (1) Front doors (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (4) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (5) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (6) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (7) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (8) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (9) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (10) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (11) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (12) Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (13) Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (14) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (15) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (16) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
 - (17) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
 - (18) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (19) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (20) Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
 - (21) Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (22) Steering shaft (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (23) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (24) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (25) Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
 - (26) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (27) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (28) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (29) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
 - (30) Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
 - (31) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (32) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (33) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (34) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (35) Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
 - (36) Rear heat duct (1) (See 07-11-18 REAR HEAT DUCT REMOVAL/INSTALLATION.)
 - (37) Shower ducts (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION)
 - (38) Heater case (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION)
5. Remove the nuts and bolts for installing the dashboard to the body.
6. Remove the nuts and bolts for installing the A/C unit to the dashboard.
7. Remove the accelerator pedal. (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
8. Disconnect the following connectors:
 - Blower motor connector
 - Power MOS FET connector
 - Evaporator temperature sensor connector
 - Air intake actuator connector
 - Air mix actuator connector

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

— Airflow mode actuator connector

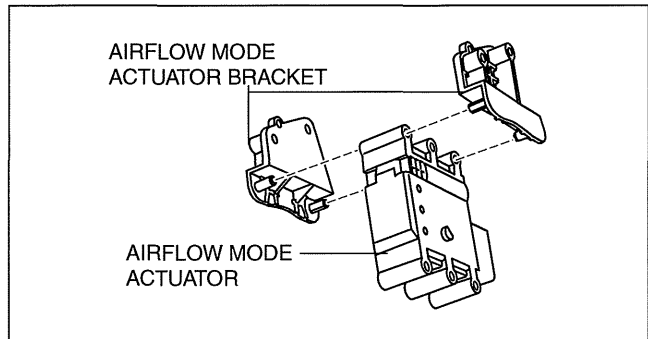
9. Remove the dashboard. (See 09-17-5 DASHBOARD REMOVAL/INSTALLATION.)
10. Remove the airflow mode rod from the airflow mode actuator.
11. Remove the screw.
12. Remove the airflow mode actuator. (See 07-40A-8 Airflow Mode Actuator Disassemble Note.)
13. Install in the reverse order of removal.



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Airflow Mode Actuator Disassemble Note

1. Remove the airflow mode actuator bracket as shown in the figure.



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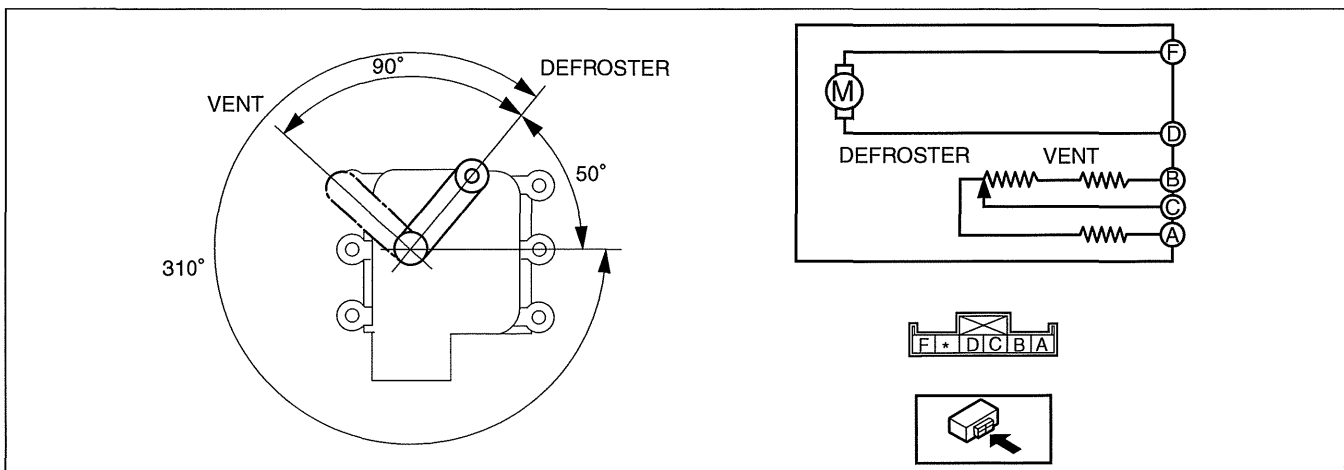
AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER]

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Caution

- If the lever position exceeds the operation range shown in the figure, the circuit in the actuator could be damaged. Always perform an actuator operation inspection with the lever movement within the range shown in the figure.

1. Connect battery positive voltage to airflow mode actuator terminal D (or F), connect terminal F (or D) to ground, and then verify that the airflow mode actuator operates as shown in the table.
 - If the operation condition is not normal, replace the airflow mode actuator.

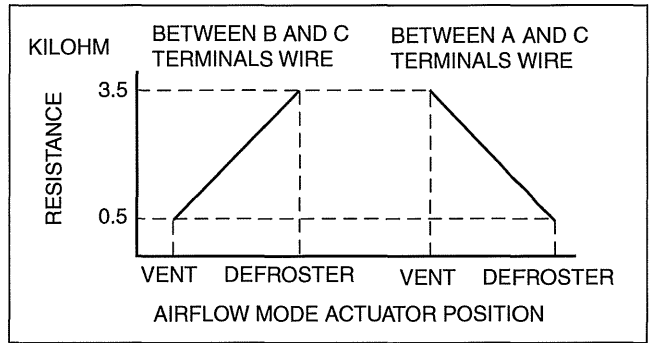


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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

Terminal		Airflow mode actuator operation
D	F	
B+	Ground	DEFROSTER → VENT
Ground	B+	VENT → DEFROSTER

2. Verify that the resistance between terminals B and C, C and A matches the airflow mode actuator operation as shown in the graph.
- If the operation condition and resistance are not normal, replace the airflow mode actuator.



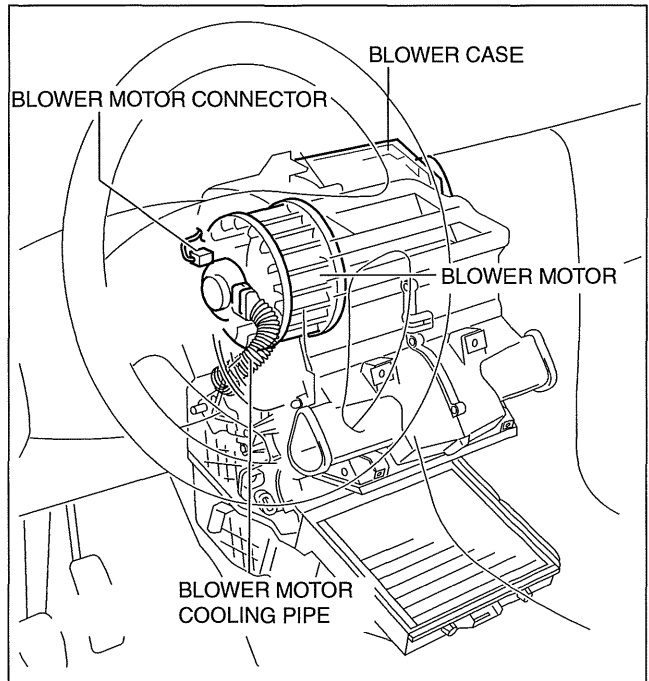
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BLOWER MOTOR REMOVAL [FULL-AUTO AIR CONDITIONER]

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Note

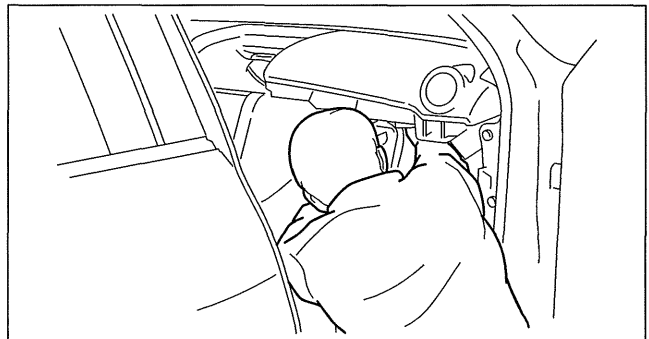
- The blower motor is located on the A/C unit as shown in the figure.



07-40A

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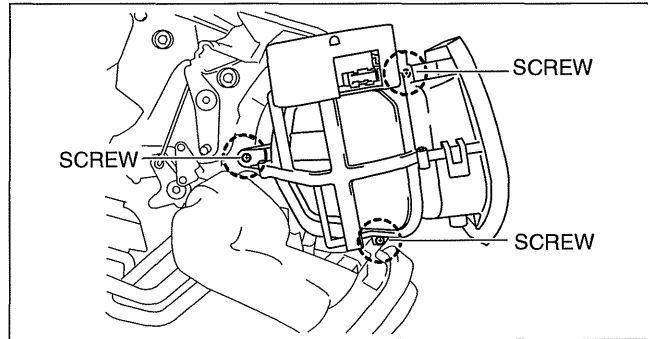
- Perform the work from the front passenger side in the posture shown in the figure.



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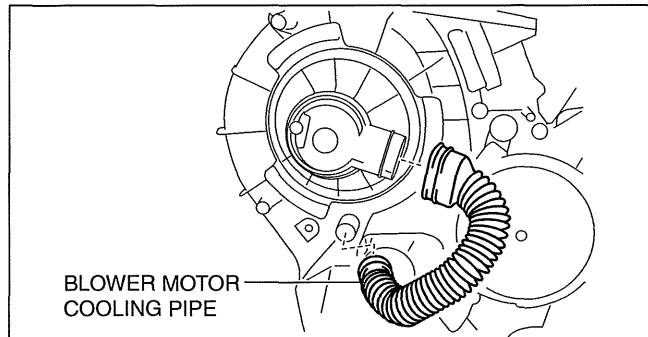
CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

1. Set the air intake mode to FRESH.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (9) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (10)Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (11)Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (12)Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (13)Shower duct (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
 - (14)Accelerator pedal (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the air intake actuator connector. (See 07-40B-3 AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
5. Detach the harness clip from the blower case.
6. Remove the screws shown in the figure and slide the blower case.
7. Remove the blower case.



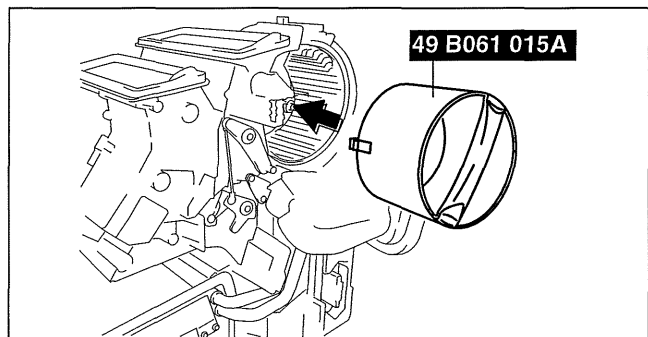
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8. Disconnect the blower motor cooling pipe.



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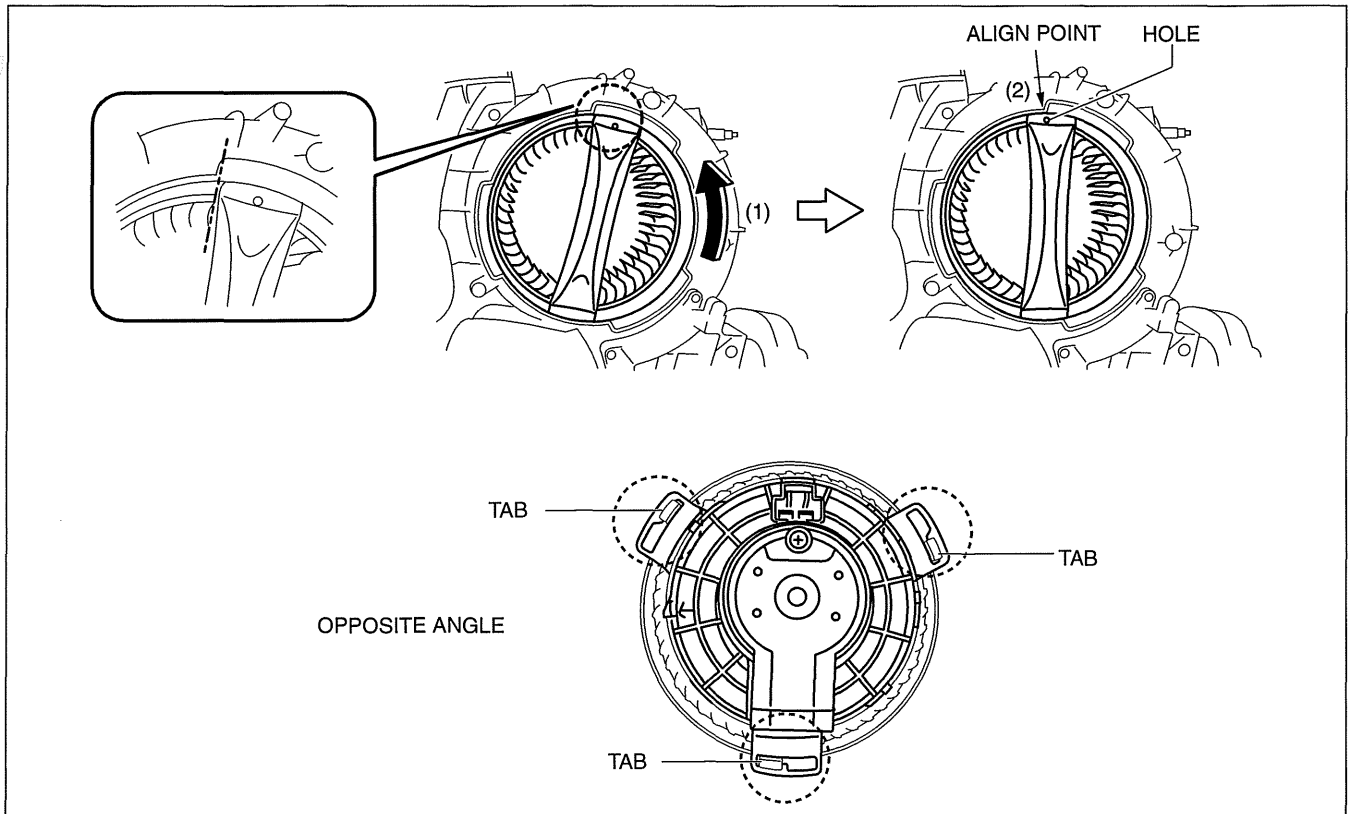
9. Install the **SST (49 B061 015A)** to the blower motor.



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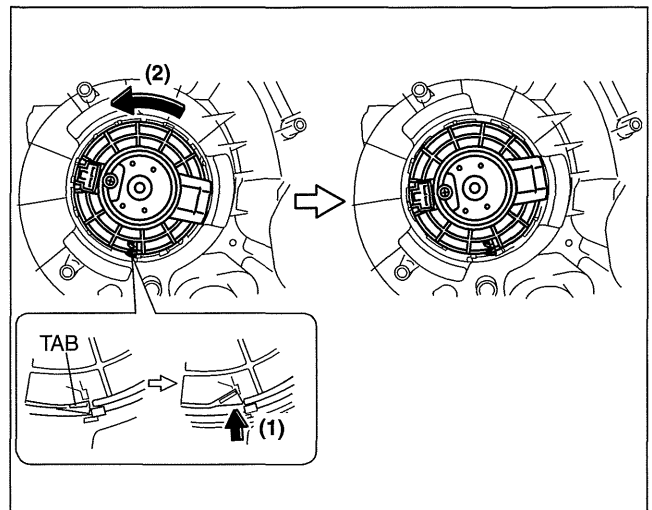
CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

- (1) Rotate the **SST** (1) and align the **SST** hole with the align point (2) and then confirm that the **SST** tabs into the three set holes on the blower motor they are inserted as shown in the figure.



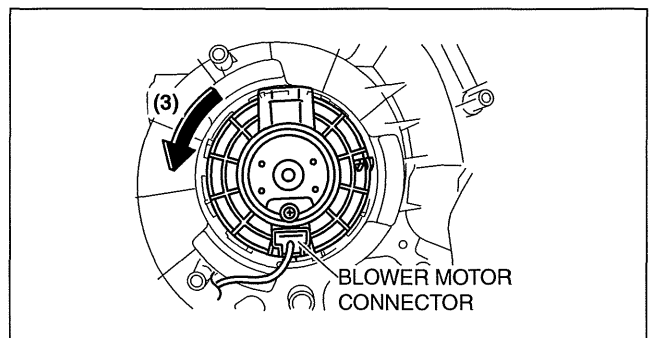
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10. Press the tab (1) and rotate the blower motor (2) and push the blower motor into the A/C case slightly.



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11. Rotate the blower motor and the blower motor connector position as shown in the figure (3) for disconnect the blower motor connector eased.

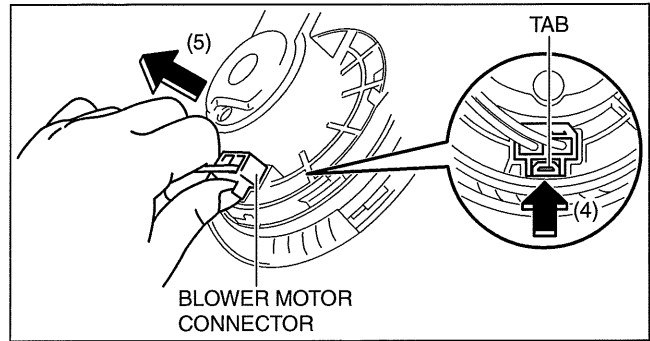


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07-40A

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

12. Press the tab (4) disconnect the blower motor connector as shown in the figure (5).

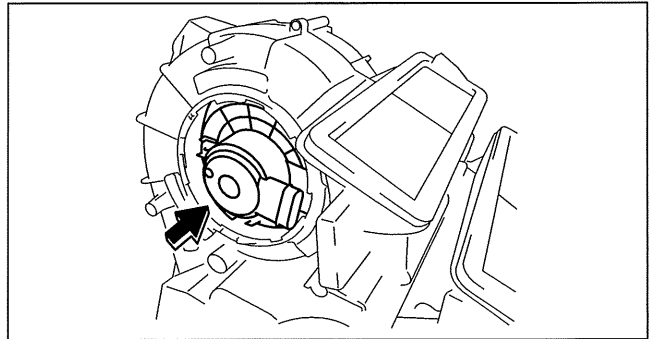


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13. Remove the blower motor in the direction shown by the arrow.

Caution

- To prevent damage to the sirocco fan, pull the blower motor out being careful that the blower motor does not interfere with the A/C unit.

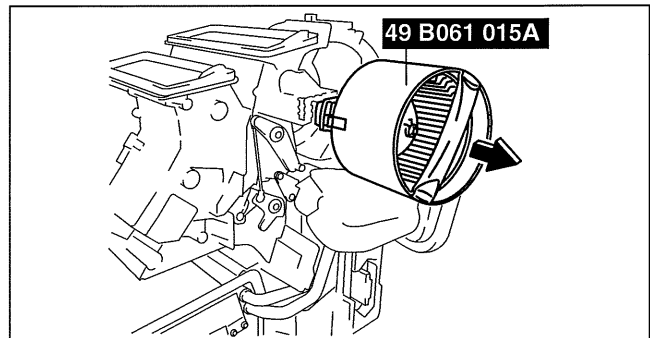


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14. Remove the blower motor with SST (49 B061 015A) by pulling it out.

Caution

- To prevent damage to the sirocco fan, pull the blower motor out being careful that the blower motor does not interfere with the A/C unit.



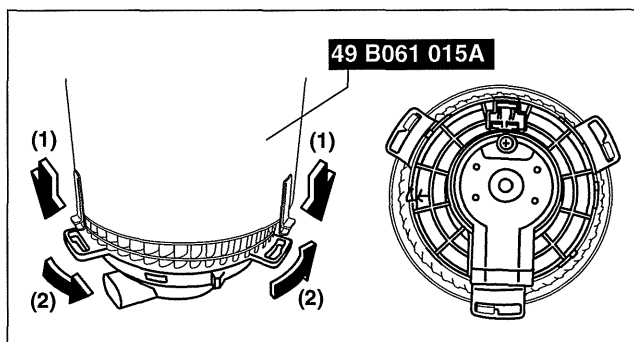
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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

BLOWER MOTOR INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1807200

1. Install the SST (49 B061 015A) to the blower motor.

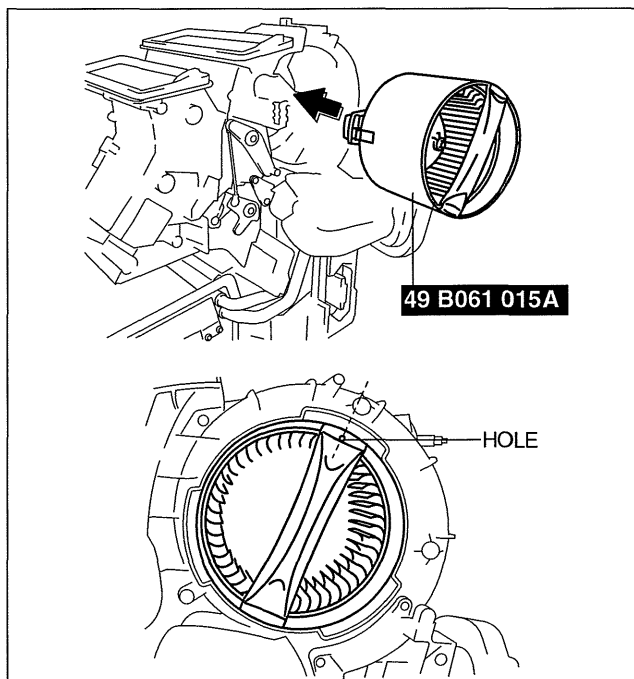


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2. Install the blower motor with the SST (49 B061 015A) installed, to the A/C unit.

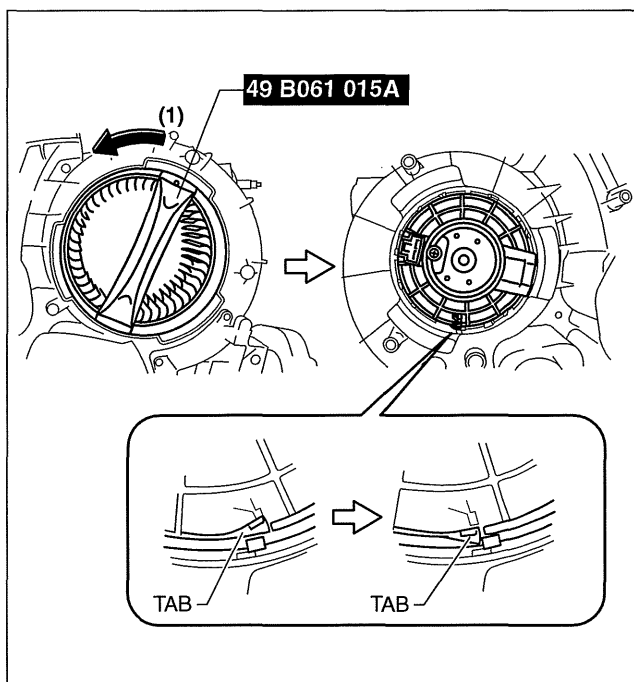
Caution

- To prevent damage to the sirocco fan, install the blower motor being careful that the blower motor does not interfere with the A/C unit. Also, another person must hold the blower motor at the installation position.



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3. Rotate the SST (49 B061 015A) until to the blower motor tab locked.

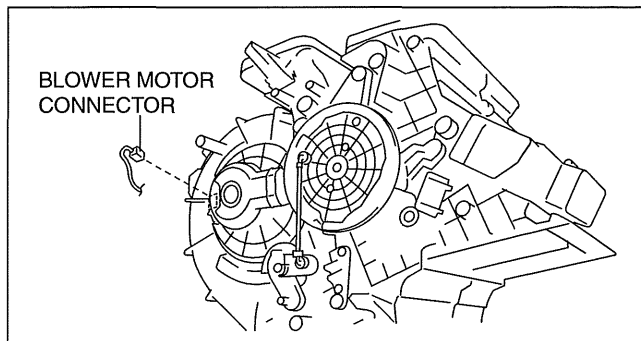


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07-40A

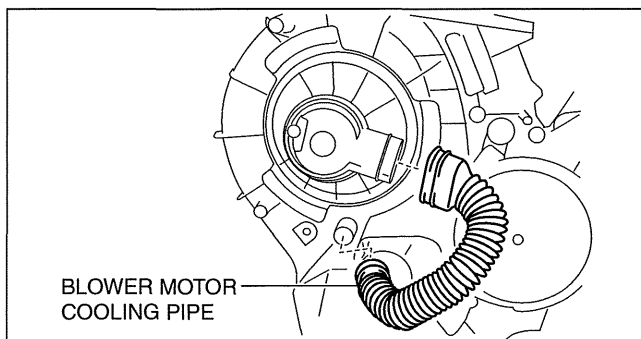
CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

4. Connect the blower motor connector as shown in the figure.



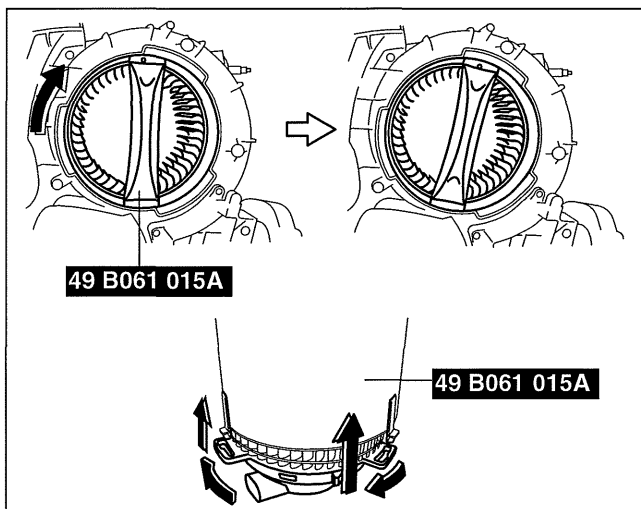
am3uuw0000406

5. Connect the blower motor cooling pipe.



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6. Rotate the **SST (49 B061 015A)** in the direction shown by the arrow.

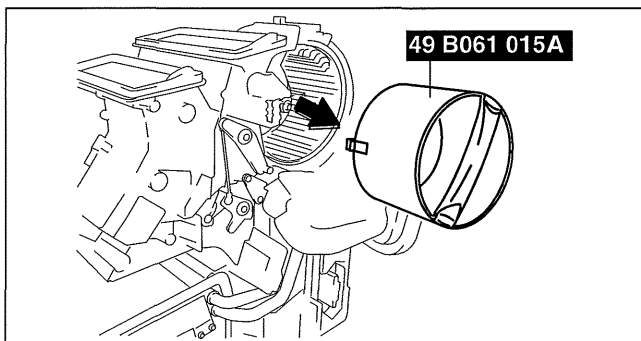


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7. Remove the **SST (49 B061 015A)** from the blower motor.
8. Install the blower case.

Caution

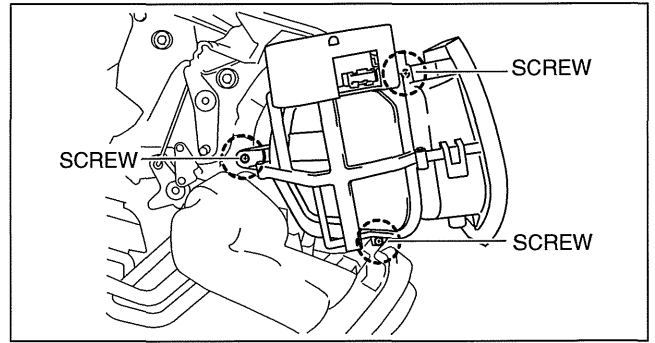
- Install the blower case while pressing the dashboard insulator, otherwise the blower case could be damaged.



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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

9. Install the screws shown in the figure.
10. Install the harness clip to the blower case.
11. Connect the air intake actuator connector.
12. Install the following parts:
 - (1) Accelerator pedal (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Shower duct (Passenger side) (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
 - (3) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (4) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (5) Dashboard under cover (Passenger side) (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (6) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (9) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (10) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (11) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (12) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)



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07-40A

Blower Case Installation Note

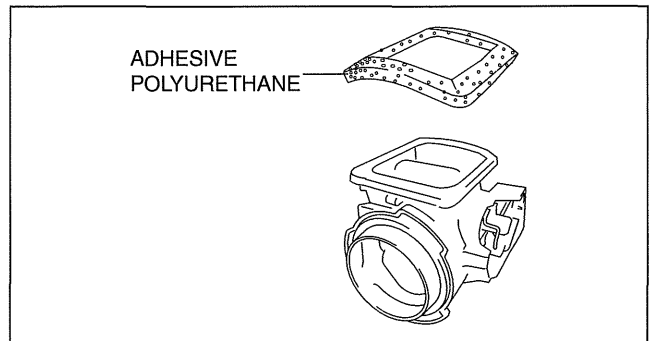
1. If not replacing the blower case, replace the adhesive polyurethane on the fresh-air inlet of the blower case.

Caution

- To adhere new polyurethane properly, be sure to remove the adhesive agent and adhesive polyurethane completely.

Note

- If the blower case is removed or installed, the adhesive polyurethane can be damaged. Damaged adhesive polyurethane could cause abnormal noise or other malfunctions, therefore replace it.

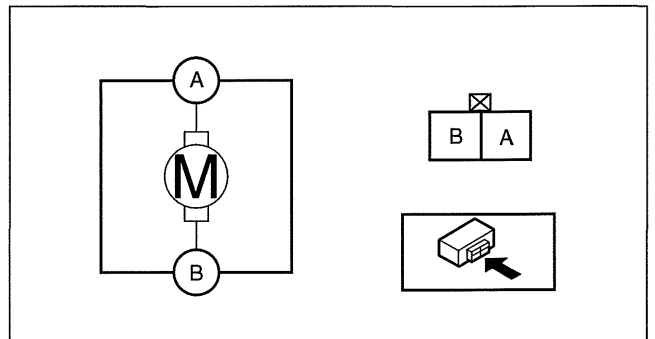


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BLOWER MOTOR INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1801000

1. Connect battery positive voltage to blower motor terminal A, connect terminal B to ground, and then verify its operation.
 - If there is any malfunction, replace the blower motor.



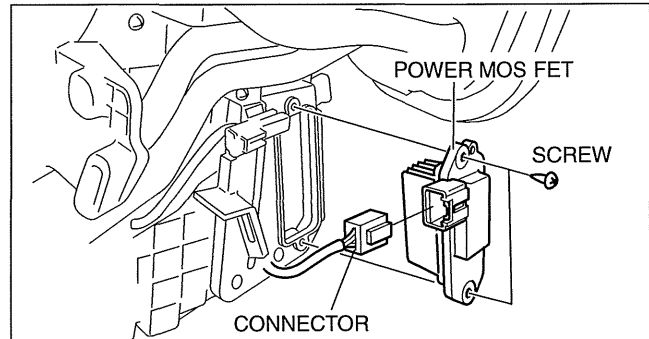
am3uuw0000403

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

POWER METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR (POWER MOS FET) REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1800200

1. Disconnect the negative battery cable.
2. Remove the dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the screw.
5. Remove the power MOS FET.
6. Install in the reverse order of removal.



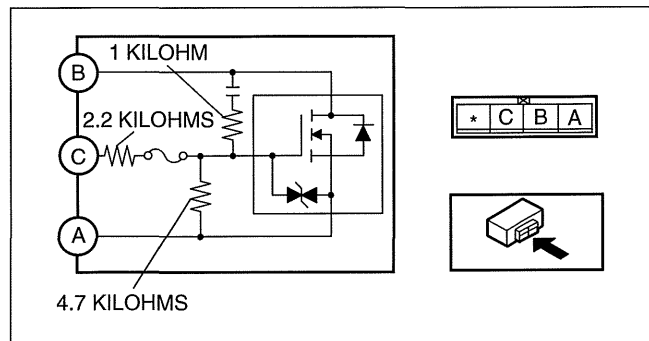
am3uuw0000571

POWER METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR (POWER MOS FET) INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1800300

1. Verify that the continuity between the power MOS FET terminals is as indicated in the table.
 - If there is any malfunction, replace the power MOS FET.
 - If the blower motor operation is not normal even though no malfunction can be verified, inspect the climate control unit. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)

Tester lead		Resistance (kilohm)
+	-	
A	B	∞
A	C	6.9
B	A	Continuity detected
B	C	Continuity detected
C	A	6.9
C	B	∞

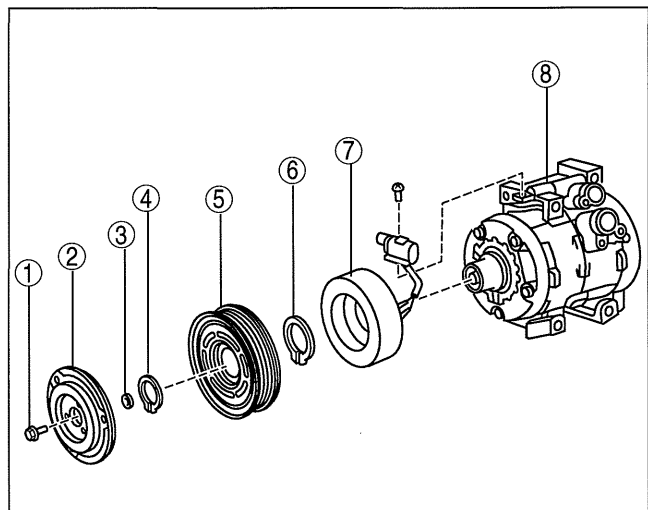


am3zzw0000143

MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [FULL-AUTO AIR CONDITIONER]

id0740a1800400

1. Disassemble in the order indicated in the table.
L5, L3 WITH TC

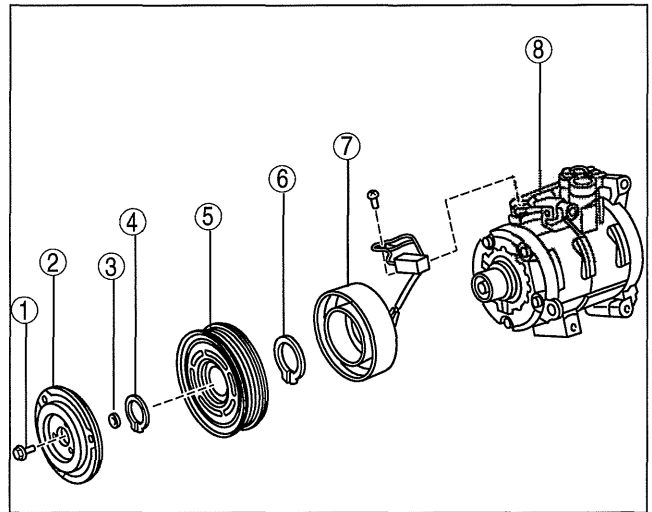


am3uuw0000402

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

LF

1	Bolt (See 07-40A-17 Bolt Removal/Installation Note.)
2	Pressure plate
3	Shim (See 07-40A-19 Shim Installation Note.)
4	Snap ring (See 07-40A-19 Snap Ring Removal/Installation Note.)
5	A/C compressor pulley (See 07-40A-18 A/C Compressor Pulley Removal Note.) (See 07-40A-18 A/C Compressor Pulley Installation Note.)
6	Snap ring (See 07-40A-19 Snap Ring Removal/Installation Note.)
7	Stator
8	A/C compressor body



am3uuw0000402

2. Assemble in the reverse order of disassembly.
3. Adjust the magnetic clutch clearance. (See 07-40A-19 MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].)

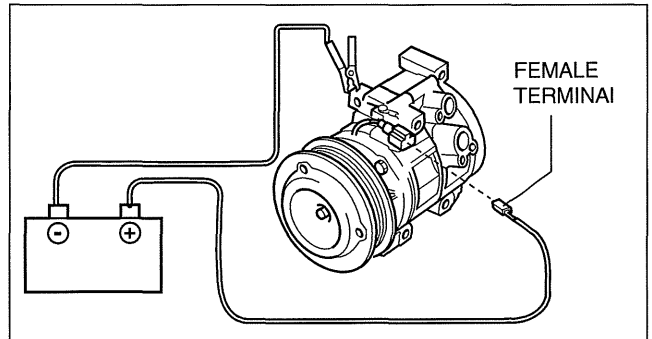
Bolt Removal/Installation Note

1. When removing or installing the bolt, lock the A/C compressor pulley against rotation using the following procedure

Caution

- When connecting the positive battery cable to the magnetic clutch connector, use a cable with a female terminal of the correct size. Otherwise, load will be applied to the terminal, resulting in deformation or damage, and poor contact. In addition, the positive battery cable could disconnect from the connector resulting in a short circuit.

- (1) Apply battery positive voltage to the magnetic clutch terminal and connect the A/C compressor body to the ground.

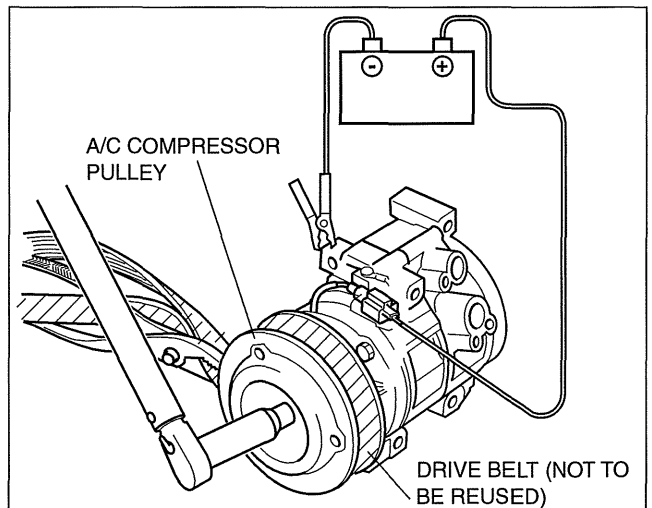


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- (2) Wrap the drive belt, which is no longer of use, tightly around the A/C compressor pulley.
- (3) Hold the drive belt in place with pliers.
- (4) Remove/installation the bolt.

Tightening torque

15 N·m {1.5 kgf·m, 11 ft·lbf}



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07-40A

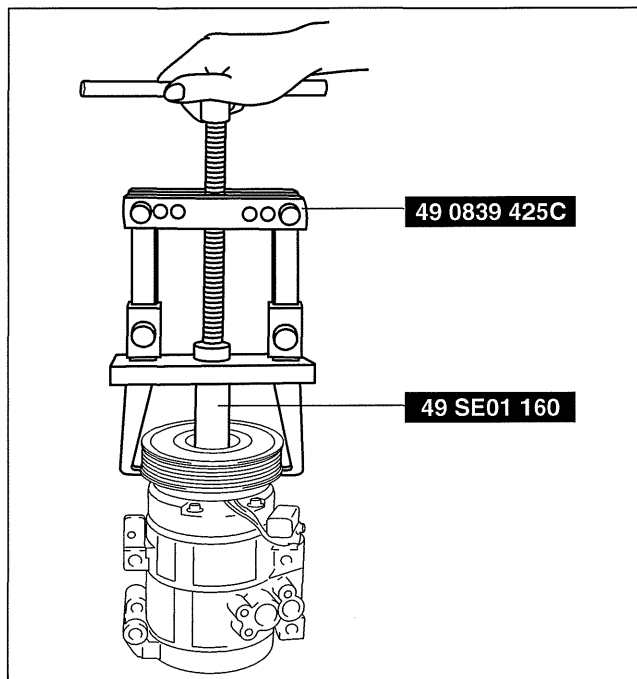
CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

A/C Compressor Pulley Removal Note

1. Remove the A/C compressor pulley using the SSTs (49 0839 425C, 49 SE01 160).

Caution

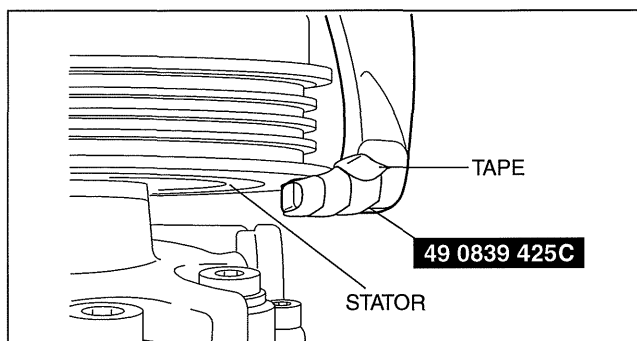
- Be careful that the SST (49 0839 425C) tabs do not hang over the stator.



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Note

- Taping on the nail to protect damage.



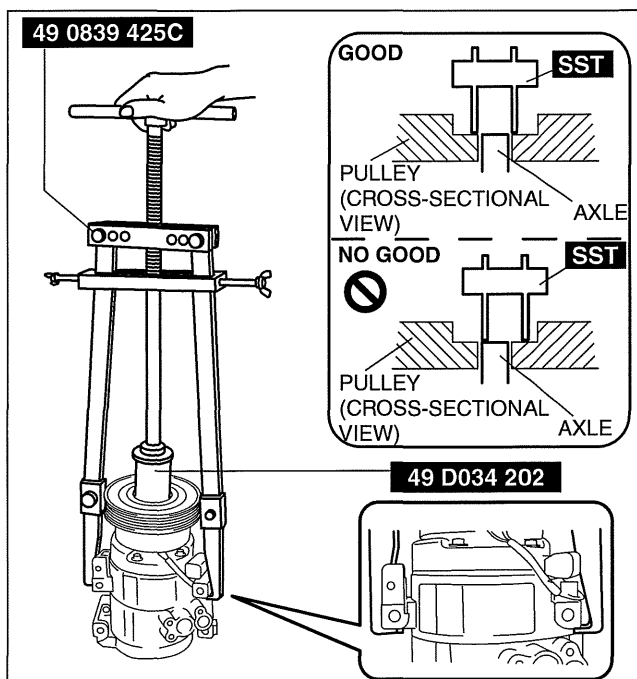
am3uuw0000572

A/C Compressor Pulley Installation Note

1. Install the inner wheel of the pulley using SST (49 D034 202) to the compressor.

Caution

- If the SST is not properly positioned when the A/C compressor pulley is press-fit, the A/C compressor axle will interfere with the SST, possibly damaging component parts. Verify the SST and axle are properly positioned and perform the procedure very carefully.

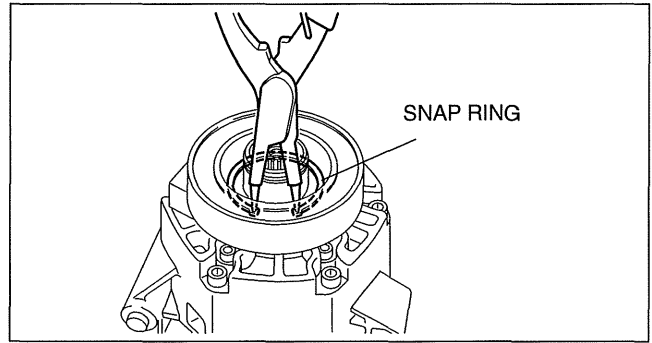


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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

Snap Ring Removal/Installation Note

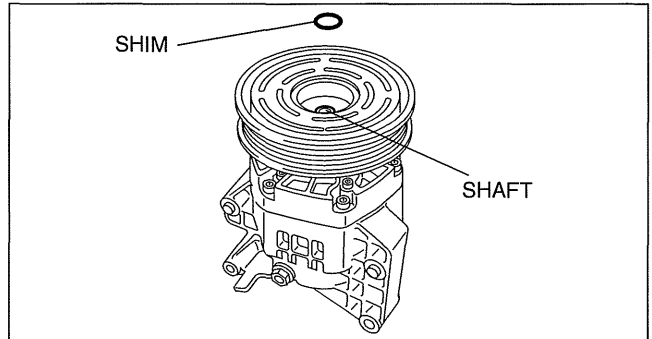
1. Remove/installation the snap ring using a snap ring pliers.



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Shim Installation Note

1. First, insert the 1mm (0.039 in) thick shim into the shaft.



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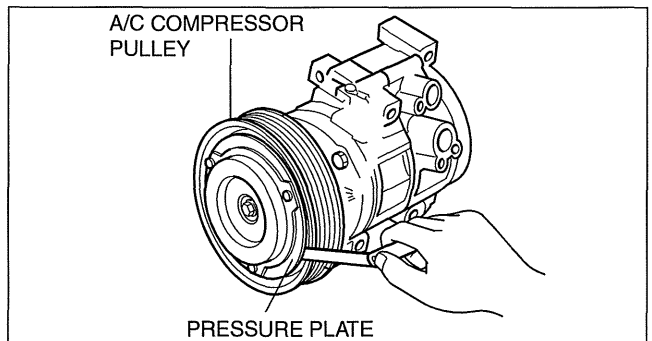
MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER]

id0740a1800500

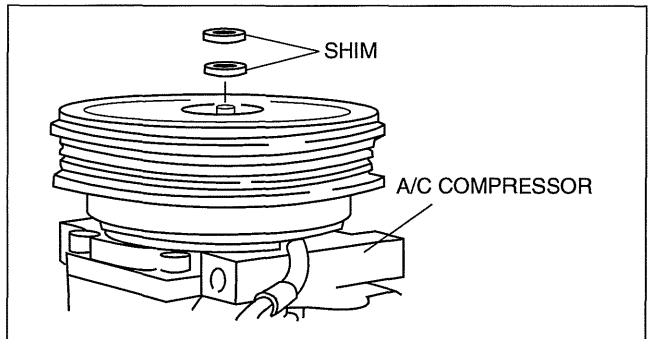
1. Measure the clearance around the entire circumference between the pressure plate and A/C compressor pulley using a thickness gauge.
2. Verify that the clearance.
 - If not within the specification, remove the pressure plate and adjust the clearance by changing the shim (0.2 mm {0.008 in}, 0.5 mm {0.02 in}) or the number of shims.

Clearance

0.35—0.65 mm {0.014—0.025 in}



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am6xuw0000101

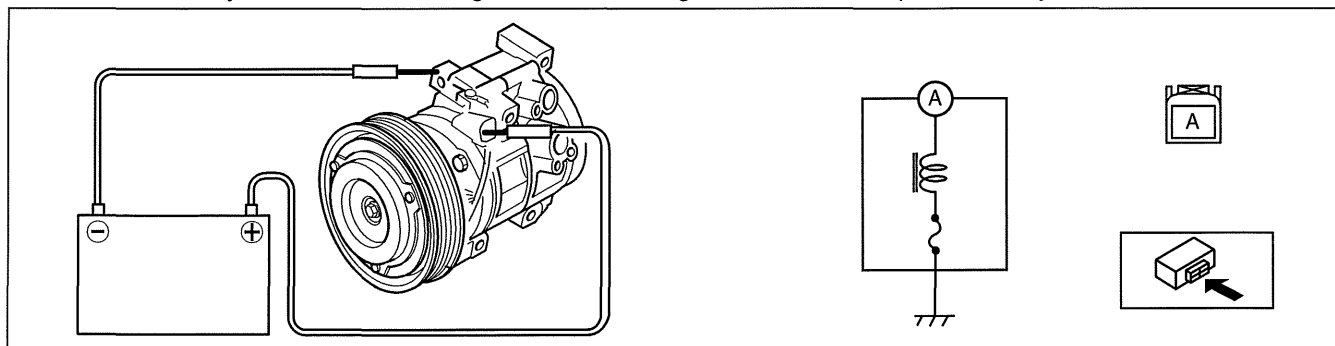
07-40A

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1800600

1. Connect battery to terminal A of magnetic clutch and ground to A/C compressor body.



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2. Verify that the magnetic clutch operates.
 - If there is any malfunction, replace the magnetic clutch.

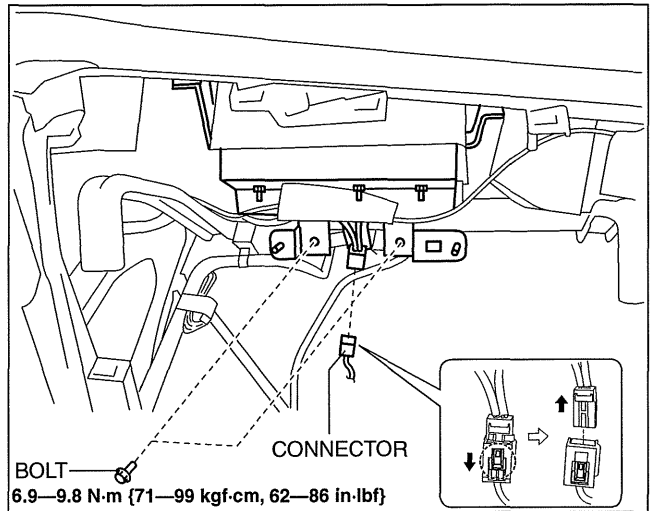
SOLAR RADIATION SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1802800

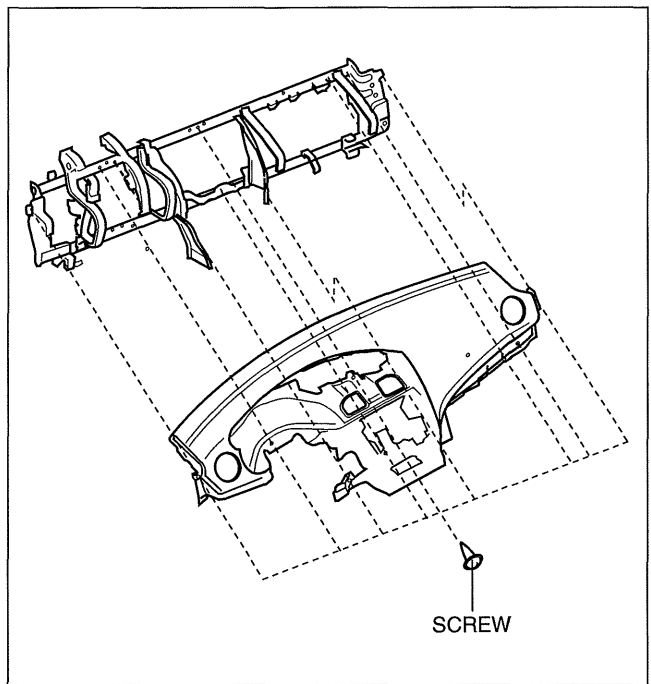
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (8) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (9) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (10) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (11) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (12) Lower panel (passenger-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (13) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (14) Lower panel (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (15) Shower duct (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
 - (16) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (17) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (18) Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
 - (19) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
 - (20) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (21) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (22) Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
 - (23) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (24) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (25) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (26) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
 - (27) Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
 - (28) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (29) Ventilator grille (See 09-17-34 VENTILATOR GRILLE REMOVAL/INSTALLATION.)
 - (30) SIRIUS satellite radio unit (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

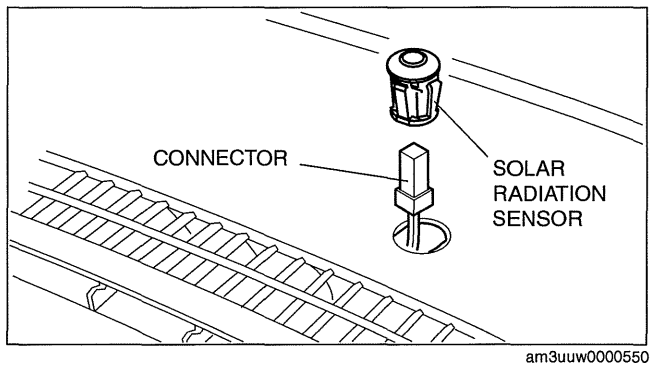
3. Remove the passenger-side air bag module installation bolt.
4. Disconnect the passenger-side air bag module connector.



5. Remove the screws and the panel of the dashboard.
6. Remove the dashboard wiring harness and clips.



7. Disconnect the solar radiation sensor connector.
8. Remove the solar radiation sensor.
9. Install in the reverse order of removal.



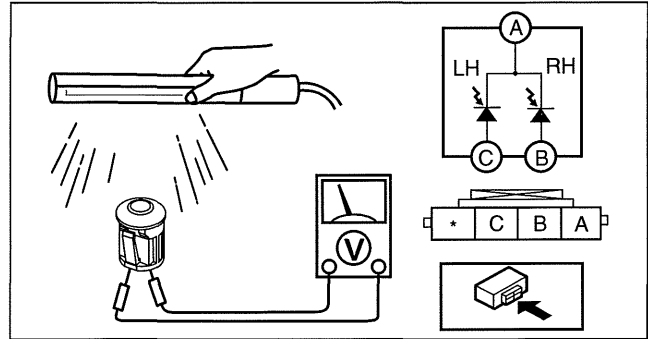
07-40A

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

SOLAR RADIATION SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1802900

1. Shine a fluorescent light or expose the solar radiation sensor to natural sunlight.
2. Connect the positive (+) lead to terminal B, C and negative (-) lead to terminal A of the solar radiation, and verify that the voltage value is output.
 - If the voltage is **0 V**, replace the solar radiation sensor.

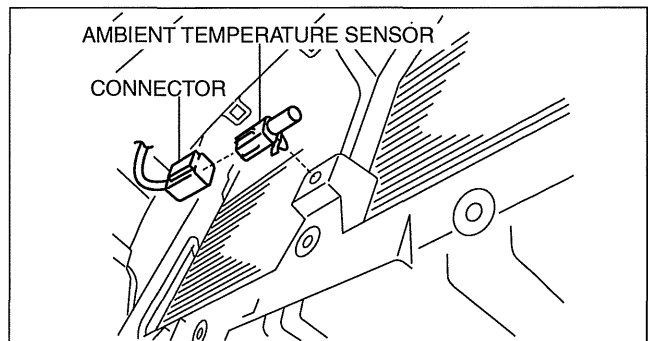


am3uuw0000613

AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1803200

1. Disconnect the negative battery cable.
2. Remove the under cover.
3. Disconnect the connector.
4. Remove the ambient temperature sensor.
5. Install in the reverse order of removal.

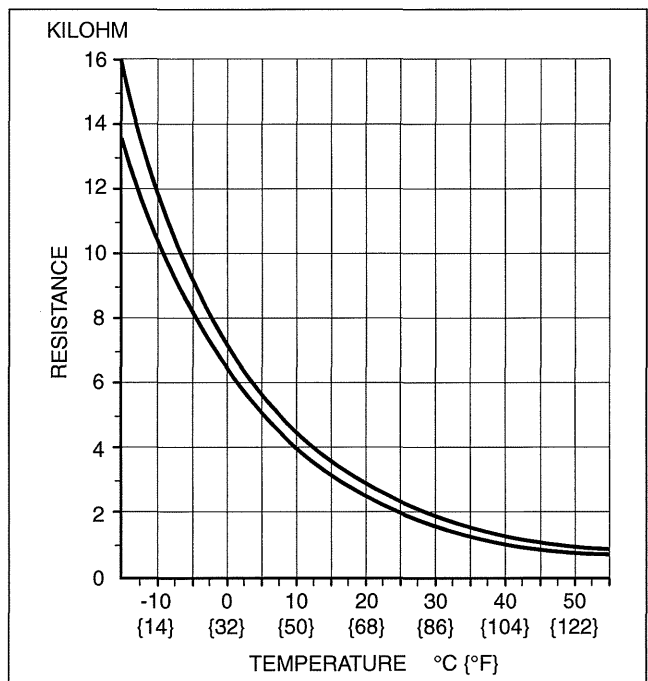


am3uuw0000405

AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1803300

1. Measure the temperature around the ambient temperature sensor and measure the resistance between the ambient temperature sensor terminal.
 - If the characteristics of the ambient temperature sensor are not as shown in the graph, replace the ambient temperature sensor.



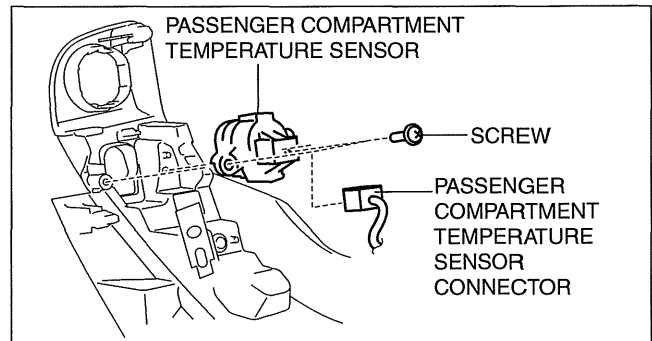
am3zzw0000076

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1803000

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Front side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (5) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (6) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (7) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
3. Disconnect the passenger compartment temperature sensor connector.
4. Remove the screw.
5. Remove the passenger compartment temperature sensor.
6. Install in the reverse order of removal.



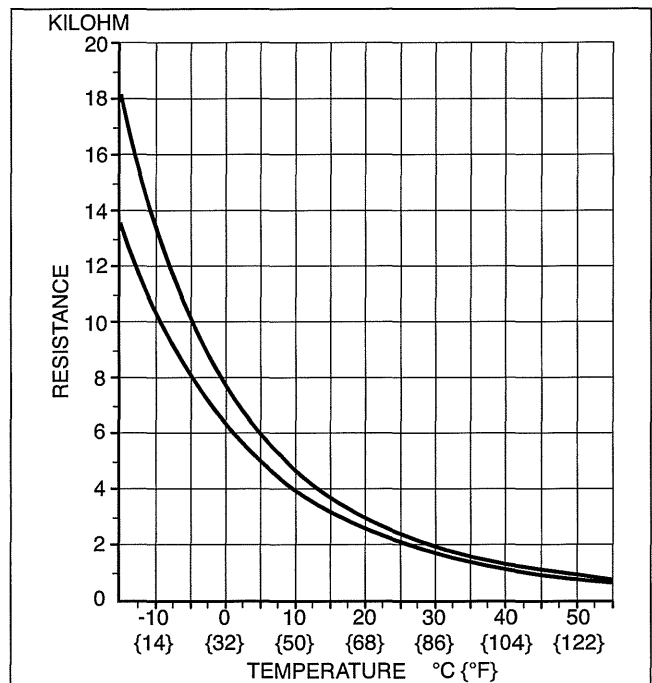
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07-40A

PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

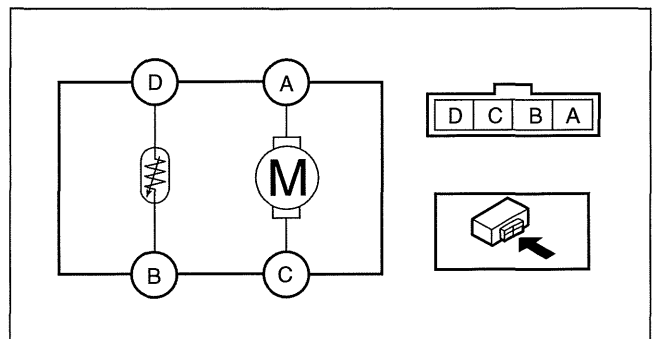
id0740a1803100

1. Measure the temperature around the passenger compartment temperature sensor and measure the resistance between passenger compartment temperature sensor terminals B and D.
 - If the characteristics of the passenger compartment temperature sensor are not as shown in the graph, replace the passenger compartment temperature sensor.



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2. Connect battery positive voltage to passenger compartment temperature sensor terminal A and connect terminal C to ground to verify fan operation.
 - If there is any malfunction, replace the passenger compartment temperature sensor.



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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

id0740a1801100

1. Remove the evaporator temperature sensor from the A/C unit. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)

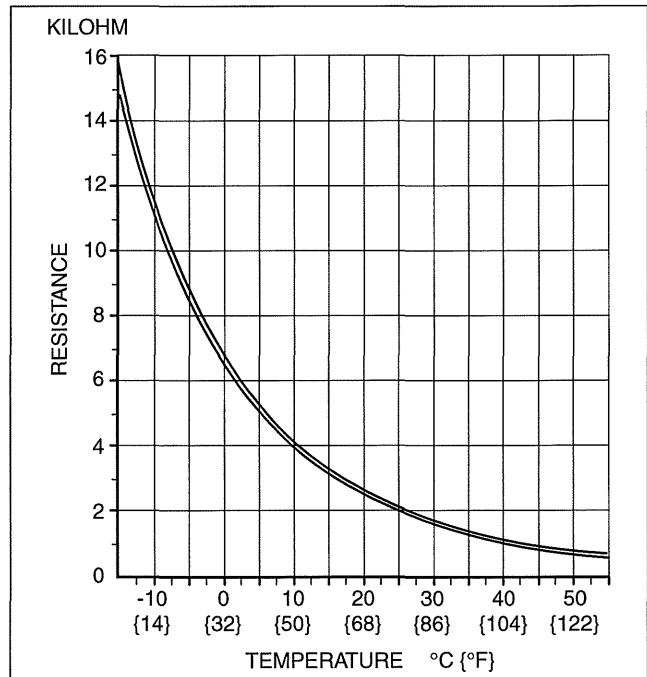
EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1801200

Note

- Inspect the evaporator temperature sensor when it is installed to the A/C unit.

1. Set the fan speed MAX HI.
2. Set the temperature control at MAX COLD.
3. Set the RECIRCULATE mode.
4. Turn the A/C switch off.
5. Close all doors and windows.
6. Wait for **5 min.**
7. Disconnect the evaporator temperature sensor connector.
8. Measure the temperature at the blower inlet.
9. Measure the resistance between the evaporator temperature sensor terminals.
 - If the resistance is not as shown in the graph, replace the evaporator temperature sensor.



REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

am3uuw0000403

id0740a1817300

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Disconnect the refrigerant pressure sensor connector.

Caution

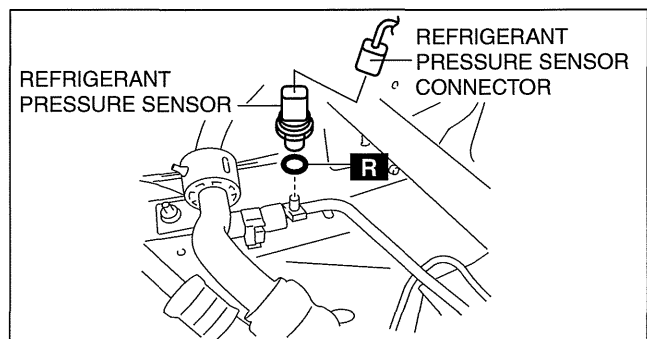
- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

4. Loosen the refrigerant pressure sensor using two spanners.
5. Remove the refrigerant pressure sensor. (See 07-40A-25 Refrigerant Pressure Sensor Installation Note.)

Tightening torque

9.5—11.5 N·m {102—112 kgf·cm, 89—97 in·lbf}

6. Install in the reverse order of removal.
7. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)



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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

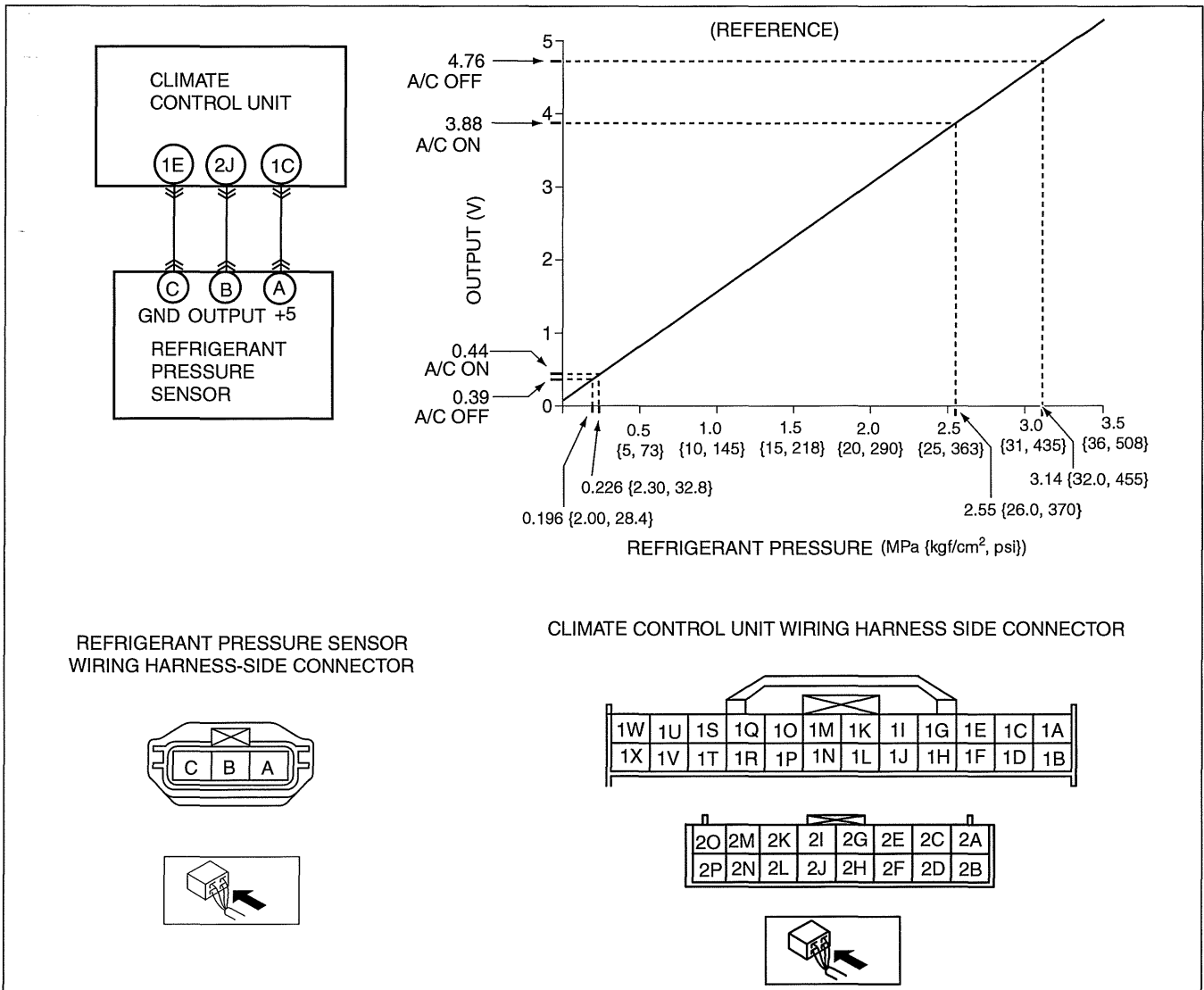
Refrigerant Pressure Sensor Installation Note

1. Apply compressor oil to the O-rings and connect the joints.

REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1817400

1. Install the manifold gauge.
2. Verify the high-pressure side reading of the manifold gauge.
3. Measure the terminal voltage of the climate control unit.
 - 1C, 1E and 2J
4. Verify that below graph as measure the terminal voltage 2J.
5. Follow the climate control unit inspection when measure the other terminal voltage. (See 07-40A-26 CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER].)
 - Terminal 1E: 1.0 V or less
 - Terminal 1C: Approx. 5 V (Ignition switch on)
 - If the each voltage is not normal, inspect the related wiring harness.
 - If there is any malfunction, replace the related wiring harness.
 - If wiring harness is normal, replace the refrigerant pressure sensor.



07-40A

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CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

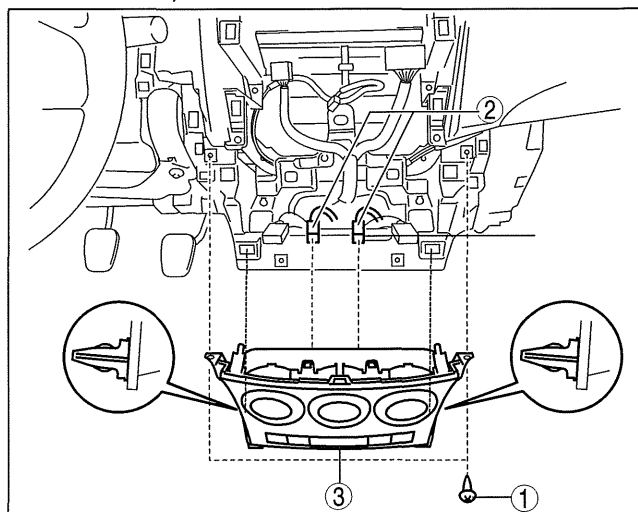
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1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (8) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (9) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (10) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (11) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (12) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (13) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (14) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (15) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)

3. Remove in the order indicated in the table.

1	Screw
2	Connector
3	Climate control unit

4. Install in the reverse order of removal.



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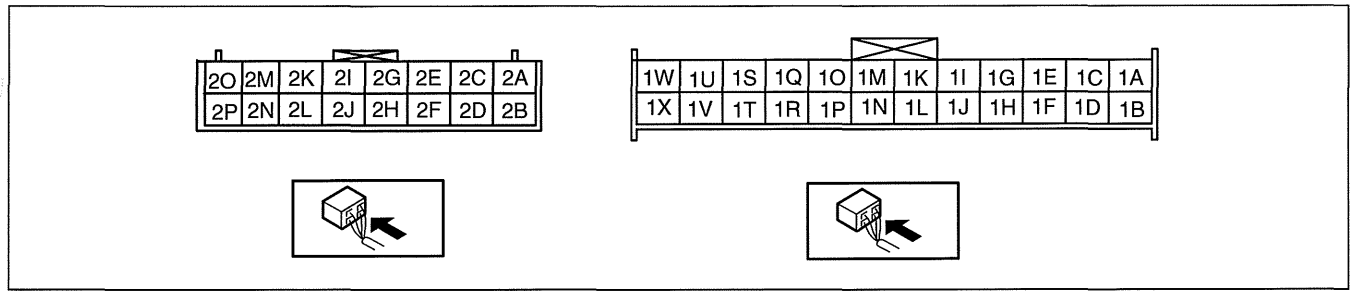
CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER]

id0740a1802200

1. Remove the climate control unit with the connector connected. (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
2. Switch the ignition to ON.
3. Connect the negative (-) lead of the tester to body ground.
4. By inserting the positive (+) lead of the tester into each climate control unit terminal, measure the voltage according to the terminal voltage table.
 - If there is any malfunction, inspect the parts under "Inspection item (s)".
 - If the parts under "Inspection item (s)" are found to be normal (except for terminal 1M), replace the climate control unit.
 - For terminal 1M, first try replacing the power MOS FET. If there is still any malfunction, replace the climate control unit.

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

Terminal Voltage Table (Reference)



am3uuw0000404

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
1A	—	—	—	—	—
1B	—	—	—	—	—
1C	+5V	<ul style="list-style-type: none"> Driver-side air mix actuator Passenger-side air mix actuator Airflow mode actuator Solar radiation sensor Refrigerant pressure sensor 	Switch the ignition to ON	5	<ul style="list-style-type: none"> Related wiring harness Driver-side air mix actuator Passenger-side air mix actuator Airflow mode actuator Solar radiation sensor Refrigerant pressure sensor Climate control unit: terminal voltage (1E)
			Switch the ignition to Off	1.0 or less	
1D	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
1E	Sensor GND	<ul style="list-style-type: none"> Driver-side air mix actuator Passenger-side air mix actuator Airflow mode actuator Evaporator temperature sensor Refrigerant pressure sensor 	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Climate control unit: terminal voltage (1C)
1F	Solar radiation sensor (RH) input	Solar radiation sensor	Sunlight shined directly on the solar radiation sensor	4	<ul style="list-style-type: none"> Related wiring harness Climate control unit: terminal voltage (1C) Solar radiation sensor
			Blocking light to solar radiation sensor	1.0 or less	
1G	Potentiometer input	Driver-side air mix actuator	Set temperature at MAX HOT	4.3 or more	<ul style="list-style-type: none"> Related wiring harness Driver-side air mix actuator Climate control unit: terminal voltage (1C)
			Set temperature at MAX COLD	1.0 or less	
1H	Solar radiation sensor (LH) input	Solar radiation sensor	Sunlight shined directly on the solar radiation sensor	4	<ul style="list-style-type: none"> Related wiring harness Climate control unit: terminal voltage (1C) Solar radiation sensor
			Blocking light to solar radiation sensor	1.0 or less	
1I	Potentiometer input	Passenger-side air mix actuator	Set temperature at MAX COLD	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Passenger-side air mix actuator Climate control unit: terminal voltage (1C)
			Set temperature at MAX HOT	4.3 or more	
1J	—	—	—	—	—
1K	Potentiometer input	Airflow mode actuator	VENT	4.3 or more	<ul style="list-style-type: none"> Related wiring harness Airflow mode actuator Climate control unit: terminal voltage (1C)
			BI-LEVEL	3.4	
			HEAT	2.5	
			HEAT/DEF	1.6	
			DEFROSTER	0.7 or less	

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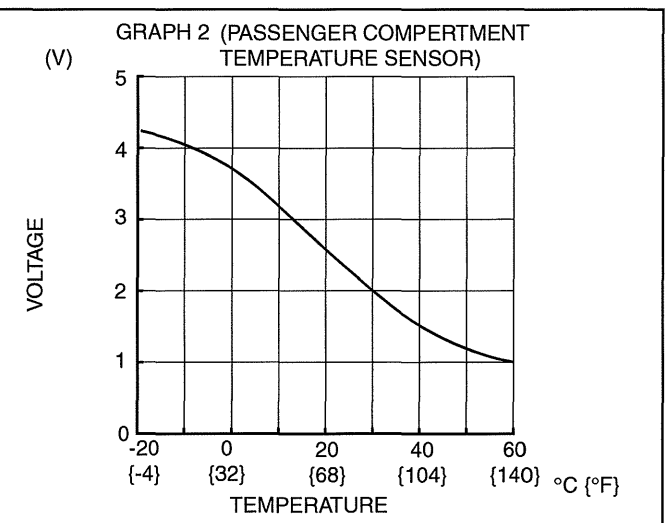
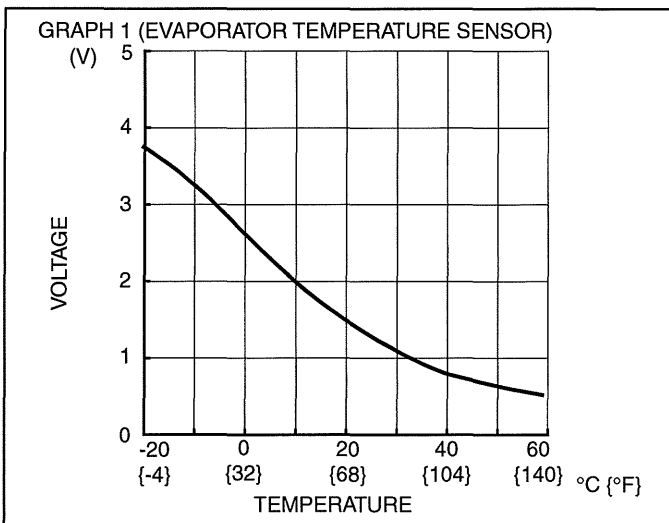
CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
1L	Evaporator temperature sensor input	Evaporator temperature sensor	Compared with temperature detected by evaporator temperature sensor	Refer to graph 1	<ul style="list-style-type: none"> Related wiring harness Evaporator temperature sensor Climate control unit: terminal voltage (1L,1E)
1M	Blower fan speed control	Power MOS FET	Fan stopped	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Power MOS FET
			Fan: manual 1st	2.2	
			Fan: manual 7th	9.7	
1N	Blower motor feedback	<ul style="list-style-type: none"> Blower motor Power MOS FET 	Fan stopped	B+	<ul style="list-style-type: none"> Power MOS FET Blower motor Blower relay HEATER 40 A fuse Power MOS FET replacement Related wiring harness
			Fan: manual 1st	9.8	
			Fan: manual 7th	0.4 or less	
1O	—	—	—	—	—
1P	—	—	—	—	—
1Q	Motor operation (COLD)	Passenger-side air mix actuator	Moving towards HOT	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Passenger-side air mix actuator
			Moving towards COLD	B+	
1R	Motor operation (FRESH)	Air intake actuator	Moving towards RECIRCULATE	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Air intake actuator
			Moving towards FRESH	B+	
1S	Motor operation (HOT)	Passenger-side air mix actuator	Moving towards HOT	B+	<ul style="list-style-type: none"> Related wiring harness Passenger-side air mix actuator
			Moving towards COLD	1.0 or less	
1T	Motor operation (RECIRCULATE)	Air intake actuator	Moving towards RECIRCULATE	B+	<ul style="list-style-type: none"> Related wiring harness Air intake actuator
			Moving towards FRESH	1.0 or less	
1U	Motor operation (COLD)	Driver-side air mix actuator	Moving towards HOT	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Driver-side air mix actuator
			Moving towards COLD	B+	
1V	Motor operation (DEFROSTER)	Airflow mode actuator	Moving towards DEFROSTER	B+	<ul style="list-style-type: none"> Related wiring harness Airflow mode actuator
			Moving towards VENT	1.0 or less	
1W	Motor operation (HOT)	Driver-side air mix actuator	Moving towards HOT	B+	<ul style="list-style-type: none"> Related wiring harness Driver-side air mix actuator
			Moving towards COLD	1.0 or less	
1X	Motor operation (VENT)	Airflow mode actuator	Moving towards VENT	B+	<ul style="list-style-type: none"> Related wiring harness Airflow mode actuator
			Moving towards DEFROSTER	1.0 or less	
2A	Illumination control	Instrument cluster	Headlight switch ON and panel light control switch at MAX	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Instrument cluster
			Headlight switch ON and panel light control switch at MIN	11.5	
2B	B+	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> Related wiring harness ROOM 15 A fuse
2C	—	—	—	—	—
2D	—	—	—	—	—
2E	MS_CAN_H	CAN related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Related wiring harness
2F	TNS signal	TNS relay	Headlight switch ON	B+	<ul style="list-style-type: none"> Related wiring harness TNS relay BCM Headlight switch
			Headlight switch OFF	1.0 or less	

CONTROL SYSTEM [FULL-AUTO AIR CONDITIONER]

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
2G	MS_CAN_L	CAN related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Related wiring harness
2H	IG2	HEATER 10 A fuse	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Related wiring harness HEATER 10 A fuse
			Switch the ignition to Off	1.0 or less	
2I	—	—	—	—	—
2J	Refrigerant pressure sensor input	Refrigerant pressure sensor	Compared with temperature detected by refrigerant pressure sensor	(See 07-40A-25 REFRIGERANT PRESSURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)	<ul style="list-style-type: none"> Related wiring harness Refrigerant pressure sensor Climate control unit: terminal voltage (1C,1E)
2K	—	—	—	—	—
2L	—	—	—	—	—
2M	Passenger compartment temperature sensor input	Passenger compartment temperature sensor	Compared with temperature detected by passenger compartment temperature sensor	Refer to graph 2	<ul style="list-style-type: none"> Related wiring harness Passenger compartment temperature sensor Climate control unit: terminal voltage (2N)
2N	Passenger compartment temperature sensor GND	Passenger compartment temperature sensor	Under any condition	1.0 or less	<ul style="list-style-type: none"> Climate control unit: terminal voltage (2M)
2O	—	—	—	—	—
2P	—	—	—	—	—

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07-40B CONTROL SYSTEM [MANUAL AIR CONDITIONER]

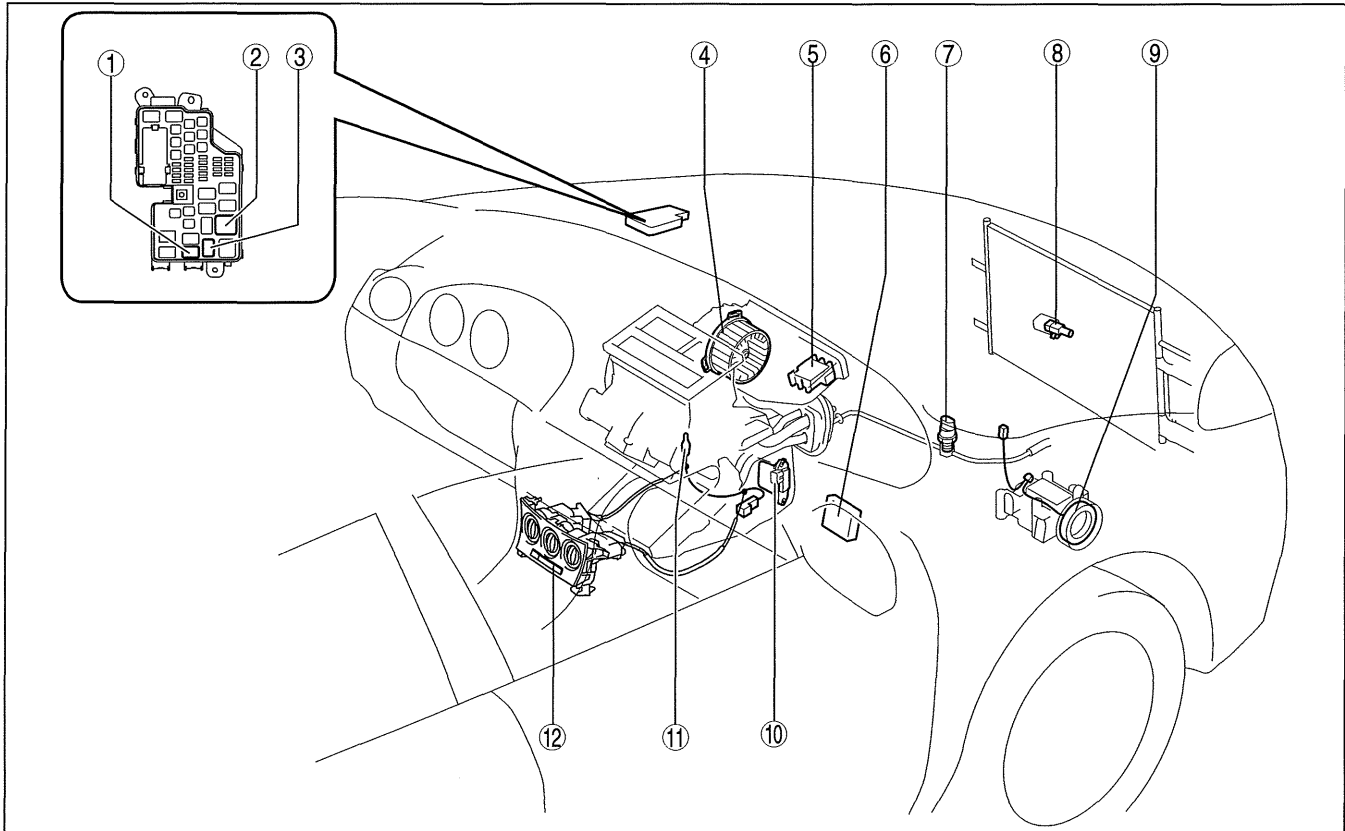
HVAC CONTROL SYSTEM		AMBIENT TEMPERATURE SENSOR	
LOCATION INDEX		REMOVAL/INSTALLATION	
[MANUAL AIR CONDITIONER]	07-40B-2	[MANUAL AIR CONDITIONER]	07-40B-14
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REMOVAL/INSTALLATION		INSPECTION	
[MANUAL AIR CONDITIONER]	07-40B-3	[MANUAL AIR CONDITIONER]	07-40B-14
AIR INTAKE ACTUATOR INSPECTION		EVAPORATOR TEMPERATURE	
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BLOWER MOTOR REMOVAL		[MANUAL AIR CONDITIONER]	07-40B-15
[MANUAL AIR CONDITIONER]	07-40B-4	EVAPORATOR TEMPERATURE	
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[MANUAL AIR CONDITIONER]	07-40B-9	[MANUAL AIR CONDITIONER]	07-40B-15
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[MANUAL AIR CONDITIONER]	07-40B-10	REMOVAL/INSTALLATION	
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A/C Compressor Pulley		Installation Note	07-40B-18
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Snap Ring		DISASSEMBLY/ASSEMBLY	
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MAGNETIC CLUTCH INSPECTION		[MANUAL AIR CONDITIONER]	07-40B-20
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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

HVAC CONTROL SYSTEM LOCATION INDEX [MANUAL AIR CONDITIONER]

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1	Rear window defroster relay (See 09-21-16 RELAY LOCATION.) (See 09-21-17 RELAY INSPECTION.)
2	Blower relay (See 09-21-16 RELAY LOCATION.) (See 09-21-17 RELAY INSPECTION.)
3	A/C relay (See 09-21-16 RELAY LOCATION.) (See 09-21-17 RELAY INSPECTION.)
4	Blower motor (See 07-40B-4 BLOWER MOTOR REMOVAL [MANUAL AIR CONDITIONER].) (See 07-40B-7 BLOWER MOTOR INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-9 BLOWER MOTOR INSPECTION [MANUAL AIR CONDITIONER].)
5	Air intake actuator (See 07-40B-3 AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-3 AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER].)
6	BCM (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.) (See 09-40-6 BODY CONTROL MODULE (BCM) INSPECTION.) (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.)
7	Refrigerant pressure sensor (See 07-40B-15 REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-16 REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].)

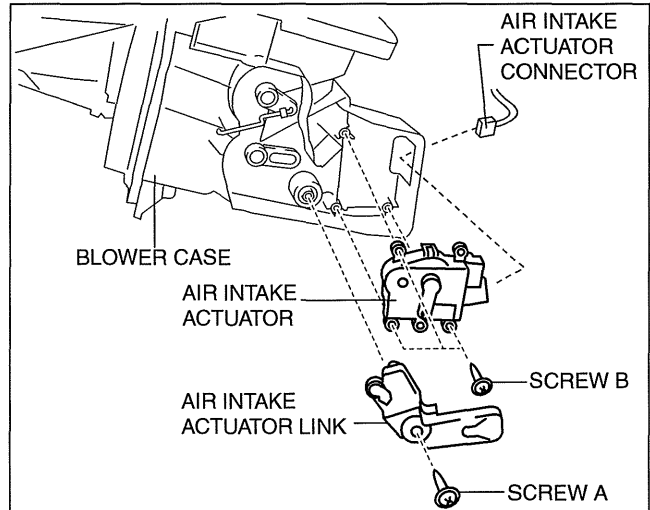
8	Ambient temperature sensor (See 07-40B-14 AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-14 AMBIENT TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].)
9	Magnetic clutch (See 07-40B-10 MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [MANUAL AIR CONDITIONER].) (See 07-40B-13 MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER].) (See 07-40B-14 MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER].)
10	Resistor (See 07-40B-10 RESISTOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-10 RESISTOR INSPECTION [MANUAL AIR CONDITIONER].)
11	Evaporator temperature sensor (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-15 EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].)
12	Climate control unit (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].) (See 07-40B-19 CLIMATE CONTROL UNIT DISASSEMBLY/ASSEMBLY [MANUAL AIR CONDITIONER].) (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) (See 07-40B-22 FAN SWITCH INSPECTION [MANUAL AIR CONDITIONER].)

CONTROL SYSTEM [MANUAL AIR CONDITIONER]

AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

id0740a2801400

1. Set the air intake mode to FRESH.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Front scuff plate (Passenger side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Passenger side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Lower panel (Passenger side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) Shower duct (Passenger side) (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
4. Disconnect the harness clip from the blower case.
5. Disconnect the air intake actuator connector.
6. Remove the blower case. (See 07-40B-4 BLOWER MOTOR REMOVAL [MANUAL AIR CONDITIONER].) (See 07-40B-7 BLOWER MOTOR INSTALLATION [MANUAL AIR CONDITIONER].)
7. Remove the screw A.
8. Remove the air intake actuator link.
9. Remove the screw B.
10. Remove the air intake actuator.
11. Install in the reverse order of removal.



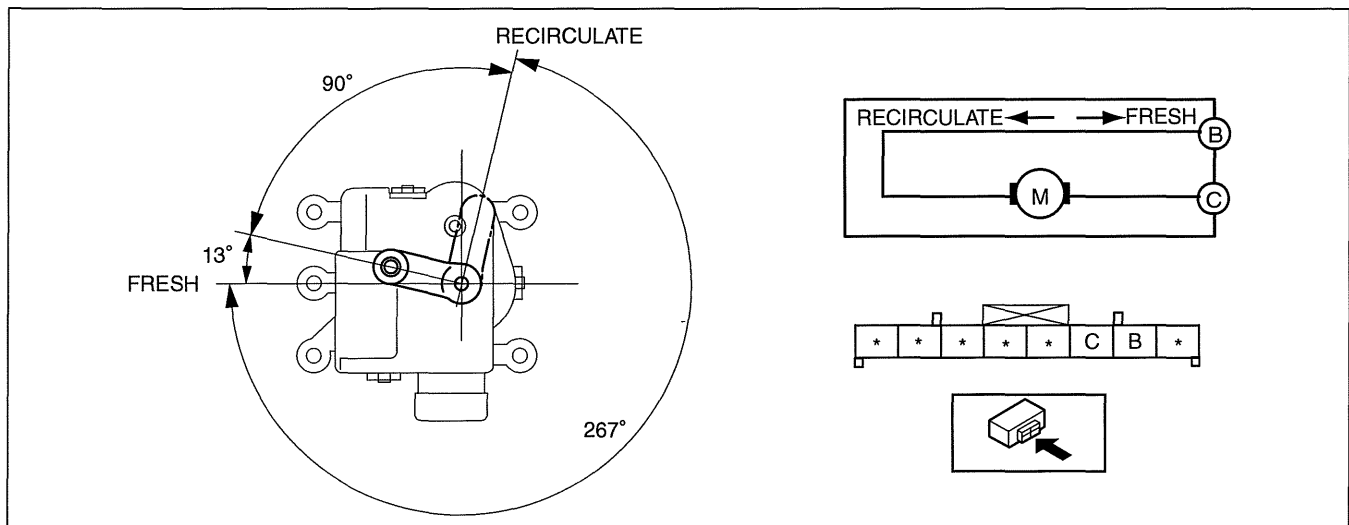
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AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER]

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1. Connect battery positive voltage to air intake actuator terminal B (or C), connect terminal C (or B) to ground, and then verify that the air intake actuator operates as shown in the table.
 - If the operation condition is not normal, replace the air intake actuator.



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Terminal		Air intake actuator operation
B	C	
B+	Ground	FRESH → RECIRCULATE
Ground	B+	RECIRCULATE → FRESH

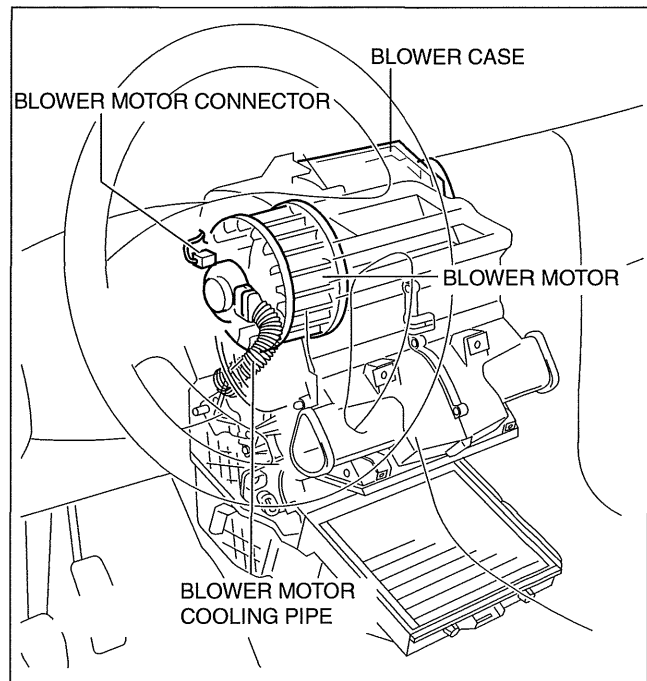
CONTROL SYSTEM [MANUAL AIR CONDITIONER]

BLOWER MOTOR REMOVAL [MANUAL AIR CONDITIONER]

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Note

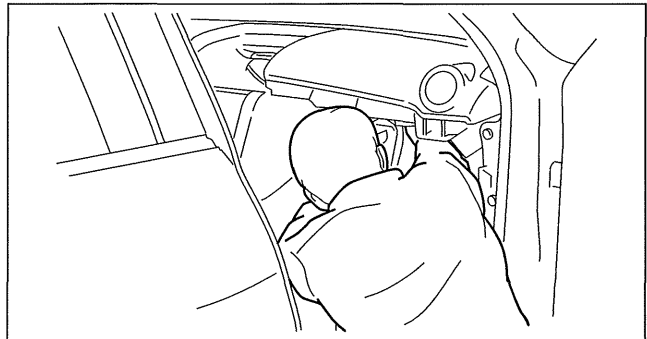
- The blower motor is located on the A/C unit as shown in the figure.



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- Perform the work from the front passenger side in the posture shown in the figure.

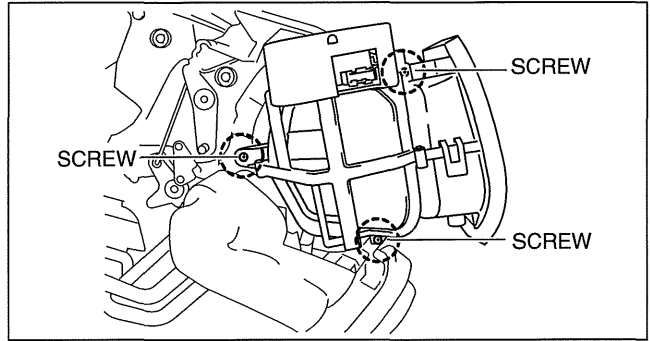
1. Set the air intake mode to FRESH.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (9) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (10)Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (11)Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (12)Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (13)Shower duct (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
 - (14)Accelerator pedal (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
4. Disconnect the air intake actuator connector. (See 07-40B-3 AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
5. Detach the harness clip from the blower case.



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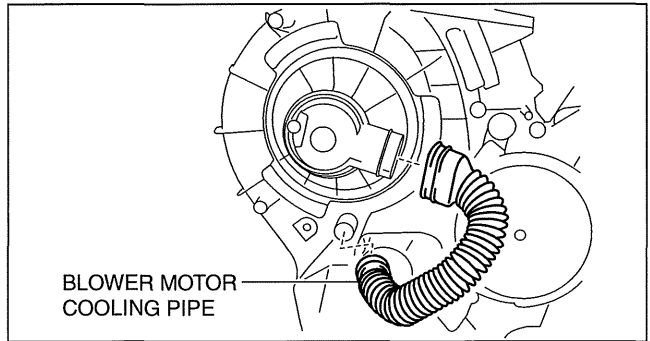
CONTROL SYSTEM [MANUAL AIR CONDITIONER]

- Remove the screws shown in the figure and slide the blower case.
- Remove the blower case.



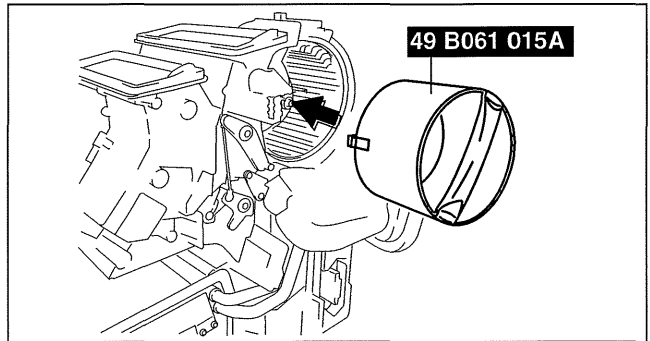
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- Disconnect the blower motor cooling pipe.

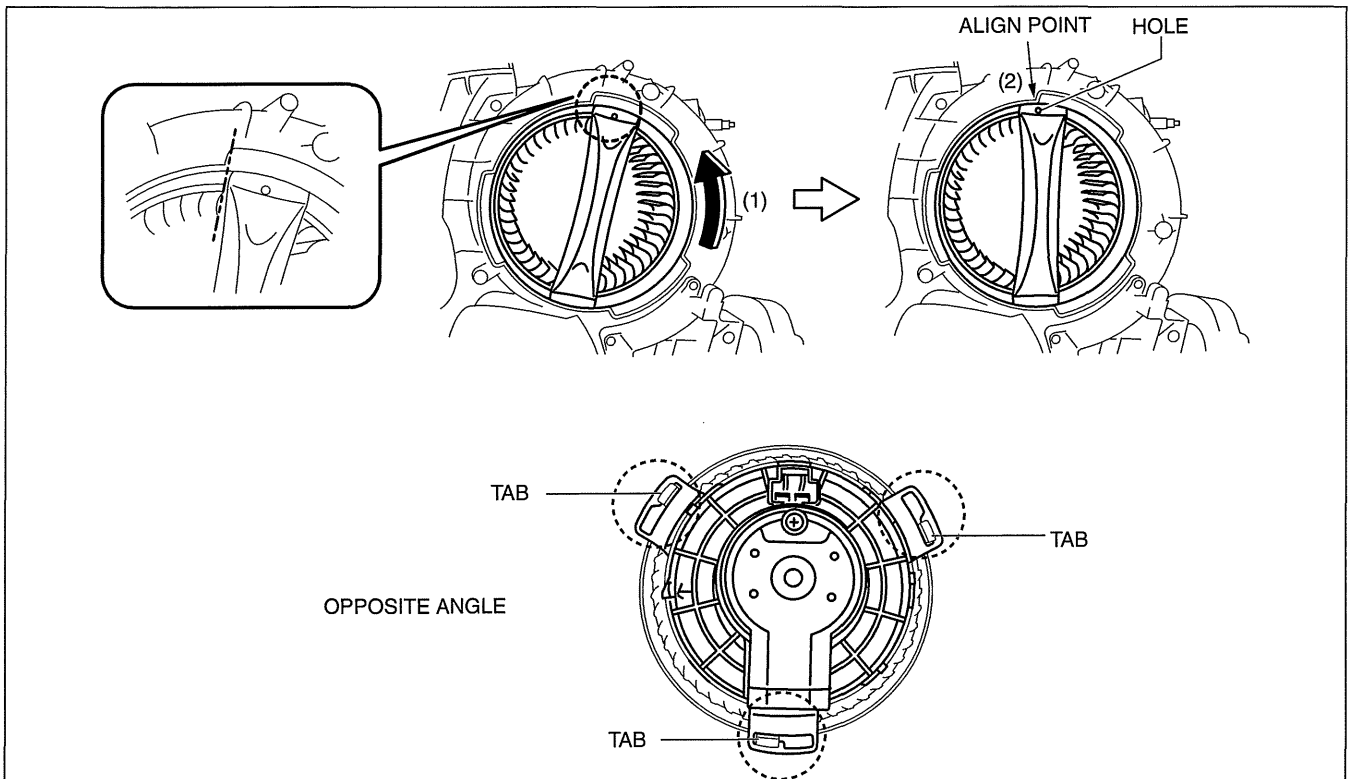


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- Install the **SST (49 B061 015A)** to the blower motor.
- Rotate the **SST (1)** and align the **SST** hole with the align point (2) and then confirm that the **SST** tabs into the three set holes on the blower motor they are inserted as shown in the figure.



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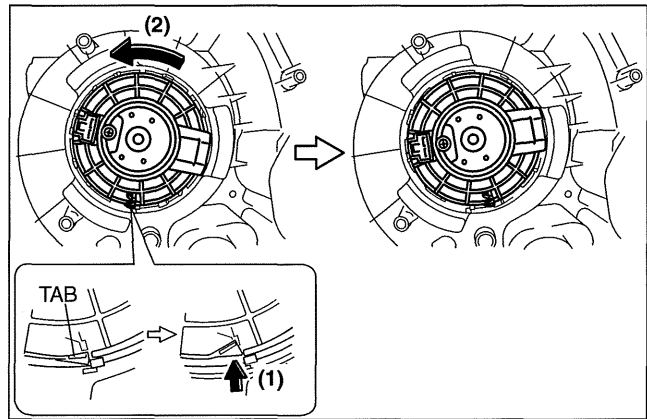


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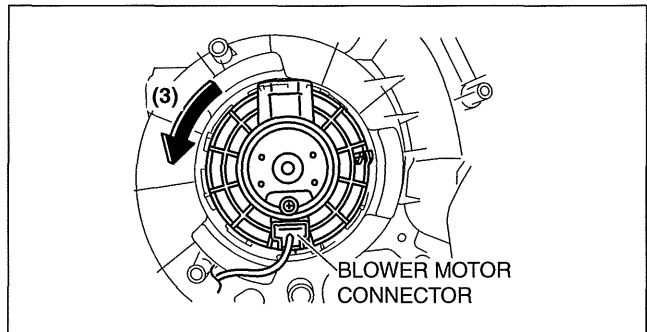
CONTROL SYSTEM [MANUAL AIR CONDITIONER]

11. Press the tab (1) and rotate the blower motor (2) and push the blower motor into the A/C case slightly.



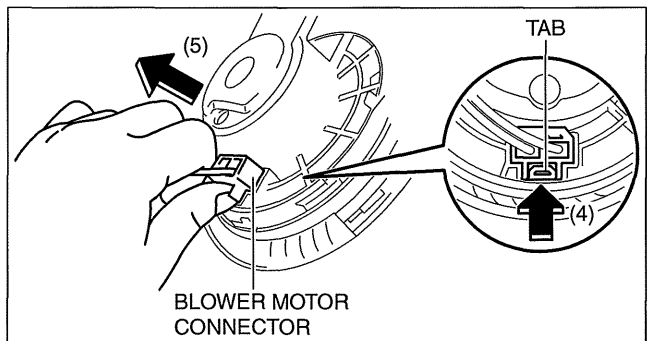
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12. Rotate the blower motor and the blower motor connector position as shown in the figure (3) for disconnect the blower motor connector eased.



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13. Press the tab (4) disconnect the blower motor connector as shown in the figure (5).

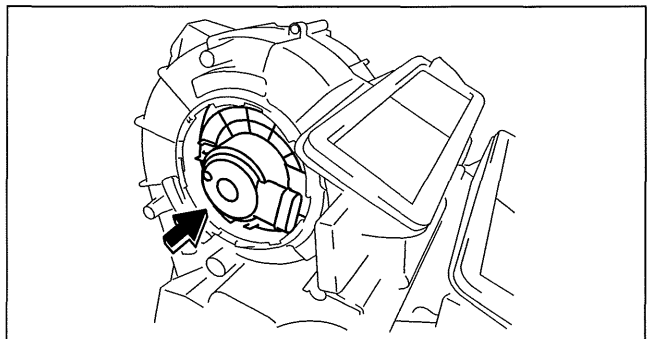


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14. Remove the blower motor in the direction shown by the arrow.

Caution

- To prevent damage to the sirocco fan, pull the blower motor out being careful that the blower motor does not interfere with the A/C unit.

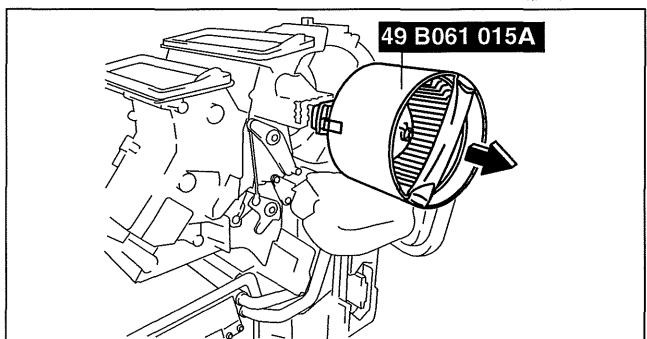


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15. Remove the blower motor with SST (49 B061 015A) by pulling it out.

Caution

- To prevent damage to the sirocco fan, pull the blower motor out being careful that the blower motor does not interfere with the A/C unit.



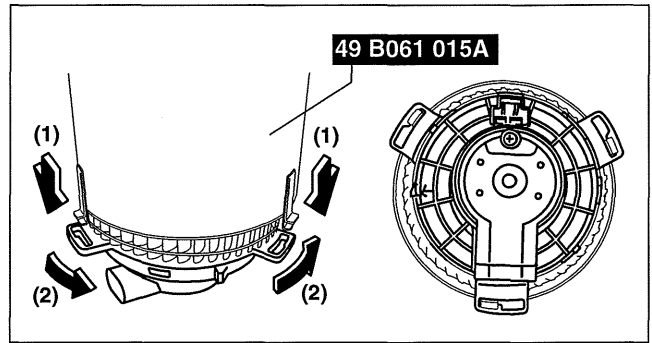
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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

BLOWER MOTOR INSTALLATION [MANUAL AIR CONDITIONER]

id0740a2807200

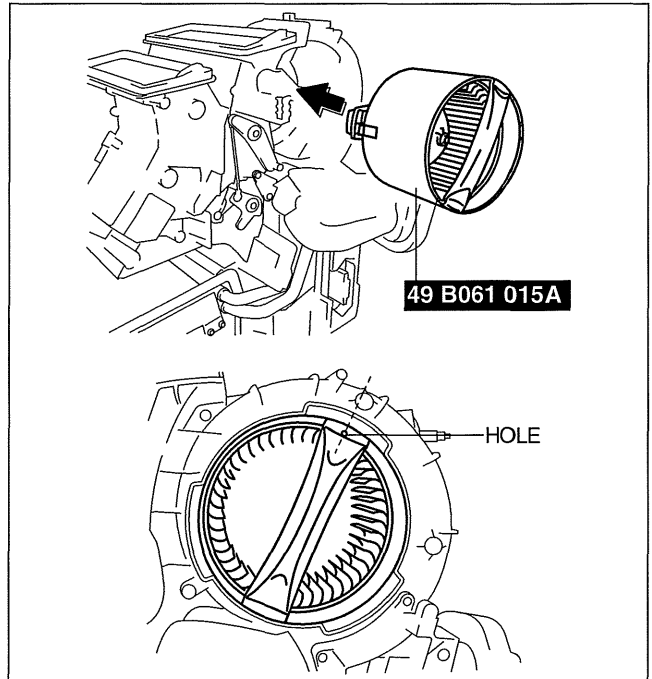
1. Install the SST (49 B061 015A) to the blower motor.



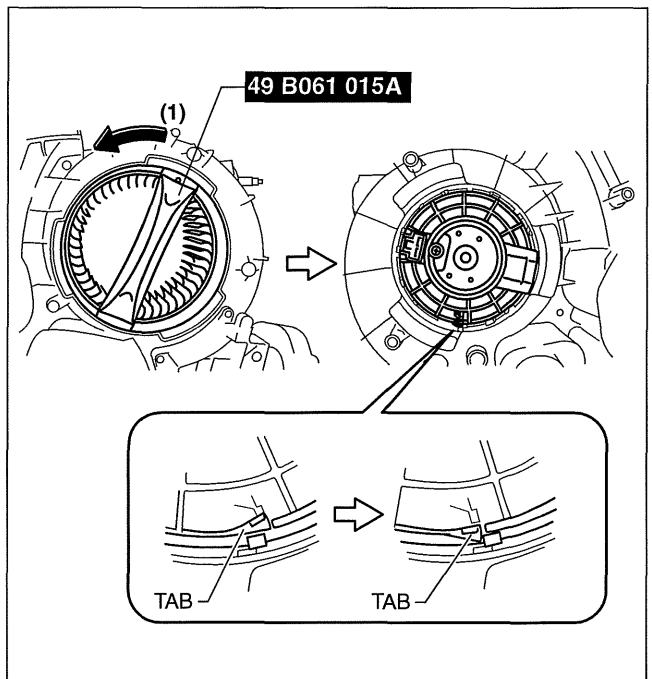
2. Install the blower motor with the SST (49 B061 015A) installed, to the A/C unit.

Caution

- To prevent damage to the sirocco fan, install the blower motor being careful that the blower motor does not interfere with the A/C unit. Also, another person must hold the blower motor at the installation position.



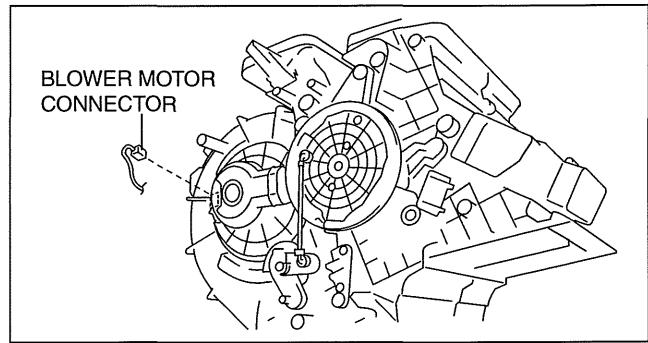
3. Rotate the SST (49 B061 015A) until to the blower motor tab locked.



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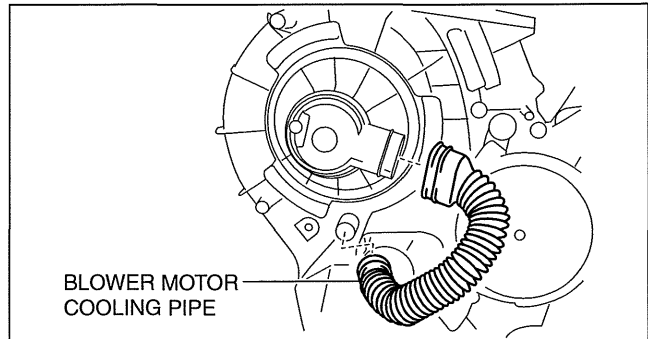
CONTROL SYSTEM [MANUAL AIR CONDITIONER]

4. Connect the blower motor connector as shown in the figure.



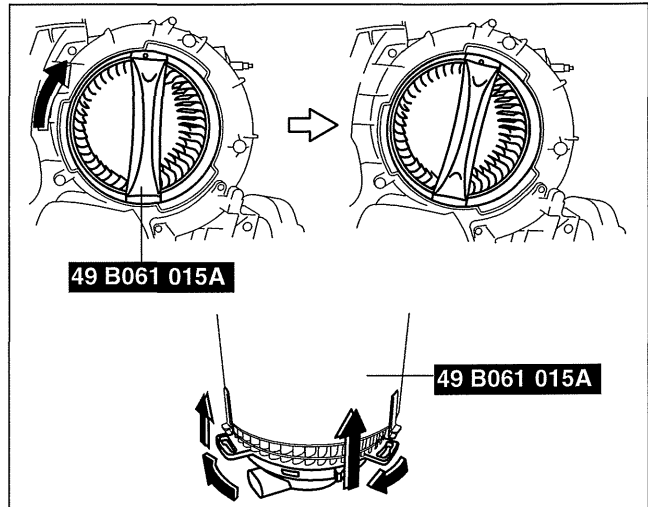
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5. Connect the blower motor cooling pipe.



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6. Rotate the **SST (49 B061 015A)** in the direction shown by the arrow.

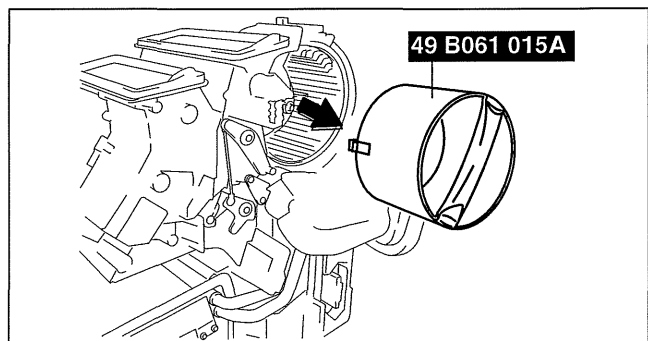


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7. Remove the **SST (49 B061 015A)** from the blower motor.
8. Install the blower case.

Caution

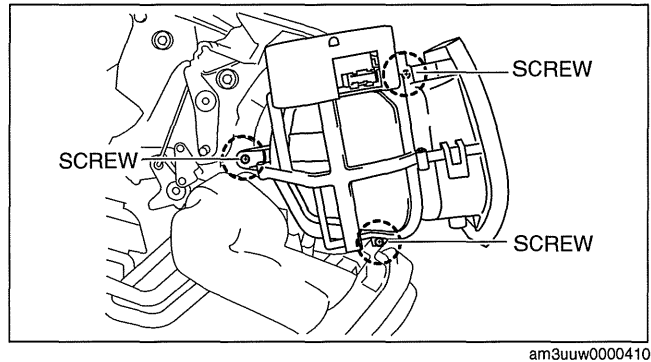
- Install the blower case while pressing the dashboard insulator, otherwise the blower case could be damaged.



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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

9. Install the screws shown in the figure.
10. Install the harness clip to the blower case.
11. Connect the air intake actuator connector.
12. Install the following parts:
 - (1) Accelerator pedal (See 01-13A-8 ACCELERATOR PEDAL REMOVAL/INSTALLATION [LF, L5].) (See 01-13B-14 ACCELERATOR PEDAL REMOVAL/INSTALLATION [L3 WITH TC].)
 - (2) Shower duct (Passenger side) (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION.)
 - (3) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (4) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (5) Dashboard under cover (Passenger side) (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (6) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (9) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (10) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (11) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (12) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)



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07-40B

Blower Case Installation Note

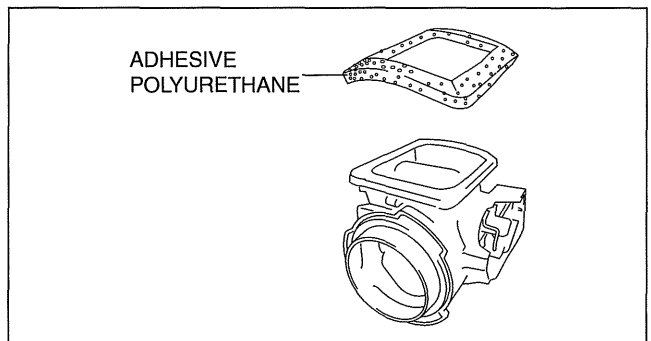
1. If not replacing the blower case, replace the adhesive polyurethane on the fresh-air inlet of the blower case.

Caution

- To adhere new polyurethane properly, be sure to remove the adhesive agent and adhesive polyurethane completely.

Note

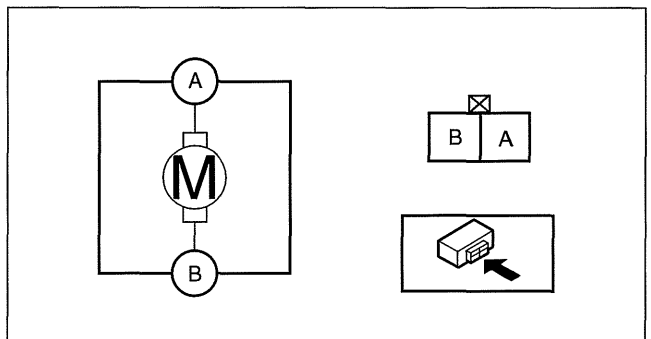
- If the blower case is removed or installed, the adhesive polyurethane can be damaged. Damaged adhesive polyurethane could cause abnormal noise or other malfunctions, therefore replace it.



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BLOWER MOTOR INSPECTION [MANUAL AIR CONDITIONER]

1. Connect battery positive voltage to blower motor terminal A, connect terminal B to ground, and then verify its operation.
 - If there is any malfunction, replace the blower motor.



id0740a2801000

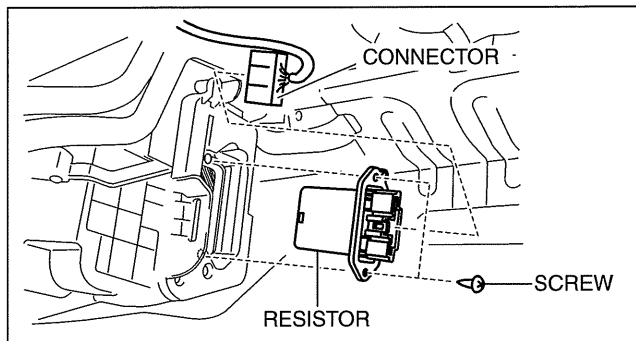
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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

RESISTOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

id0740a2800700

1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Remove the screw.
4. Remove the resistor.
5. Install in the reverse order of removal.



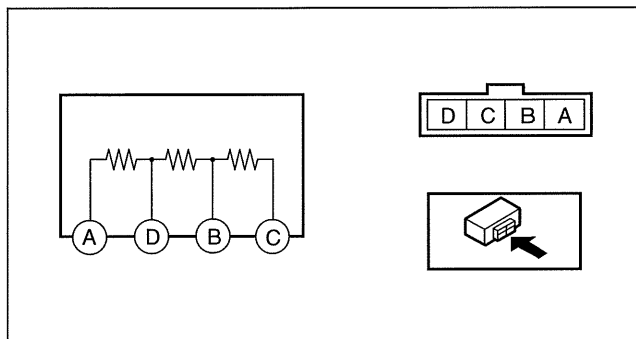
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RESISTOR INSPECTION [MANUAL AIR CONDITIONER]

id0740a2800800

1. Verify that the resistance between the resistor terminals is as shown in the table.
 - If there is any malfunction, replace the resistor.

Terminal	Resistance (ohm)
A—D	0.33—0.39
A—B	0.95—1.09
A—C	1.88—2.16

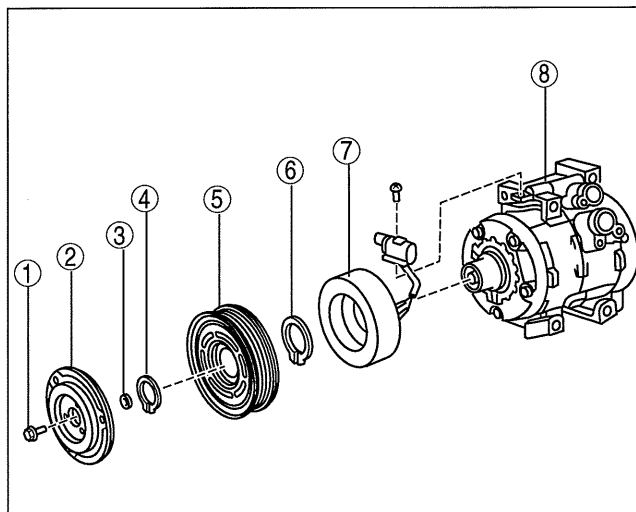


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MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [MANUAL AIR CONDITIONER]

id0740a2800400

1. Disassemble in the order indicated in the table.
L5, L3 WITH TC

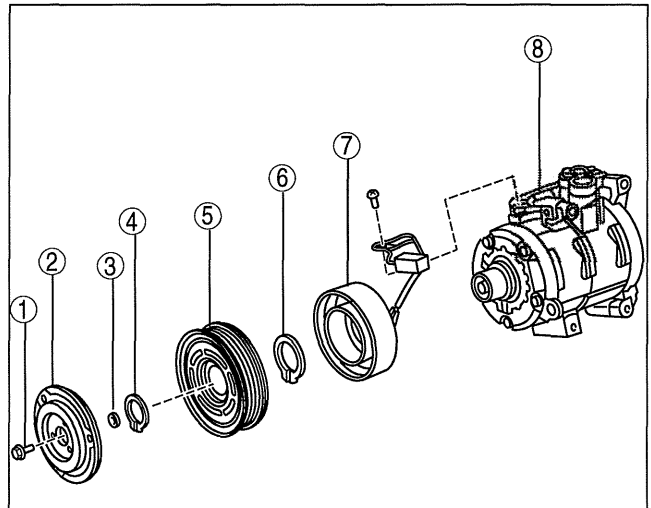


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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

LF

1	Bolt (See 07-40B-11 Bolt Removal/Installation Note.)
2	Pressure plate
3	Shim (See 07-40B-13 Shim Installation Note.)
4	Snap ring (See 07-40B-13 Snap Ring Removal/Installation Note.)
5	A/C compressor pulley (See 07-40B-12 A/C Compressor Pulley Removal Note.) (See 07-40B-12 A/C Compressor Pulley Installation Note.)
6	Snap ring (See 07-40B-13 Snap Ring Removal/Installation Note.)
7	Stator
8	A/C compressor body



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2. Assemble in the reverse order of disassembly.
3. Adjust the magnetic clutch clearance. (See 07-40B-13 MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER].)

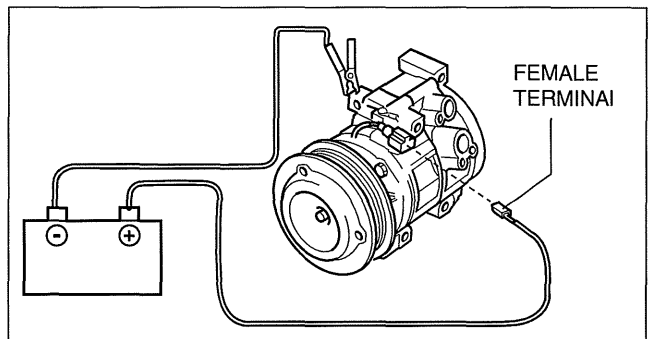
Bolt Removal/Installation Note

1. When removing or installing the bolt, lock the A/C compressor pulley against rotation using the following procedure.

Caution

- When connecting the positive battery cable to the magnetic clutch connector, use a cable with a female terminal of the correct size. Otherwise, load will be applied to the terminal, resulting in deformation or damage, and poor contact. In addition, the positive battery cable could disconnect from the connector resulting in a short circuit.

- (1) Apply battery positive voltage to the magnetic clutch terminal and connect the A/C compressor body to the ground.

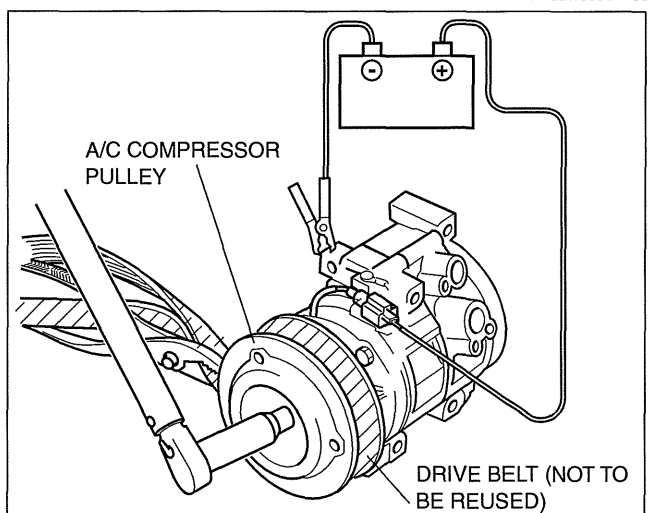


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- (2) Wrap the drive belt, which is no longer of use, tightly around the A/C compressor pulley.
- (3) Hold the drive belt in place with pliers.
- (4) Remove/installation the bolt.

Tightening torque

15 N·m {1.5 kgf·m, 11 ft·lbf}



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07-40B

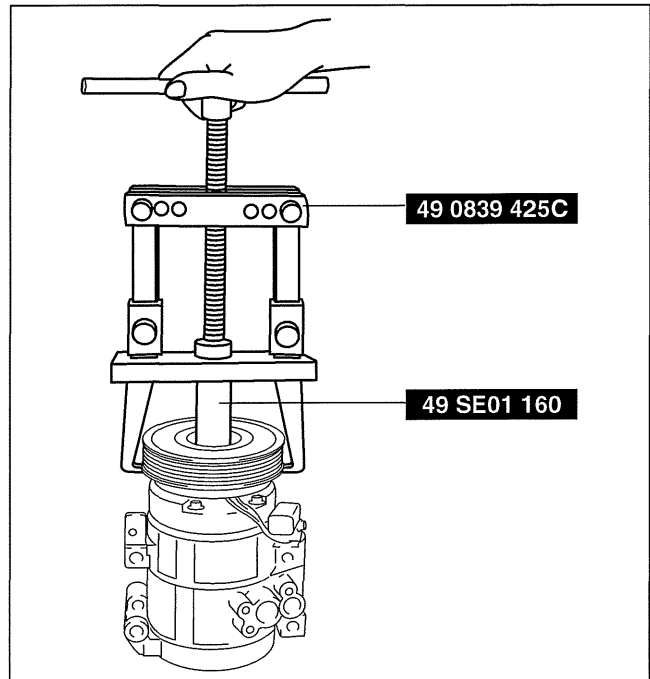
CONTROL SYSTEM [MANUAL AIR CONDITIONER]

A/C Compressor Pulley Removal Note

1. Remove the A/C compressor pulley using the SSTs (49 0839 425C, 49 SE01 160).

Caution

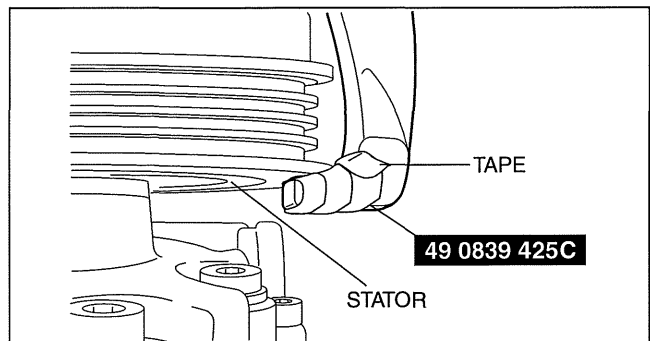
- Be careful that the SST (49 0839 425C) tabs do not hang over the stator.



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Note

- Taping on the nail to protect damage.



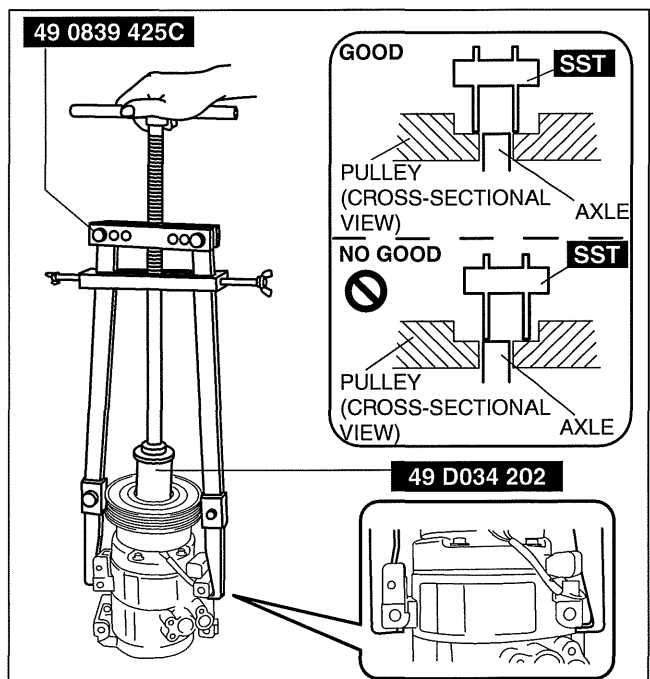
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A/C Compressor Pulley Installation Note

1. Install the inner wheel of the pulley using SST (49 D034 202) to the compressor.

Caution

- If the SST is not properly positioned when the A/C compressor pulley is press-fit, the A/C compressor axle will interfere with the SST, possibly damaging component parts. Verify the SST and axle are properly positioned and perform the procedure very carefully.

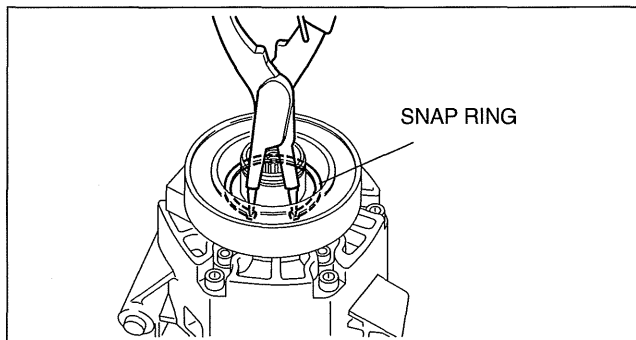


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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

Snap Ring Removal/Installation Note

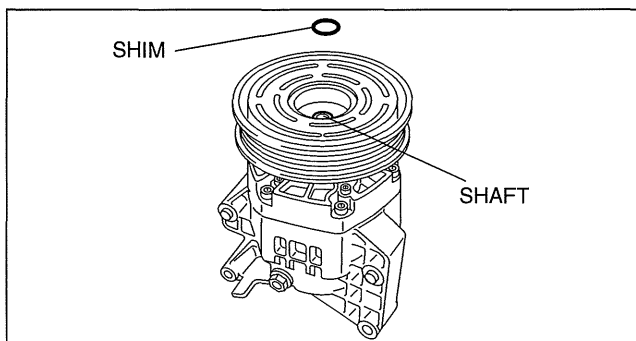
1. Remove/installation the snap ring using a snap ring pliers.



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Shim Installation Note

1. First, insert the 1mm (0.039 in) thick shim into the shaft.



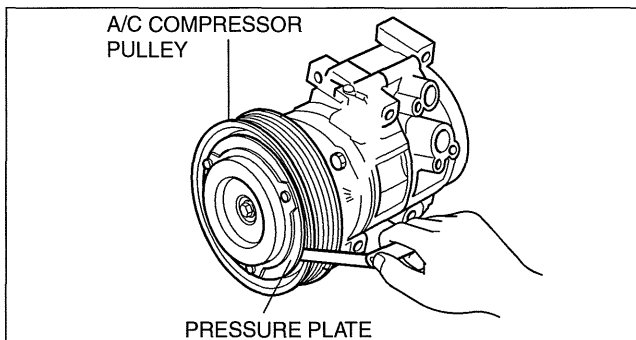
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07-40B

MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER]

id0740a2800500

1. Measure the clearance around the entire circumference between the pressure plate and A/C compressor pulley using a thickness gauge.

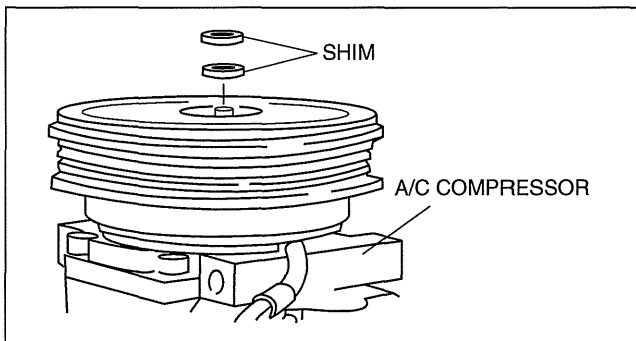


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2. Verify that the clearance.
 - If not within the specification, remove the pressure plate and adjust the clearance by changing the shim (0.2 mm {0.008 in}, 0.5 mm {0.02 in}) or the number of shims.

Clearance

0.35—0.65 mm {0.014—0.025 in}



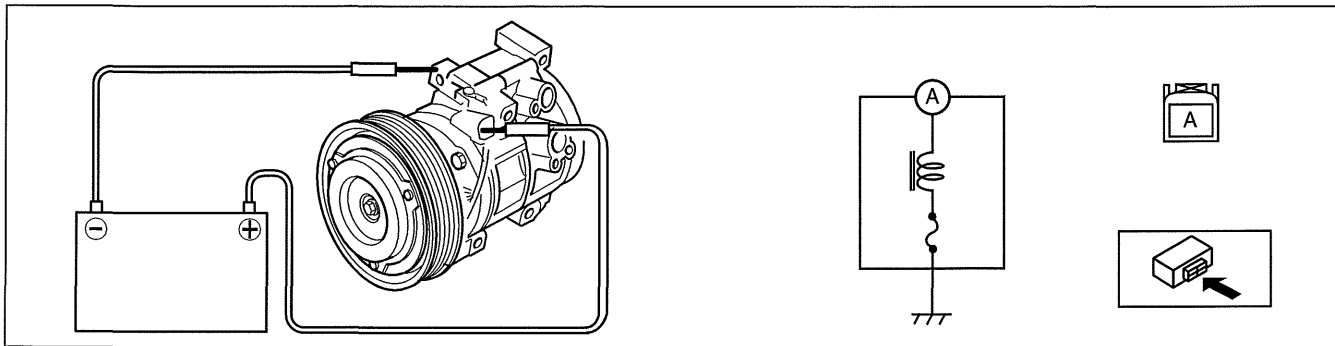
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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER]

id0740a2800600

1. Connect battery to terminal A of magnetic clutch and ground to A/C compressor body.



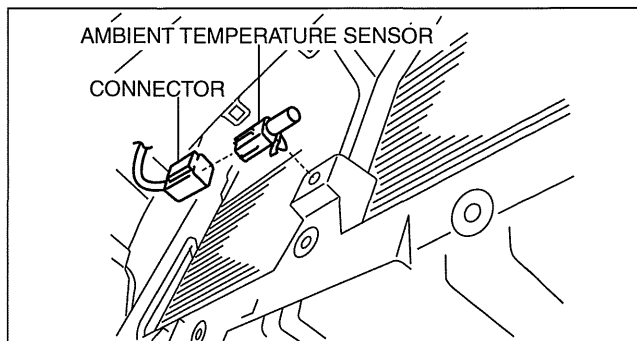
am3uuw0000408

2. Verify that the magnetic clutch operates.
 - If there is any malfunction, replace the magnetic clutch.

AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

id0740a2803200

1. Disconnect the negative battery cable.
2. Remove the under cover.
3. Disconnect the connector.
4. Remove the ambient temperature sensor.
5. Install in the reverse order of removal.

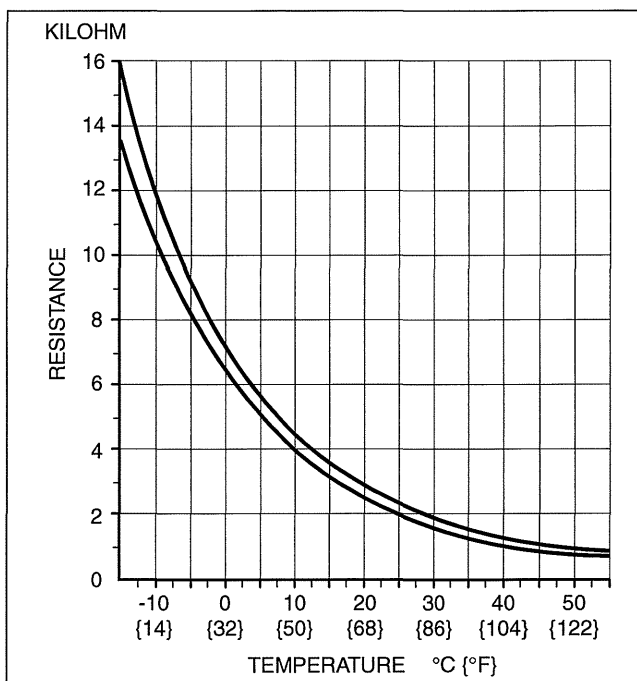


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AMBIENT TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]

id0740a2803300

1. Measure the temperature around the ambient temperature sensor and measure the resistance between the ambient temperature sensor terminal.
 - If the characteristics of the ambient temperature sensor are not as shown in the graph, replace the ambient temperature sensor.



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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

id0740a2801100

1. Remove the evaporator temperature sensor from the A/C unit. (See 07-11-10 A/C UNIT DISASSEMBLY/ASSEMBLY.)

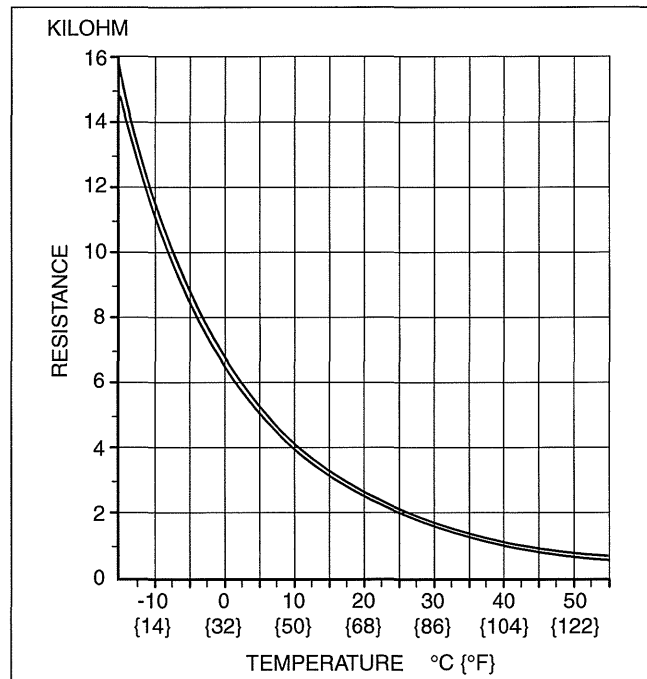
EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]

id0740a2801200

Note

- Inspect the evaporator temperature sensor when it is installed to the A/C unit.

1. Set the fan speed MAX HI.
2. Set the temperature control at MAX COLD.
3. Set the RECIRCULATE mode.
4. Turn the A/C switch off.
5. Close all doors and windows.
6. Wait for **5 min.**
7. Disconnect the evaporator temperature sensor connector.
8. Measure the temperature at the blower inlet.
9. Measure the resistance between the evaporator temperature sensor terminals.
 - If the resistance is not as shown in the graph, replace the evaporator temperature sensor.



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REFRIGERANT PRESSURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

am3uuw0000408

id0740a2817300

1. Disconnect the negative battery cable.
2. Discharge the refrigerant. (See 07-10-3 REFRIGERANT CHARGING.)
3. Disconnect the refrigerant pressure sensor connector.

Caution

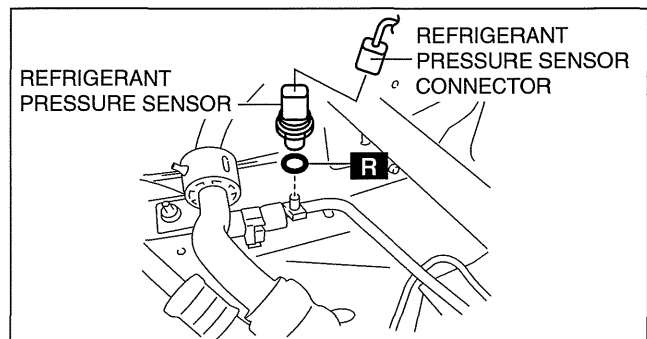
- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

4. Loosen the refrigerant pressure sensor using two spanners.
5. Remove the refrigerant pressure sensor. (See 07-40B-16 Refrigerant Pressure Sensor Installation Note.)

Tightening torque

9.5—11.5 N·m {102—112 kgf·cm, 89—97 in·lbf}

6. Install in the reverse order of removal.
7. Perform the refrigerant system performance test. (See 07-10-7 REFRIGERANT SYSTEM PERFORMANCE TEST.)



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07-40B-15

CONTROL SYSTEM [MANUAL AIR CONDITIONER]

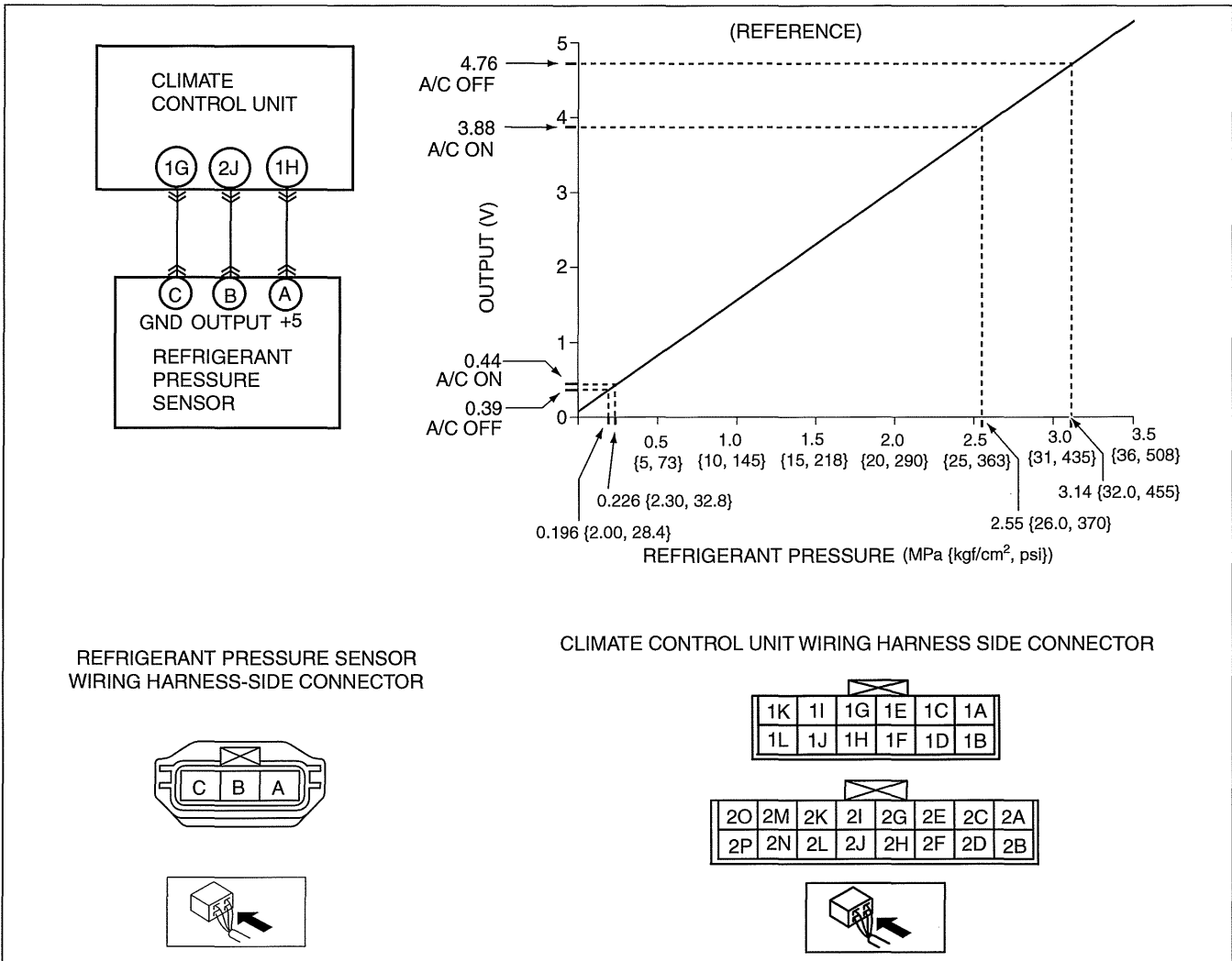
Refrigerant Pressure Sensor Installation Note

1. Apply compressor oil to the O-rings and connect the joints.

REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]

id0740a2817400

1. Install the manifold gauge.
2. Verify the high-pressure side reading of the manifold gauge.
3. Measure the terminal voltage of the climate control unit.
 - 1G, 1H and 2J
4. Verify that below graph as measure the terminal voltage 2J.
5. Follow the climate control unit inspection when measure the other terminal voltage. (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].)
 - Terminal 1G: 1.0 V or less
 - Terminal 1H: Approx. 5 V (Ignition switch on)
 - If the each voltage is not normal, inspect the related wiring harness.
 - If there is any malfunction, replace the related wiring harness.
 - If wiring harness is normal, replace the refrigerant pressure sensor.



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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

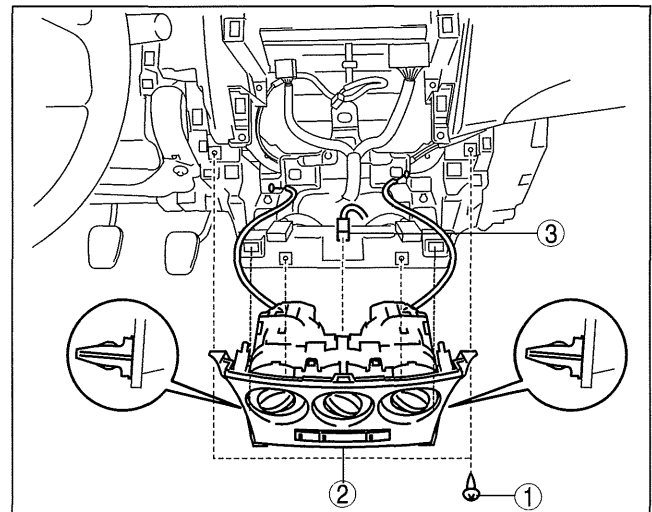
CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

id0740a2807400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (8) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (9) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (10) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (11) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (12) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (13) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (14) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (15) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Screw
2	Climate control unit (See 07-40B-17 Climate Control Unit Removal Note.) (See 07-40B-18 Climate Control Unit Installation Note.)
3	Connector

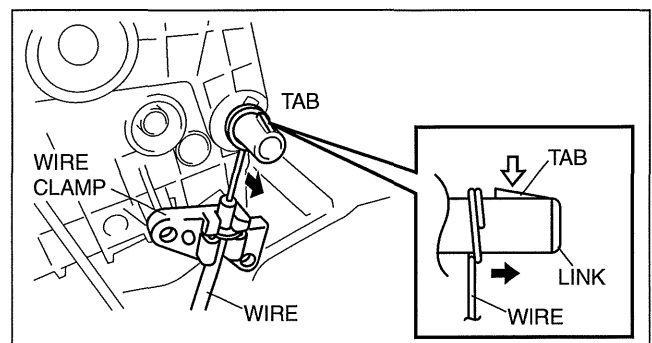
4. Install in the reverse order of removal.



07-40B

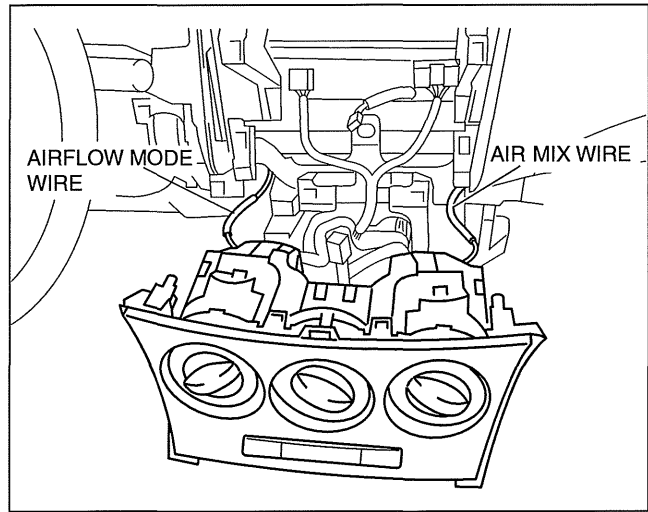
Climate Control Unit Removal Note

1. Disconnect each wire to links and remove it to the wire clamps.



CONTROL SYSTEM [MANUAL AIR CONDITIONER]

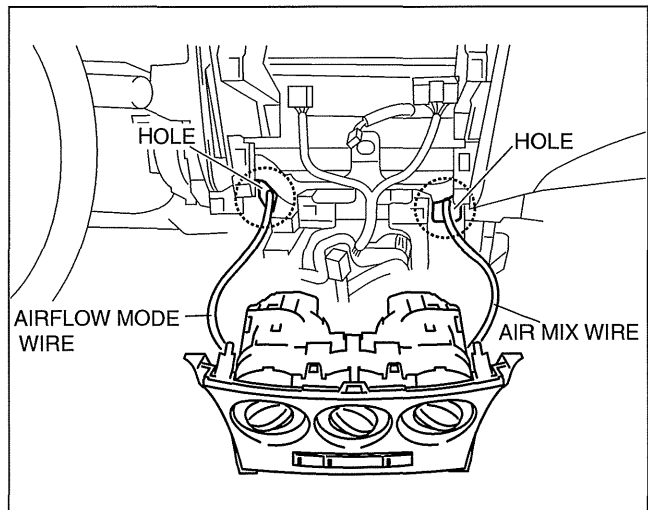
2. Pull out the air mix wire and airflow mode from the dashboard.



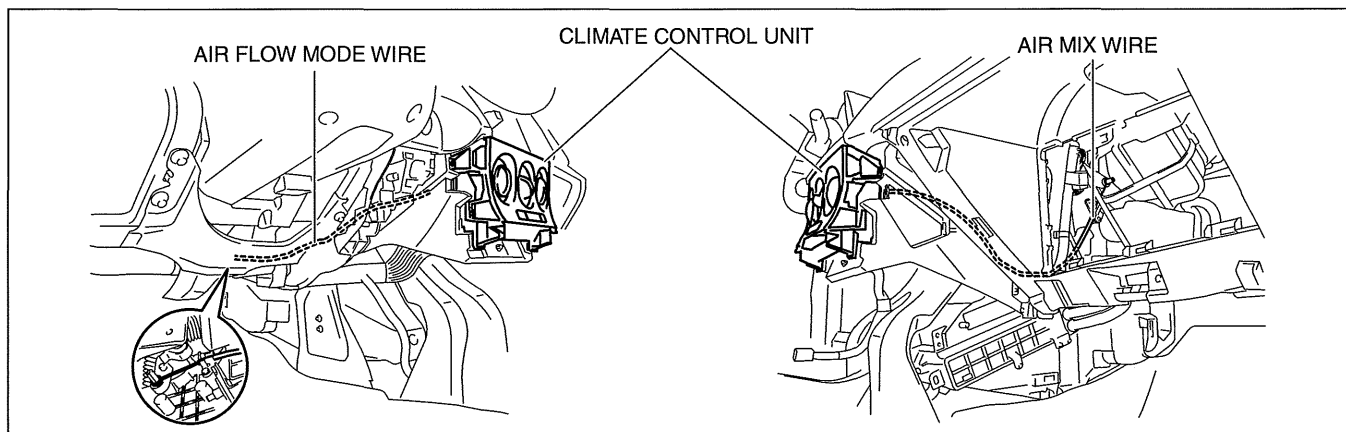
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Climate Control Unit Installation Note

1. Pass each wire through the hole on the dashboard as shown in the figure.
2. Route each wire as shown in the figure.



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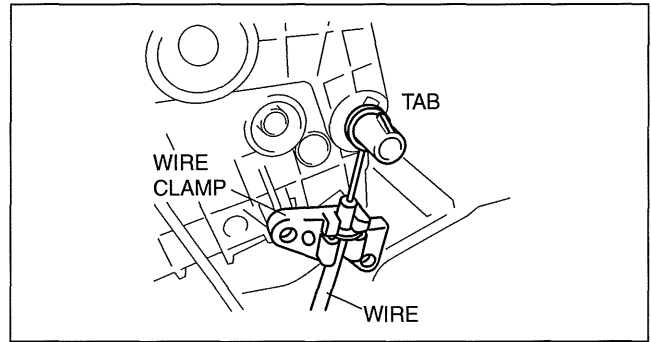


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3. Connect the climate control unit connector.

CONTROL SYSTEM [MANUAL AIR CONDITIONER]

- Connect each wire to links and install it to the wire clamps.
- Verify that the dial is turned fully from one end to the other.



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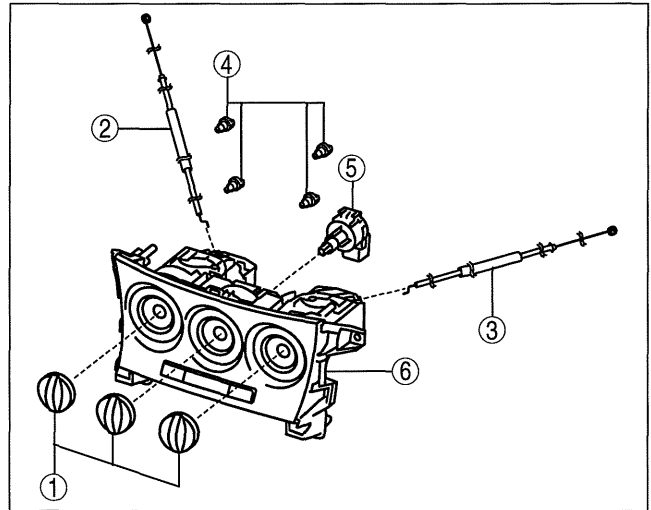
CLIMATE CONTROL UNIT DISASSEMBLY/ASSEMBLY [MANUAL AIR CONDITIONER]

id0740a2802000

- Disassemble in the order indicated in the figure.

1	Dial
2	Airflow mode wire (See 07-40B-19 Wire Removal Note.) (See 07-40B-19 Wire Installation Note.)
3	Air mix wire (See 07-40B-19 Wire Removal Note.) (See 07-40B-19 Wire Installation Note.)
4	Bulb
5	Fan switch
6	Climate control unit

- Assemble in the reverse order of disassembly.

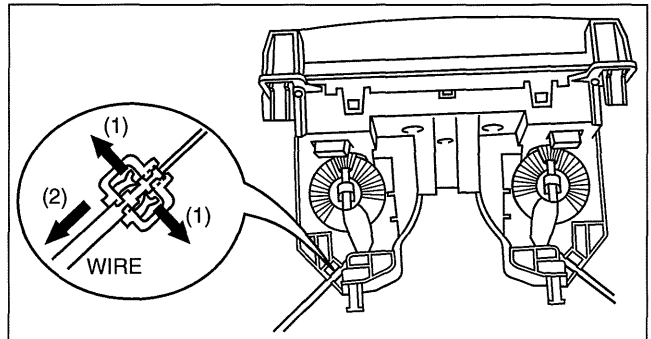


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07-40B

Wire Removal Note

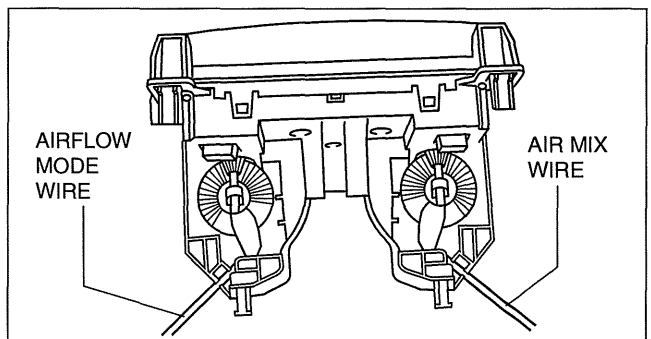
- Remove in the order indicated in the figure.



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Wire Installation Note

- Install as shown in the figure.



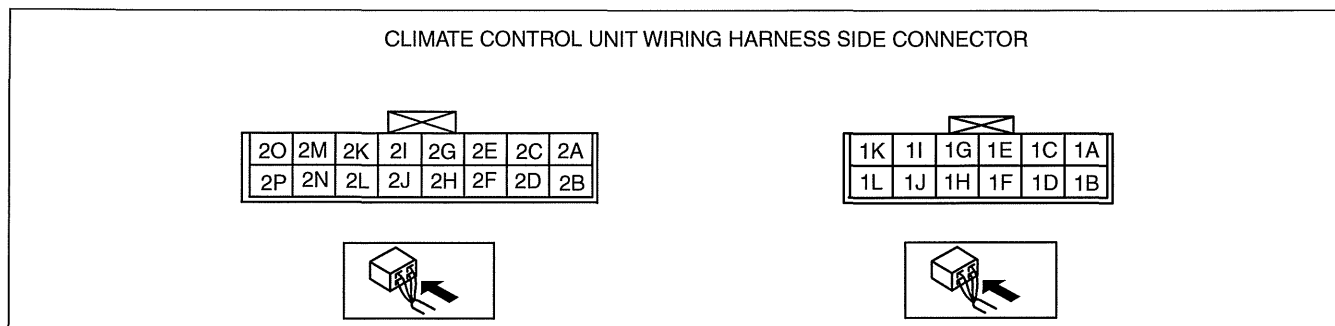
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CONTROL SYSTEM [MANUAL AIR CONDITIONER]

CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]

id0740a2802200

1. Remove the climate control unit with the connector connected. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
2. Switch the ignition to ON.
3. Connect the negative (-) lead of the tester to the body ground.
4. By inserting the positive (+) lead of the tester into the climate control unit connector, measure the voltage according to the terminal voltage table.
 - If there is any malfunction, inspect the parts under “Inspection item(s)”.
 - If the parts under “Inspection item(s)” are normal, replace the climate control unit.



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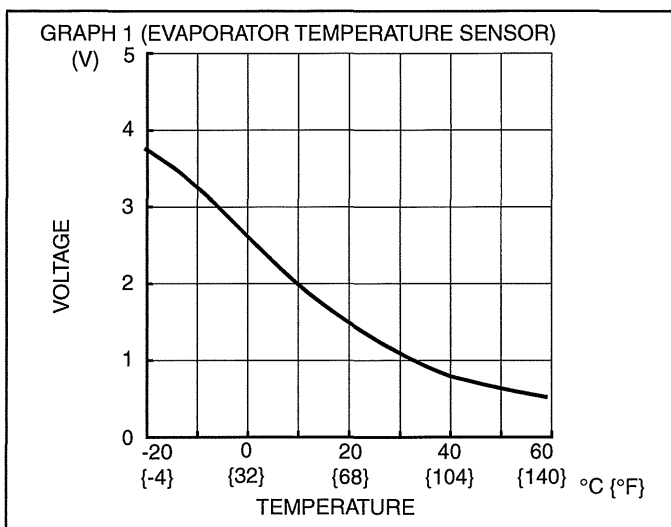
Terminal Voltage Table (Reference)

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item(s)
1A	—	—	—	—	—
1B	Motor operation	Air intake actuator	Switched to RECIRCULATE	B+	<ul style="list-style-type: none"> • Related wiring harness • Air intake actuator
			Switched to FRESH	1.0 or less	
1C	Evaporator temperature sensor input	Evaporator temperature sensor	Compared with temperature detected by evaporator temperature sensor	Refer to graph 1	<ul style="list-style-type: none"> • Related wiring harness • Evaporator temperature sensor • Climate control unit: terminal voltage (1G)
1D	—	—	—	—	—
1E	—	—	—	—	—
1F	Motor operation	Air intake actuator	Switched to RECIRCULATE	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness • Air intake actuator
			Switched to FRESH	B+	
1G	Sensor GND	<ul style="list-style-type: none"> • Evaporator temperature sensor • Refrigerant pressure sensor 	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness • Evaporator temperature sensor • Refrigerant pressure sensor • Climate control unit: terminal voltage (1H)
1H	+5 V	Refrigerant pressure sensor	Switch the ignition to ON	5	<ul style="list-style-type: none"> • Related wiring harness • Climate control unit: terminal voltage (1G)
			Switch the ignition to Off	1.0 or less	
1I	Ground	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness
1J	—	—	—	—	—
1K	—	—	—	—	—
1L	Blower fan ON/OFF signal	Fan switch	Fan stopped	B+	<ul style="list-style-type: none"> • Fan switch terminal voltage (D)
			Fan on	1.0 or less	
2A	Illumination (-)	Instrument cluster	Headlight ON and panel light control MAX	2.0	<ul style="list-style-type: none"> • Instrument cluster • Related wiring harness
			Headlight ON and panel light control MIN	9.65	
2B	B+	ROOM 15 A fuse	Switch the ignition to ON	B+	<ul style="list-style-type: none"> • Related wiring harness • ROOM 15 A fuse
			Switch the ignition to Off	1.0 or less	

CONTROL SYSTEM [MANUAL AIR CONDITIONER]

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item(s)
2C	—	—	—	—	—
2D	LIN	BCM	Because this terminal is for communication, good/no good judgement by terminal voltage is not possible.		<ul style="list-style-type: none"> • Related wiring harness • BCM
2E	—	—	—	—	—
2F	TNS signal	TNS relay	Headlight switch OFF	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness • TNS relay • BCM • Headlight switch
			Headlight switch ON	B+	
2G	—	—	—	—	—
2H	IG2	HEATER 10 A fuse	IG SW ON	B+	<ul style="list-style-type: none"> • Related wiring harness • HEATER 10 A fuse
			IG SW LOCK	1.0 or less	
2I	—	—	—	—	—
2J	Refrigerant pressure sensor signal	Refrigerant pressure sensor	Compared with temperature detected by refrigerant pressure sensor	(See 07-40B-16 REFRIGERANT PRESSURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].)	<ul style="list-style-type: none"> • Related wiring harness • Refrigerant pressure sensor
2K	Rear window defroster indicator	BCM	Rear window defroster switch OFF	11.12	<ul style="list-style-type: none"> • Related wiring harness • BCM
			Rear window defroster switch ON	1.0 or less	
2L	—	—	—	—	—
2M	—	—	—	—	—
2N	—	—	—	—	—
2O	Rear window defroster signal	BCM	While pressed rear window defroster switch	4.7	<ul style="list-style-type: none"> • Related wiring harness • Rear window defroster switch • BCM
			Released rear window defroster switch	1.0 or less	
2P	A/C signal	Instrument cluster	A/C ON	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness • Instrument cluster
			A/C OFF	4.8	

07-40B



CONTROL SYSTEM [MANUAL AIR CONDITIONER]

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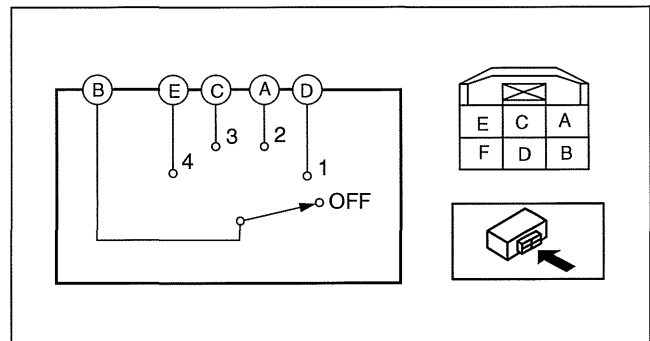
FAN SWITCH INSPECTION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (6) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (7) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (8) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (9) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (10)Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (11)Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (12)Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (13)Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (14)Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (15)Climate control unit. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
3. Verify that the continuity between the fan switch terminals as indicated in the table.
 - If there is any malfunction, replace the fan switch.

○—○: Continuity

Switch position	Terminal				
	A	B	C	D	E
0					
1		○—○		○—○	
2	○—○	○—○			
3		○—○	○—○		
4		○—○			○—○

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TECHNICAL DATA

07-50 TECHNICAL DATA

HVAC TECHNICAL DATA 07-50-1

HVAC TECHNICAL DATA

id075000800100

Item		Specification
REFRIGERANT SYSTEM		
Refrigerant	Type	HFC-134a
	Regular amount (approx. quantity) (g {oz})	455—505 {16.1—17.8}
BASIC SYSTEM		
A/C compressor	Lubrication oil	Type
		Sealed volume (approx. quantity) (ml {cc, fl oz})
		FD46 XG
		120 {120, 4.06}
CONTROL SYSTEM		
A/C compressor	Magnetic clutch clearance	(mm {in}) 0.35—0.65 {0.014—0.025}

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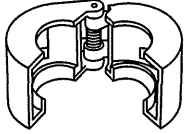
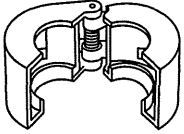
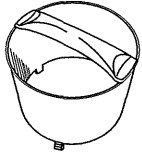
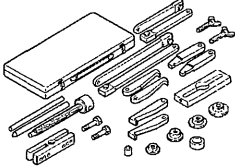

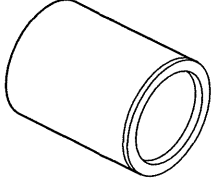
SERVICE TOOLS

07-60 SERVICE TOOLS

HVAC SST 07-60-1

HVAC SST

id076000800200

<p>49 B061 014</p> <p>Spring Lock Coupling Disconnect Tool</p> 	<p>49 G061 001</p> <p>Spring Lock Coupling Disconnect Tool</p> 	<p>49 B061 015A</p> <p>Holder</p> 
<p>49 0839 425C</p> <p>Bearing puller set</p> 	<p>49 SE01 160</p> <p>Valve seal pusher</p> 	<p>49 D034 202</p> <p>Support block</p> 

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RESTRAINTS

08
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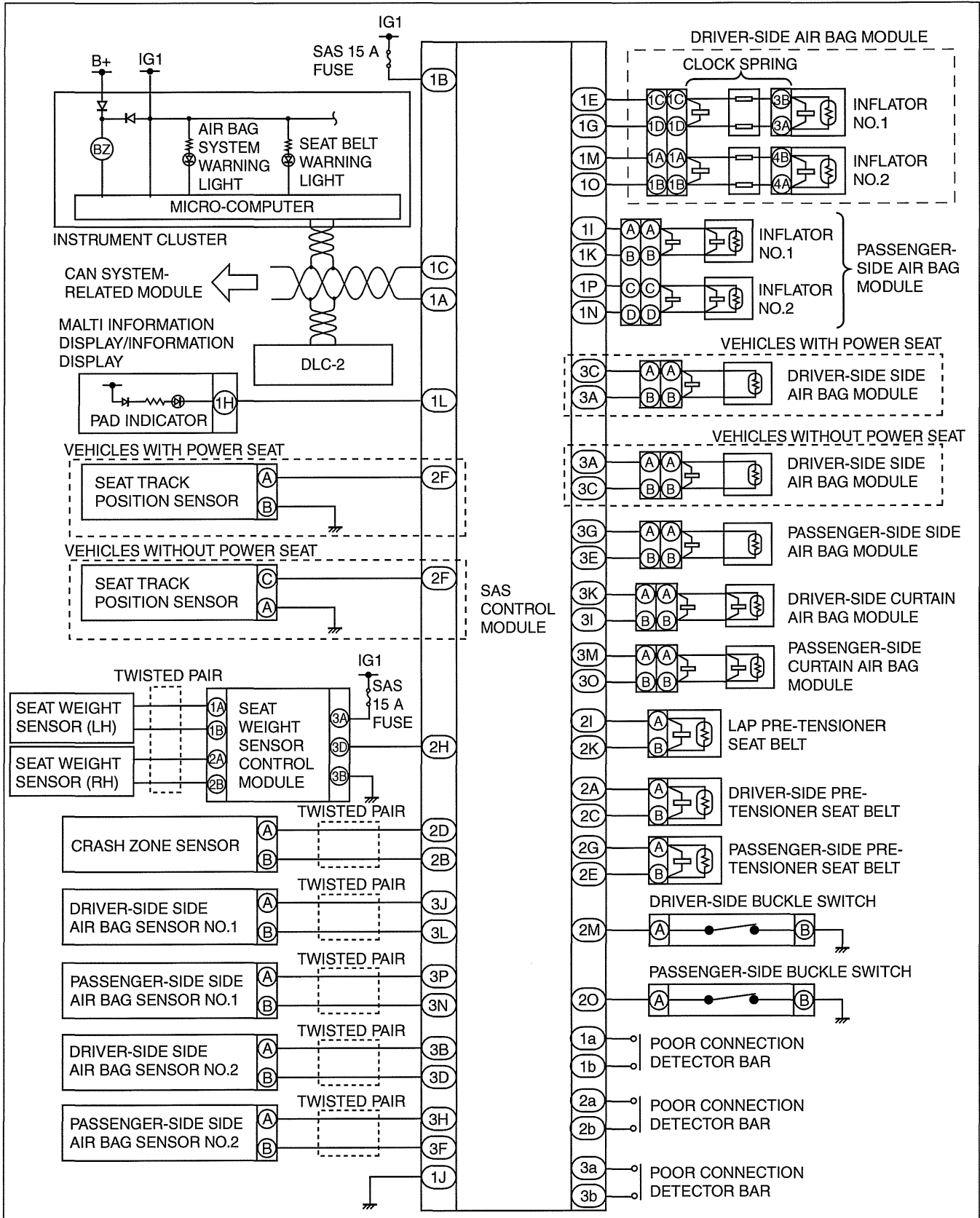
ON-BOARD DIAGNOSTIC

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DTC B1231	08-02-75	Detection Condition	08-02-90
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ON-BOARD DIAGNOSTIC

ON-BOARD DIAGNOSTIC WIRING DIAGRAM

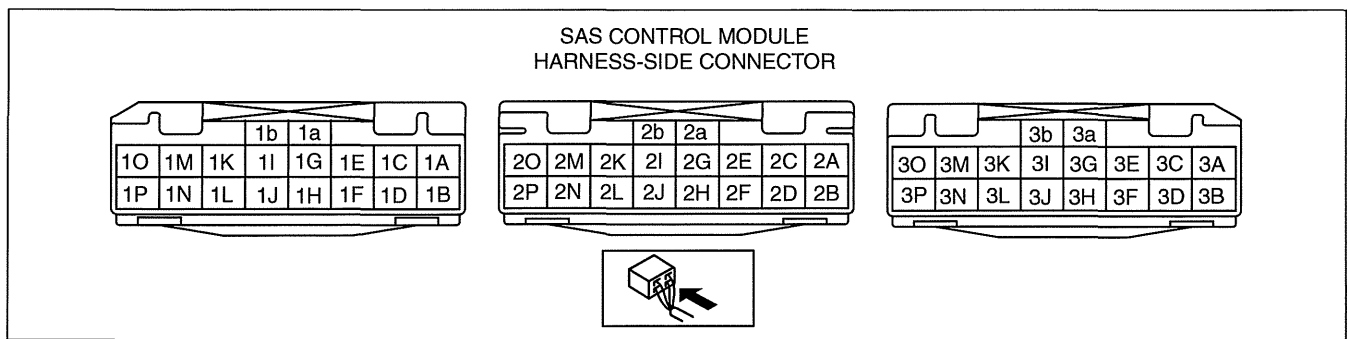
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ON-BOARD DIAGNOSTIC



am3uuw0000470

FOREWORD

id080200080300

Outline

- The OBD (on-board diagnostic) system has the following functions:
 - Malfunction detection function: Detects malfunctions in the air bag system and outputs DTCs (Diagnostic Trouble Codes).
 - PID/data monitor function: Reads out specific input/output signals and the system status.
- DTCs can be read/cleared using the M-MDS.

Note

- Use the M-MDS to verify DTCs because the DTCs displayed by the air bag system warning light are reference information only.

FLOWCHART

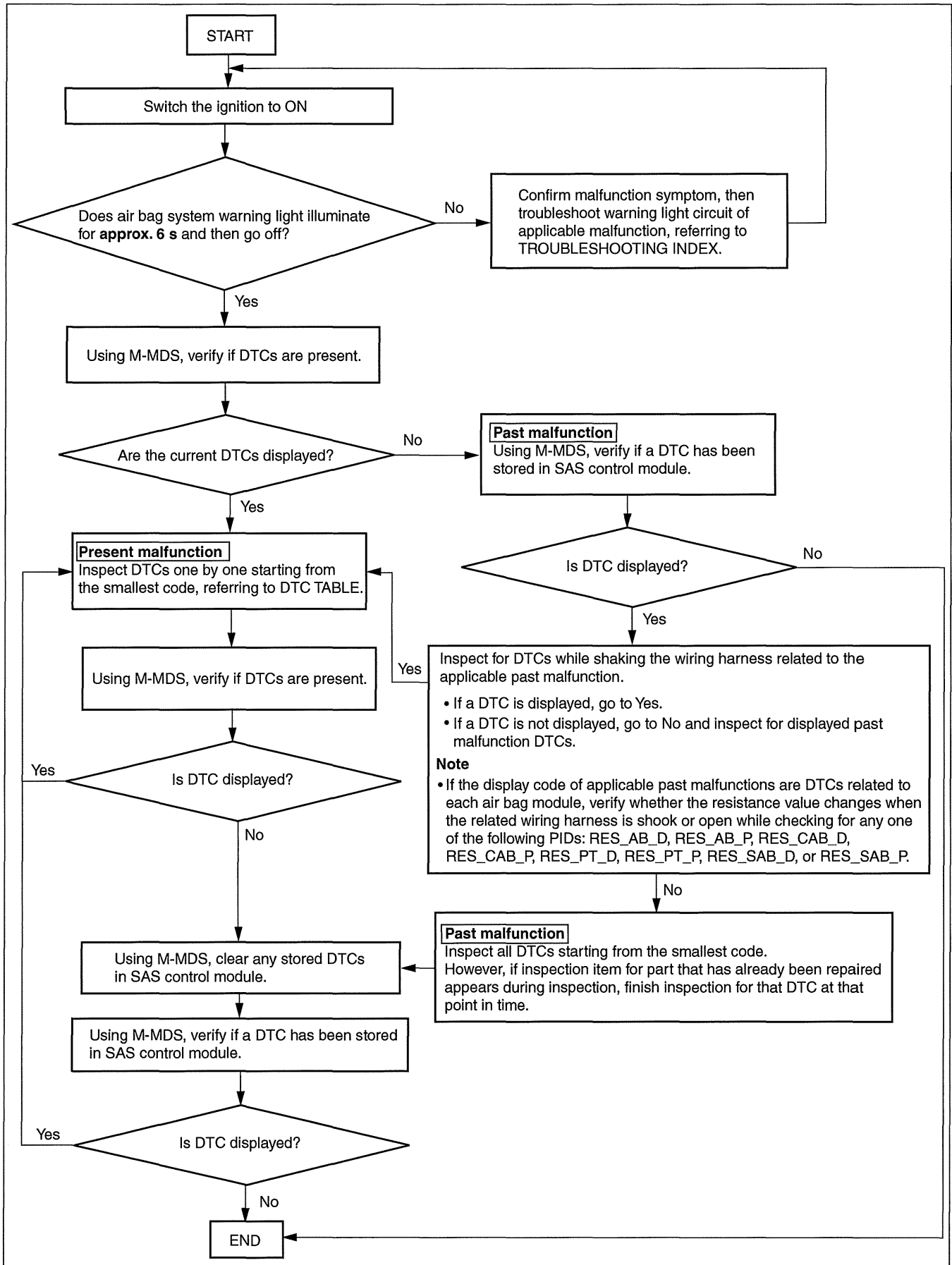
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- Use the following flowchart to verify the cause of the trouble.

Note

- When inspecting past malfunction codes, inspect only the DTCs that were indicated before beginning the inspection. A mis-diagnosis could occur as a result of new DTCs being added while performing an inspection by disconnecting related parts or connectors.
- When DTCs of the present malfunction are no longer output after present or past malfunctions or both have been repaired, be sure to clear the past malfunction from memory to prevent repair of malfunctions that have already been repaired.

ON-BOARD DIAGNOSTIC



08-02

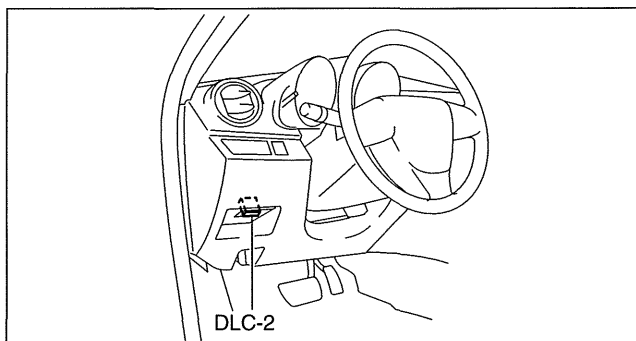
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ON-BOARD DIAGNOSTIC

DTC INSPECTION

id080200080500

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RCM".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the SAS control module. (See 08-02-6 CLEARING DTC.)

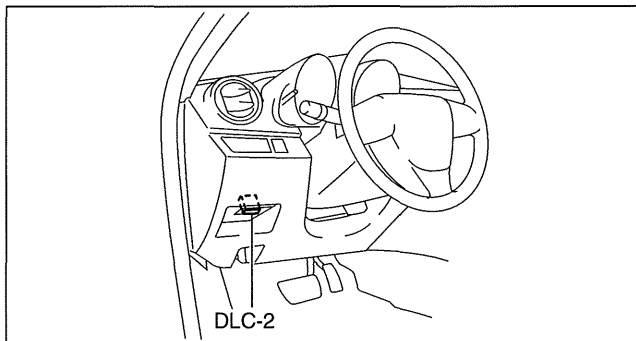


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CLEARING DTC

id080200080600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RCM".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 08-02-6 DTC INSPECTION.)
8. Verify that no DTCs are displayed.




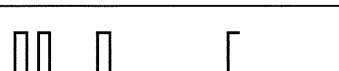



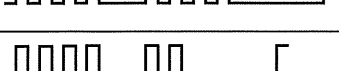
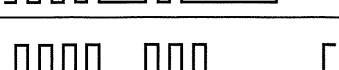



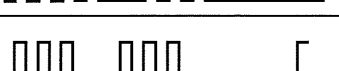
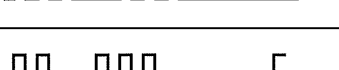


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ON-BOARD DIAGNOSTIC

DTC TABLE

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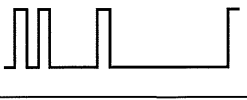
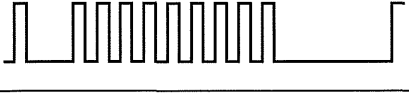


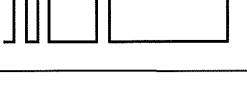

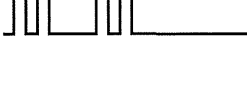
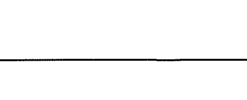

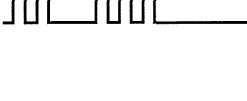
M-MDS display	DTC		System malfunction location	Page
	Air bag system warning light			
	Flashing pattern	Priority ranking		
B1013	16		22	Seat weight sensor calibration error (See 08-02-13 DTC B1013.)
B1046	24		21	Short to the driver-side curtain air bag module circuit and other air bag module circuits (See 08-02-14 DTC B1046, B2773, B2774, B2775, B2776.)
B1047	22		19	Short to the driver-side side air bag module circuit and other air bag module circuits (See 08-02-18 DTC B1047, B1992, B1993, B1994, B1995.)
B1048	21		13	Short to the passenger-side air bag module (inflator No.1) circuit and other air bag module circuits (See 08-02-22 DTC B1048, B1925, B1933, B1935, B1938.)
B1049	34		16	Short to the passenger-side pre-tensioner seat belt circuit and other air bag module circuits (See 08-02-25 DTC B1049, B1881, B1882, B1883, B1886.)
B104B	43		10	Short to the driver-side side air bag sensor No.1 circuit and other sensor circuits (See 08-02-29 DTC B104B, B104E, B1051, U2017.)
B104C	44		9	Short to the passenger-side side air bag sensor No.1 circuit and other sensor circuits (See 08-02-32 DTC B104C, B104F, B1050, U2018.)
B104D	42		8	Short to the crash zone sensor circuits and other sensor circuits (See 08-02-35 DTC B104D, B2226, B2227, B2855.)
B104E	43		10	Driver-side side air bag sensor No.1 circuit short to power supply or body ground (See 08-02-29 DTC B104B, B104E, B1051, U2017.)
B104F	44		9	Passenger-side side air bag sensor No.1 internal malfunction (See 08-02-32 DTC B104C, B104F, B1050, U2018.)
B1050			9	Passenger-side side air bag sensor No.1 circuit short to power supply or body ground
B1051	43		10	Driver-side side air bag sensor No.1 internal malfunction (See 08-02-29 DTC B104B, B104E, B1051, U2017.)
B1054	33		17	Short to the driver-side pre-tensioner seat belt circuit and other air bag module circuits (See 08-02-38 DTC B1054, B1877, B1878, B1879, B1885.)
B1055	23		18	Short to the passenger-side side air bag module circuit and other air bag module circuits (See 08-02-42 DTC B1055, B1996, B1997, B1998, B1999.)
B1056	25		20	Short to the passenger-side curtain air bag module circuit and other air bag module circuits (See 08-02-46 DTC B1056, B2777, B2778, B2779, B2780.)

08-02




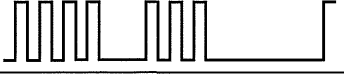



ON-BOARD DIAGNOSTIC

M-MDS display		DTC		System malfunction location	Page
		Air bag system warning light			
		Flashing pattern	Priority ranking		
B1057	19		14	Short to the driver-side air bag module (inflator No.1) circuit and other air bag module circuits	(See 08-02-50 DTC B1057, B1916, B1932, B1934, B1936.)
B1058				Short to the driver-side air bag module (inflator No.2) circuit and other air bag module circuits	(See 08-02-54 DTC B1058, B2228, B2230, B2232, B2234.)
B1059	21		13	Short to the passenger-side air bag module (inflator No.2) circuit and other air bag module circuits	(See 08-02-58 DTC B1059, B2229, B2231, B2233, B2235.)
B105B	45		12	Short to the driver-side side air bag sensor No.2 circuit and other sensor circuits	(See 08-02-62 DTC B105B, B110C, B1144, B1145.)
B105F	46		11	Short to the passenger-side side air bag sensor No.2 circuit and other sensor circuits	(See 08-02-66 DTC B105F, B110D, B1146, B1147.)
B10A6	35		15	Lap pre-tensioner seat belt circuit open circuit or resistance high	(See 08-02-70 DTC B10A6, B10A7, B10A8, B10A9, B10AA.)
B10A7				Lap pre-tensioner seat belt circuit short to power supply	
B10A8				Lap pre-tensioner seat belt circuit short to body ground	
B10A9				Lap pre-tensioner seat belt circuit resistance low	
B10AA				Short to the lap pre-tensioner seat belt circuit and other air bag module circuits	
B110C	45		12	Driver-side side air bag sensor No.2 circuit short to power supply or body ground	(See 08-02-62 DTC B105B, B110C, B1144, B1145.)
B110D	46		11	Passenger-side side air bag sensor No.2 circuit short to power supply or body ground	(See 08-02-66 DTC B105F, B110D, B1146, B1147.)
B110E	45		12	Driver-side side air bag sensor No.2 ID mismatch	(See 08-02-74 DTC B110E, B110F, B2856, B2886, B2887.)
B110F	46		11	Passenger-side side air bag sensor No.2 ID mismatch	
B1144	45		12	Driver-side side air bag sensor No.2 internal malfunction	(See 08-02-62 DTC B105B, B110C, B1144, B1145.)
B1145				Driver-side side air bag sensor No.2 (communication error)	
B1146	46		11	Passenger-side side air bag sensor No.2 internal malfunction	(See 08-02-66 DTC B105F, B110D, B1146, B1147.)
B1147				Passenger-side side air bag sensor No.2 (communication error)	

ON-BOARD DIAGNOSTIC

DTC				System malfunction location	Page
M-MDS display	Air bag system warning light		Priority ranking		
	Flashing pattern				
B1932	19		14	Driver-side air bag module (inflator No.1) circuit open circuit or resistance high	(See 08-02-50 DTC B1057, B1916, B1932, B1934, B1936.)
B1933	21		13	Passenger-side air bag module (inflator No.1) circuit open circuit or resistance high	(See 08-02-22 DTC B1048, B1925, B1933, B1935, B1938.)
B1934	19		14	Driver-side air bag module (inflator No.1) circuit resistance low	(See 08-02-50 DTC B1057, B1916, B1932, B1934, B1936.)
B1935	21		13	Passenger-side air bag module (inflator No.1) circuit resistance low	(See 08-02-22 DTC B1048, B1925, B1933, B1935, B1938.)
B1936	19		14	Driver-side air bag module (inflator No.1) circuit short to body ground	(See 08-02-50 DTC B1057, B1916, B1932, B1934, B1936.)
B1938	21		13	Passenger-side air bag module (inflator No.1) circuit short to body ground	(See 08-02-22 DTC B1048, B1925, B1933, B1935, B1938.)
B1992	22		19	Driver-side side air bag module circuit short to power supply	(See 08-02-18 DTC B1047, B1992, B1993, B1994, B1995.)
B1993				Driver-side side air bag module circuit short to body ground	
B1994				Driver-side side air bag module circuit open circuit or resistance high	
B1995				Driver-side side air bag module circuit resistance low	
B1996	23		18	Passenger-side side air bag module circuit short to power supply	(See 08-02-42 DTC B1055, B1996, B1997, B1998, B1999.)
B1997				Passenger-side side air bag module circuit short to body ground	
B1998				Passenger-side side air bag module circuit open circuit or resistance high	
B1999				Passenger-side side air bag module circuit resistance low	
B2226	42		8	Crash zone sensor internal malfunction	(See 08-02-35 DTC B104D, B2226, B2227, B2855.)
B2227				Crash zone sensor (communication error)	
B2228	19		14	Driver-side air bag module (inflator No.2) circuit short to body ground	(See 08-02-54 DTC B1058, B2228, B2230, B2232, B2234.)
B2229	21		13	Passenger-side air bag module (inflator No.2) circuit short to body ground	(See 08-02-58 DTC B1059, B2229, B2231, B2233, B2235.)

ON-BOARD DIAGNOSTIC

DTC				System malfunction location	Page
M-MDS display	Air bag system warning light		Priority ranking		
	Flashing pattern				
B2855	42		8	Crash zone sensor circuit short to power supply or body ground	(See 08-02-35 DTC B104D, B2226, B2227, B2855.)
B2856				Crash zone sensor ID mismatch	(See 08-02-74 DTC B110E, B110F, B2856, B2886, B2887.)
B2867	58		7	SAS control module connectors are poorly connected	(See 08-02-90 DTC B2867.)
B2886	44		9	Passenger-side side air bag sensor No.1 ID mismatch	(See 08-02-74 DTC B110E, B110F, B2856, B2886, B2887.)
B2887	43		10	Driver-side side air bag sensor No.1 ID mismatch	(See 08-02-74 DTC B110E, B110F, B2856, B2886, B2887.)
C1946	49		24	Seat track position sensor circuit open circuit or resistance high	(See 08-02-92 DTC C1946, C1947, C1948, C1981, C1982.)
C1947				Seat track position sensor circuit short to body ground	
C1948				Seat track position sensor circuit resistance not within specification	
C1981				Seat track position sensor malfunction	
C1982				Seat track position sensor circuit open or short to power supply	
U0073	—	Continuously illuminated	1	CAN communication error	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0155				Communication error to instrument cluster	
U2017	43		10	Driver-side side air bag sensor No.1 (communication error)	(See 08-02-29 DTC B104B, B104E, B1051, U2017.)
U2018	44		9	Passenger-side side air bag sensor No.1 (communication error)	(See 08-02-32 DTC B104C, B104F, B1050, U2018.)

ON-BOARD DIAGNOSTIC

DTC B1013

id080200800900

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1013	Seat weight sensor calibration error

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- Calibration set value not within valid range

Possible Causes

- Seat weight sensor deformed or malfunction
- Load to or deformation of the seat belt rail
- Deformed front passenger-side seat under-bracket or frame
- Weight acting on front passenger-side seat during calibration
- Improperly installed front passenger-side seat part at time of calibration
- Deformed floor where attached to front passenger-side seat
- Seat weight sensor control module malfunction
- SAS control module malfunction

08-02

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT SEAT WEIGHT SENSOR <ul style="list-style-type: none"> • Properly install the passenger-side front seat. • Inspect the seat weight sensor. (See 08-10-19 SEAT WEIGHT SENSOR INSPECTION.) • Is the seat weight sensor normal? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	INSPECT PASSENGER-SIDE FRONT SEAT <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the passenger-side seat and visually inspect for the following: <ul style="list-style-type: none"> — Seat under-bracket deformation — Seat frame deformation — Seat weight sensor deformation — Foreign objects stuck in seat • Are any of the parts deformed or are any foreign objects stuck in the seat? 	Yes	Replace any deformed parts or remove any foreign objects. <ul style="list-style-type: none"> • After replacement, perform seat weight sensor calibration and reperform the DTC inspection. If the DTC is displayed, go the next step. (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.)
		No	Go to the next step.
3	INSPECT FLOOR <ul style="list-style-type: none"> • Visually inspect the installation parts of the front passenger-side seat for the following: <ul style="list-style-type: none"> — Abnormal floor deformation — Installation hole of front passenger-side seat is improperly positioned • Is the floor normal? 	Yes	Go to the next step.
		No	Repair floor deformation. <ul style="list-style-type: none"> • After repair, perform seat weight sensor calibration and reperform the DTC inspection. If the DTC is displayed even though the floor has been repaired, go the next step. (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.)
4	INSPECT SEAT WEIGHT SENSOR CONTROL MODULE <ul style="list-style-type: none"> • Replace the seat weight sensor. • Connect the negative battery cable. • Switch the ignition to ON. • After replacement, perform seat weight sensor calibration. (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.) • Reperform the DTC inspection. • Are the same DTCs present? 	Yes	Replace the seat weight sensor control module. (See 08-10-18 SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.) <ul style="list-style-type: none"> • After replacement, perform seat weight sensor calibration and reperform the DTC inspection. If the DTC is displayed even though the seat weight sensor control module has been replaced, replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B1046, B2773, B2774, B2775, B2776

id080200808900

System Malfunction Location

DTC	System Malfunction Location
B1046	Short to the driver-side curtain air bag module circuit and other air bag module circuits
B2773	Driver-side curtain air bag module circuit resistance low
B2774	Driver-side curtain air bag module circuits open circuit or resistance high
B2775	Driver-side curtain air bag module circuit short to body ground
B2776	Driver-side curtain air bag module circuit short to power supply

Detection Condition

Warning

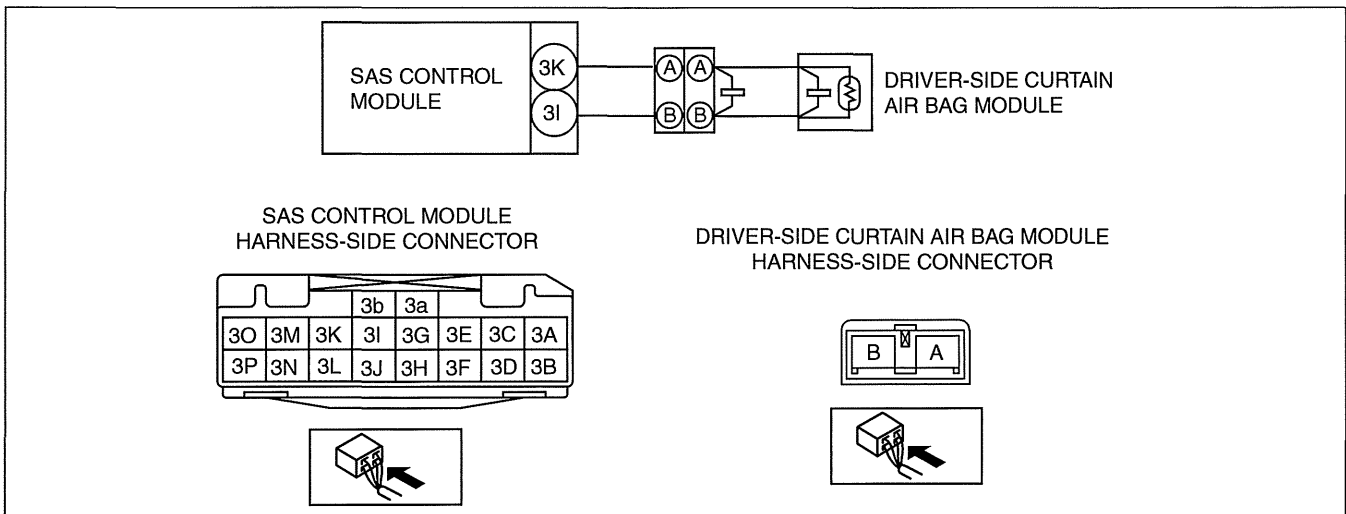
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Resistance other than **1.10–9.64 ohms** detected in driver-side curtain air bag module circuit
- Wiring harness between the driver-side curtain air bag module and SAS control module has a malfunction

Possible Causes

- Driver-side curtain air bag module connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the driver-side curtain air bag module and SAS control module
- Driver-side curtain air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000542

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT DRIVER-SIDE CURTAIN AIR BAG MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the C-pillar trim (driver-side). (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver-side curtain air bag module connector. (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Inspect the driver-side curtain air bag module connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the driver-side curtain air bag module connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the driver-side curtain air bag module wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the driver-side curtain air bag module wiring harness.	No	Go to the next step.
Yes	Replace the driver-side curtain air bag module wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3K and driver-side curtain air bag module connector terminal A, and SAS control module connector terminal 3I and driver-side curtain air bag module connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side curtain air bag module. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; vertical-align: top;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="vertical-align: top;">No</td> <td>Replace the wiring harness between the SAS control module and the driver-side curtain air bag module.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the driver-side curtain air bag module.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the driver-side curtain air bag module.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE CURTAIN AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and driver-side curtain air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 3K and 3I of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and driver-side curtain air bag module. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the driver-side curtain air bag module.
		No	Go to the next step.
4	<p>INSPECT DRIVER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the driver-side curtain air bag module connector terminals A-B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the driver-side curtain air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the driver-side curtain air bag module. (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/ INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the driver-side curtain air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1047, B1992, B1993, B1994, B1995

id080200809000

System Malfunction Location

DTC	System Malfunction Location
B1047	Short to the driver-side side air bag module circuit and other air bag module circuits
B1992	Driver-side side air bag module circuit short to power supply
B1993	Driver-side side air bag module circuit short to body ground
B1994	Driver-side side air bag module circuit open circuit or resistance high
B1995	Driver-side side air bag module circuit resistance low

Detection Condition

Warning

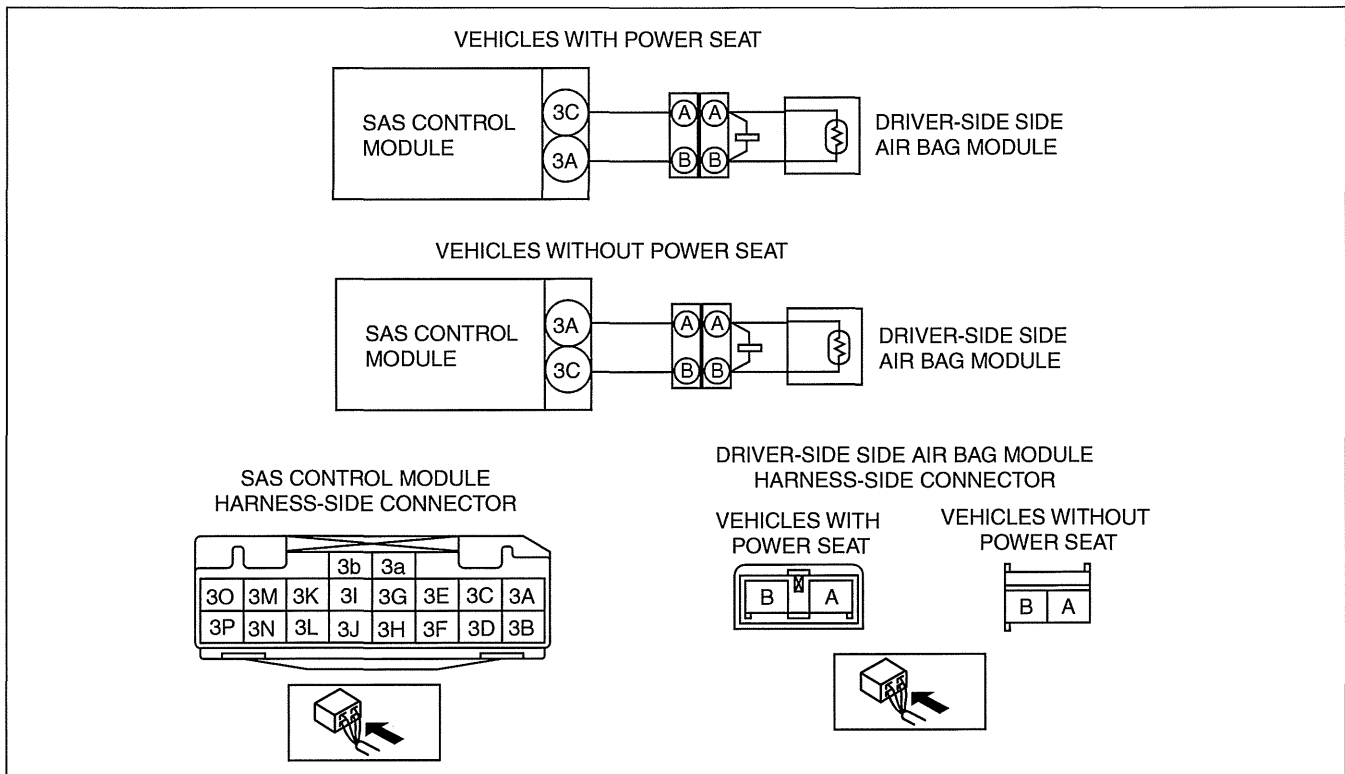
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Resistance other than **1.10–9.64 ohms** is detected in driver-side side air bag module circuit
- Wiring harness between the driver-side side air bag module and SAS control module has a malfunction

Possible Causes

- Driver-side side air bag module connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the driver-side side air bag module and SAS control module
- Driver-side side air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000542

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT DRIVER-SIDE SIDE AIR BAG MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the driver-side side air bag module connector installed to the lower side of the seat cushion of the front seat. • Inspect the driver-side side air bag module connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the driver-side side air bag module connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the driver-side side air bag module wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the driver-side side air bag module wiring harness.	No	Go to the next step.
Yes	Replace the driver-side side air bag module wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) <p>Vehicles with power seat</p> <ul style="list-style-type: none"> • Inspect the wiring harnesses between SAS control module connector terminal 3A and driver-side side air bag module connector terminal B, and SAS control module connector terminal 3C and driver-side side air bag module connector terminal A for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Vehicles without power seat</p> <ul style="list-style-type: none"> • Inspect the wiring harnesses between SAS control module connector terminal 3A and driver-side side air bag module connector terminal A, and SAS control module connector terminal 3C and driver-side side air bag module connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side side air bag module. <p>• Is the wiring harness normal?</p>	<p>Yes: Go to the next step.</p> <p>No: Replace the wiring harness between the SAS control module and the driver-side side air bag module.</p>

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and driver-side side air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 3A and 3C of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and driver-side side air bag module. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the driver-side side air bag module.
		No	Go to the next step.
4	<p>INSPECT DRIVER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the driver-side side air bag module connector terminals A-B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the driver-side side air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the driver-side side air bag module. (See 08-10-10 SIDE AIR BAG MODULE REMOVAL/ INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the driver-side side air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1048, B1925, B1933, B1935, B1938

id080200810600

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1048	Short to the passenger-side air bag module (inflator No.1) circuit and other air bag module circuits
B1925	Passenger-side air bag module (inflator No.1) circuit short to power supply
B1933	Passenger-side air bag module (inflator No.1) circuit open circuit or resistance high
B1935	Passenger-side air bag module (inflator No.1) circuit resistance low
B1938	Passenger-side air bag module (inflator No.1) circuit short to body ground

Detection Condition

Warning

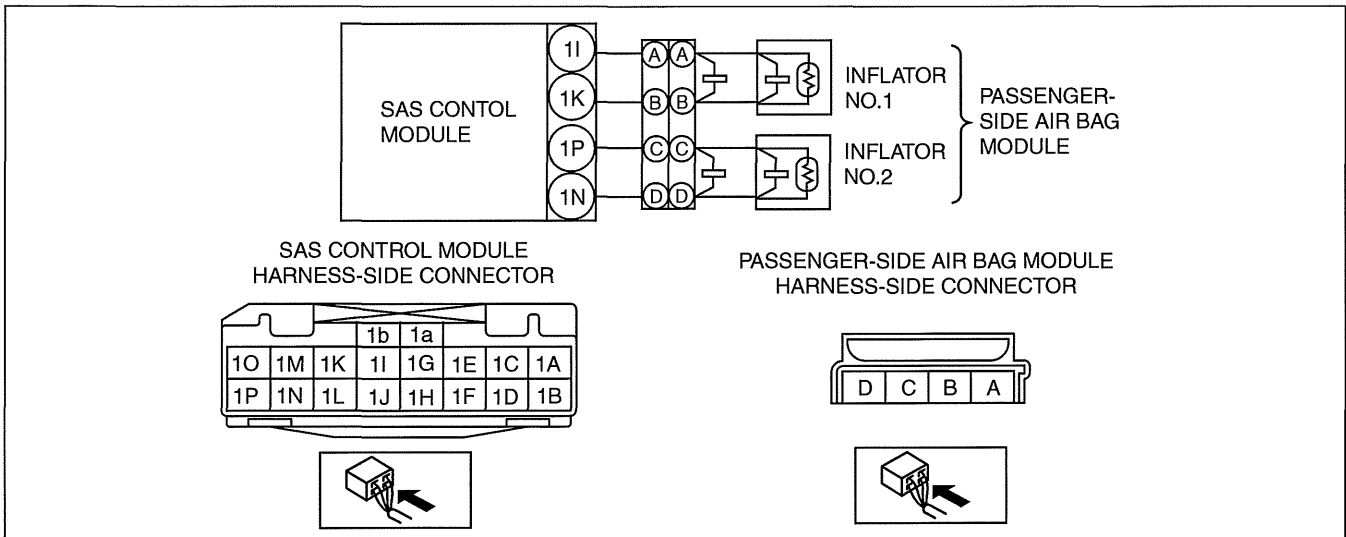
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Resistance other than **1.10–5.77 ohms** detected in passenger-side air bag module (inflator No.1) circuit
- Malfunction in the wiring harness between the passenger-side air bag module (inflator No.1) and SAS control module

Possible Causes

- Passenger-side air bag module connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side air bag module (inflator No.1) and the SAS control module
- Passenger-side air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



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ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT PASSENGER-SIDE AIR BAG MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Inspect the passenger-side air bag module connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the passenger-side air bag module connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the passenger-side air bag module wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the passenger-side air bag module wiring harness.	No	Go to the next step.
Yes	Replace the passenger-side air bag module wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 1I and passenger-side air bag module connector terminal A, and SAS control module connector terminal 1K and passenger-side air bag module connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side air bag module. <p>• Is the wiring harness normal?</p>	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the passenger-side air bag module.
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 1I and 1K of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side air bag module. <p>• Is the voltage measured?</p>	Yes	Replace the wiring harness between the SAS control module and the passenger-side air bag module.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
4	INSPECT PASSENGER-SIDE AIR BAG MODULE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side air bag module connector terminals A–B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the passenger-side air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the passenger-side air bag module. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
5	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the passenger-side air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

DTC B1049, B1881, B1882, B1883, B1886

id080200810700

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1049	Short to the passenger-side pre-tensioner seat belt circuit and other air bag module circuits
B1881	Passenger-side pre-tensioner seat belt circuit open circuit or resistance high
B1882	Passenger-side pre-tensioner seat belt circuit short to power supply
B1883	Passenger-side pre-tensioner seat belt circuit short to body ground
B1886	Passenger-side pre-tensioner seat belt circuit resistance low

Detection Condition

Warning

- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

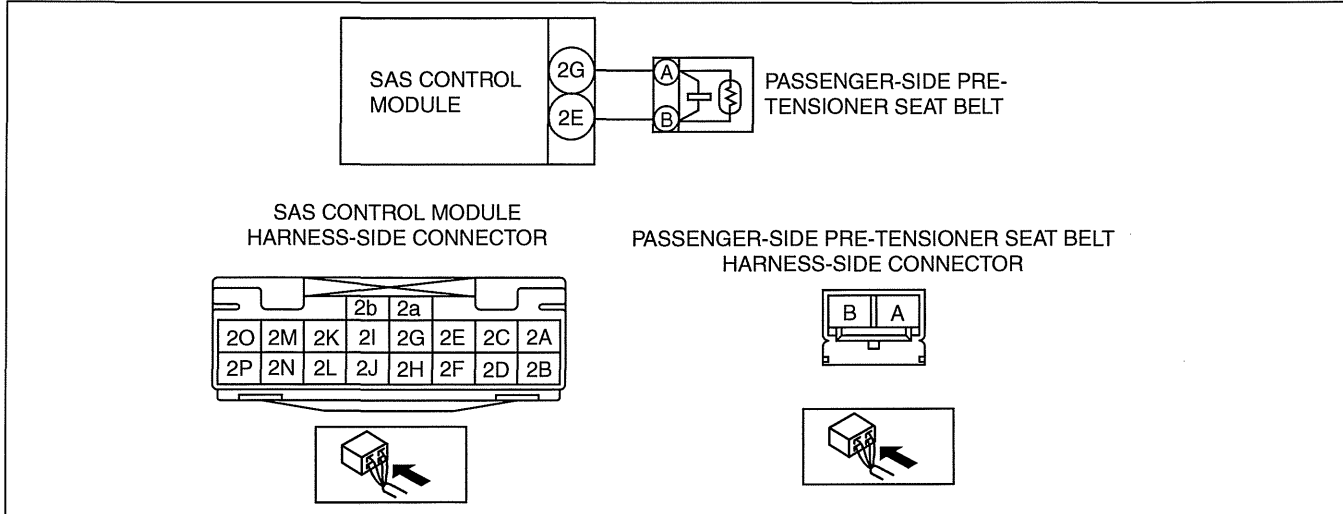
- Resistance other than **1.10–5.77 ohms** detected in passenger-side pre-tensioner seat belt circuit
- Wiring harness between the passenger-side pre-tensioner seat belt and SAS control module has a malfunction

ON-BOARD DIAGNOSTIC

Possible Causes

- Passenger-side pre-tensioner seat belt connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side pre-tensioner seat belt and SAS control module
- Passenger-side pre-tensioner seat belt malfunction
- SAS control module malfunction

System Wiring Diagram



am6xuw0000197

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT PASSENGER SIDE PRE-TENSIONER SEAT BELT CONNECTOR Warning <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the B-pillar lower trim (passenger-side). (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Inspect the passenger-side pre-tensioner seat belt connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the passenger-side pre-tensioner seat belt connector? 	Yes	Replace the passenger-side pre-tensioner seat belt wiring harness.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 2G and passenger-side pre-tensioner seat belt connector terminal A, and SAS control module connector terminal 2E and passenger-side pre-tensioner seat belt connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side pre-tensioner seat belt. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the passenger-side pre-tensioner seat belt.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the passenger-side pre-tensioner seat belt.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the passenger-side pre-tensioner seat belt.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE PRE-TENSIONER SEAT BELT FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side pre-tensioner seat belt connector disconnected. • Measure the voltage of SAS control module connector terminals 2E and 2G of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side pre-tensioner seat belt. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the passenger-side pre-tensioner seat belt.
		No	Go to the next step.
4	<p>INSPECT PASSENGER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side pre-tensioner seat belt connector terminals A–B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the passenger-side pre-tensioner seat belt connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the passenger-side pre-tensioner seat belt. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the passenger-side pre-tensioner seat belt connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B104B, B104E, B1051, U2017

id080200810800

System Malfunction Location

DTC	System Malfunction Location
B104B	Short to the driver-side side air bag sensor No.1 circuit and other sensor circuits
B104E	Driver-side side air bag sensor No.1 circuit short to power supply or body ground
B1051	Driver-side side air bag sensor No.1 internal malfunction
U2017	Driver-side side air bag sensor No.1 (communication error)

Detection Condition

Warning

- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

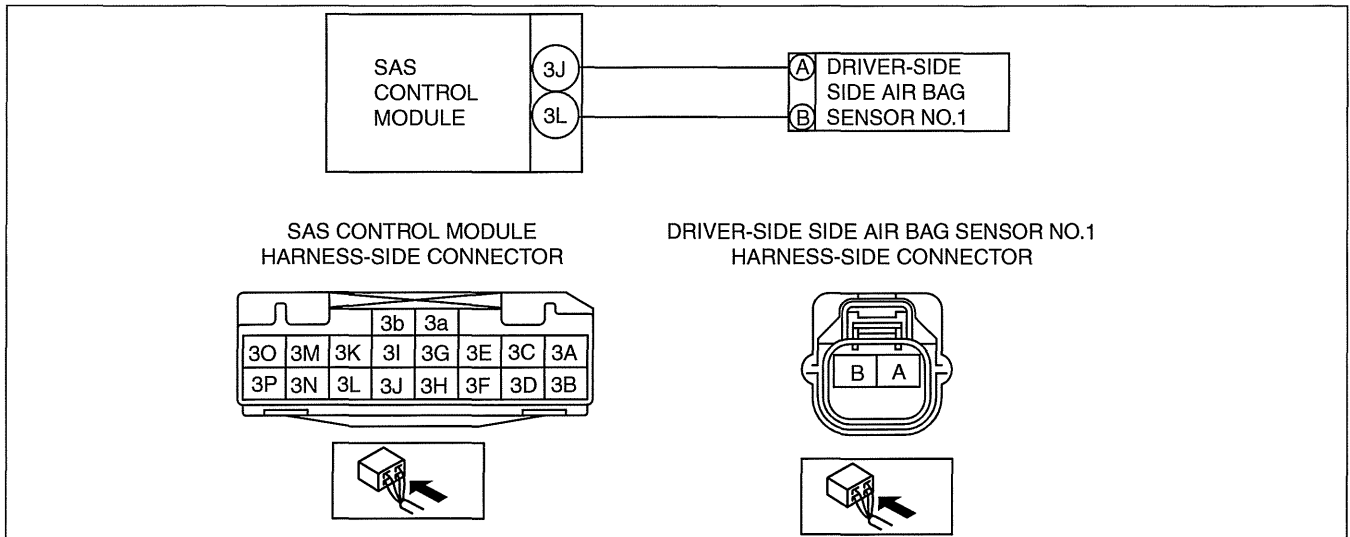
- Wiring harness between the driver-side side air bag sensor No.1 and SAS control module has a malfunction.
- Driver-side side air bag sensor No.1 has a malfunction

Possible Causes

- Driver-side side air bag sensor No.1 connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the driver-side side air bag sensor No.1 and SAS control module
- Driver-side side air bag sensor No.1 malfunction
- SAS control module malfunction

08-02

System Wiring Diagram



am3uuw0000542

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT DRIVER-SIDE SIDE AIR BAG SENSOR NO.1 CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the B-pillar lower trim (driver-side). (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the driver-side side air bag sensor No.1 connector. (See 08-10-19 SIDE AIR BAG SENSOR NO. 1 REMOVAL/INSTALLATION.) • Inspect the driver-side side air bag sensor No.1 connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the driver-side side air bag sensor No.1 connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the driver-side side air bag sensor No.1 wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the driver-side side air bag sensor No.1 wiring harness.	No	Go to the next step.
Yes	Replace the driver-side side air bag sensor No.1 wiring harness.					
No	Go to the next step.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR NO.1</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/ INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/ INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/ INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/ INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3J and driver-side side air bag sensor No.1 connector terminal A, and SAS control module connector terminal 3L and driver-side side air bag sensor No.1 connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side side air bag sensor No.1. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.1.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.1.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.1.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR NO.1 FOR A SHORT CIRCUIT TO THE POWER SUPPLY <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and driver-side side air bag sensor No.1 connector disconnected. • Measure the voltage of SAS control module connector terminals 3J and 3L of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and driver-side side air bag sensor No.1. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.1.
		No	Replace the driver-side side air bag sensor No.1, then go to the next step. (See 08-10-19 SIDE AIR BAG SENSOR NO. 1 REMOVAL/INSTALLATION.)
4	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

DTC B104C, B104F, B1050, U2018

id080200810900

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B104C	Short to the passenger-side side air bag sensor No.1 circuit and other sensor circuits
B104F	Passenger-side side air bag sensor No.1 internal malfunction
B1050	Passenger-side side air bag sensor No.1 circuit short to power supply or body ground
U2018	Passenger-side side air bag sensor No.1 (communication error)

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure**

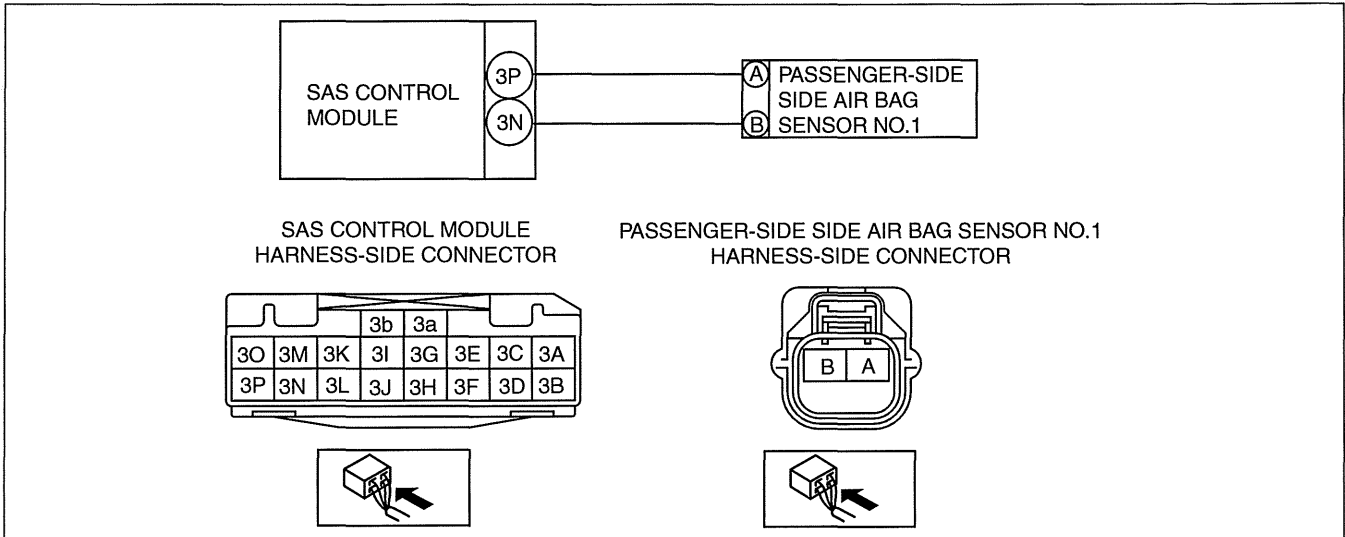
- Wiring harness between passenger-side side air bag sensor No.1 and SAS control module has a malfunction
- Passenger-side side air bag sensor No.1 has a malfunction

Possible Causes

- Passenger-side side air bag sensor No.1 connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side side air bag sensor No.1 and SAS control module
- Passenger-side side air bag sensor No.1 malfunction
- SAS control module malfunction

ON-BOARD DIAGNOSTIC

System Wiring Diagram



am3uuw0000542

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT PASSENGER-SIDE SIDE AIR BAG SENSOR NO.1 CONNECTOR Warning <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Remove the B-pillar lower trim (passenger-side). (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) Disconnect the passenger-side side air bag sensor No.1 connector. (See 08-10-19 SIDE AIR BAG SENSOR NO. 1 REMOVAL/INSTALLATION.) Inspect the passenger-side side air bag sensor No.1 connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the passenger-side side air bag sensor No.1 connector? 	Yes	Replace the passenger-side side air bag sensor No.1 wiring harness.
		No	Go to the next step.

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG SENSOR NO.1</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3P and passenger-side side air bag sensor No.1 connector terminal A, and SAS control module connector terminal 3N and passenger-side side air bag sensor No.1 connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side side air bag sensor No.1. <p>• Is the wiring harness normal?</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.1.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.1.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.1.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG SENSOR NO.1 FOR A SHORT CIRCUIT TO THE POWER SUPPLY <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side side air bag sensor No.1 connector disconnected. • Measure the voltage of SAS control module connector terminals 3N and 3P of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side side air bag sensor No.1. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.1.
		No	Replace the passenger-side side air bag sensor No.1, then go to the next step. (See 08-10-19 SIDE AIR BAG SENSOR NO. 1 REMOVAL/INSTALLATION.)
4	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

DTC B104D, B2226, B2227, B2855

id080200811000

System Malfunction Location

DTC	System Malfunction Location
B104D	Short to the crash zone sensor circuit and other sensor circuits
B2226	Crash zone sensor internal malfunction
B2227	Crash zone sensor (communication error)
B2855	Crash zone sensor circuit short to power supply or body ground

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

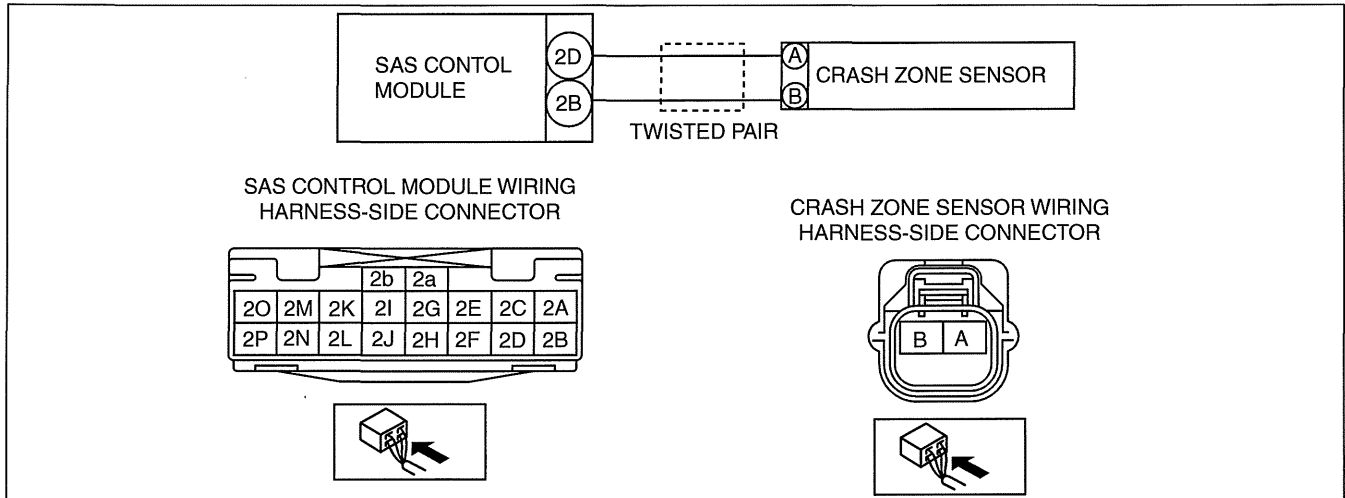
- Malfunction in the wiring harness between the crash zone sensor and SAS control module
- Malfunction in the crash zone sensor circuit

Possible Causes

- Crash zone sensor connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the crash zone sensor and SAS control module
- Crash zone sensor malfunction
- SAS control module malfunction

ON-BOARD DIAGNOSTIC

System Wiring Diagram



am3uuw0000367

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT CRASH ZONE SENSOR CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the crash zone sensor connector. (See 08-10-16 CRASH ZONE SENSOR REMOVAL/INSTALLATION.) Inspect the crash zone sensor connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the crash zone sensor connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the crash zone sensor wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the crash zone sensor wiring harness.	No	Go to the next step.
Yes	Replace the crash zone sensor wiring harness.					
No	Go to the next step.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND CRASH ZONE SENSOR</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/ INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/ INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/ INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/ INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 2D and crash zone sensor connector terminal A, and SAS control module connector terminal 2B and crash zone sensor connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and crash zone sensor. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the crash zone sensor.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the crash zone sensor.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the crash zone sensor.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND CRASH ZONE SENSOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and crash zone sensor connector disconnected. • Measure the voltage of SAS control module connector terminals 2B and 2D of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and crash zone sensor. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the crash zone sensor.
		No	Replace the crash zone sensor, then go to the next step. (See 08-10-16 CRASH ZONE SENSOR REMOVAL/INSTALLATION.)
4	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

DTC B1054, B1877, B1878, B1879, B1885

id080200811200

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1054	Short to the driver-side pre-tensioner seat belt circuit and other air bag module circuits
B1877	Driver-side pre-tensioner seat belt circuit open circuit or resistance high
B1878	Driver-side pre-tensioner seat belt circuit short to power supply
B1879	Driver-side pre-tensioner seat belt circuit short to body ground
B1885	Driver-side pre-tensioner seat belt circuit resistance low

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

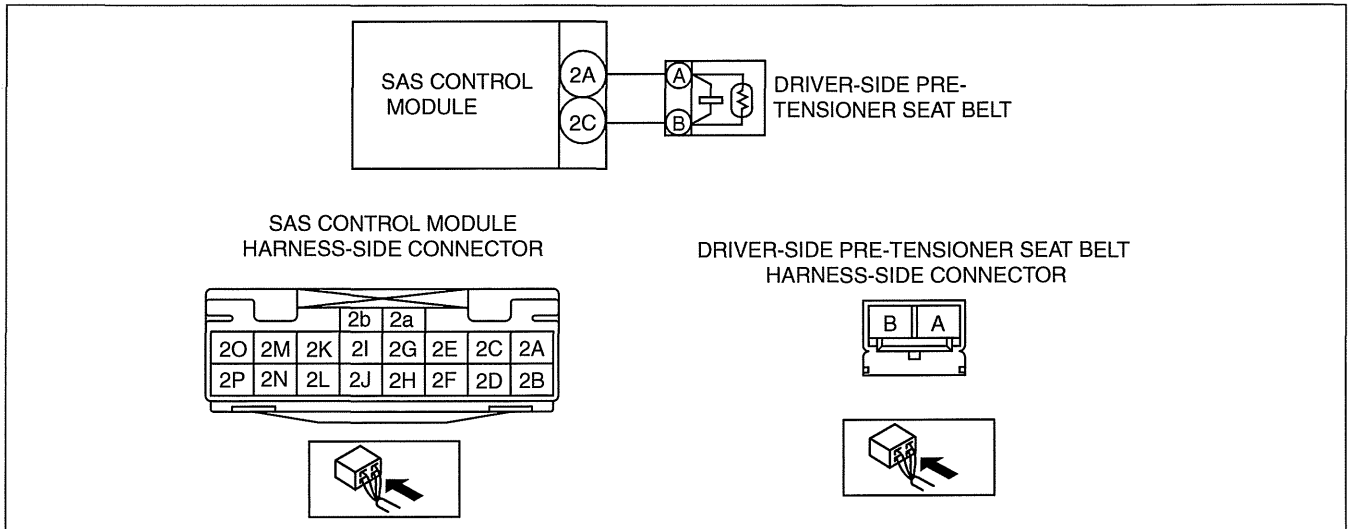
- Resistance other than **1.10–5.77 ohms** detected in driver-side pre-tensioner seat belt circuit
- Wiring harness between the driver-side pre-tensioner seat belt and SAS control module has a malfunction

Possible Causes

- Driver-side pre-tensioner seat belt connector malfunction
- Open or short or short to ground or short to power supply circuit in the wiring harness between the driver-side pre-tensioner seat belt and SAS control module
- Driver-side pre-tensioner seat belt malfunction
- SAS control module malfunction

ON-BOARD DIAGNOSTIC

System Wiring Diagram



am3uuw0000367

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT DRIVER-SIDE PRE-TENSIONER SEAT BELT CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Remove the B-pillar lower trim (driver-side). (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) Inspect the driver-side pre-tensioner seat belt connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the driver-side pre-tensioner seat belt connector? 	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the driver-side pre-tensioner seat belt wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the driver-side pre-tensioner seat belt wiring harness.	No	Go to the next step.
Yes	Replace the driver-side pre-tensioner seat belt wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 2A and driver-side pre-tensioner seat belt connector terminal A, and SAS control module connector terminal 2C and driver-side pre-tensioner seat belt connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side pre-tensioner seat belt. <p>• Is the wiring harness normal?</p>	<p>Yes Go to the next step.</p> <p>No Replace the wiring harness between the SAS control module and the driver-side pre-tensioner seat belt.</p>

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE PRE-TENSIONER SEAT BELT FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and driver-side pre-tensioner seat belt connector disconnected. • Measure the voltage of SAS control module connector terminals 2A and 2C of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and driver-side pre-tensioner seat belt. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the driver-side pre-tensioner seat belt.
		No	Go to the next step.
4	<p>INSPECT DRIVER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the driver-side pre-tensioner seat belt connector terminals A-B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the driver-side pre-tensioner seat belt connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the driver-side pre-tensioner seat belt. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the driver-side pre-tensioner seat belt connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1055, B1996, B1997, B1998, B1999

id080200809400

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1055	Short to the passenger-side side air bag module circuit and other air bag module circuits
B1996	Passenger-side side air bag module circuit short to power supply
B1997	Passenger-side side air bag module circuit short to body ground
B1998	Passenger-side side air bag module circuit open circuit or resistance high
B1999	Passenger-side side air bag module circuit resistance low

Detection Condition

Warning

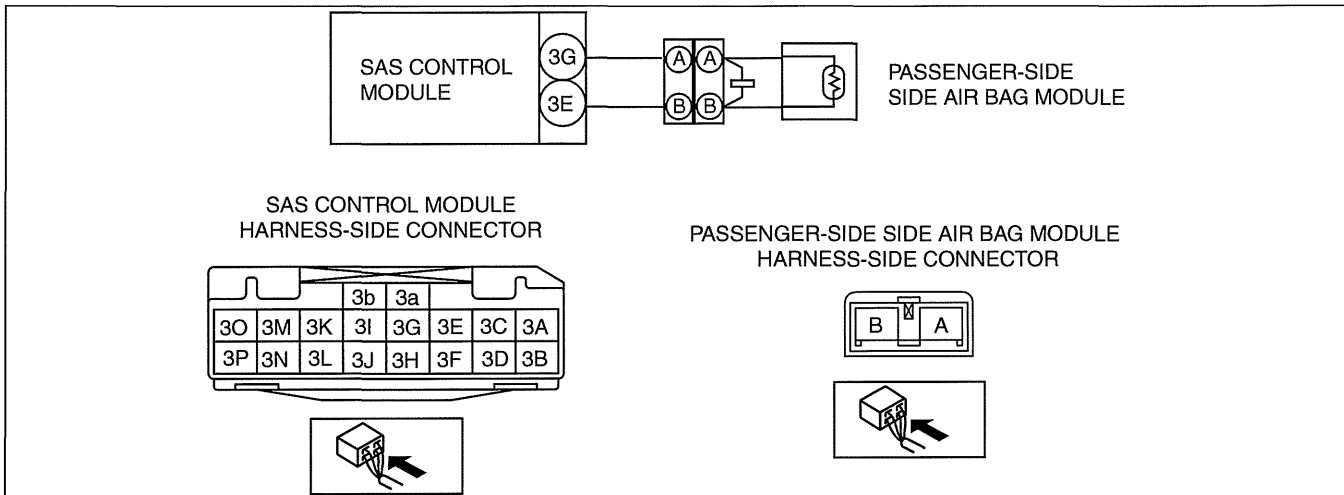
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Resistance other than **1.10–9.64 ohms** detected in passenger-side side air bag module circuit
- Wiring harness between the passenger-side side air bag module and SAS control module has a malfunction

Possible Causes

- Passenger-side side air bag module connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side side air bag module and SAS control module
- Passenger-side side air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000542

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT PASSENGER-SIDE SIDE AIR BAG MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the passenger-side side air bag module connector installed to the lower side of the seat cushion of the front seat. • Inspect the passenger-side side air bag module connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the passenger-side side air bag module connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the passenger-side side air bag module wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the passenger-side side air bag module wiring harness.	No	Go to the next step.
Yes	Replace the passenger-side side air bag module wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3G and passenger-side side air bag module connector terminal A, and SAS control module connector terminal 3E and passenger-side side air bag module connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side side air bag module. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the passenger-side side air bag module.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the passenger-side side air bag module.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the passenger-side side air bag module.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side side air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 3E and 3G of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side side air bag module. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the passenger-side side air bag module.
		No	Go to the next step.
4	<p>INSPECT PASSENGER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side side air bag module connector terminals A–B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the passenger-side side air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the passenger-side side air bag module. (See 08-10-10 SIDE AIR BAG MODULE REMOVAL/ INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the passenger-side side air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1056, B2777, B2778, B2779, B2780

id080200809500

System Malfunction Location

DTC	System Malfunction Location
B1056	Short to the passenger-side curtain air bag module circuit and other air bag module circuits
B2777	Passenger-side curtain air bag module circuit resistance low
B2778	Passenger-side curtain air bag module circuit open circuit or resistance high
B2779	Passenger-side curtain air bag module circuit short to body ground
B2780	Passenger-side curtain air bag module circuit short to power supply

Detection Condition

Warning

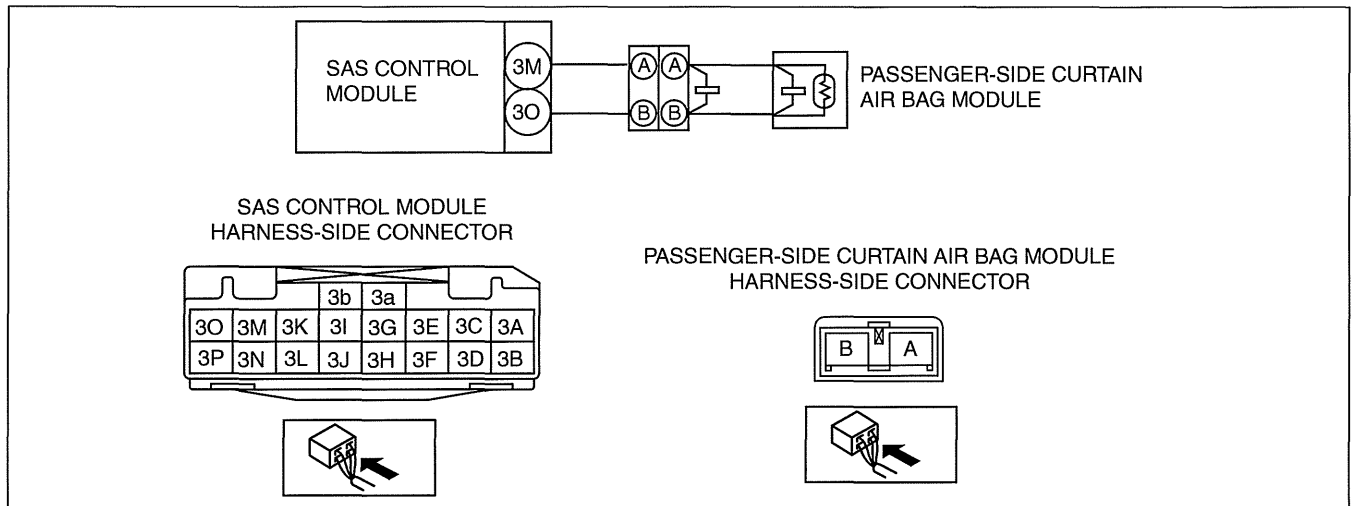
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Resistance other than **1.10–9.64 ohms** detected in passenger-side curtain air bag module circuit
- Wiring harness between the passenger-side curtain air bag module and SAS control module has a malfunction

Possible Causes

- Passenger-side curtain air bag module connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side curtain air bag module and SAS control module
- Passenger-side curtain air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000543

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action	
1	<p>INSPECT PASSENGER-SIDE CURTAIN AIR BAG MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the C-pillar trim (passenger-side). (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the passenger-side curtain air bag module connector. (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Inspect the passenger-side curtain air bag module connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the passenger-side curtain air bag module connector? 	Yes	Replace the passenger-side curtain air bag module wiring harness.
		No	Go to the next step.

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3M and passenger-side curtain air bag module connector terminal A, and SAS control module connector terminal 3O and passenger-side curtain air bag module connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side curtain air bag module. <p>• Is the wiring harness normal?</p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the passenger-side curtain air bag module.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the passenger-side curtain air bag module.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the passenger-side curtain air bag module.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE CURTAIN AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side curtain air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 3M and 3O of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side curtain air bag module. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the passenger-side curtain air bag module.
		No	Go to the next step.
4	<p>INSPECT PASSENGER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side curtain air bag module connector terminals A–B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the passenger-side curtain air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the passenger-side curtain air bag module. (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/ INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the passenger-side curtain air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1057, B1916, B1932, B1934, B1936

id080200811300

System Malfunction Location

DTC	System Malfunction Location
B1057	Short to the driver-side air bag module (inflator No.1) circuit and other air bag module circuits
B1916	Driver-side air bag module (inflator No.1) circuit short to power supply
B1932	Driver-side air bag module (inflator No.1) circuit open circuit or resistance high
B1934	Driver-side air bag module (inflator No.1) circuit resistance low
B1936	Driver-side air bag module (inflator No.1) circuit short to body ground

Detection Condition

Warning

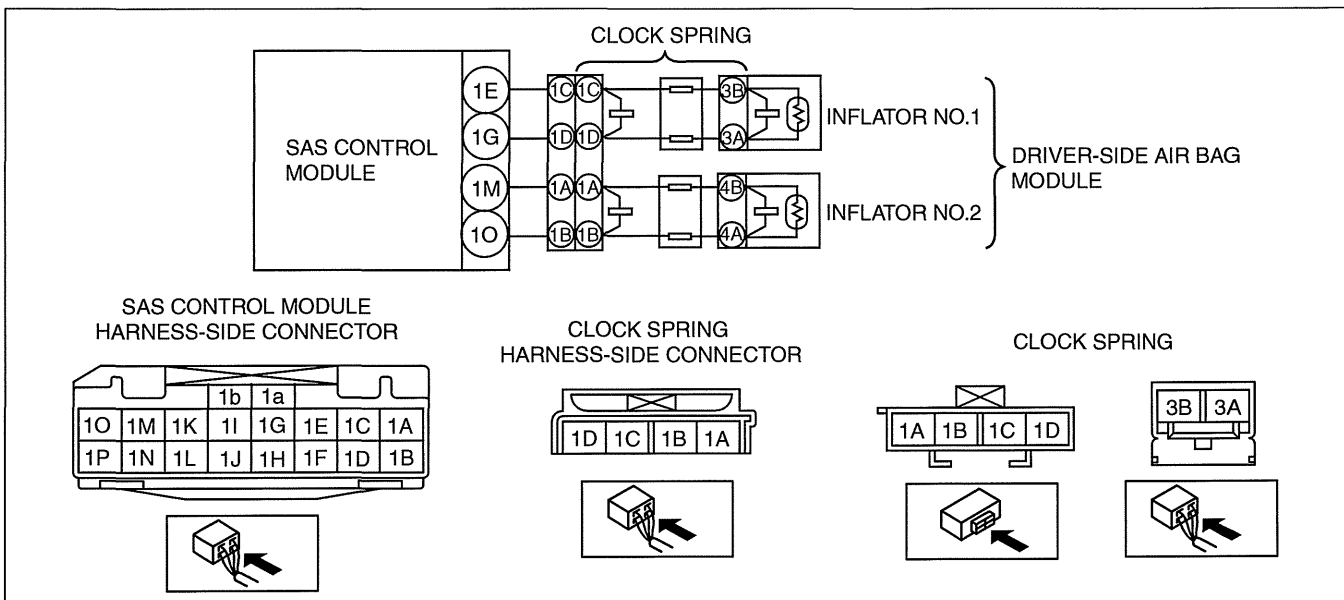
- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- Resistance **other than 1.61–5.77 ohms** detected in driver-side air bag module circuit
- Wiring harness between driver-side air bag module (inflator No.1) and SAS control module has malfunction

Possible Causes

- Clock spring connector malfunction
- Clock spring malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the clock spring and SAS control module
- Driver-side air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000496

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action	
1	<p>INSPECT DRIVER-SIDE AIR BAG MODULE CONNECTOR (CLOCK SPRING)</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Inspect the clock spring connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the clock spring connector? 	Yes	Replace clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	<p>INSPECT CLOCK SPRING</p> <ul style="list-style-type: none"> • Remove the steering wheel. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Remove the clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.) • Inspect for continuity between clock spring terminals 1D—3A and 1C—3B. <p>Note</p> <ul style="list-style-type: none"> • Inspect the clock spring wiring harness for continuity while shaking it. <ul style="list-style-type: none"> • Is there continuity? 	Yes	Go to the next step.
		No	Replace clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT WIRING HARNESS BETWEEN CLOCK SPRING AND SAS CONTROL MODULE</p> <ul style="list-style-type: none"> • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harness between SAS control module connector terminal 1E and clock spring connector terminal 1C, SAS control module connector terminal 1G and clock spring connector terminal 1D for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and clock spring. 	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and clock spring.
4	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND CLOCK SPRING FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and clock spring connector disconnected. • Measure the voltage of SAS control module connector terminals 1E and 1G. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and clock spring. 	Yes	Replace the wiring harness between the SAS control module and clock spring.
		No	Go to the next step.
	<ul style="list-style-type: none"> • Is the wiring harness normal? 		
	<ul style="list-style-type: none"> • Is the voltage measured? 		

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
5	INSPECT DRIVER-SIDE AIR BAG MODULE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Connect the leads of the SST (Fuel and thermometer checker) or apply 2 ohms resistance to clock spring connector terminals 3A–3B. • Set the resistance of the SST (Fuel and thermometer checker) to the 2 ohms position. • Except for the driver-side air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
6	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the driver-side air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1058, B2228, B2230, B2232, B2234

id080200809600

System Malfunction Location

DTC	System Malfunction Location
B1058	Short to the driver-side air bag module (inflator No.2) circuit and other air bag module circuits
B2228	Driver-side air bag module (inflator No.2) circuit short to body ground
B2230	Driver-side air bag module (inflator No.2) circuit short to power supply
B2232	Driver-side air bag module (inflator No.2) circuit open circuit or resistance high
B2234	Driver-side air bag module (inflator No.2) circuit resistance low

Detection Condition

Warning

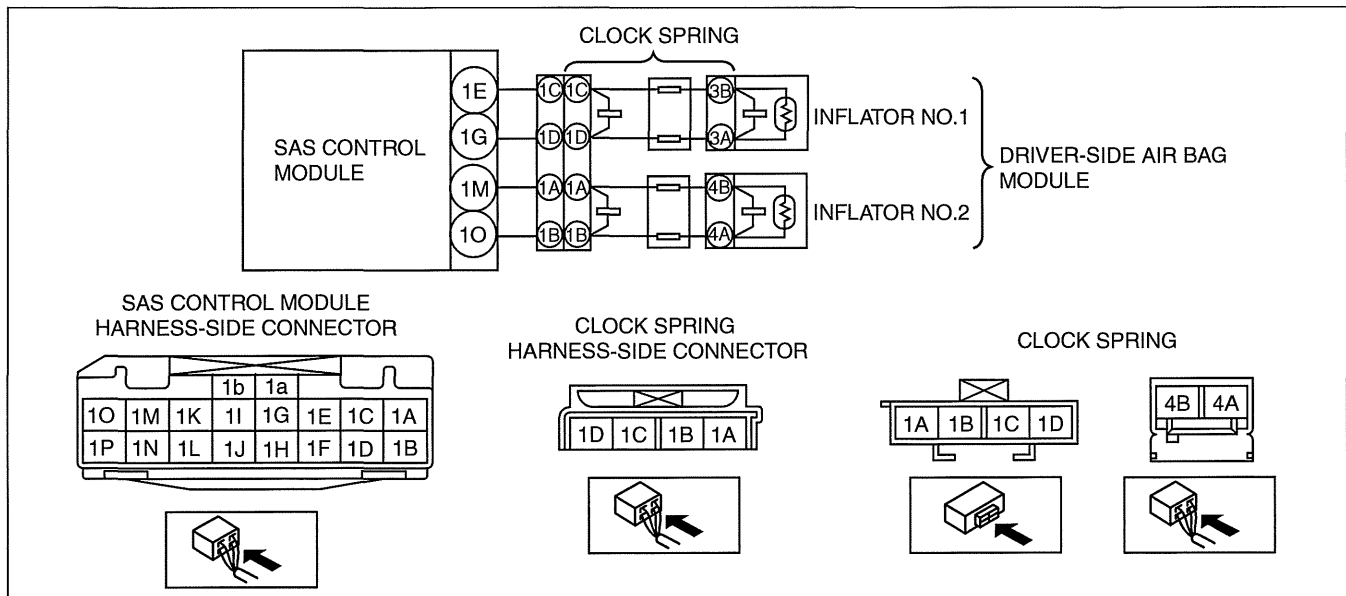
- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- Abnormal resistance (other than **1.61—5.77 ohms**) detected in the driver-side air bag module (inflator No.2) circuit
- Malfunction in the wiring harness between the driver-side air bag module (inflator No.2) and SAS control module

Possible Causes

- Clock spring connector malfunction
- Clock spring malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the clock spring and SAS control module
- Driver-side air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000367

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action	
1	<p>INSPECT DRIVER-SIDE AIR BAG MODULE CONNECTOR (CLOCK SPRING)</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Inspect the clock spring connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the clock spring connector? 	Yes	Replace clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	<p>INSPECT CLOCK SPRING</p> <ul style="list-style-type: none"> • Remove the steering wheel. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Remove the clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.) • Inspect for continuity between clock spring terminals 1A—4B and 1B—4A. <p>Note</p> <ul style="list-style-type: none"> • Inspect the clock spring wiring harness for continuity while shaking it. <ul style="list-style-type: none"> • Is there continuity? 	Yes	Go to the next step.
		No	Replace clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT WIRING HARNESS BETWEEN CLOCK SPRING AND SAS CONTROL MODULE</p> <ul style="list-style-type: none"> • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harness between SAS control module connector terminal 1M and clock spring connector terminal 1A, SAS control module connector terminal 1O and clock spring connector terminal 1B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and clock spring. <p>• Is the wiring harness normal?</p>	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and clock spring.
4	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND CLOCK SPRING FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and clock spring connector disconnected. • Measure the voltage of SAS control module connector terminals 1M and 1O. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and clock spring. <p>• Is the voltage measured?</p>	Yes	Replace the wiring harness between the SAS control module and clock spring.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
5	INSPECT DRIVER-SIDE AIR BAG MODULE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Connect the leads of the SST (Fuel and thermometer checker) or apply 2 ohms resistance to clock spring connector terminals 4A–4B. • Set the resistance of the SST (Fuel and thermometer checker) to the 2 ohms position. • Except for the driver-side air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
6	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the driver-side air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1059, B2229, B2231, B2233, B2235

id080200809700

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1059	Short to the passenger-side air bag module (inflator No.2) circuit and other air bag module circuits
B2229	Passenger-side air bag module (inflator No.2) circuit short to body ground
B2231	Passenger-side air bag module (inflator No.2) circuit short to power supply
B2233	Passenger-side air bag module (inflator No.2) circuit open circuit or resistance high
B2235	Passenger-side air bag module (inflator No.2) circuit resistance low

Detection Condition

Warning

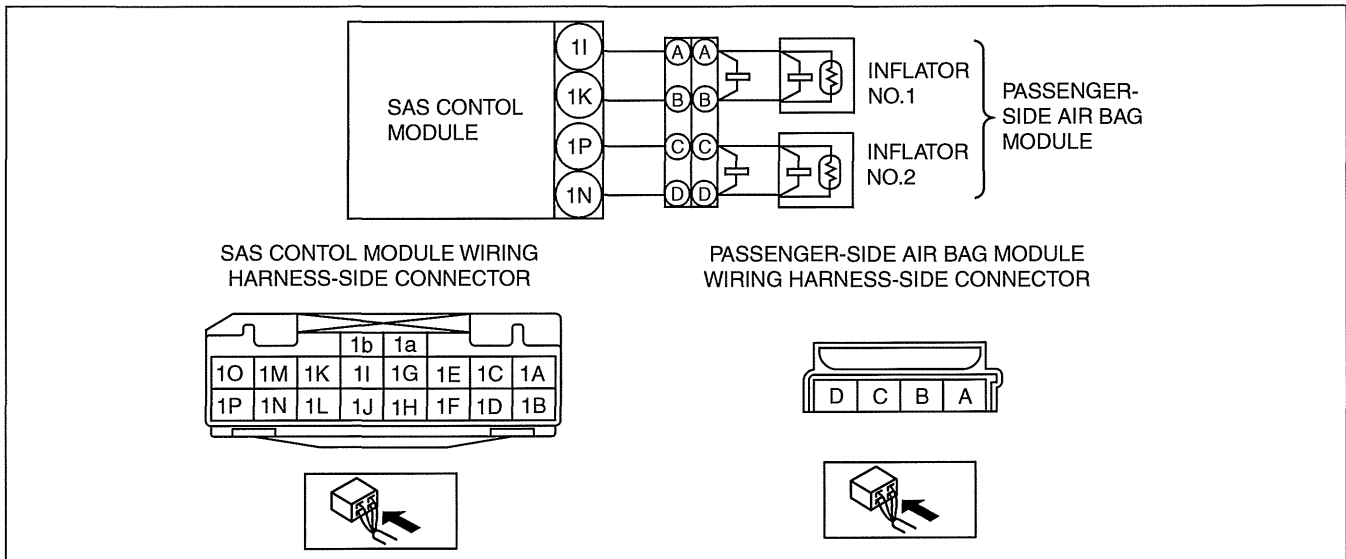
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Abnormal resistance (other than **1.10—5.77 ohms**) detected in the passenger-side air bag module (inflator No.2) circuit
- Malfunction in the wiring harness between the passenger-side air bag module (inflator No.2) and SAS control module

Possible Causes

- Passenger-side air bag module connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side air bag module (inflator No.2) and SAS control module
- Passenger-side air bag module malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000367

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT PASSENGER-SIDE AIR BAG MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Inspect the passenger-side air bag module connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the passenger-side air bag module connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the passenger-side air bag module wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the passenger-side air bag module wiring harness.	No	Go to the next step.
Yes	Replace the passenger-side air bag module wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 1P and passenger-side air bag module connector terminal C, and SAS control module connector terminal 1N and passenger-side air bag module connector terminal D for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side air bag module. 	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the passenger-side air bag module.
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 1P and 1N of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side air bag module. 	Yes	Replace the wiring harness between the SAS control module and the passenger-side air bag module.
		No	Go to the next step.
	<ul style="list-style-type: none"> • Is the wiring harness normal? 		
	<ul style="list-style-type: none"> • Is the voltage measured? 		

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
4	INSPECT PASSENGER-SIDE AIR BAG MODULE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side air bag module connector terminals C–D. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the passenger-side air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the passenger-side air bag module. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
5	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the passenger-side air bag module connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B105B, B110C, B1144, B1145

id080200812000

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B105B	Short to the driver-side side air bag sensor No.2 circuit and other sensor circuits
B110C	Driver-side side air bag sensor No.2 circuit short to power supply or body ground
B1144	Driver-side side air bag sensor No.2 internal malfunction
B1145	Driver-side side air bag sensor No.2 (communication error)

Detection Condition

Warning

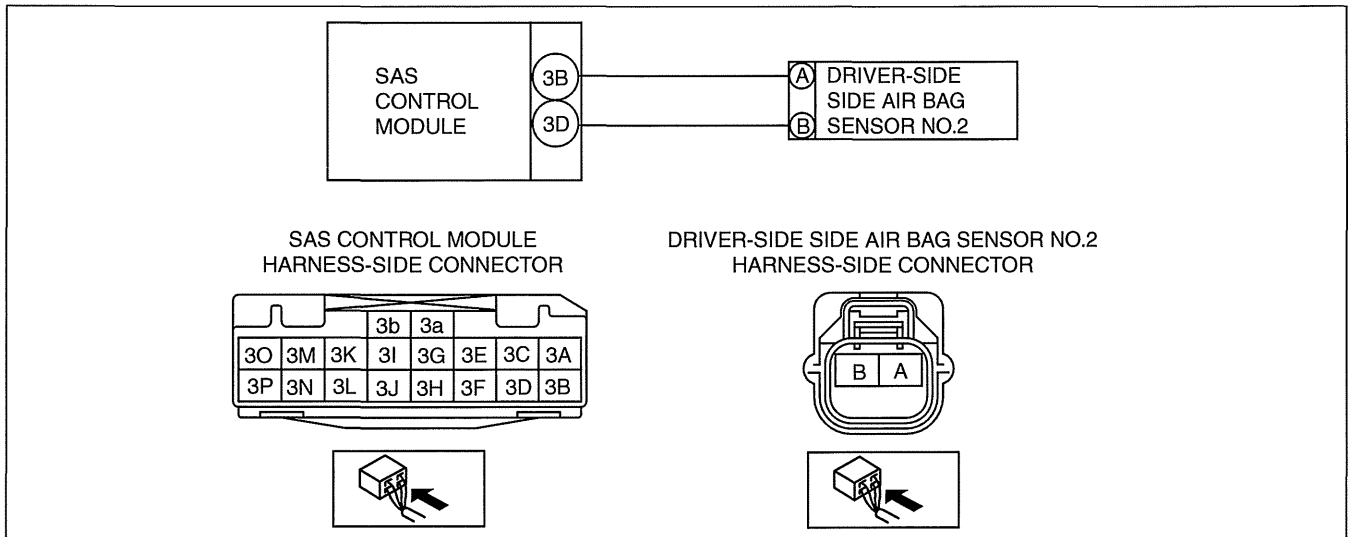
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Wiring harness between the driver-side side air bag sensor No.2 and SAS control module has a malfunction.
- Driver-side side air bag sensor No.2 has a malfunction.

Possible Causes

- Driver-side side air bag sensor No.2 connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the driver-side side air bag sensor No.2 and SAS control module
- Driver-side side air bag sensor No.2 malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000543

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT DRIVER-SIDE SIDE AIR BAG SENSOR NO.2 CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the tire house trim (driver-side). (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.) • Disconnect the driver-side side air bag sensor No.2 connector. (See 08-10-20 SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION.) • Inspect the driver-side side air bag sensor No.2 connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the driver-side side air bag sensor No.2 connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the driver-side side air bag sensor No.2 wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the driver-side side air bag sensor No.2 wiring harness.	No	Go to the next step.
Yes	Replace the driver-side side air bag sensor No.2 wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR NO.2</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3B and driver-side side air bag sensor No.2 connector terminal A, and SAS control module connector terminal 3D and driver-side side air bag sensor No.2 connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side side air bag sensor No.2. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.2.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.2.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.2.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR NO.2 FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and driver-side side air bag sensor No.2 connector disconnected. • Measure the voltage of SAS control module connector terminals 3B and 3D of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and driver-side side air bag sensor No.2. 	Yes	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor No.2.
		No	Replace the driver-side side air bag sensor No.2, then go to the next step. (See 08-10-20 SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION.)
4	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B105F, B110D, B1146, B1147

id080200811900

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B105F	Short to the passenger-side side air bag sensor No.2 circuit and other sensor circuits
B110D	Passenger-side side air bag sensor No.2 circuit short to power supply or body ground
B1146	Passenger-side side air bag sensor No.2 internal malfunction
B1147	Passenger-side side air bag sensor No.2 (communication error)

Detection Condition

Warning

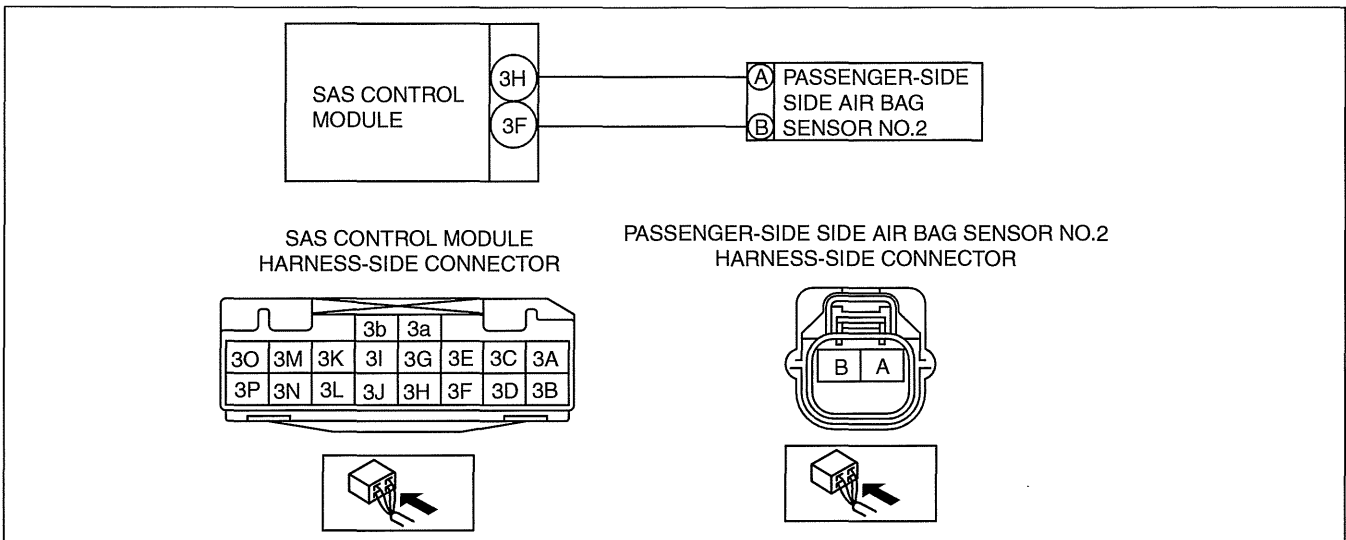
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Wiring harness between passenger-side side air bag sensor No.2 and SAS control module has a malfunction
- Passenger-side side air bag sensor No.2 has a malfunction

Possible Causes

- Passenger-side side air bag sensor No.2 connector malfunction
- Open or short circuit or short to ground or short to power supply in the wiring harness between the passenger-side side air bag sensor No.2 and SAS control module
- Passenger-side side air bag sensor No.2 malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000543

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action				
1	<p>INSPECT PASSENGER-SIDE SIDE AIR BAG SENSOR NO.2 CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the tire house trim (driver-side). (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.) • Disconnect the passenger-side side air bag sensor No.2 connector. (See 08-10-20 SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION.) • Inspect the passenger-side side air bag sensor No.2 connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the passenger-side side air bag sensor No.2 connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the passenger-side side air bag sensor No.2 wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the passenger-side side air bag sensor No.2 wiring harness.	No	Go to the next step.
Yes	Replace the passenger-side side air bag sensor No.2 wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG SENSOR NO.2</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 3H and passenger-side side air bag sensor No.2 connector terminal A, and SAS control module connector terminal 3F and passenger-side side air bag sensor No.2 connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side side air bag sensor No.2. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 50px; vertical-align: top;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="vertical-align: top;">No</td> <td>Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.2.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.2.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.2.					

ON-BOARD DIAGNOSTIC

Step	Inspection	Action				
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG SENSOR NO.2 FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and passenger-side side air bag sensor No.2 connector disconnected. • Measure the voltage of SAS control module connector terminals 3F and 3H of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side side air bag sensor No.2. <ul style="list-style-type: none"> • Is the voltage measured? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.2.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Replace the passenger-side side air bag sensor No.2, then go to the next step. (See 08-10-20 SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION.)</td> </tr> </table>	Yes	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.2.	No	Replace the passenger-side side air bag sensor No.2, then go to the next step. (See 08-10-20 SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION.)
Yes	Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor No.2.					
No	Replace the passenger-side side air bag sensor No.2, then go to the next step. (See 08-10-20 SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION.)					
4	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)	No	DTC troubleshooting completed.
Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)					
No	DTC troubleshooting completed.					

08-02

ON-BOARD DIAGNOSTIC

DTC B10A6, B10A7, B10A8, B10A9, B10AA

id080200818100

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B10A6	Lap pre-tensioner seat belt circuit open circuit or resistance high
B10A7	Lap pre-tensioner seat belt circuit short to power supply
B10A8	Lap pre-tensioner seat belt circuit short to body ground
B10A9	Lap pre-tensioner seat belt circuit resistance low
B10AA	Short to the lap pre-tensioner seat belt circuit and other air bag module circuits

Detection Condition

Warning

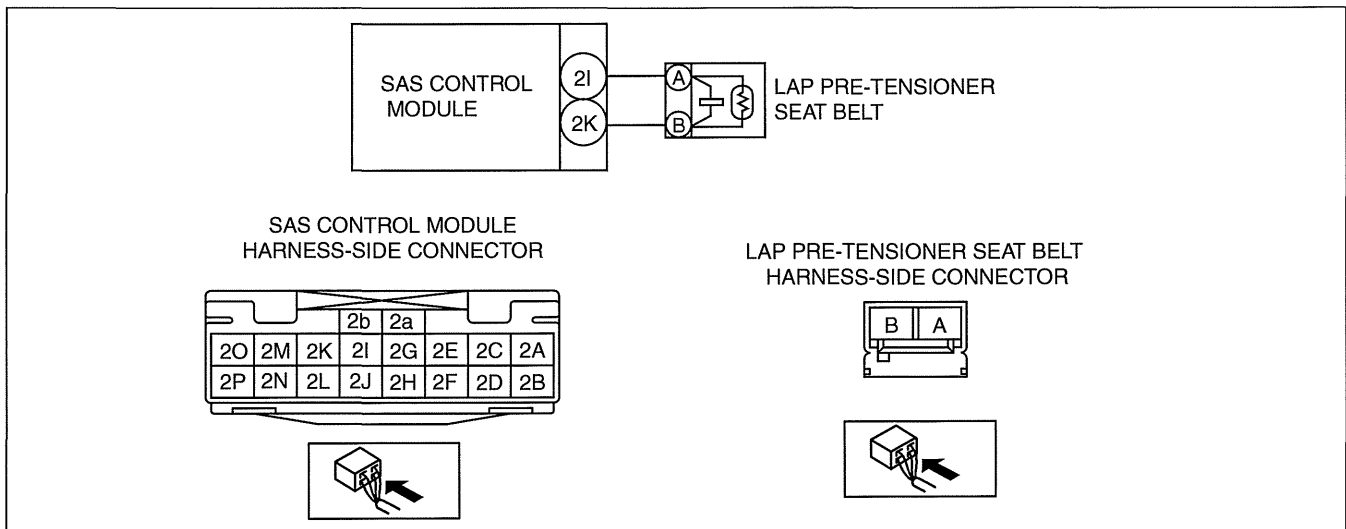
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Resistance other than **1.10–5.77 ohms** detected in lap pre-tensioner seat belt circuit
- Wiring harness between the lap pre-tensioner seat belt and SAS control module has a malfunction.

Possible Causes

- Lap pre-tensioner seat belt connector malfunction
- Open or short or short to ground or short to power supply circuit in the wiring harness between the lap pre-tensioner seat belt and SAS control module
- Lap pre-tensioner seat belt malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000558

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action	
1	<p>INSPECT LAP PRE-TENSIONER SEAT BELT CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the B-pillar lower trim (driver-side). (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Inspect the lap pre-tensioner seat belt connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the lap pre-tensioner seat belt connector? 	Yes	Replace the lap pre-tensioner seat belt wiring harness.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC

Step	Inspection	Action
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND LAP PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Inspect the wiring harnesses between SAS control module connector terminal 2I and lap pre-tensioner seat belt connector terminal A, and SAS control module connector terminal 2K and lap pre-tensioner seat belt connector terminal B for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and lap pre-tensioner seat belt. <p>• Is the wiring harness normal?</p>	<p style="text-align: center;">Yes</p> <p>Go to the next step.</p> <p style="text-align: center;">No</p> <p>Replace the wiring harness between the SAS control module and the lap pre-tensioner seat belt.</p>

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND LAP PRE-TENSIONER SEAT BELT FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and lap pre-tensioner seat belt connector disconnected. • Measure the voltage of SAS control module connector terminals 2I and 2K of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and lap pre-tensioner seat belt. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the lap pre-tensioner seat belt.
		No	Go to the next step.
4	<p>INSPECT LAP PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the lap pre-tensioner seat belt connector terminals A–B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the lap pre-tensioner seat belt connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Go to the next step.
		No	Replace the lap pre-tensioner seat belt. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the lap pre-tensioner seat belt connector. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B110E, B110F, B2856, B2886, B2887

id080200811800

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B110E	Driver-side side air bag sensor No.2 ID mismatch
B110F	Passenger-side side air bag sensor No.2 ID mismatch
B2856	Crash zone sensor ID mismatch
B2886	Passenger-side side air bag sensor No.1 ID mismatch
B2887	Driver-side side air bag sensor No.1 ID mismatch

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- The SAS control module detects an error of impact magnitude set in the sensor, which occurs due to installation mismatch of the crash zone sensor or side air bag sensors.

Possible Causes

- Crash zone sensor misinstalled with wrong sensor
- Driver-side side air bag sensor No.1 misinstalled with wrong sensor
- Passenger-side side air bag sensor No.1 misinstalled with wrong sensor
- Driver-side side air bag sensor No.2 misinstalled with wrong sensor
- Passenger-side side air bag sensor No.2 misinstalled with wrong sensor
- SAS control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT EACH SENSOR FOR INSTALLATION POSITION Warning <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Verify that the crash zone sensor or side air bag sensor is installed in the correct position. • Is each sensor installed correctly? 	Yes: Go to the next step. No: Install the each sensor correctly, then go to the next step.
2	PERFORM DTC INSPECTION <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes: Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) No: DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B1231

id080200801000

System Malfunction Location

- SAS control module activation (deployment) control freeze

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- SAS control module determined collision

Possible Causes

- SAS control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	PERFORM DTC INSPECTION <ul style="list-style-type: none">• Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.)• Are the same DTCs present?	Yes Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC

DTC B1317, B1318

id080200811500

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1317	SAS control module power supply voltage increases (16 V or more)
B1318	SAS control module power supply voltage decreases (8 V or less)

Detection Condition

Warning

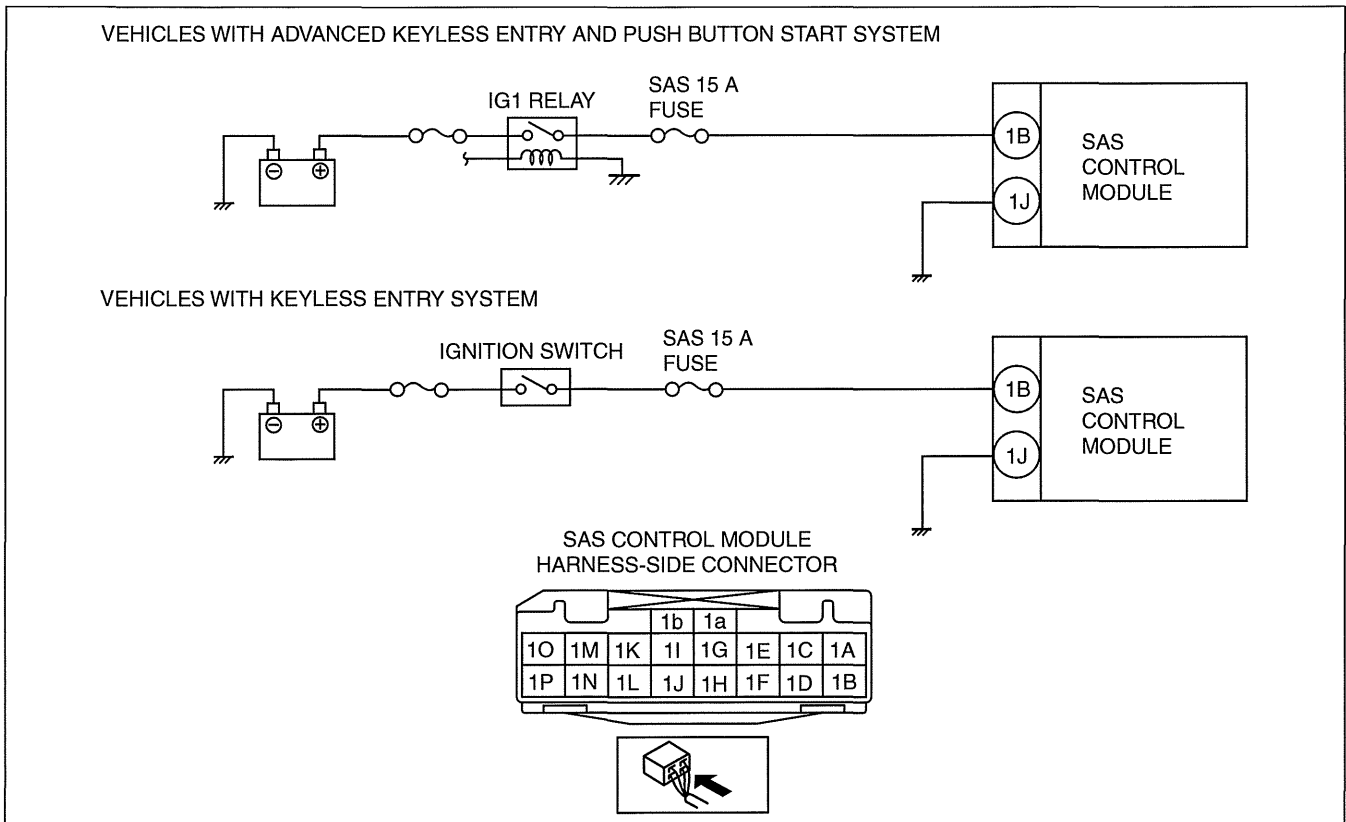
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- SAS control module power supply voltage is other than 8.1–15.9 V

Possible Causes

- Battery malfunction
- SAS 15 A fuse malfunction
- Open circuit or short to body ground in the wiring harness between the SAS control module and IG1 relay/ignition switch
- Open circuit in the wiring harness between the SAS control module and body ground
- SAS control module malfunction

System Wiring Diagram



am3uuw0000495

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action	
1	BATTERY INSPECTION <ul style="list-style-type: none"> • Refer to the battery inspection and inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is the battery normal? 	Yes	Go to the next step.
		No	Replace or charge the battery. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
2	FUSE INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait 1 min or more. • Remove the SAS 15 A fuse. • Is the fuse normal? 	Yes	Go to the next step.
		No	Replace the SAS 15 A fuse.

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action
3	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR NO.1</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Connect the negative battery cable. • Switch the ignition to ON. • Measure the voltage of SAS control module connector terminal 1B. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and IG relay/ignition switch. <ul style="list-style-type: none"> • Is the voltage 8.1–15.9 V? 	<p>Yes: Go to the next step.</p> <p>No: Replace the wiring harness between the SAS control module and the IG relay/ignition switch.</p>

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
4	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND BODY GROUND <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait 1 min or more. • Inspect the wiring harness between SAS control module connector terminal 1J and body ground. <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and body ground. <ul style="list-style-type: none"> • Is the wiring harness normal? 	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and body ground.
5	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1342, B1921

id080200811700

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1342	SAS control module internal malfunction
B1921	Air bag diagnostic ground circuit open

Detection Condition

Warning

- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Malfunction in the SAS control module internal circuit

Possible Causes

- SAS control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none">• Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.)• Are the same DTCs present?	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B1868

id080200815000

System Malfunction Location

- Air bag system warning light malfunction

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- Air bag system warning light malfunction detected

Possible Causes

- Instrument cluster assembly incorrect
- Instrument cluster malfunction
- SAS control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	VERIFY IF OTHER DTCs ARE DISPLAYED <ul style="list-style-type: none"> • Clear the DTC from the SAS control module memory using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Is DTC U0073 or U0155 displayed? 	Yes	Perform a separate inspection of the applicable DTCs. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
2	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Verify that the correct instrument cluster is assembled. • Instrument cluster assembly incorrect? 	Yes	Go to the next step.
		No	Install the instrument cluster.
3	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Perform the following active command mode inspection for the instrument cluster using the M-MDS. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) <ul style="list-style-type: none"> — WL+IL (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].) • Does the air bag system warning light illuminate? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
4	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B1884, B1890

id080200801600

System Malfunction Location

DTC	System Malfunction Location
M-MDS display	
B1884	Passenger air bag deactivation (PAD) indicator circuit open or short to body ground
B1890	Passenger air bag deactivation (PAD) indicator circuit short to power supply

Detection Condition

Warning

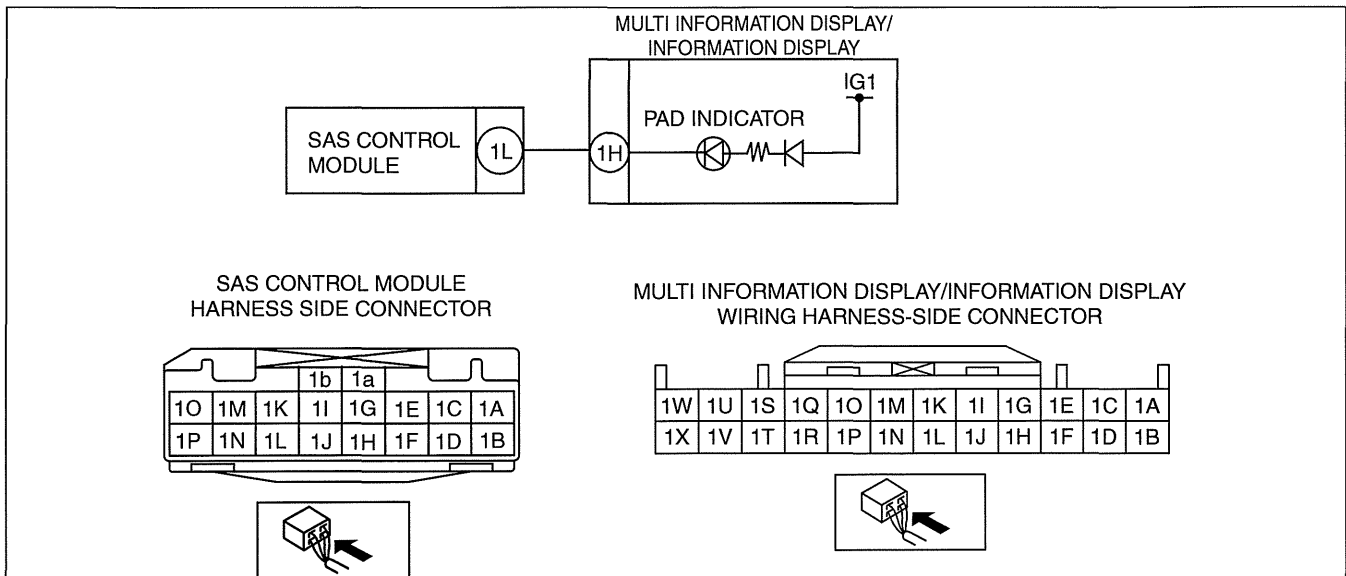
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Malfunction in PAD indicator circuit

Possible Causes

- Multi information display connector malfunction
- Multi information display malfunction
- Open or short circuit or short to ground or short to power supply in wiring harness between multi information display and SAS control module
- SAS control module malfunction

System Wiring Diagram



am3uuw0000542

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	PERFORM MULTI INFORMATION DISPLAY DTC INSPECTION <ul style="list-style-type: none"> • Perform the DTC inspection for the multi information display using the M-MDS. (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) • Is DTC B1318 displayed? 	Yes	Perform troubleshooting according to corresponding DTC inspection. (See 09-02J-6 DTC B1318 [MULTI INFORMATION DISPLAY].)
		No	Go to the next step.
2	INSPECT MULTI INFORMATION DISPLAY CONNECTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.) • Disconnect the multi information display connector. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.) • Inspect the multi information display connector. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the multi information display connector? 	Yes	Go to the next step.
		No	Repair the multi information display wiring harness.
3	INSPECT PAD INDICATOR <p>Warning</p> <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Connect the multi information display connector. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.) • Ground multi information display connector terminal 1H using a jumper wire. • Connect the negative battery cable. • Switch the ignition to ON. • Does the PAD indicator illuminate? 	Yes	Go to the next step.
		No	Replace the multi information display. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)

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ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION	
4	<p>INSPECT WIRING HARNESS BETWEEN MULTI INFORMATION DISPLAY AND SAS CONTROL MODULE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Inspect the wiring harness between multi information display connector terminal 1H and SAS control module connector terminal 1L for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and multi information display. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Repair the wiring harness between the multi information display and SAS control module.</p>
5	<p>INSPECT THE WIRING HARNESS BETWEEN SAS CONTROL MODULE AND MULTI INFORMATION DISPLAY FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON. • Measure the voltage of SAS control module connector terminal 1L. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and multi information display. <ul style="list-style-type: none"> • Is the voltage measured? 	<p>Yes</p> <p>No</p>	<p>Repair the wiring harness between the multi information display and SAS control module.</p> <p>Go to the next step.</p>

ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION				
6	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)	No	DTC troubleshooting completed.
Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)					
No	DTC troubleshooting completed.					

DTC B2290

id080200802300

System Malfunction Location

- Seat weight sensor ID mismatch (Air bag system warning light DTC 15 is displayed)
- Seat weight sensor communication error (Air bag system warning light DTC 16 is displayed)

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

08-02

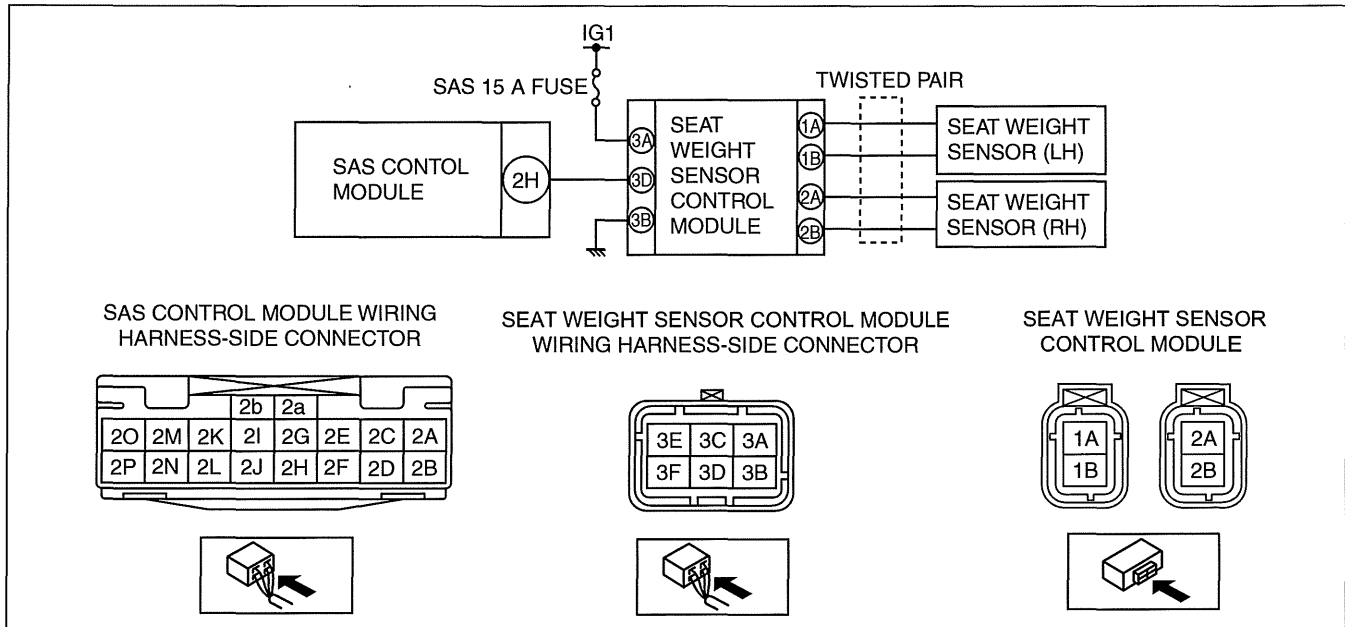
- Error signal is detected between SAS control module and seat weight sensor control module
- Seat weight sensor ID mismatch

Possible Causes

- Seat weight sensor control module connector malfunction
- Open or short circuit in the wiring harness between the battery and the seat weight sensor control module
- Open or short circuit in the wiring harness between the SAS control module and seat weight sensor control module
- Open circuit in the wiring harness between the seat weight sensor control module and body ground
- Seat weight sensor calibration not properly set
- Communication error between SAS control module and seat weight sensor control module
- Seat weight sensor control module internal malfunction
- LH or RH seat weight sensor malfunction
- SAS control module malfunction

ON-BOARD DIAGNOSTIC

System Wiring Diagram



am3uuw0000475

Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT SEAT WEIGHT SENSOR CONTROL MODULE CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the seat weight sensor control module connector. (See 08-10-18 SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.) Is there any malfunction of the seat weight sensor control module connector? 	<p>Yes: Go to the next step.</p> <p>No: Repair or replace the wiring harness.</p>

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
2	INSPECT SEAT WEIGHT SENSOR CONTROL MODULE POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Connect the negative battery cable. • Switch the ignition to ON. • Measure the voltage of seat weight sensor control module connector terminals 3A. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the seat weight sensor control module and fuse block. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Go to the next step.
		No	Repair the wiring harness between the seat weight sensor control module and fuse block.
3	INSPECTION WIRING HARNESS <ul style="list-style-type: none"> • Disconnect the SAS control module connector. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) • Verify continuity in the following wiring harnesses: <ul style="list-style-type: none"> — Between SAS control module terminal 2H and seat weight sensor control module terminal 3D — Between seat weight sensor control module terminal 3B and body ground <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and seat weight sensor control module. <ul style="list-style-type: none"> • Is the continuity normal? 	Yes	Go to the next step.
		No	If there is any malfunction in the wiring harnesses, repair or replace the applicable wiring harness. After replacement, reperform the DTC inspection and verify that no DTCs are displayed.
4	INSPECT PASSENGER SENSING SYSTEM <ul style="list-style-type: none"> • Connect the seat weight sensor control module connector. • Connect the SAS control module. • Connect the negative battery cable. • Verify the following PIDs using the M-MDS. (See 08-02-96 PID/DATA MONITOR TABLE.) <ul style="list-style-type: none"> — OCSFLT_CAL — OCSFLT_COM — OCSFLT_L — OCSFLT_MDL — OCSFLT_R • Do all PIDs display "OK"? 	Yes	Go to the Step 6.
		No	Replace the following parts according to the M-MDS screen: <ul style="list-style-type: none"> • If FAULT is displayed for OCSFLT_CAL: <ul style="list-style-type: none"> — Perform seat weight sensor calibration (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.) • If FAULT is displayed for OCSFLT_COM or OCSFLT_MDL: <ul style="list-style-type: none"> — Seat weight sensor control module (See 08-10-18 SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.) • If FAULT is displayed for OCSFLT_L or OCSFLT_R: <ul style="list-style-type: none"> — Go to the next step

08-02

ON-BOARD DIAGNOSTIC

Step	Inspection	Action	
5	<p>INSPECT SEAT WEIGHT SENSOR CONTROL MODULE</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the seat weight sensor connector from the seat weight sensor control module. • Connect the negative battery cable. • Switch the ignition to ON. • Measure the voltage between the following terminals: Caution <ul style="list-style-type: none"> • When measuring the voltage at a terminal of the seat weight sensor control module, measure it being careful not to bend or damage the terminal. <p>— Seat weight sensor control module terminal 1A (module side) and body ground — Seat weight sensor control module terminal 2A (module side) and body ground</p> <ul style="list-style-type: none"> • Is the voltage approx. 6.5 V? 	Yes	Replace the seat weight sensor on the side in which the PID/data monitor indicates a malfunction.
		No	Replace the seat weight sensor control module, then go to the next step. (See 08-10-18 SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.)
6	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC

DTC B2477

id080200810500

System Malfunction Location

- Configuration error

Detection Condition

Warning

- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- SAS control module configuration setting has not been done correctly

Possible Causes

- SAS control module configuration setting not implemented
- SAS control module configuration setting invalid
- SAS control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	PERFORM SAS CONTROL MODULE INSPECTION <ul style="list-style-type: none">• Perform the configuration for the SAS control module using the M-MDS. (See 08-10-17 SAS CONTROL MODULE CONFIGURATION.)• Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.)• Are the same DTCs present?	Yes	Perform the SAS control module configuration, then go to the next step. (See 08-10-17 SAS CONTROL MODULE CONFIGURATION.)
		No	Go to the next step.
2	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none">• Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.)• Are the same DTCs present?	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC B2867

id080200803100

System Malfunction Location

- SAS control module connectors are poorly connected

Detection Condition

Warning

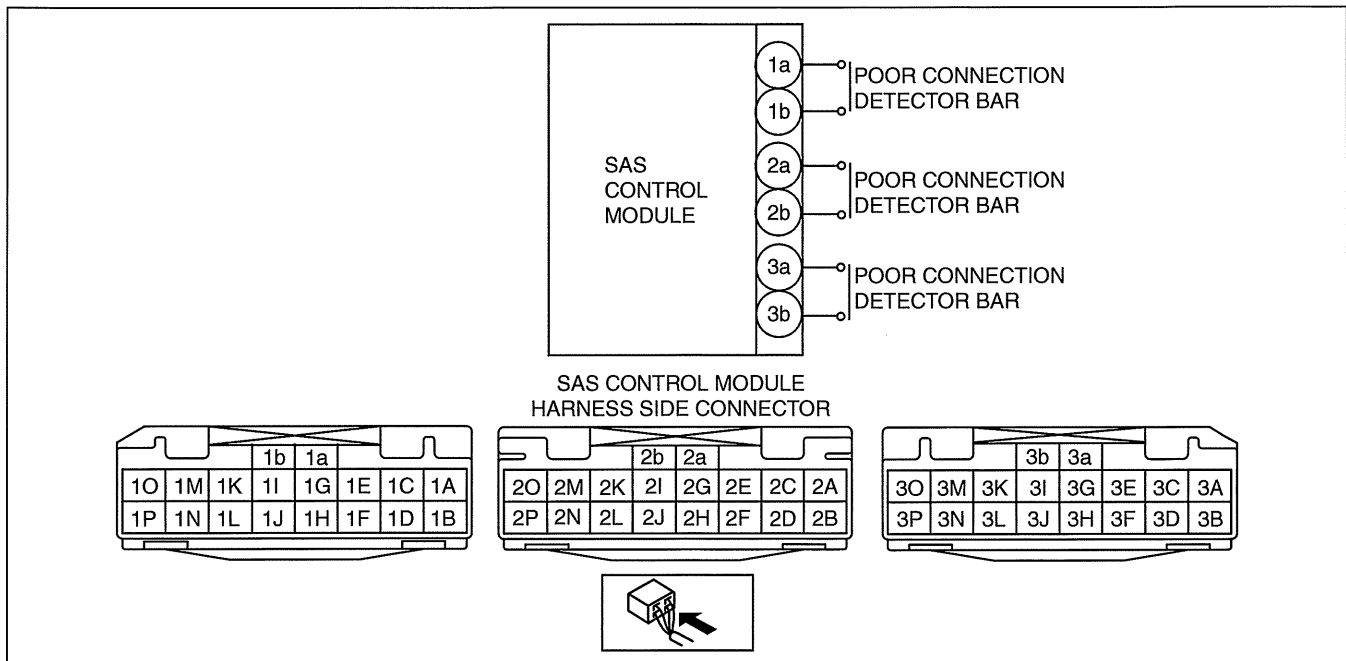
- **Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.**

- No continuity between poorly connected detector bar terminals of the SAS control module

Possible Causes

- SAS control module connectors are poorly connected
- SAS control module connector malfunction
- SAS control module malfunction

System Wiring Diagram



am6xuw0000196

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT CONTACTS OF SAS CONTROL MODULE CONNECTORS Warning <ul style="list-style-type: none"> • Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Are all SAS control module connectors securely connected? 	Yes	Go to the next step.
		No	Reconnect the SAS control module connectors properly.
2	VERIFY POORLY CONNECTED DETECTOR BARS OF SAS CONTROL MODULE CONNECTORS <ul style="list-style-type: none"> • Disconnect the SAS control module connectors. • Verify the condition of the poorly connected detector bars of the SAS control module connectors. (Corrosion, damage, and disconnected pins) • Are the poorly connected detector bars of the SAS control module connectors normal? 	Yes	Go to the next step.
		No	Replace the air bag wiring harness.
3	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none"> • Connect the SAS control module connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

08-02

ON-BOARD DIAGNOSTIC

DTC C1946, C1947, C1948, C1981, C1982

id080200820200

System Malfunction Location

DTC	System Malfunction Location
C1946	Seat track position sensor circuit open or resistance high
C1947	Seat track position sensor circuit short to body ground
C1948	Seat track position sensor circuit resistance not within specification
C1981	Seat track position sensor malfunction
C1982	Seat track position sensor circuit open or short to power supply

Detection Condition

Warning

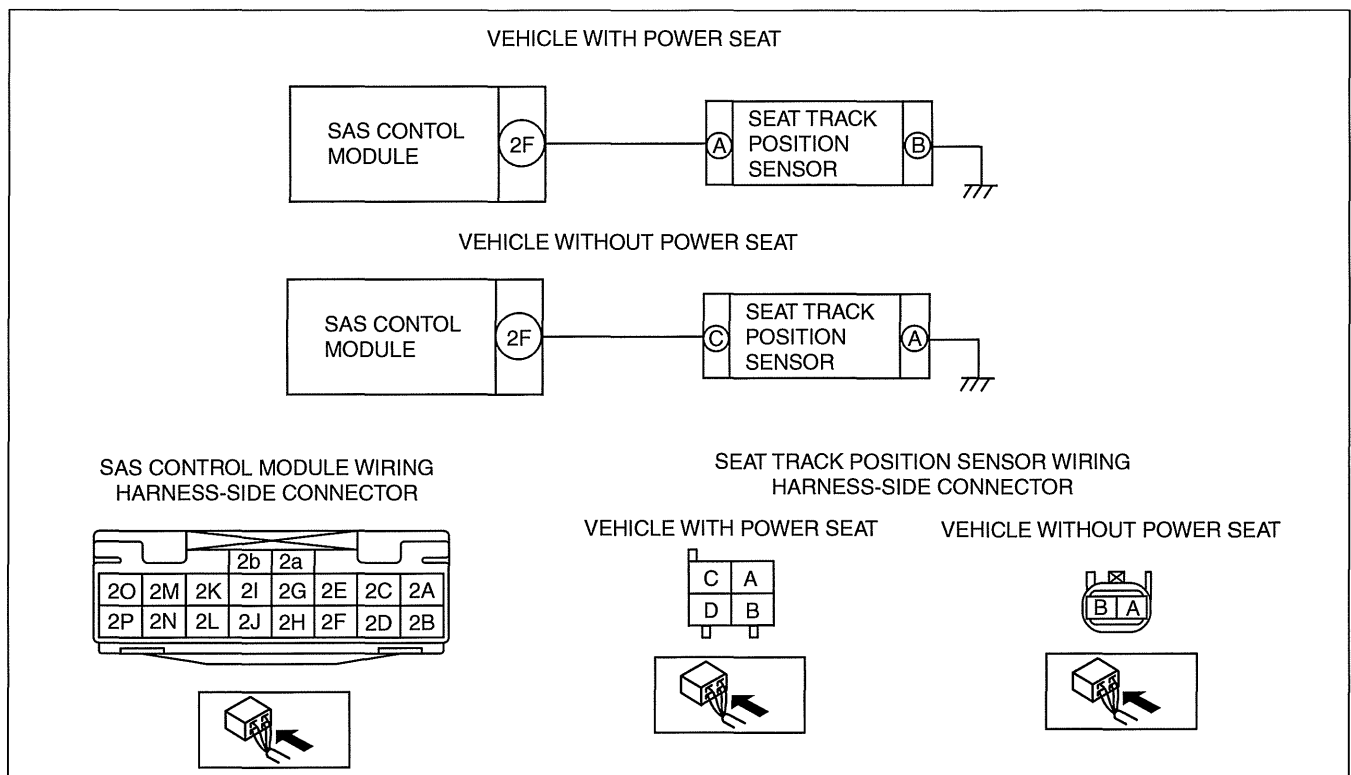
- Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.

- Malfunction in seat track position sensor circuit.

Possible Causes

- Seat track position sensor connector malfunction
- Open or short circuit or short to ground or short to power supply in wiring harness between seat track position sensor and SAS control module.
- Open circuit in wiring harness between seat track position sensor and body ground.
- Seat track position sensor malfunction
- SAS control module malfunction

System Wiring Diagram



am3uuw0000368

ON-BOARD DIAGNOSTIC

Diagnostic Procedure

STEP	INSPECTION	ACTION				
1	<p>INSPECT SEAT TRACK POSITION SENSOR CONNECTOR</p> <p>Warning</p> <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the seat track position sensor connector. • Inspect the seat track position sensor connection. (Corrosion, damage, and disconnected pins) • Is there any malfunction of the seat track position sensor connector? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Replace the seat track position sensor wiring harness.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the seat track position sensor wiring harness.	No	Go to the next step.
Yes	Replace the seat track position sensor wiring harness.					
No	Go to the next step.					

08-02

ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION				
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND SEAT TRACK POSITION SENSOR</p> <ul style="list-style-type: none"> • Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.) • Disconnect the clock spring connector. • Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.) • Disconnect the passenger-side air bag module connector. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) • Disconnect the passenger-side front seat connector. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.) • Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side curtain air bag module connector (harness side). (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) • Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.) • Disconnect the lap pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Disconnect the driver and passenger-side pre-tensioner seat belt connector. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.) • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) <p>Vehicles with power seat</p> <ul style="list-style-type: none"> • Inspect the wiring harnesses between SAS control module connector terminal 2F and seat track position sensor connector terminal A for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Vehicles without power seat</p> <ul style="list-style-type: none"> • Inspect the wiring harnesses between SAS control module connector terminal 2F and seat track position sensor connector terminal C for the following: <ul style="list-style-type: none"> — Short circuit between terminals — Short to body ground — Open circuit <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the SAS control module and seat track position sensor. <ul style="list-style-type: none"> • Is the wiring harness normal? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; vertical-align: top;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="vertical-align: top;">No</td> <td>Replace the wiring harness between the SAS control module and the seat track position sensor.</td> </tr> </table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the seat track position sensor.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the seat track position sensor.					

ON-BOARD DIAGNOSTIC

STEP	INSPECTION	ACTION	
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND SEAT TRACK POSITION SENSOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to ON with SAS control module connector and seat track position sensor connector disconnected. • Measure the voltage of SAS control module connector terminals 2F of SAS control module harness side connector. <p>Note</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and seat track position sensor. <ul style="list-style-type: none"> • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the seat track position sensor.
		No	Go to the next step.
4	<p>INSPECT WIRING HARNESS BETWEEN SEAT TRACK POSITION SENSOR AND BODY GROUND</p> <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait 1 min or more. <p>Vehicles with power seat</p> <ul style="list-style-type: none"> • Inspect the wiring harness between seat track position sensor connector terminal B and body ground. <p>Vehicles without power seat</p> <ul style="list-style-type: none"> • Inspect the wiring harness between seat track position sensor connector terminal A and body ground. <p>Note</p> <ul style="list-style-type: none"> • Inspect for continuity while shaking the wiring harness between the seat track position sensor and body ground. <ul style="list-style-type: none"> • Is the wiring harness normal? 	Yes	Replace the seat track position sensor, then go to the next step. (See 08-10-18 SEAT TRACK POSITION SENSOR REMOVAL/INSTALLATION.)
		No	Replace the wiring harness between the seat track position sensor and body ground.
5	<p>PERFORM SAS CONTROL MODULE DTC INSPECTION</p> <ul style="list-style-type: none"> • Reconnect all disconnected connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Clear the DTC for the SAS control module using the M-MDS. (See 08-02-6 CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See 08-02-6 DTC INSPECTION.) • Are the same DTCs present? 	Yes	Replace the SAS control module. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

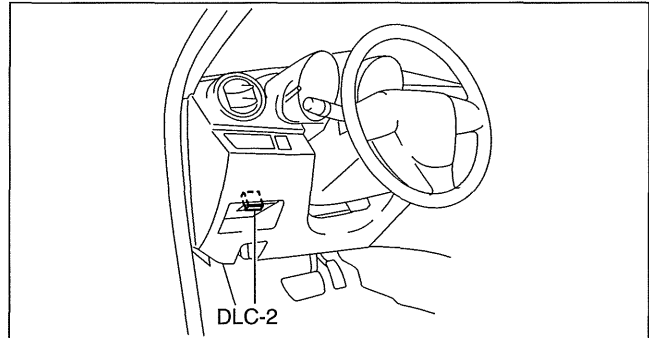
08-02

ON-BOARD DIAGNOSTIC

PID/DATA MONITOR INSPECTION

id080200080800

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "RCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RCM".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



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Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE

id080200081000

PID name (definition)	Unit/Operation	Operation Status (Reference)	Terminal
BUCKLE_D (Driver-side buckle switch status)	Unbuckled/ Buckled	<ul style="list-style-type: none"> • Driver-side front seat belt fastened (Driver-side buckle switch off): Buckled • Driver-side front seat belt not fastened (Driver-side buckle switch on): Unbuckled 	2M
BUCKLE_P (Passenger-side buckle switch status)	Unbuckled/ Buckled	<ul style="list-style-type: none"> • Passenger-side front seat belt fastened (Passenger-side buckle switch off): Buckled • Passenger-side front seat belt not fastened (Passenger-side buckle switch on): Unbuckled 	2O
CCNT_RCM (Number of continuous DTCs)	—	<ul style="list-style-type: none"> • DTCs detected: 1—255 • No DTCs detected: 0 	—
IGN_V (IG1 voltage)	V	Switch the ignition to ON: B+	1B
OCSFLT_CAL (Seat weight sensor calibration status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Passenger sensing system error: FAULT 	2H
OCSFLT_COM (Seat weight sensor control module communication status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Passenger sensing system communication error: FAULT 	2H
OCSFLT_L (Seat weight sensor (LH) malfunction status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Passenger sensing system (LH) malfunction: FAULT 	2H
OCSFLT_MDL (Seat weight sensor control module malfunction status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Passenger sensing system control module malfunction: FAULT 	2H
OCSFLT_R (Seat weight sensor (RH) malfunction status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Passenger sensing system (RH) malfunction: FAULT 	2H
PS_WEIGHT (Seat weight sensor measured weight of passenger)	kg	Display of load (body weight) on passenger-side seat	2H
PSAB_DepSt (Passenger-side air bag module deployment status)	Inactive/ Active	<ul style="list-style-type: none"> • Passenger-side air bag module non-operation (non-deployment) status: Inactive • Passenger-side air bag module operation (deployment) enabled status: Active 	—

ON-BOARD DIAGNOSTIC

PID name (definition)	Unit/Operation	Operation Status (Reference)	Terminal
RES_AB_D (Driver-side air bag module (inflator No.1) resistance nominal)	ohm	Continuous: 1.61–5.77 ohms	1E, 1G
RES_AB_P (Passenger-side air bag module (inflator No.1) resistance nominal)	ohm	Continuous: 1.10–5.77 ohms	1I, 1K
RES_AB2_D (Driver-side air bag module (inflator No.2) resistance nominal)	ohm	Continuous: 1.61–5.77 ohms	1M, 1O
RES_AB2_P (Passenger-side air bag module (inflator No.2) resistance nominal)	ohm	Continuous: 1.10–5.77 ohms	1P, 1N
RES_CAB_D (Driver-side curtain air bag module resistance nominal)	ohm	Continuous: 1.10–9.64 ohms	3I, 3K
RES_CAB_P (Passenger-side curtain air bag module resistance nominal)	ohm	Continuous: 1.10–9.64 ohms	3M, 3O
RES_LPT_D (Lap pre-tensioner seat belt resistance nominal)	ohm	Continuous: 1.10–5.77 ohms	2I, 2K
RES_PT_D (Driver-side pre-tensioner seat belt resistance nominal)	ohm	Continuous: 1.10–5.77 ohms	2A, 2C
RES_PT_P (Passenger-side pre-tensioner seat belt resistance nominal)	ohm	Continuous: 1.10–5.77 ohms	2E, 2G
RES_SAB_D (Driver-side side air bag module resistance nominal)	ohm	Continuous: 1.10–9.64 ohms	3A, 3C
RES_SAB_P (Passenger-side side air bag module resistance nominal)	ohm	Continuous: 1.10–9.64 ohms	3E, 3G
TRAK_SW (Seat track position sensor state)	Forward/ Rearward	<ul style="list-style-type: none"> • Front seat front position: Forward • Front seat rear position: Rearward 	2F

08-02



08-03 SYMPTOM TROUBLESHOOTING

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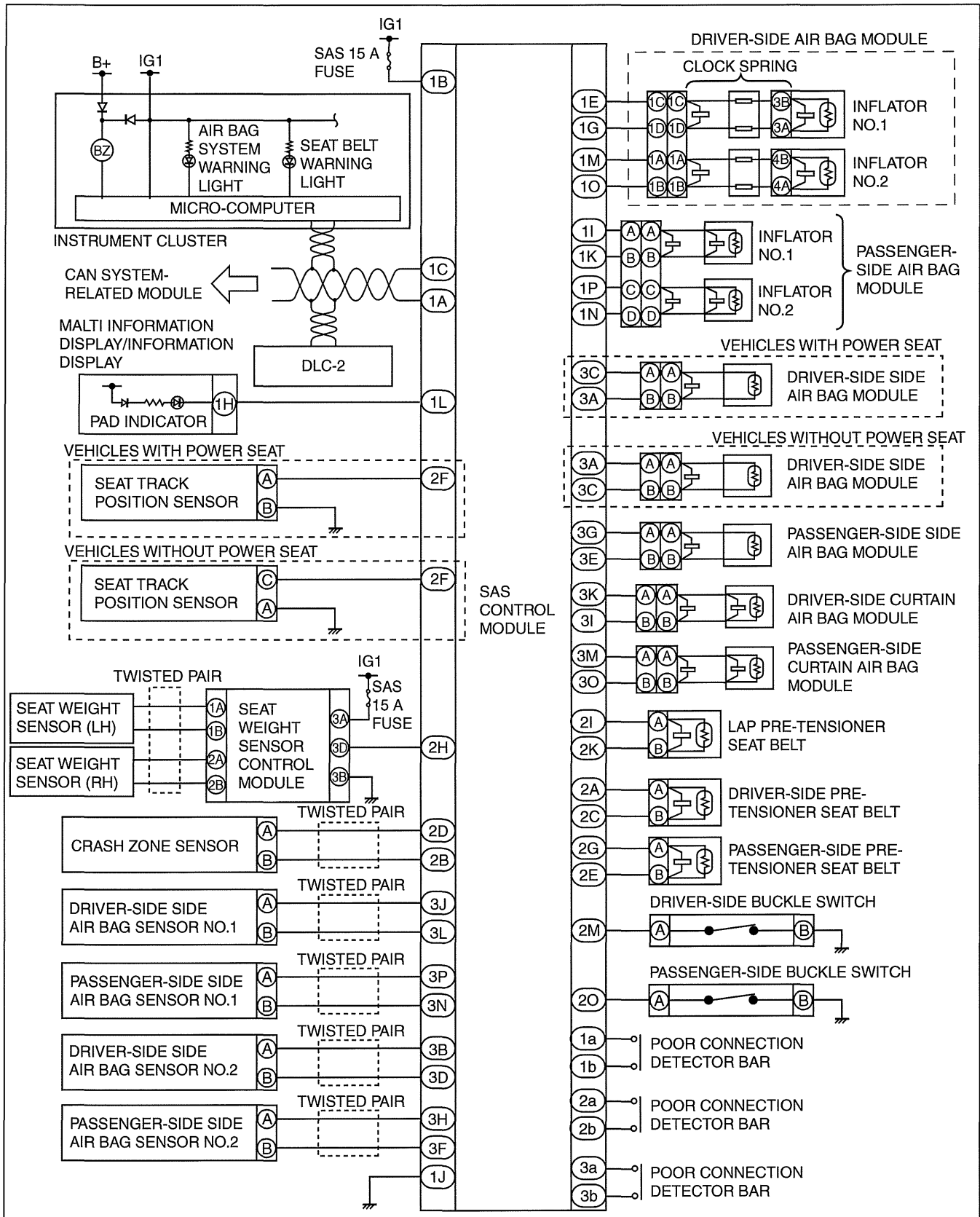
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SYMPTOM TROUBLESHOOTING

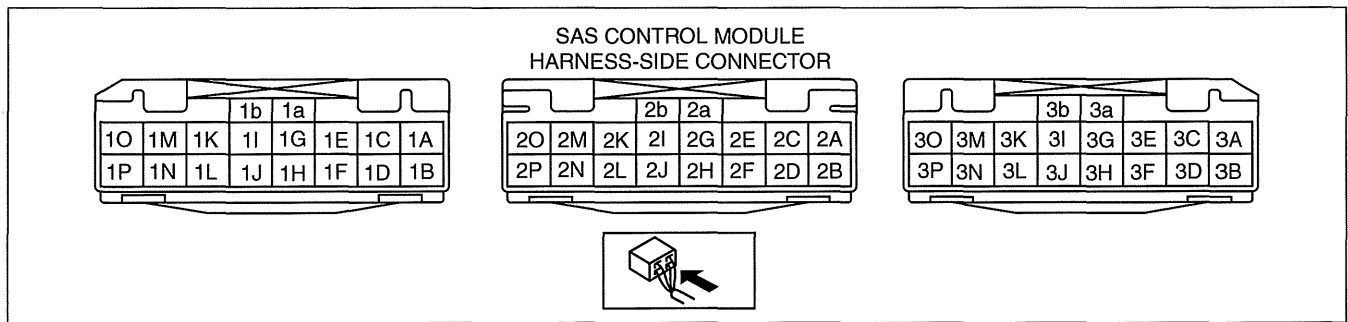
AIR BAG SYSTEM WIRING DIAGRAM (SYMPTOM TROUBLESHOOTING)

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SYMPTOM TROUBLESHOOTING



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TROUBLESHOOTING INDEX

id080300802000

- Use the chart below verify the symptoms of the trouble in order to diagnose the appropriate area.

No.	Troubleshooting item	Description	Page
1	Air bag system warning light does not illuminate.	Air bag system warning light does not illuminate while the air bag system is performing initialization.	(See 08-03-3 NO.1 AIR BAG SYSTEM WARNING LIGHT DOES NOT ILLUMINATE)
2	Air bag system warning light is illuminated constantly.	Air bag system warning light is illuminated constantly and remains illuminated after 6 s have elapsed.	(See 08-03-4 NO.2 AIR BAG SYSTEM WARNING LIGHT ILLUMINATES CONSTANTLY)

NO.1 AIR BAG SYSTEM WARNING LIGHT DOES NOT ILLUMINATE

id080300802000

08-03

1	Air bag system warning light does not illuminate.
DETECTION CONDITION	Air bag system warning light does not illuminate while the air bag system is performing initialization.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Instrument cluster (circuit board) malfunction • Short to ground circuit in wiring harness between instrument cluster and SAS control module • Air bag system warning light (LED) malfunction • Communication error between SAS control module and instrument cluster • SAS control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT OTHER WARNING AND INDICATOR LIGHTS CIRCUIT IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Switch the ignition to ON. • Do other warning and indicator lights illuminate? 	Yes Switch the ignition to off, then go to the next step.
		No Inspect the instrument cluster power supply system and ground system, then go to Step 3.
2	INSPECT DTCS IN SAS CONTROL MODULE <ul style="list-style-type: none"> • Inspect the DTC for the SAS control module on-board diagnostic system. • Have DTCs been recorded in memory? 	Yes Perform the applicable DTC inspection, then go to Step 5. (See 08-02-7 DTC TABLE.)
		No Go to the next step.
3	VERIFY WHERE MALFUNCTION IS IN WARNING LIGHTS INDICATION CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Turn on all warning lights and indicator lights using the instrument cluster PID WL+IL of simulation function using the M-MDS. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Do other warning and indicator lights illuminate? 	Yes Go to the next step.
		No Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.) Then go to Step 5.
4	INSPECT DTCS IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Inspect the DTC for the instrument cluster on-board diagnostic system. • Have DTCs been recorded in memory? 	Yes Perform the applicable DTC inspection, then go to the next step. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No Go to the next step.

SYMPTOM TROUBLESHOOTING

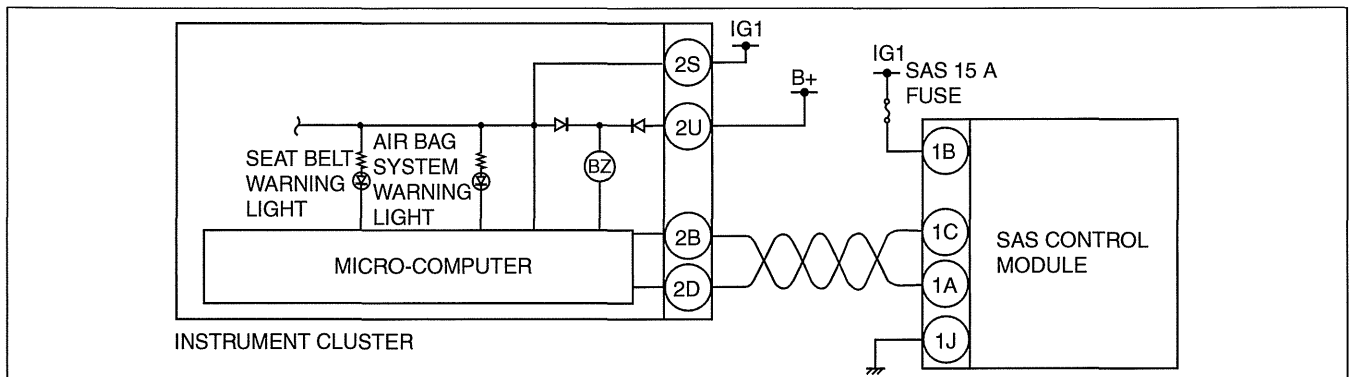
STEP	INSPECTION	ACTION				
5	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Connect all disconnected SAS system connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Does the air bag system warning light operate properly? 	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Verify that there are no DTCs in the memory. If there are no DTCs, the troubleshooting is completed.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.</td> </tr> </table>	Yes	Verify that there are no DTCs in the memory. If there are no DTCs, the troubleshooting is completed.	No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.
Yes	Verify that there are no DTCs in the memory. If there are no DTCs, the troubleshooting is completed.					
No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.					

NO.2 AIR BAG SYSTEM WARNING LIGHT ILLUMINATES CONSTANTLY

id080300800300

2	Air bag system warning light illuminates constantly
DETECTION CONDITION	Air bag system warning light is illuminated constantly and remains illuminated after 6 s have elapsed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Weak battery • SAS control module malfunction • Instrument cluster (circuit board) malfunction • No connection in SAS control module connector • Poor contact in instrument cluster connector (24-pin) • Open or short to power supply circuit in wiring harness between instrument cluster and SAS control module • Poor contact at terminals 1J and/or 1B of SAS control module connector • Poor contact in wiring harness between terminal 1J of SAS control module connector and ground • Poor contact in wiring harness between battery and terminal 1B of SAS control module

System Wiring Diagram



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SYMPTOM TROUBLESHOOTING

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT BATTERY <ul style="list-style-type: none"> • Measure the voltage of battery. • Is the voltage 8 V or more? 	Yes	Go to the next step.
		No	Battery is weak. Inspect charge/discharge system, then go to Step 8. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].)
2	VERIFY THAT SAS CONTROL MODULE CONNECTOR IS CONNECTED <p>Warning</p> <ul style="list-style-type: none"> • Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag system components. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Are all SAS control module connectors securely connected? 	Yes	Go to the next step.
		No	Reconnect the connector properly, then go to Step 8.
3	INSPECT DTCS IN SAS CONTROL MODULE <ul style="list-style-type: none"> • Clear DTCS using the M-MDS. (See 08-02-6 CLEARING DTC.) • Inspect the DTC for the SAS control module on-board diagnostic system. • Have DTCS been recorded in memory? 	Yes	Perform the applicable DTC inspection, then go to Step 8. (See 08-02-7 DTC TABLE.)
		No	Go to the next step.
4	INSPECT DTCS IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Inspect the DTC for the instrument cluster on-board diagnostic system. • Have DTCS been recorded in memory? 	Yes	Perform the applicable DTC inspection, then go to Step 8. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
5	VERIFY WHERE MALFUNCTION IS IN WARNING LIGHTS INDICATION CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Turn on all warning lights and indicator lights using the instrument cluster PID WL+IL of simulation function using the M-MDS. (See 09-02E-24 ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER].) • Do other warning and indicator lights illuminate? 	Yes	Go to the next step.
		No	Repair the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.) Then go to Step 8.

08-03

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION	
6	INSPECT POWER SUPPLY CIRCUIT OF SAS CONTROL MODULE (TERMINAL 1B) <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.) • Disconnect all SAS control module connectors. • Connect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at SAS control module at wiring harness-side connector terminal 1B. • Is the voltage 8—16 V? 	Yes	Go to the next step.
		No	Repair the wiring harnesses, then go to Step 8.
7	VERIFY THAT SAS CONTROL MODULE CONNECTOR TERMINAL 1J IS GROUND <ul style="list-style-type: none"> • SAS control module connector disconnected. • Inspect the wiring harness between SAS control module connector terminal 1J and ground for the following: <ul style="list-style-type: none"> — Short to power supply — Open circuit • Is the wiring harness normal? 	Yes	Replace the SAS control module, then go to the next step. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Replace the wiring harnesses, then go to the next step.
8	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Connect all disconnected SAS control module connectors during diagnosis. • Connect the negative battery cable. • Switch the ignition to ON. • Does the air bag system warning light illuminate for approx. 6 s and turn off? 	Yes	Complete troubleshooting, then explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

08-10 AIR BAG SYSTEM

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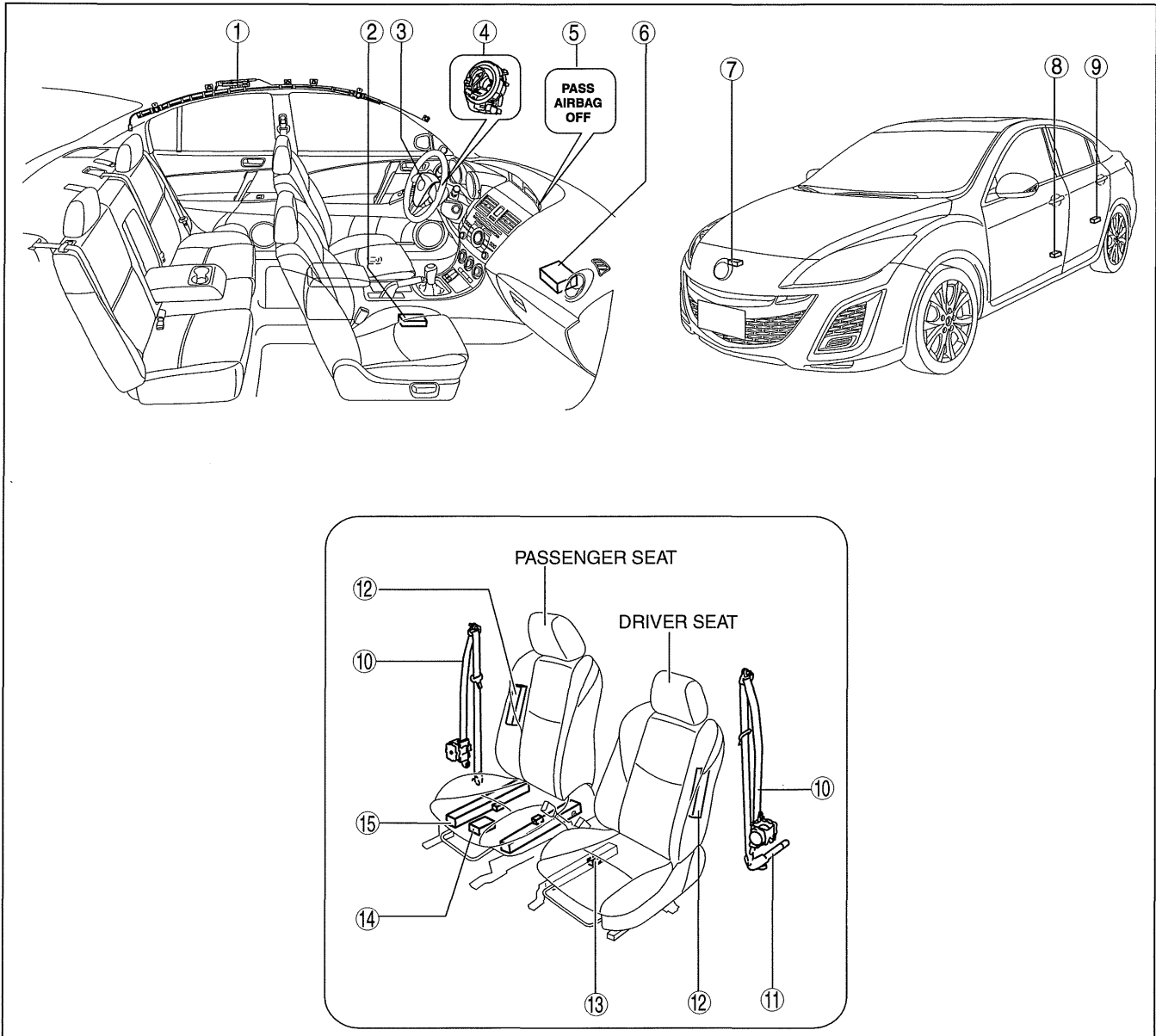
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AIR BAG SYSTEM

AIR BAG SYSTEM LOCATION INDEX

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1	Curtain air bag module (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) (See 08-10-26 AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
2	SAS control module (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.) (See 08-10-17 SAS CONTROL MODULE CONFIGURATION.)
3	Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) (See 08-10-26 AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)

4	Clock spring (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.) (See 08-10-23 CLOCK SPRING INSPECTION.) (See 08-10-22 CLOCK SPRING ADJUSTMENT.)
5	Passenger air bag deactivation (PAD) indicator light bulb (See 08-10-25 PASSENGER AIR BAG DEACTIVATION (PAD) INDICATOR LIGHT BULB REMOVAL/INSTALLATION.)
6	Passenger-side air bag module (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) (See 08-10-26 AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
7	Crash zone sensor (See 08-10-16 CRASH ZONE SENSOR REMOVAL/INSTALLATION.)

AIR BAG SYSTEM

8	Side air bag sensor No.1 (See 08-10-19 SIDE AIR BAG SENSOR NO. 1 REMOVAL/INSTALLATION.)
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10	Pre-tensioner seat belt (See 08-10-26 AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
11	Lap pre-tensioner seat belt (See 08-10-26 AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)

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13	Seat track position sensor (See 08-10-18 SEAT TRACK POSITION SENSOR REMOVAL/INSTALLATION.)
14	Seat weight sensor control module (See 08-10-18 SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.)
15	Seat weight sensor (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.) (See 08-10-19 SEAT WEIGHT SENSOR INSPECTION.)

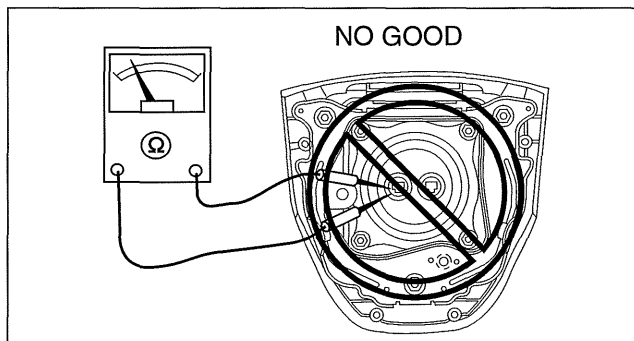
AIR BAG SYSTEM SERVICE WARNINGS

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Air Bag Module Inspection

- Inspecting an air bag module using a tester can operate (deploy) the air bag module, which may cause serious injury. Do not use a tester to inspect an air bag module. Always use the on-board diagnostic function to diagnose the air bag module for malfunctions.

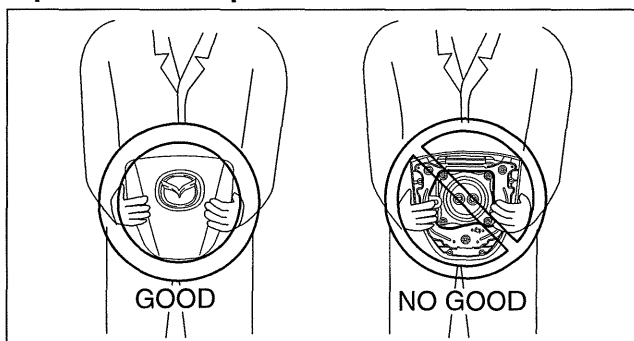
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Air Bag Module Handling

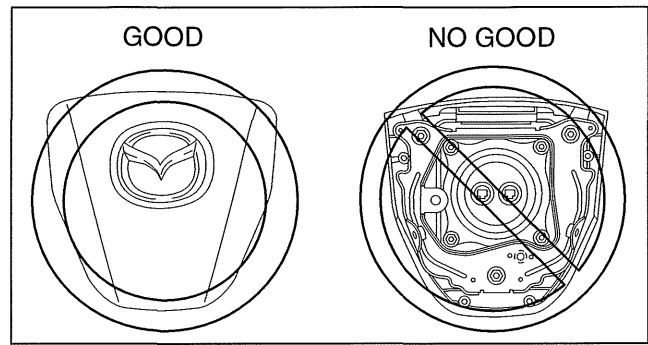
- Before removing the air bag module or disconnecting the air bag module connector, always switch the ignition to off, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- Handling a live (undeployed) air bag module that is pointed toward your body could result in serious injury if the air bag module were to accidentally operate (deploy). When carrying a live (undeployed) air bag module, point the deployment surface away from your body to lessen the chance of injury in case it operates (deploys).



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AIR BAG SYSTEM

- A live (undeployed) air bag module placed with its deployment surface to ground is dangerous. If the air bag module were to accidentally operate (deploy), it could cause serious injury. Always place a live (undeployed) air bag module with its deployment surface up.



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Side Air Bag Module Handling

- Before removing the side air bag module or disconnecting the side air bag module connector, always switch the ignition to off, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- When a side air bag module operates (deploys) due to a collision, the interior of the seat back (pad, frame, trim) may become damaged. If a side air bag does not operate (deploy) normally from a seat back that has been reused, a serious accident may result. After a side air bag has operated (deployed), always replace both the side air bag module and the seat back (pad, frame, trim) with new parts. After servicing, verify that the seat operates normally and that the wiring harness is not caught.

SAS Control Module Handling

- Removing the SAS control module or disconnecting the SAS control module connector with the switch the ignition to ON can activate the sensor in the SAS control module and operate (deploy) the air bags and pre-tensioner seat belts, which may cause serious injury. Before removing the SAS control module or disconnecting the SAS control module connector, always switch the ignition to off, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- Connecting the SAS control module connector with the SAS control module not securely fixed to the vehicle is dangerous. The sensor in the SAS control module could send an electrical signal to the air bag modules and pre-tensioner seat belts. This will operate (deploy) the air bags and pre-tensioner seat belts, which may result in serious injury. Therefore, before connecting the connector, securely fix the SAS control module to the vehicle.
- Because a sensor is built into the SAS control module, once the air bags and pre-tensioner seat belts have operated (deployed) due to a collision or other causes, the SAS control module must be replaced with a new one even if the used one does not have any visible external damage or deformation. The used SAS control module may have been damaged internally, which may cause improper operation. If the SAS control module is reused, the air bags and pre-tensioner seat belts may not operate (deploy) normally, which could result in a serious accident. Always replace the SAS control module with a new one. The SAS control module cannot be bench-checked or self-checked.

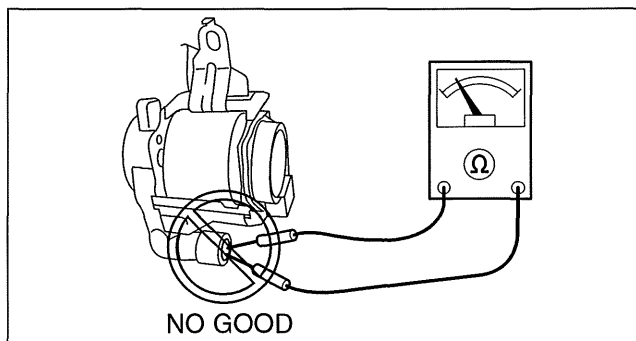
Side Air Bag Sensor Handling

- Removing the side air bag sensor or disconnecting the side air bag sensor connector with the switch the ignition to ON can activate the side air bag sensor and operate (deploy) the side air bag, which may cause serious injury. Before removing the side air bag sensor or disconnecting the side air bag sensor connector, always switch the ignition to off, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- If the side air bag sensor is subjected to shock or the sensor is disassembled, the side air bag may accidentally operate (deploy) and cause injury, or the system may fail to operate normally and cause a serious accident. Do not subject the side air bag sensor to shock or disassemble the sensor.
- Because a sensor is built into the side air bag sensor, once the air bag has operated (deployed) due to a collision or other causes, the side air bag sensor must be replaced with a new one even if the used one does not have any visible external damage or deformation. If the side air bag sensor is reused, the side air bag may not operate (deploy) normally, which could result in a serious accident. Always replace the side air bag sensor with a new one. The side air bag sensor cannot be bench-checked or self-checked.

AIR BAG SYSTEM

Pre-tensioner Seat Belt Inspection

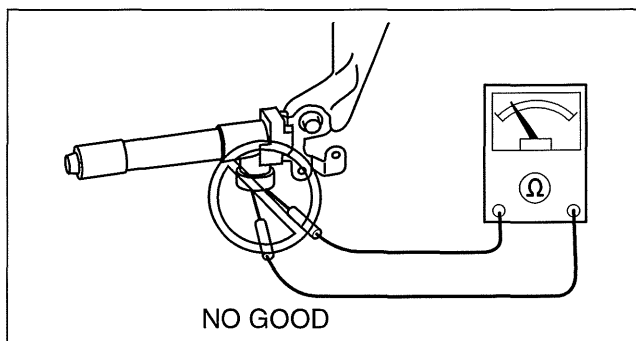
- Inspecting a pre-tensioner seat belt using a tester can operate (deploy) the pre-tensioner seat belt, which may cause serious injury. Do not use a tester to inspect a pre-tensioner seat belt. Always use the on-board diagnostic function to diagnose the pre-tensioner seat belt for malfunctions.



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Lap Pre-tensioner Seat Belt Inspection

- Inspecting a lap pre-tensioner seat belt using a tester can operate (deploy) the lap pre-tensioner seat belt, which may cause serious injury. Do not use a tester to inspect a lap pre-tensioner seat belt. Always use the on-board diagnostic function to diagnose the lap pre-tensioner seat belt for malfunctions.



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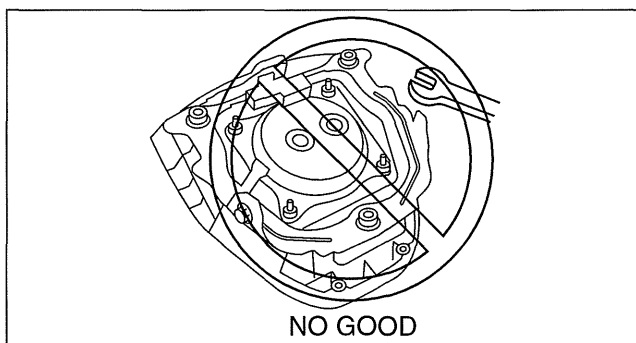
08-10

AIR BAG SYSTEM SERVICE CAUTIONS

Air Bag System Component Disassembly

- Disassembling the air bag system components could cause it to not operate (deploy) normally. Never disassemble any air bag system components.

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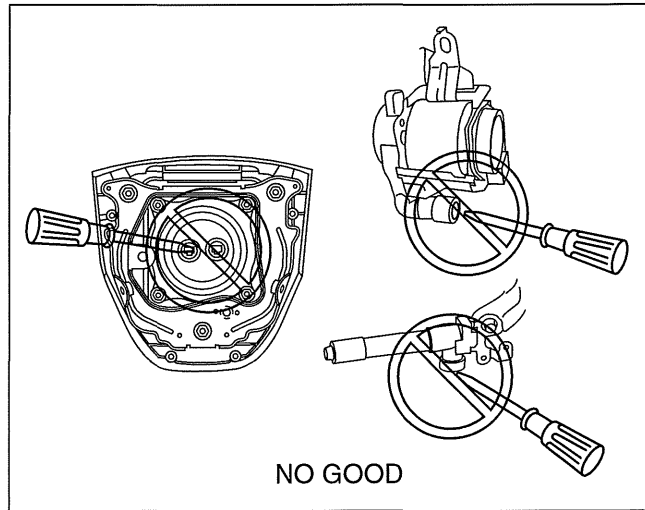
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Air Bag Module, Pre-tensioner Seat Belt, Lap Pre-tensioner Seat Belt Handling

- Oil, grease, or water on the air bag modules may cause the air bags, pre-tensioner seat belts and lap pre-tensioner seat belt to fail to operate (deploy) in an accident. Never allow oil, grease, or water to get on the air bag modules, pre-tensioner seat belts or lap pre-tensioner seat belt.

AIR BAG SYSTEM

- Inserting a screwdriver or similar object into the connector of an air bag module, pre-tensioner seat belt or a lap pre-tensioner seat belt may damage the connector and cause the air bag module, pre-tensioner seat belt or the lap pre-tensioner seat belt to operate (deploy) improperly, which may cause serious injury. Never insert any foreign objects into the air bag module, pre-tensioner seat belt or lap pre-tensioner seat belt connectors.



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Seat Weight Sensor Handling

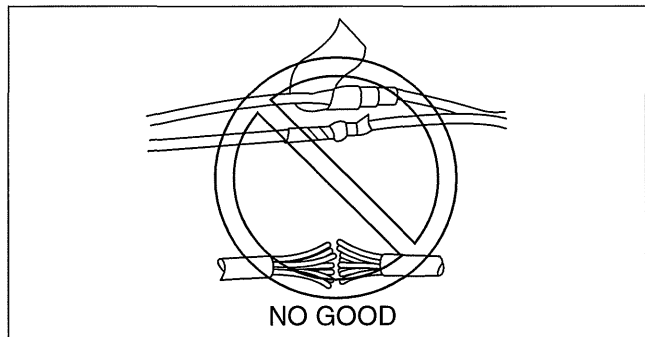
- The seat weight sensor has a built-in strain gauge which may operate improperly if the sensor is dropped by itself or when installed to the seat. If it is dropped, replace the seat weight sensor with a new one.
- Oil, grease, or water on the seat weight sensor may cause the system to operate (deploy) improperly. Never allow oil, grease, or water to get on the seat weight sensor.
- Foreign material in the seat weight sensor components may cause the system to operate (deploy) improperly. Always make sure that no foreign material can get into the seat weight sensor.
- Disassembling the seat weight sensor, or tightening any of the nuts and bolts installed to the sensor body may cause it to operate (deploy) improperly. Never disassemble the seat weight sensor or tighten any of the nuts or bolts installed to the body of the sensor.

Air Bag Module, Pre-tensioner Seat Belt Reuse

- Even if an air bag module or a pre-tensioner seat belt does not operate (deploy) in a collision and does not have any external signs of damage, it may have been damaged internally, which may cause improper operation. Before reusing a live (undeployed) air bag module and the pre-tensioner seat belts, always use the on-board diagnostic to diagnose the air bag module and the pre-tensioner seat belts to verify that they have no malfunction.

Air Bag Wiring Harness Repair

- Incorrectly repairing an air bag wiring harness can accidentally operate (deploy) the air bag module and pre-tensioner seat belts. If a problem is found in the air bag wiring harness, always replace the wiring harness with a new one.



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AIR BAG SYSTEM

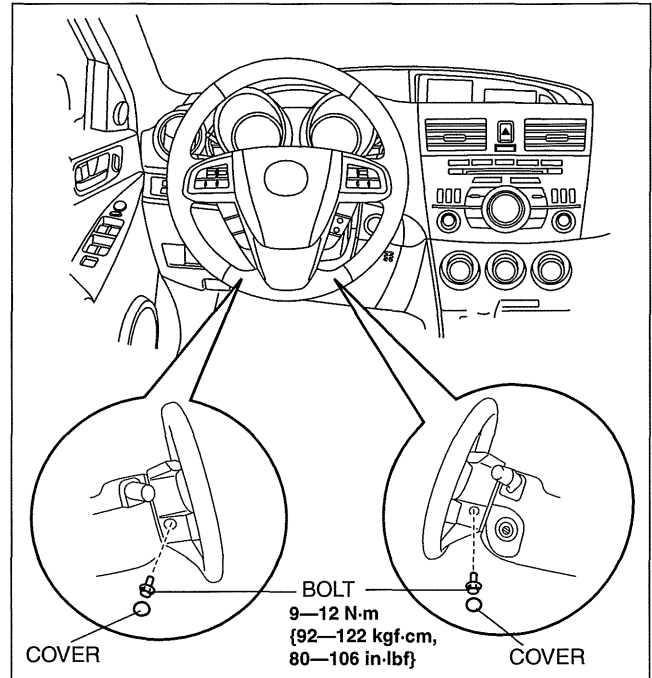
DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION

id081000801300

Warning

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)(See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)
- Due to the adoption of 2-step deployment control in the driver-side air bag module, depending on the impact force, it is possible that inflator No.2 might not deploy. In such cases, before disposing of the air bag module, make sure to follow the inflator deployment procedures and verify complete deployment of inflators No.1 and 2.

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the covers.
4. Remove the bolts.

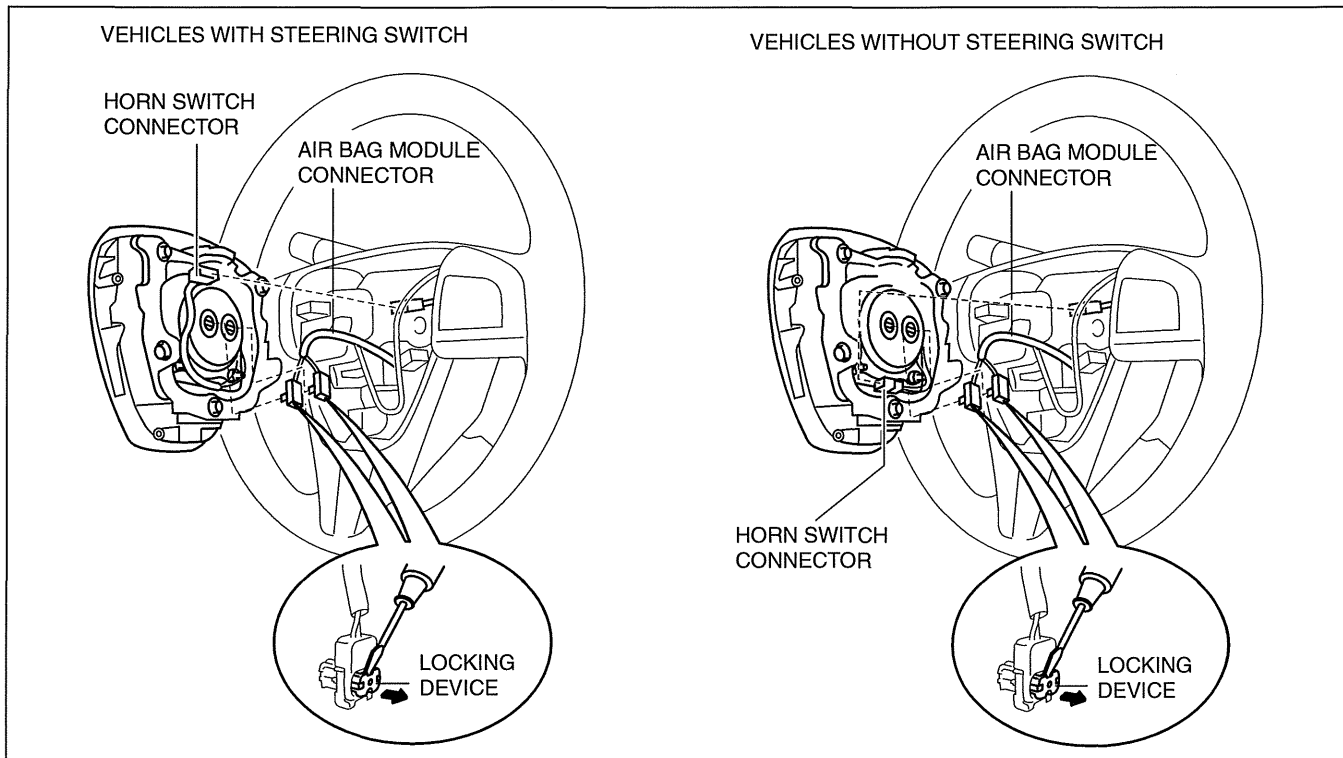


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AIR BAG SYSTEM

5. Using a flathead screwdriver, lift the locking device carefully, however do not remove it.



6. Disconnect the air bag module connector.
7. Disconnect the horn switch connector.
8. Remove the driver-side air bag module.
9. Install in the reverse order of removal.
10. Switch the ignition to ON.
11. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)

PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION

id081000801900

Warning

- **Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)**
- **Due to the adoption of 2-step deployment control in the passenger-side air bag module, depending on the impact force, it is possible that inflator No.2 might not deploy. In such cases, before disposing of the air bag module, make sure to follow the inflator deployment procedures and verify complete deployment of inflators No.1 and 2.**

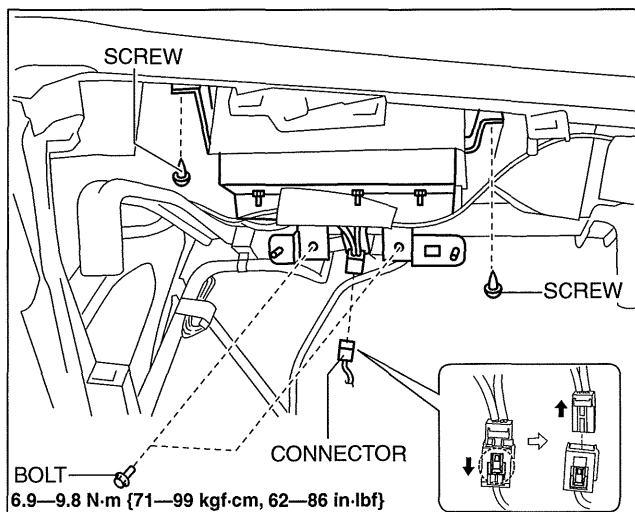
Note

- When replacing the passenger-side air bag module after the deployment, replace it together with the mid-wiring harness.
- When installing the mid-wiring harness, install it along the vehicle wiring harness using bands or tape.

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) SIRIUS satellite radio unit (with SIRIUS satellite radio system) (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)

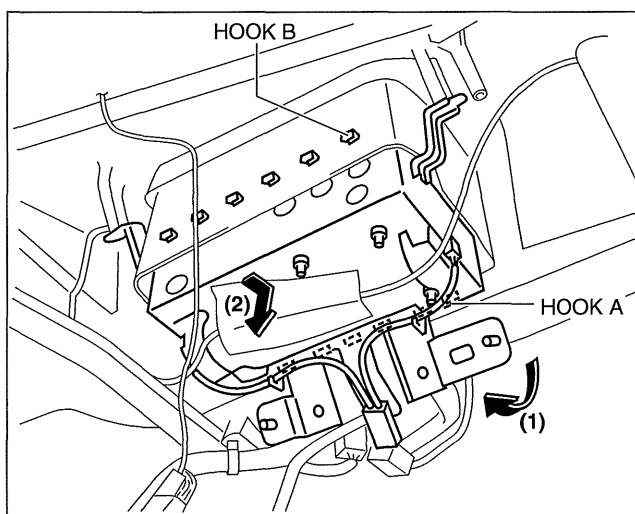
AIR BAG SYSTEM

4. Disconnect the connector.
5. Remove the screws.
6. Remove the bolts.



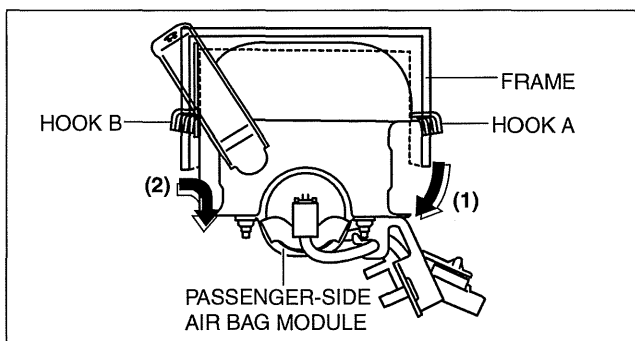
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7. Pull the passenger-side air bag module in the direction of arrow (1) and detach the hook A from the instrument panel.



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8. Pull the passenger-side air bag module in the direction of arrow (2) and detach the hook B from the instrument panel and remove it.
9. Install in the reverse order of removal.
10. Switch the ignition to ON.
11. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)



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08-10

AIR BAG SYSTEM

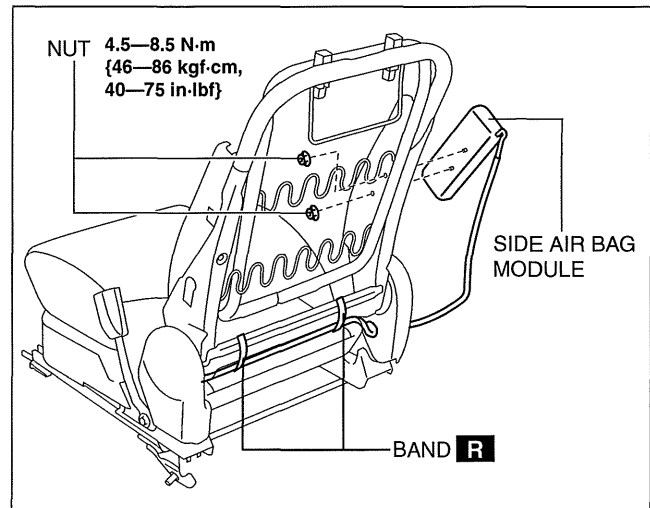
SIDE AIR BAG MODULE REMOVAL/INSTALLATION

id081000800800

Warning

- Handling the air bag module improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)
- If the side air bag module is installed with debris in the seat back, the foreign material may be scattered when the side air bag module operates (deploys), causing injury. Verify that there is no foreign material in the seat back before installing the side air bag module.

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
4. Remove the front seat back trim and front seat back pad. (See 09-13-13 FRONT SEAT BACK TRIM REMOVAL/INSTALLATION.)
5. Remove the bands.
6. Remove the nuts.
7. Remove the side air bag module.
8. Install in the reverse order of removal.
9. Switch the ignition to ON.
10. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)



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AIR BAG SYSTEM

CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION

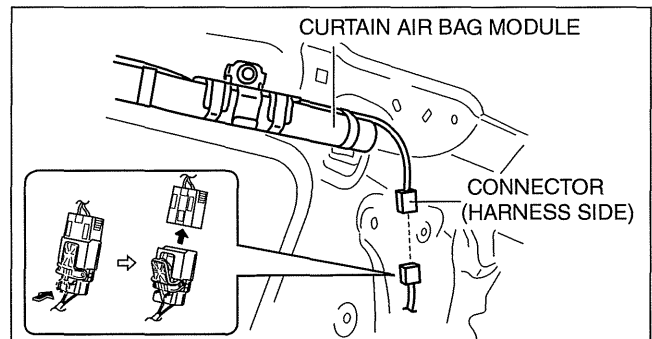
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Warning

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)(See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)

4SD

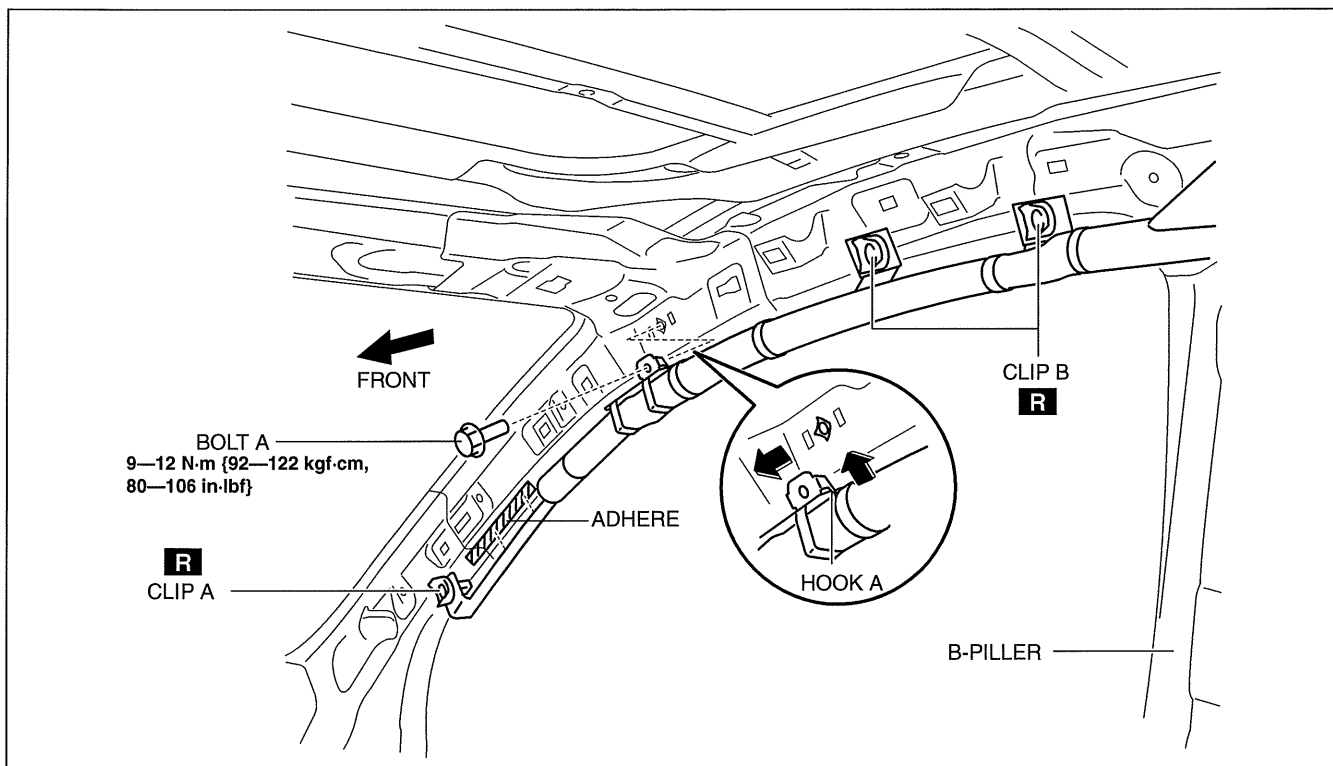
1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Partially peel back the seaming welt.
4. Remove the rain sensor cover. (Vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION)
5. Disconnect the rain sensor connector. (Vehicles with auto light/wiper system)
6. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof system)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10)C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (11)Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (12)Interior light (See 09-18-69 INTERIOR LIGHT REMOVAL/INSTALLATION.)
 - (13)Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14)Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15)Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
7. Disconnect the connector (harness side).



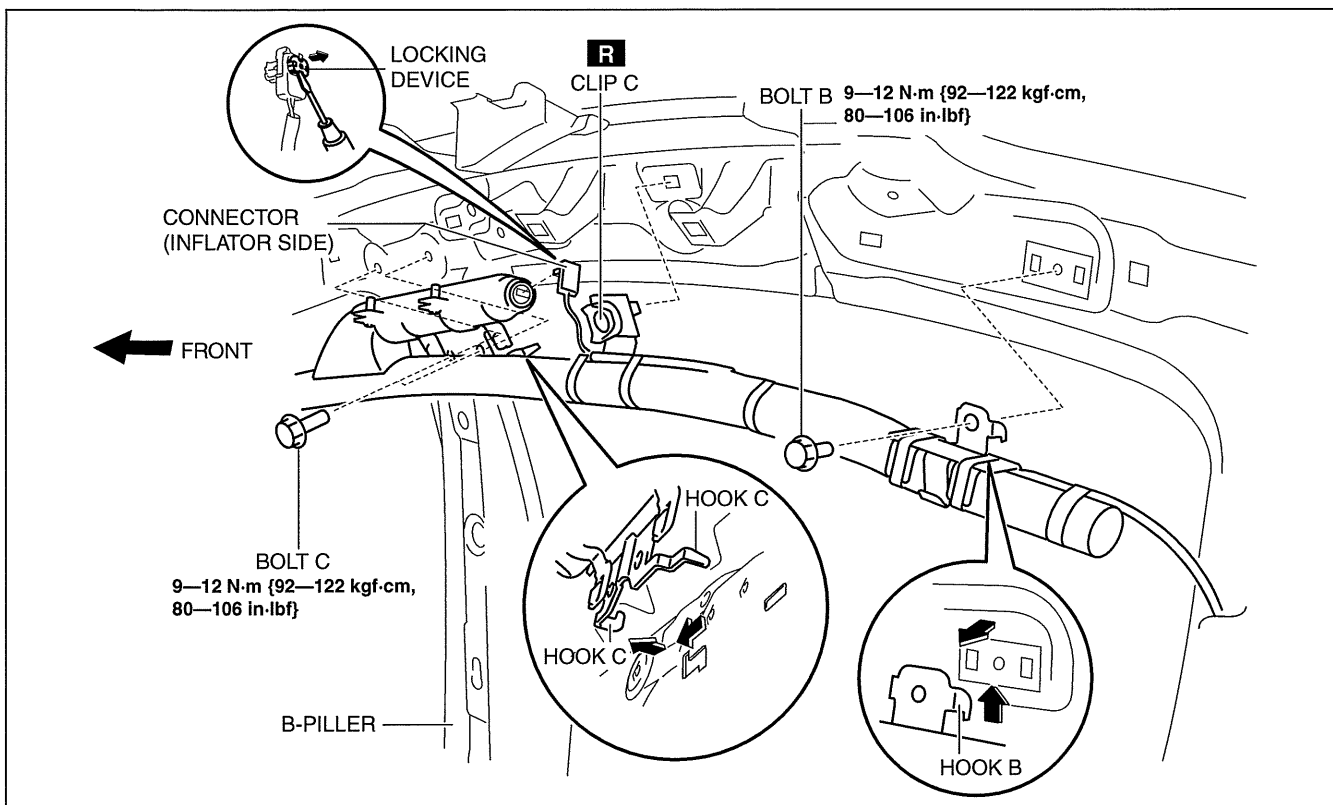
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08-10

AIR BAG SYSTEM



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8. Disconnect the connector (inflator side).
9. Remove the clip A. (See 08-10-15 Clip Removal Note.)
10. Remove the bolt A.
11. Pull hook A in the direction shown in the figure and remove it from the body.
12. Remove the clip B. (See 08-10-15 Clip Removal Note.)
13. Remove the bolt B.
14. Pull hook B in the direction shown in the figure and remove it from the body.
15. Remove the clip C. (See 08-10-15 Clip Removal Note.)

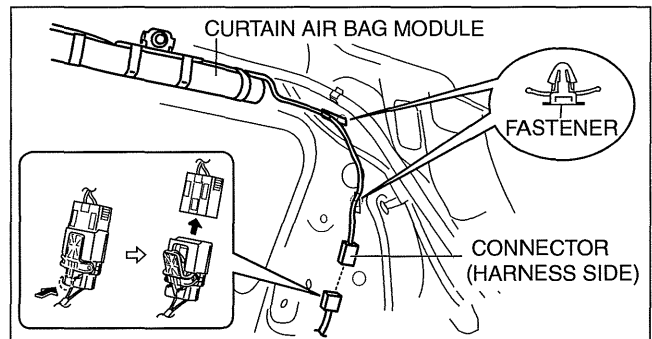
08-10-12

AIR BAG SYSTEM

16. Remove the bolt C.
17. Pull hook C in the direction shown in the figure and remove it from the body.
18. Remove the curtain air bag module.
19. Install in the reverse order of removal.
20. When the switch the ignition to ON verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)

5HB

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Partially peel back the seaming welt.
4. Remove the rain sensor cover. (Vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION)
5. Disconnect the rain sensor connector. (Vehicles with auto light/wiper system)
6. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof system)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Interior light (See 09-18-69 INTERIOR LIGHT REMOVAL/INSTALLATION.)
 - (14) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (15) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (16) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
7. Remove the fastener.

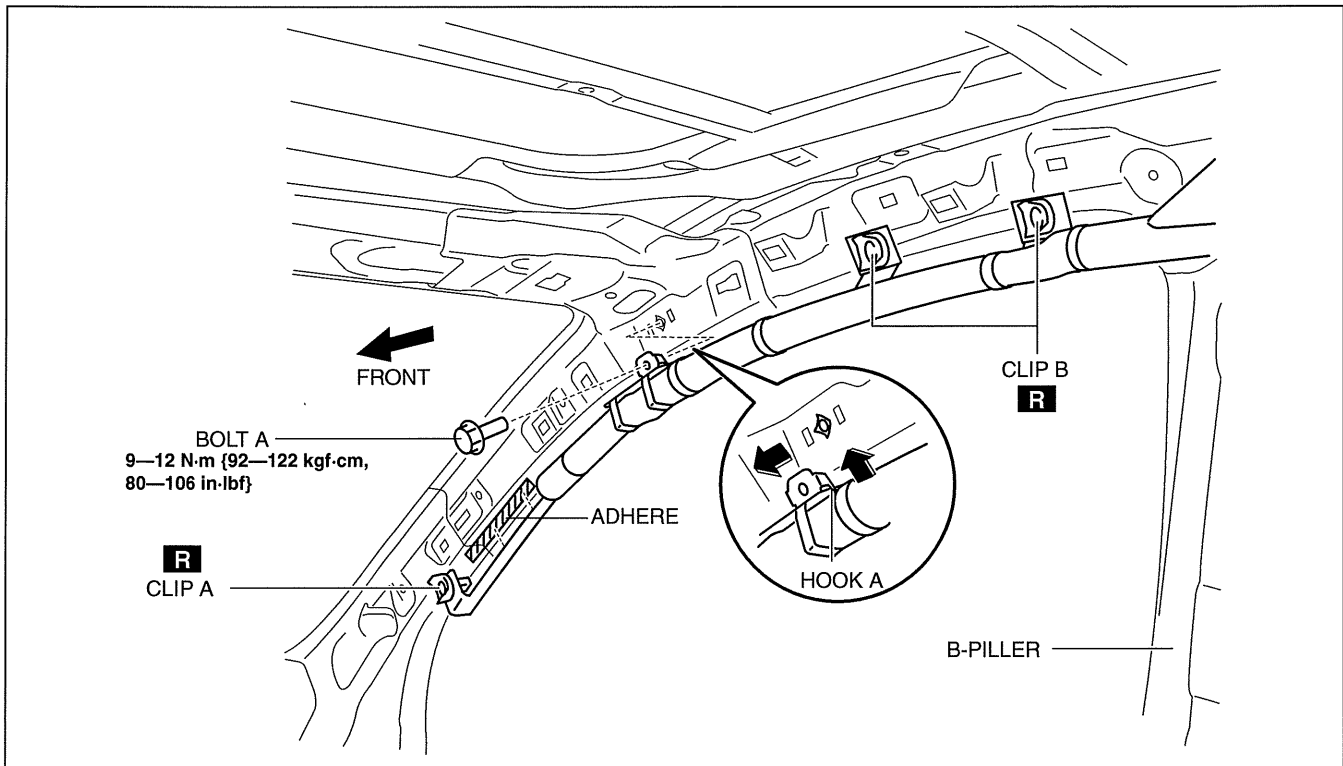


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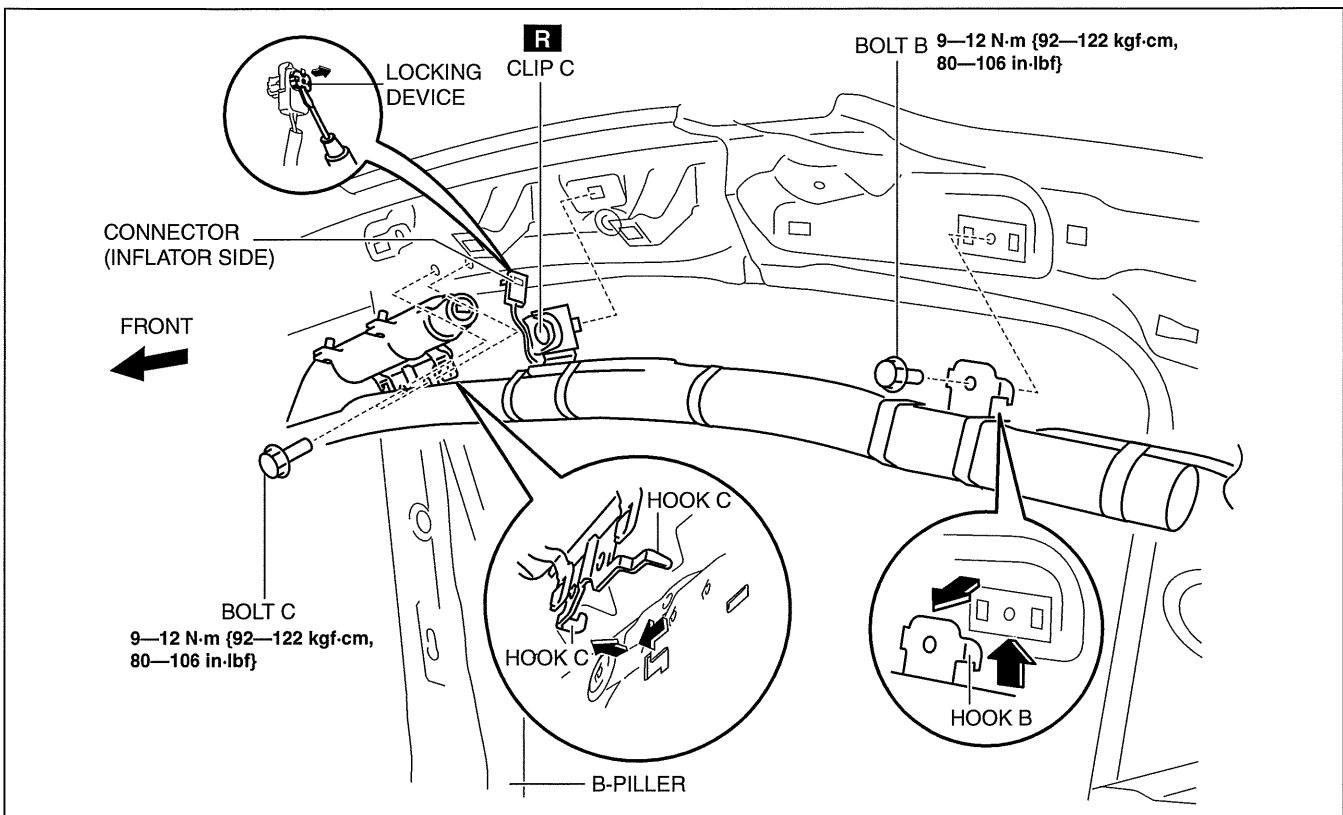
08-10

AIR BAG SYSTEM

8. Disconnect the connector (harness side).



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9. Disconnect the connector (inflator side).
10. Remove the clip A. (See 08-10-15 Clip Removal Note.)
11. Remove the bolt A.
12. Pull hook A in the direction shown in the figure and remove it from the body.
13. Remove the clip B. (See 08-10-15 Clip Removal Note.)
14. Remove the bolt B.
15. Pull hook B in the direction shown in the figure and remove it from the body.

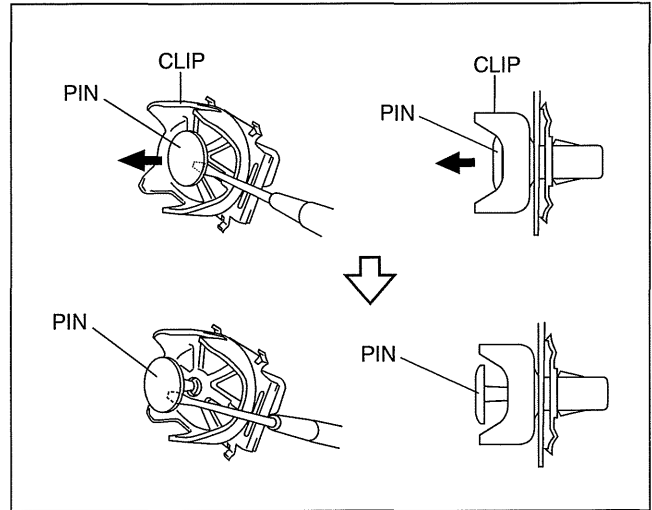
08-10-14

AIR BAG SYSTEM

16. Remove the clip C. (See 08-10-15 Clip Removal Note.)
17. Remove the bolt C.
18. Pull hook C in the direction shown in the figure and remove it from the body.
19. Remove the curtain air bag module.
20. Install in the reverse order of removal.
21. When the switch the ignition to ON verify that the air bag system warning light illuminates for **approx 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)

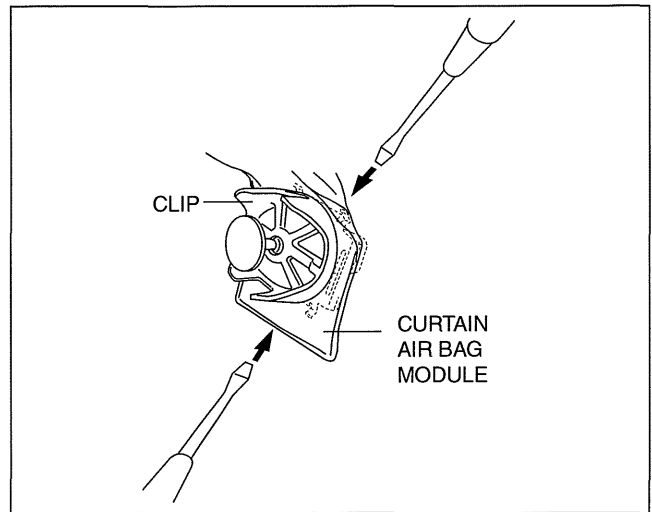
Clip Removal Note

1. Pull out the pin with flathead screwdriver as shown in the figure.



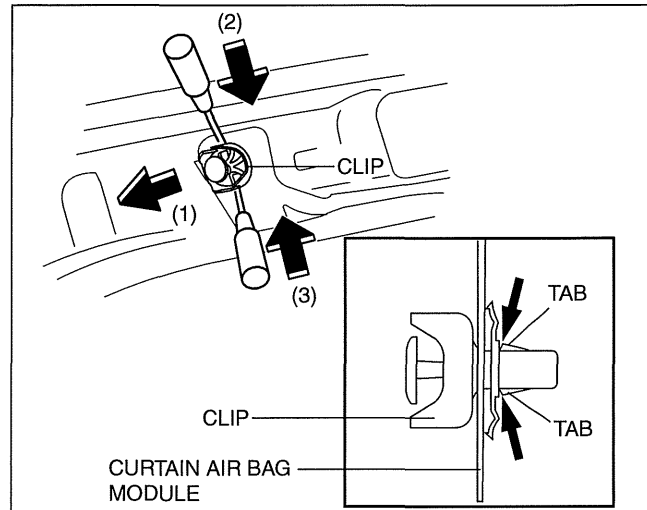
08-10

2. Insert a flathead screwdriver into shown in the figure.



AIR BAG SYSTEM

3. While pulling the curtain air bag in the direction of the arrow shown in the figure (1), detach tabs by prying with a flathead screwdriver in the direction of the arrow (2) (3).
4. Remove the clip from the body.



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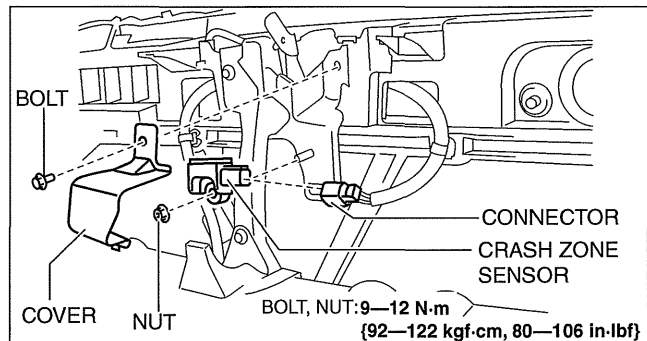
CRASH ZONE SENSOR REMOVAL/INSTALLATION

id081000800500

Warning

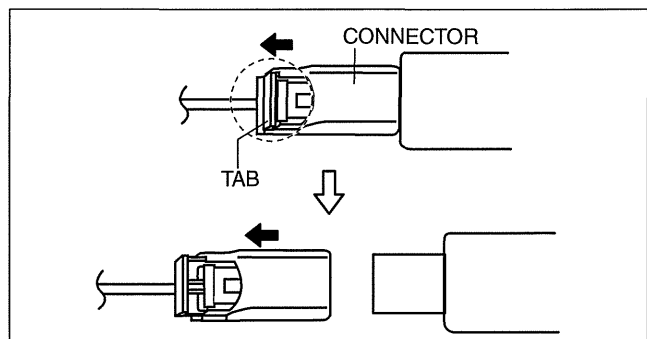
- **Handling the crash zone sensor improperly can accidentally deploy the air bags and pre-tensioner seat belts, which may seriously injure you. Read the air bag system service warnings and cautions before handling the crash zone sensor. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)**

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
4. Remove the bolt
5. Remove the cover.



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6. Disconnect the connector from the crash zone sensor by pressing the connector tab in the direction of the arrow.
7. Remove the nut.
8. Remove the crash zone sensor.
9. Install in the reverse order of removal.
10. Switch the ignition to ON.
11. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)



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AIR BAG SYSTEM

SAS CONTROL MODULE REMOVAL/INSTALLATION

id081000801400

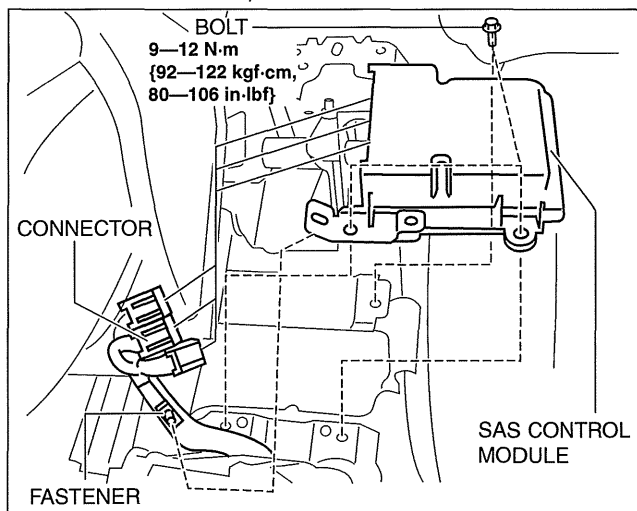
Warning

- Handling the SAS control module or air bag module improperly can accidentally deploy the air bag modules and pre-tensioner seat belt, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag module. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)
- If the connector is connected and the switch the ignition to ON with the SAS control module not secured completely using the installation nuts, the SAS control module may detect a degree of impact even when something contacts it lightly, deploying the air bag module and pre-tensioner seat belt accidentally.

Caution

- When replacing the SAS control module, always perform the configuration procedure before removing the SAS control module. If the configuration is not performed and the SAS control module is removed, DTC B2477 will be displayed.

1. Perform SAS control module configuration when replacing it. (See 08-10-17 SAS CONTROL MODULE CONFIGURATION.)
2. Switch the ignition to off.
3. Disconnect the negative battery cable and wait for **1 min or more**.
4. Remove the console. (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
5. Detach the fastener.
6. Disconnect the connectors.
7. Remove the bolts.
8. Remove the SAS control module.
9. Install in the reverse order of removal.
10. Switch the ignition to ON.
11. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)



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08-10

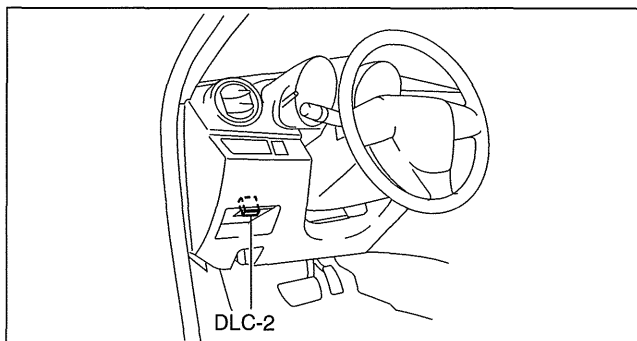
SAS CONTROL MODULE CONFIGURATION

id081000801500

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the SAS CONTROL MODULE CONFIGURATION.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "RCM".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See 08-02-7 DTC TABLE.)



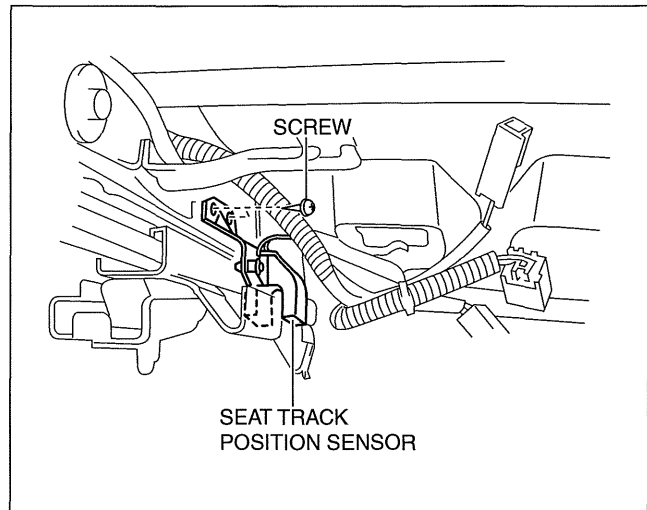
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AIR BAG SYSTEM

SEAT TRACK POSITION SENSOR REMOVAL/INSTALLATION

id081000803700

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1min or more**.
3. Remove the front driver's seat (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
4. Remove the screws.
5. Remove the seat track position sensor.
6. Install in the reverse order of removal.



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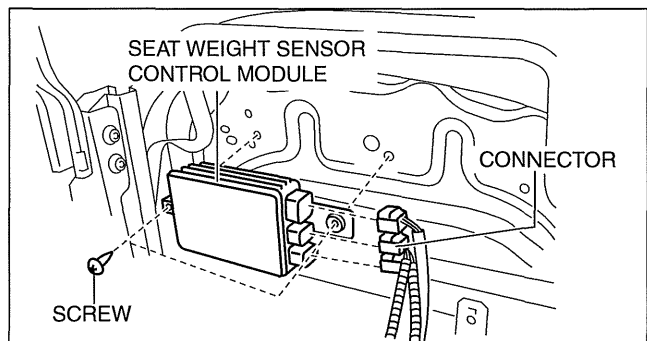
SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION

id081000801600

Caution

- When the seat weight sensor control module is replaced with a new one, perform the seat weight sensor calibration using the M-MDS. (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.)

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the connector.
4. Remove the screws.
5. Remove the seat weight sensor control module.
6. Install in the reverse order of removal.



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SEAT WEIGHT SENSOR CALIBRATION

id081000801700

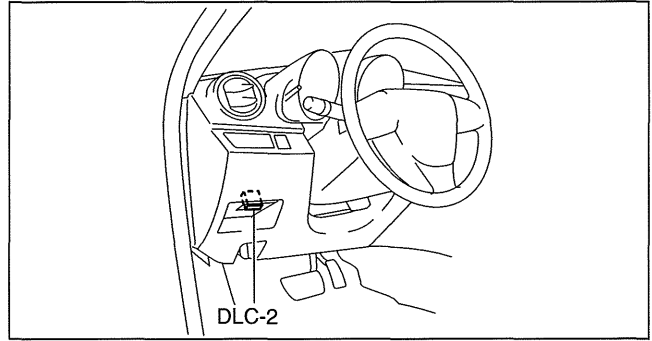
Caution

- If any of the following work is performed, perform the seat weight sensor calibration using the M-MDS.
 - Replacement with a new seat weight sensor
 - Replacement with a new seat weight sensor control module
 - Replacement with new passenger-side seat parts
 - Disassembly of the passenger-side seat
- If any of the following work is performed, perform the seat weight sensor inspection using the M-MDS. (See 08-10-19 SEAT WEIGHT SENSOR INSPECTION.)
 - Removal of the passenger-side seat
 - Loosening and retightening of passenger's seat fixing bolts
 - Or, the vehicle is involved in a collision

1. Have two **20 kg {44 lb}** weights ready to use.

AIR BAG SYSTEM

2. Connect the M-MDS to the DLC-2.
3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Restraints".
4. Then, select item from the screen menu in the following order.
 1. Select "Passenger Seat Weight Sensor ReZero".
5. Perform calibration following the procedures on the M-MDS screen.



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SEAT WEIGHT SENSOR INSPECTION

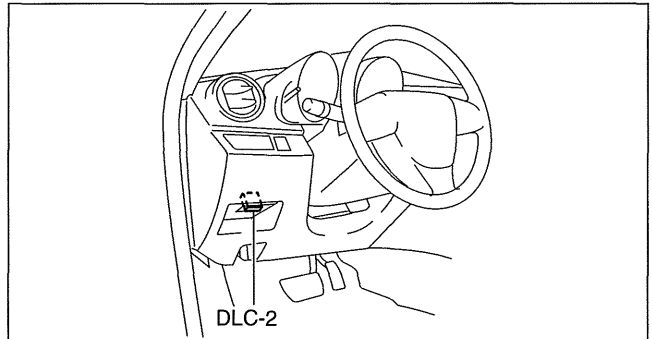
id081000801800

Caution

- If any of the following work is performed, perform the seat weight sensor inspection using the M-MDS.
 - Removal of the passenger-side seat
 - Loosening and retightening of passenger's seat fixing bolts
 - Or, the vehicle is involved in a collision
- If any of the following work is performed, perform the seat weight sensor calibration using the M-MDS. (See 08-10-18 SEAT WEIGHT SENSOR CALIBRATION.)
 - Replacement with a new seat weight sensor
 - Replacement with a new seat weight sensor control module
 - Replacement with new passenger-side seat parts
 - Disassembly of the passenger-side seat

08-10

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Restraints".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
3. Then, select item from the screen menu in the following order.
 1. Select "Passenger Seat Weight Sensor ReZero".
4. Perform inspection following the procedures on the M-MDS screen.



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SIDE AIR BAG SENSOR NO. 1 REMOVAL/INSTALLATION

id081000800600

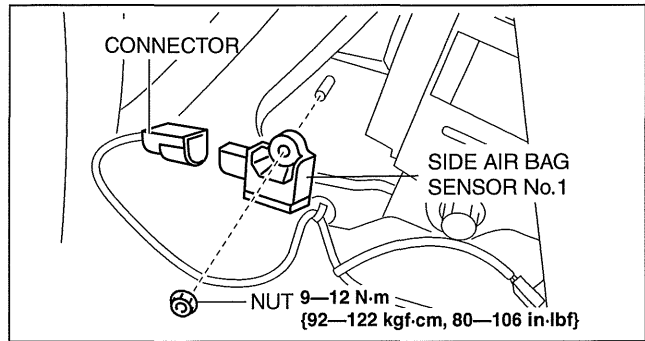
Warning

- Handling the side air bag sensor improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the air bag system service warnings and cautions before handling the side air bag sensor. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
4. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
5. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)

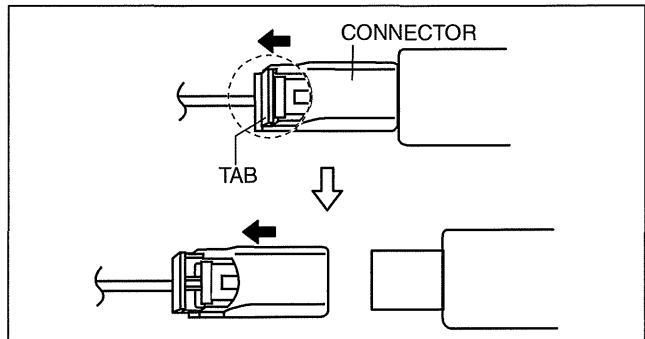
AIR BAG SYSTEM

6. Remove the nut.
7. Remove the side air bag sensor No.1.



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8. Disconnect the connector from the side air bag sensor No.1 by pressing the connector tab in the direction of the arrow.
9. Install in the reverse order of removal.
10. Switch the ignition to ON.
11. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)



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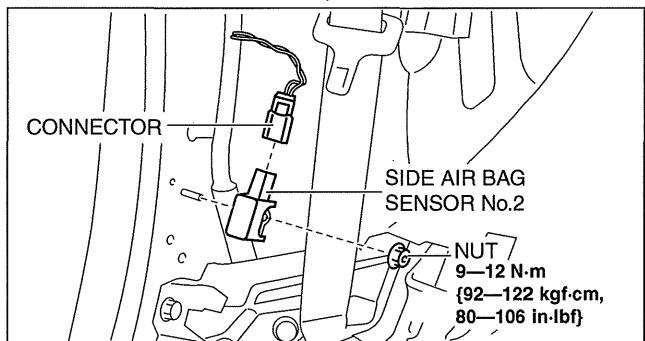
SIDE AIR BAG SENSOR NO. 2 REMOVAL/INSTALLATION

id081000800700

Warning

- **Handling the side air bag sensor improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the air bag system service warnings and cautions before handling the side air bag sensor. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)**

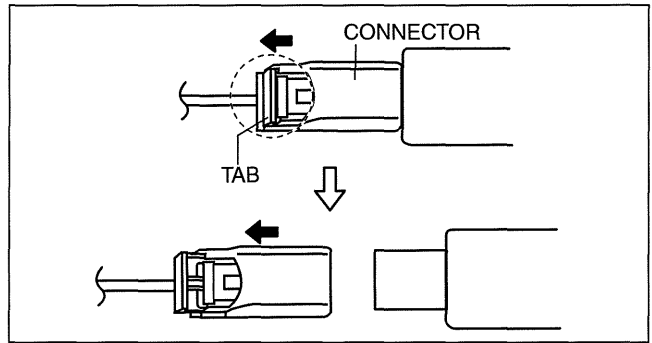
1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (3) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (4) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
4. Remove the nut.
5. Remove the side air bag sensor No.2.



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AIR BAG SYSTEM

6. Disconnect the connector from the side air bag sensor No.2 by pressing the connector tab in the direction of the arrow.
7. Install in the reverse order of removal.
8. Switch the ignition to ON.
9. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)

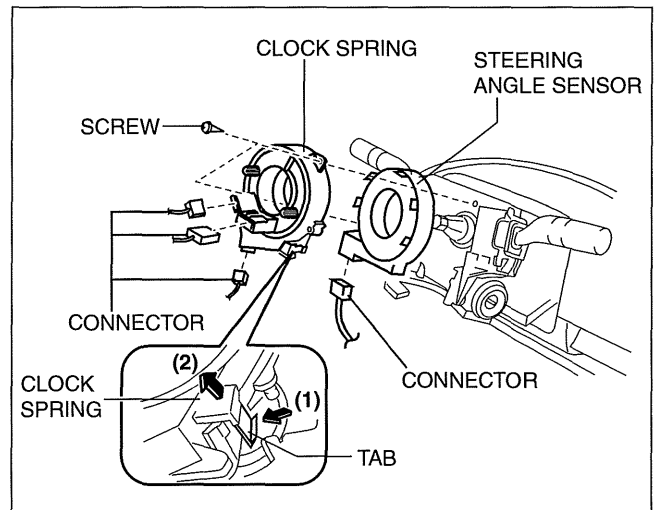


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CLOCK SPRING REMOVAL/INSTALLATION

id081000802000

1. Disconnect the negative battery cable.
2. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
3. Remove the steering wheel. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4. Remove the column cover.
5. Remove the connectors.
6. Remove the tab direction of the arrow shown in the figure.
7. Remove the screws.
8. Remove the clock spring.
9. Remove the steering angle sensor (See 08-10-21 Steering Angle Sensor Removal Note.)
10. Install in the reverse order of removal.
11. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate in the manner described above, there are malfunctions in the system. Inspect the system using the on-board diagnostic.



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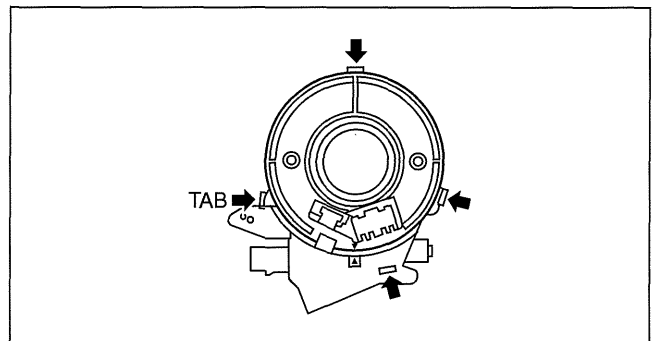
Clock Spring Installation Note

Caution

- If the clock spring is not adjusted, the spring wire in the clock spring will break due to overtension when the steering wheel is turned. Always adjust the clock spring after installing it.
- Adjust the clock spring after installing it. (See 08-10-22 CLOCK SPRING ADJUSTMENT.)

Steering Angle Sensor Removal Note

- Remove the tab shown in the figure and remove the steering angle sensor.



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AIR BAG SYSTEM

CLOCK SPRING ADJUSTMENT

id081000802100

Note

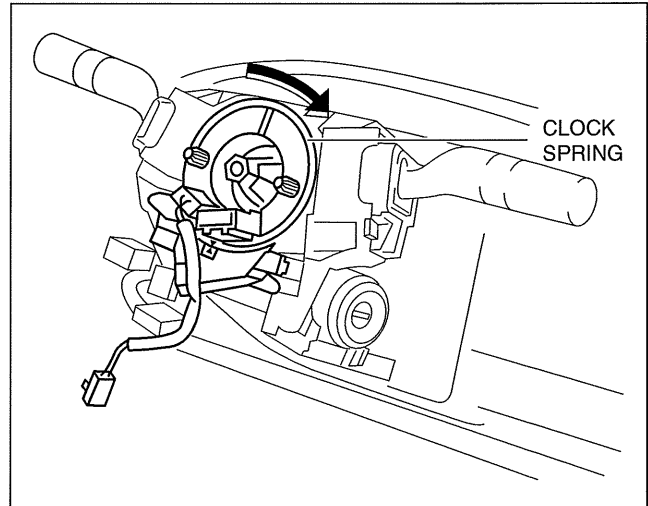
- The adjustment procedure is also specified on the caution label of the clock spring.

1. Set the front wheels straight ahead.

Caution

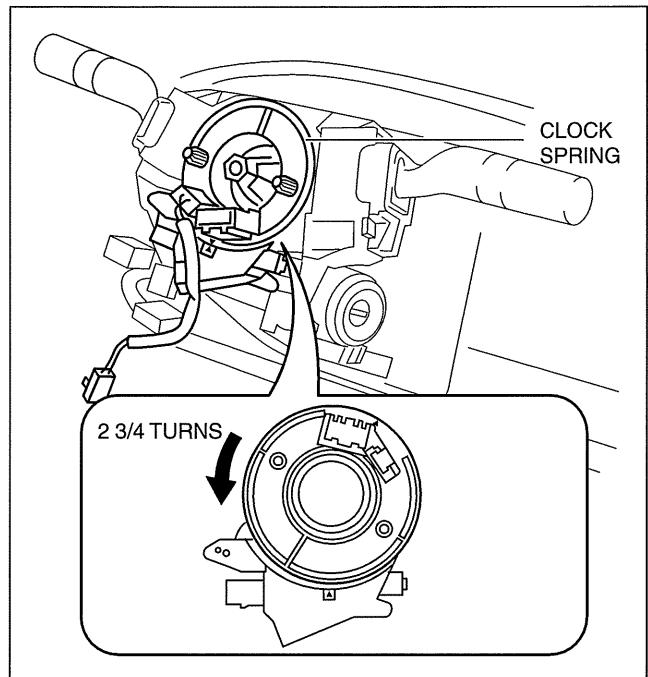
- **The clock spring will break if over-wound. Do not forcibly turn the clock spring.**

2. Turn the clock spring clockwise until it stops.



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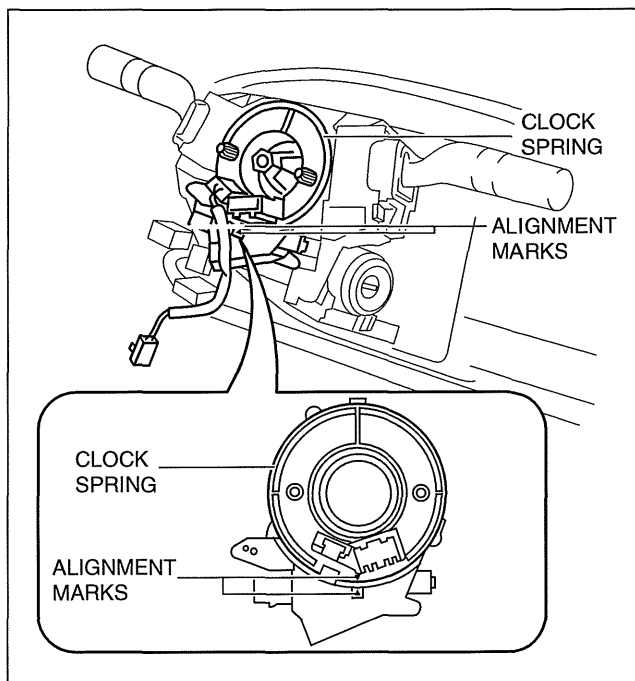
3. Turn the clock spring counterclockwise **2 3/4 turns**.



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AIR BAG SYSTEM

4. Align the mark on the clock spring with the mark on the outer housing.



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08-10

CLOCK SPRING INSPECTION

1. Disconnect the negative battery cable.
2. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
3. Remove the steering wheel. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4. Remove the column cover.
5. Remove the clock spring. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
6. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the clock spring.

Note

- When the vehicle-side connector for the clock spring is disconnected, terminals 1A, 1B, 1C and 1D are shorted to prevent unexpected operation (deployment) of the air bag module.

AIR BAG SYSTEM

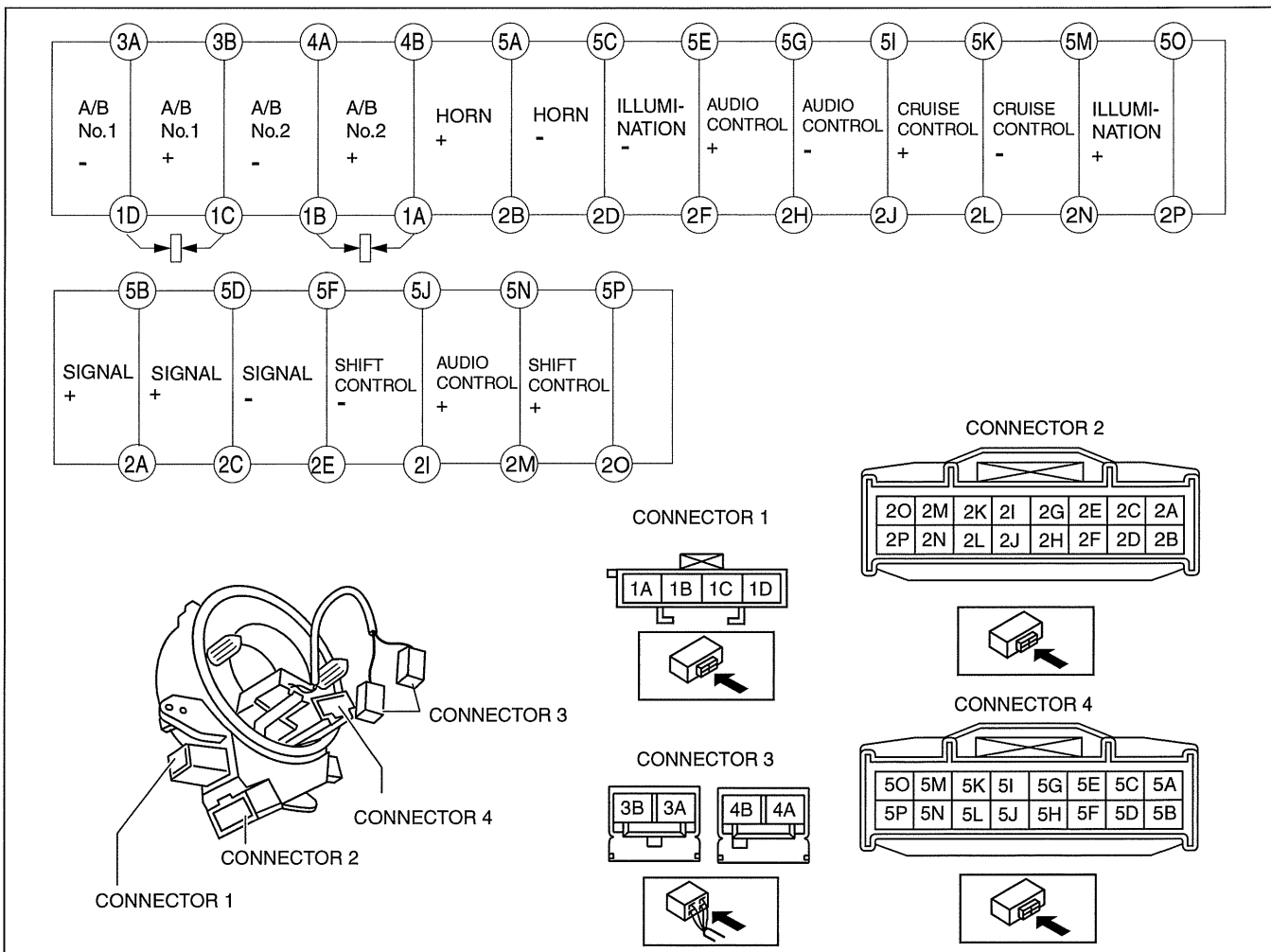
Vehicles with steering switch

○—○ : Continuity

Test condition	Terminal																									
	1A	1B	1C	1D	2B	2D	2F	2H	2J	2L	2N	2P	3A	3B	4A	4B	5A	5C	5E	5G	5I	5K	5M	5O		
Under any condition	○	○																								
			○	○									○	○												
					○													○								
						○													○							
							○													○						
								○													○					
									○													○				
										○													○			
											○													○		
												○													○	

Test condition	Terminal											
	2A	2C	2E	2I	2M	2O	5B	5D	5F	5J	5N	5P
Under any condition	○											
		○										
			○									
				○								
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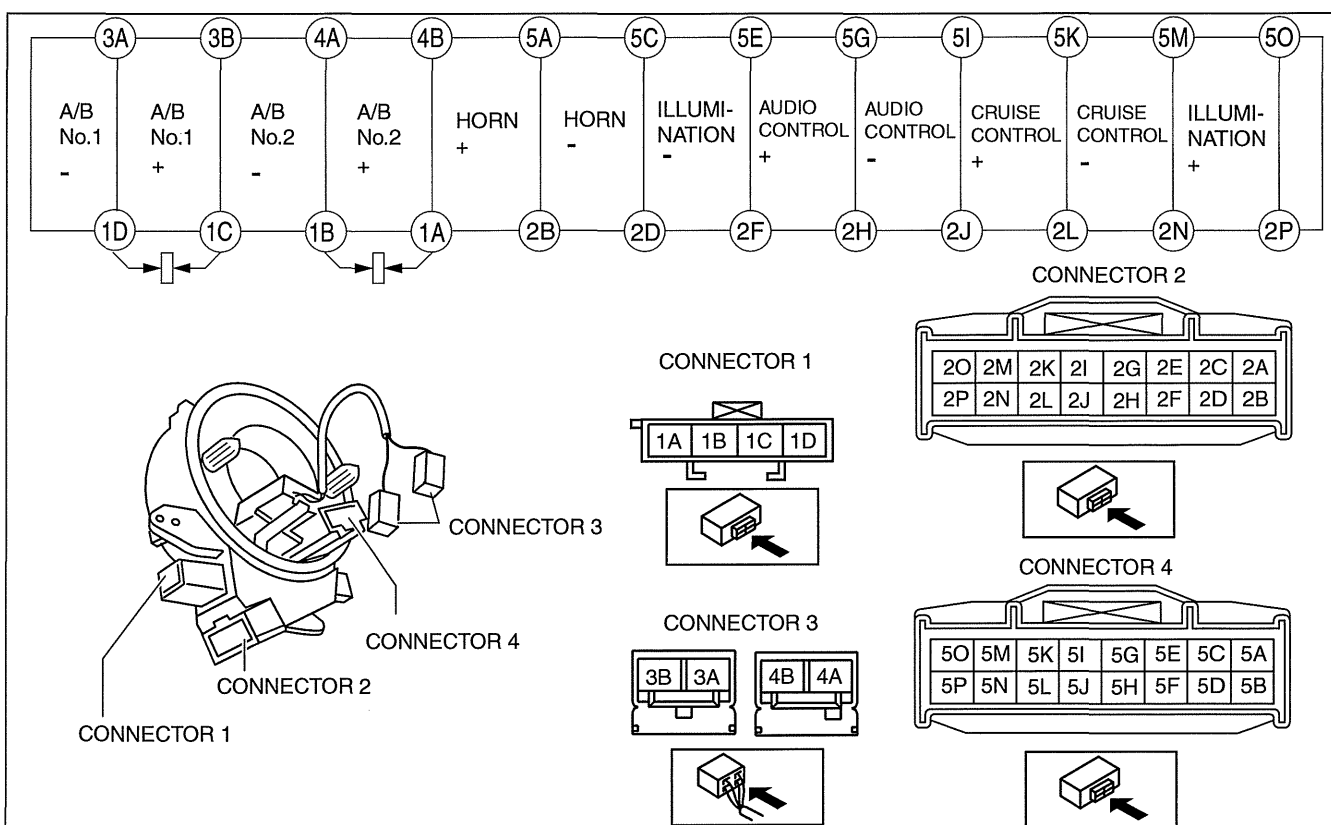
AIR BAG SYSTEM

Vehicles without steering switch

○—○ : Continuity

Test condition	Terminal																									
	1A	1B	1C	1D	2B	2D	2F	2H	2J	2L	2N	2P	3A	3B	4A	4B	5A	5C	5E	5G	5I	5K	5M	5O		
Under any condition	○	○																								
			○	○									○	○												
					○													○								
						○													○							
							○													○						

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08-10

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PASSENGER AIR BAG DEACTIVATION (PAD) INDICATOR LIGHT BULB REMOVAL/INSTALLATION

id081000806800

Note

- The PAD indicator light (LED) is built into the multi information display/information display.

- Remove the information display. (With information display) (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
- Remove the multi information display. (With multi information display) (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)

AIR BAG SYSTEM

AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES

id081000801100

Warning

- A live (undeployed) air bag module or pre-tensioner seat belt may accidentally operate (deploy) when it is disposed of and cause serious injury. Do not dispose of a live (undeployed) air bag module and pre-tensioner seat belt. If the SSTs (Deployment tool and Adapter harness) are not available, consult the nearest Mazda representative for assistance.

Caution

- Deploying the air bag modules and pre-tensioner seat belts inside the vehicle may cause damage to the vehicle interior. When the vehicle is not to be scrapped, always deploy the air bag modules and pre-tensioner seat belts outside the vehicle.
- If the vehicle is to be scrapped, or when disposing of any air bag modules or pre-tensioner seat belts, operate (deploy) them inside the vehicle by following the deployment procedure below and using the **SST (Deployment tool)**.
- When disposing of an operated (deployed) air bag module and pre-tensioner seat belt, refer to "AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DISPOSAL PROCEDURES".

Deployment Procedure for Inside of Vehicle

1. Inspect the **SST (Deployment tool)**. (See 08-10-44 INSPECTION OF SST (DEPLOYMENT TOOL).)
2. Move the vehicle to an open space, away from strong winds, and close all of the vehicle doors and windows.
3. Switch the ignition to off.
4. Disconnect the negative battery cable and wait for **1 min or more**.
5. Follow the procedure below for operating (deploying) the applicable air bag module or pre-tensioner seat belt.

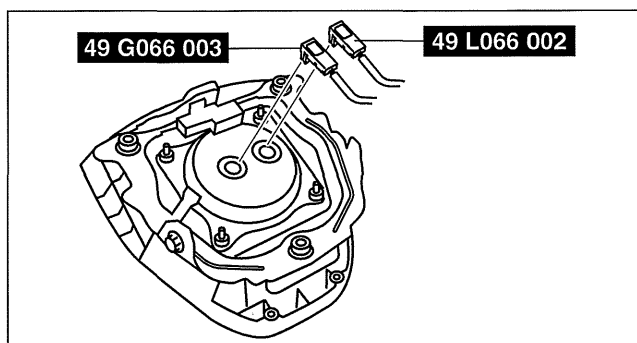
Driver-side Air Bag Module

Warning

- The driver-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both driver-side air bag module inflators simultaneously, following the procedure below.

Note

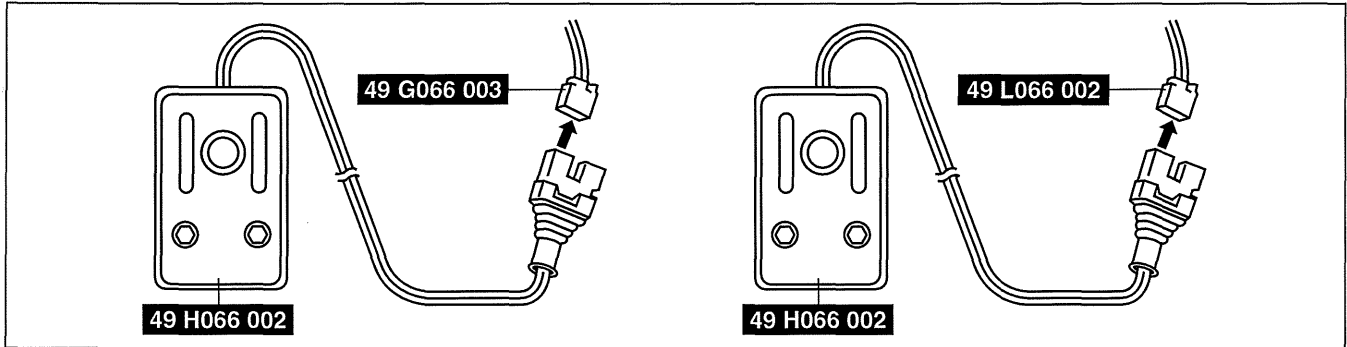
- The SSTs, two types of adapter harnesses (for inflators No.1 and No.2) and two deployment tools are to be used to operate (deploy) the driver-side air bag module.
1. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/ INSTALLATION.)
 2. Connect the **SST (Adapter harness)** to the driver-side air bag module as shown in the figure.
 3. Install the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/ INSTALLATION.)



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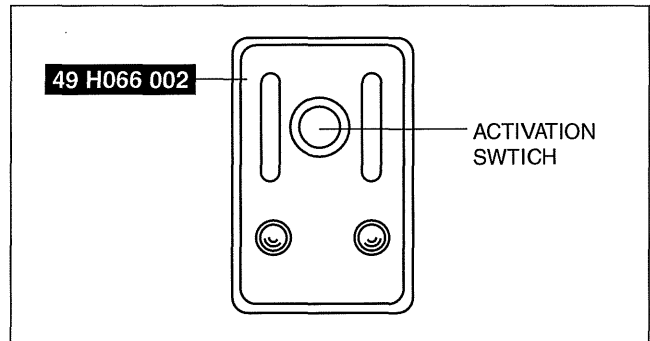
AIR BAG SYSTEM

4. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.



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5. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
6. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
7. Verify that all persons are standing **at least 6 m {20 ft}** way from the vehicle.
8. Press the activation switch on the **SST (Deployment tool)** connected with **49 L066 002** (a yellow connector) of the **SST (Adapter harness)**, and after **3 s**, press the activation switch on the other **SST (Deployment tool)** to operate (deploy) the air bag module (both inflators).



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Warning

- Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury if the air bag module operates (deploy) unexpectedly. If the two operation (explosive) sounds are not heard, perform Step 8 again. If a total of two operation (explosive) sounds cannot be verified even though Step 8 is performed again, leave the air bag module alone for 30 min or more before approaching it again.
- The air bag module is very hot immediately after it is operated (deployed). You can get burned. Do not touch the air bag module for at least 15 min after deployment.

9. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.

Passenger-side Air Bag Module

Warning

- The passenger-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both passenger-side air bag module inflators simultaneously, following the procedure below.

Note

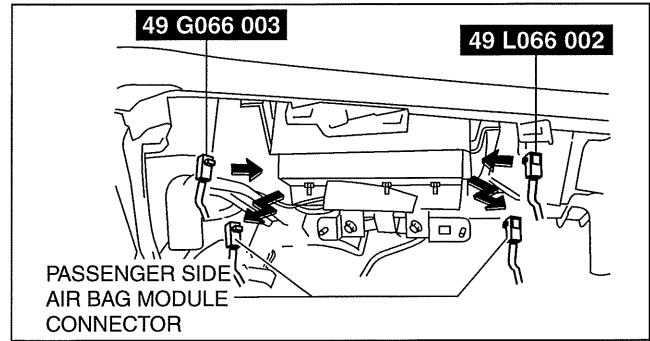
- The SSTs, two types of adapter harnesses (for inflators No.1 and No.2) and two deployment tools are to be used to operate (deploy) the passenger-side air bag module.

1. Remove the glove compartment. (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)

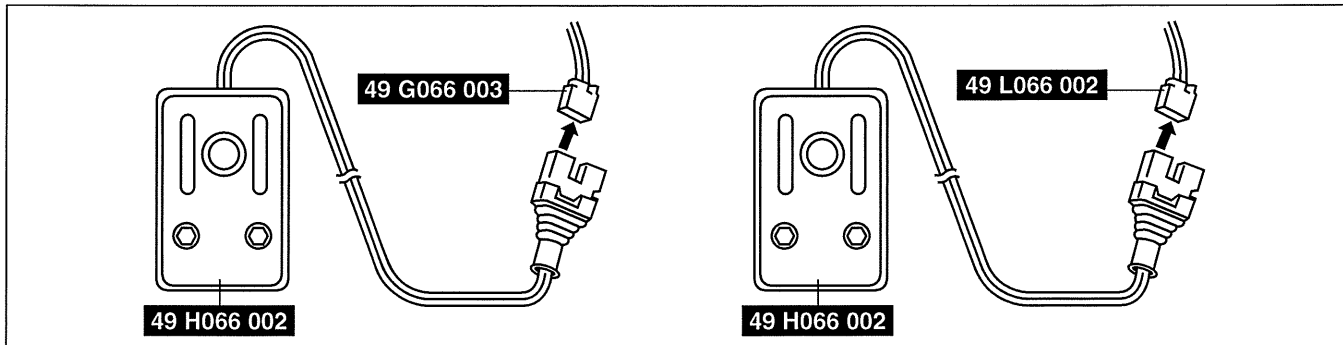
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AIR BAG SYSTEM

2. Disconnect the passenger-side air bag module connector.
3. Connect the **SST (Adapter harness)** to the passenger-side air bag module as shown in the figure.
4. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.

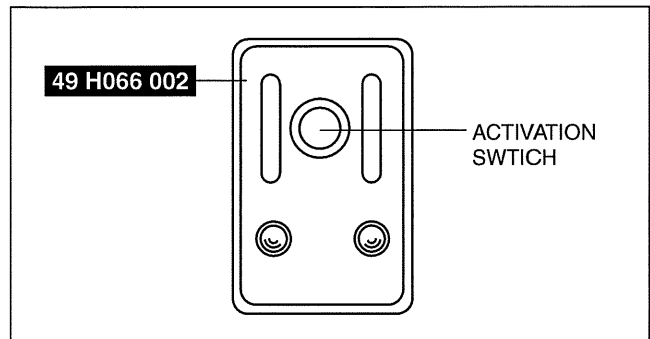


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5. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
6. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
7. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.
8. Press the activation switch on the **SST (Deployment tool)** connected with **49 L066 002** (a yellow connector) of the **SST (Adapter harness)**, and after **3 s**, press the activation switch on the other **SST (Deployment tool)** to operate (deploy) the air bag module (both inflators).



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Warning

- Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury if the air bag module operates (deploy) unexpectedly. If the two operation (explosive) sounds are not heard, perform Step 8 again. If a total of two operation (explosive) sounds cannot be verified even though Step 8 is performed again, leave the air bag module alone for 30 min or more before approaching it again.
- The air bag module is very hot immediately after it is operated (deployed). You can get burned. Do not touch the air bag module for at least 15 min after deployment.

9. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.

AIR BAG SYSTEM

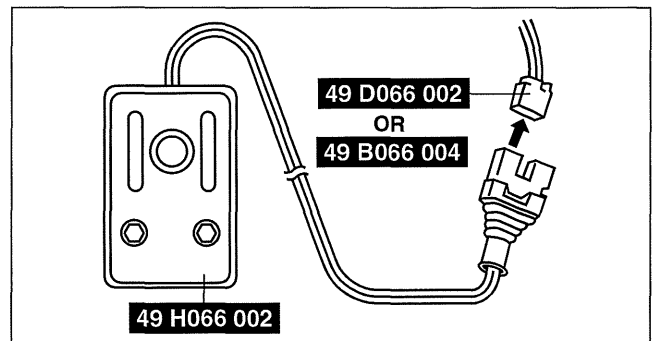
Side Air Bag Module

1. Disconnect the side air bag module connector.
2. Connect the **SST (Adapter harness)** to the side air bag module as shown in the figure.



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3. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
4. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
5. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
6. Verify that all persons are standing at least 6 m {20 ft} away from the vehicle.



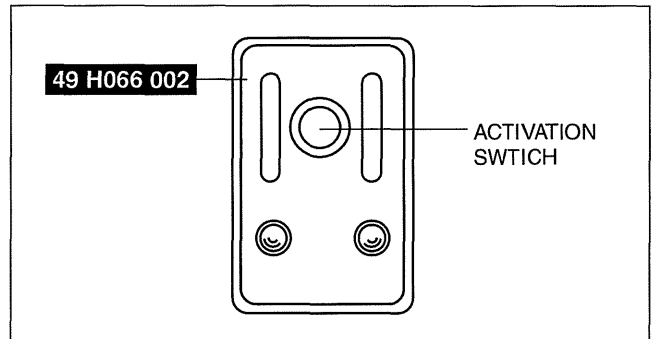
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7. Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the side air bag module.

Warning

- The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.

8. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.



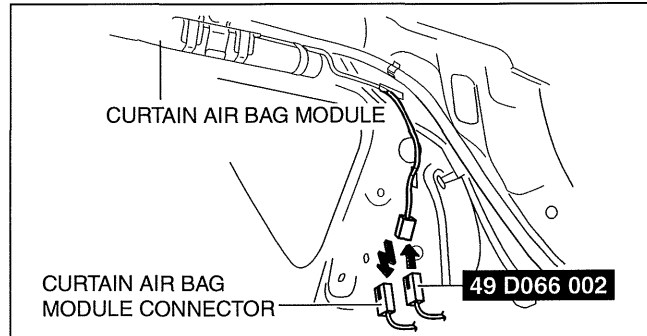
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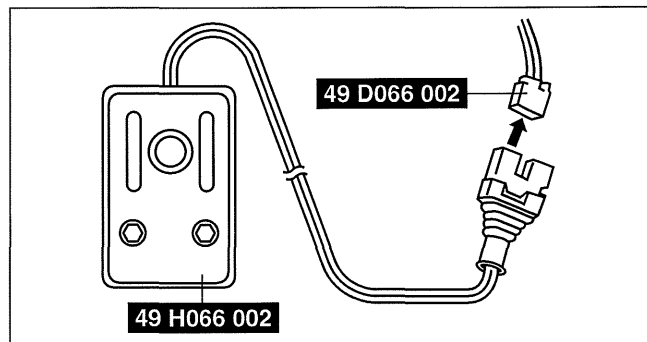
AIR BAG SYSTEM

Curtain Air Bag Module

1. Remove the following parts:
 1. Rear seat cushion (4SD) (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 2. Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 3. Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 4. Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 5. Trunk side trim (5HB) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
2. Remove the C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
3. Disconnect the curtain air bag module connector.



4. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
5. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
6. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
7. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

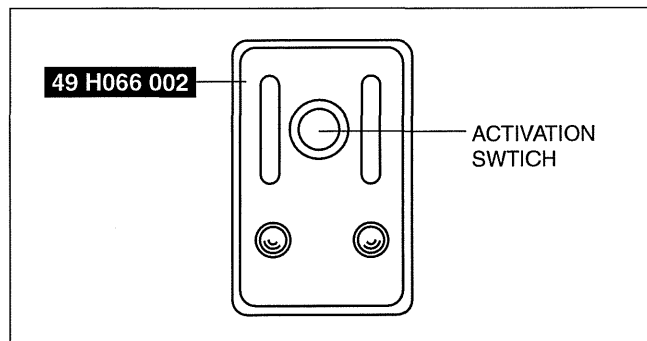


8. Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the curtain air bag module.

Warning

- **The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.**

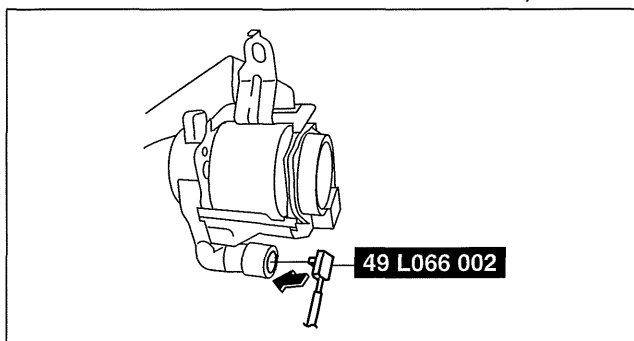
9. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.



AIR BAG SYSTEM

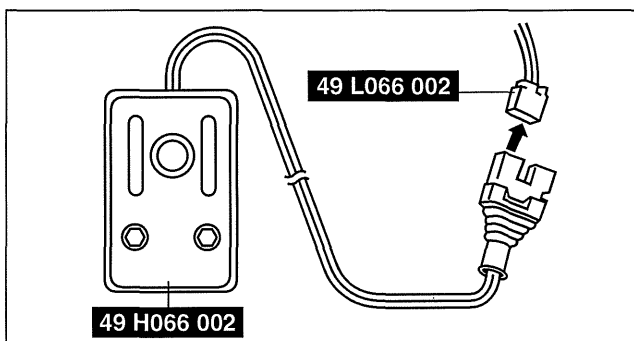
Pre-tensioner Seat Belt

1. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
3. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
4. Remove the pre-tensioner seat belt and connect the **SST (Adapter harness)** as shown in the figure. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
5. Install the pre-tensioner seat belt.



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6. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
7. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
8. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
9. Verify that all persons are standing at least 6 m {20 ft} away from the vehicle.



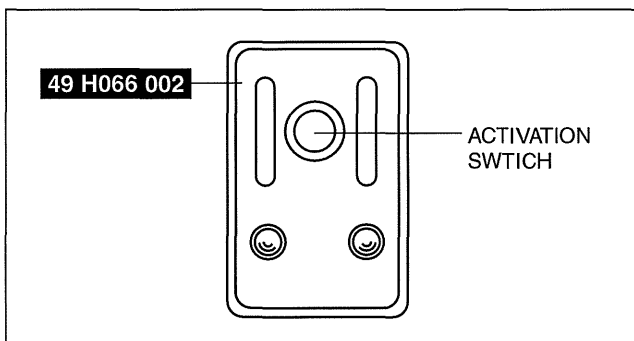
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10. Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the pre-tensioner seat belt.

Warning

- The pre-tensioner seat belt is very hot immediately after it is operated (deployed). You can be burned. Do not touch the pre-tensioner seat belt for at least 15 min after deployment.

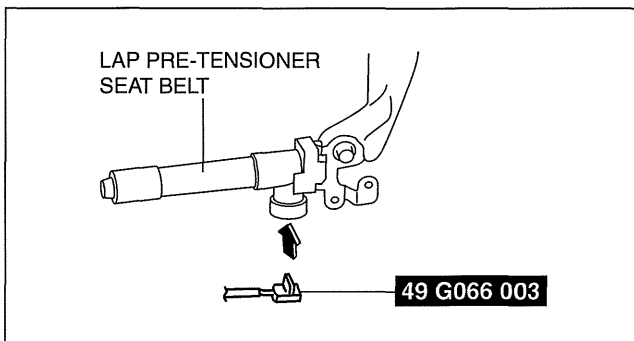
11. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.



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Lap pre-tensioner Seat Belt

1. Remove the lap pre-tensioner seat belt and connect the **SST (Adapter harness)** as shown in the figure. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
2. Install the lap pre-tensioner seat belt.

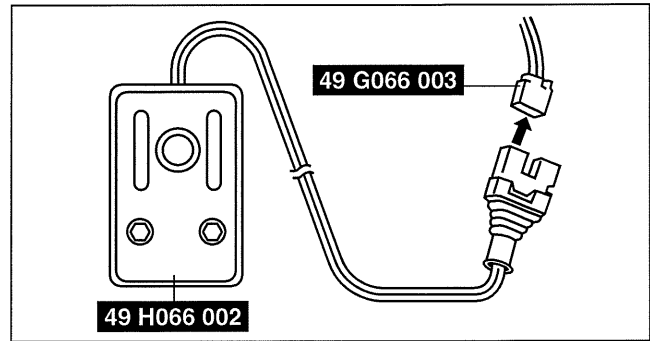


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08-10

AIR BAG SYSTEM

3. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
4. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
5. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
6. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.



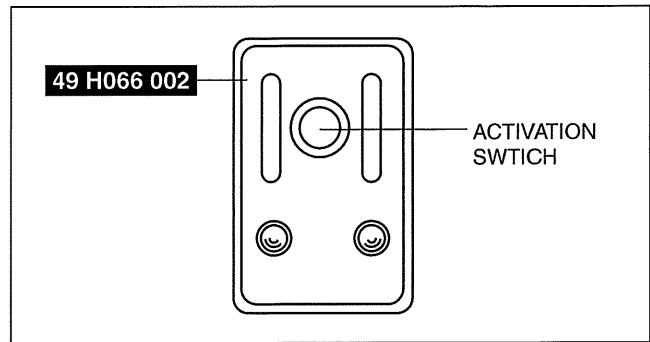
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7. Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the pre-tensioner seat belt.

Warning

- The pre-tensioner seat belt is very hot immediately after it is operated (deployed). You can be burned. Do not touch the pre-tensioner seat belt for at least 15 min after deployment.

8. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.



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Deployment Procedure for Outside of Vehicle

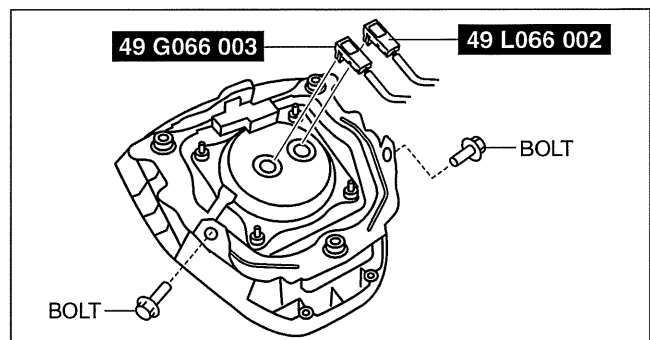
1. Inspect the **SST (Deployment tool)**. (See 08-10-44 INSPECTION OF SST (DEPLOYMENT TOOL).)
2. Switch the ignition to off.
3. Disconnect the negative battery cable and wait for **1 min or more**.
4. Follow the procedure below for operating (deploying) the applicable air bag module or lap pre-tensioner seat belt.

Driver-side Air Bag Module

Warning

- The driver-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both driver-side air bag module inflators simultaneously, following the procedure below.

1. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
2. Install the bolts to the driver-side air bag module as shown in the figure, and connect the **SST (Adapter harness)**.



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AIR BAG SYSTEM

- Place the driver-side air bag module on the center of the tire wheel with the padded surface facing up. To secure the air bag module to the tire wheel, wrap a wire (cross section 1.25 mm^2 {0.002 in²} or more) through the wheel and the bolt installation holes of the air bag module **at least 4 times**.

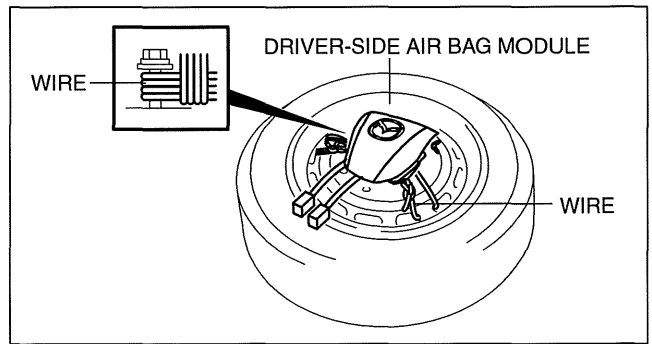
Warning

- If the air bag module is not properly installed to the tire wheel, serious injury may occur when the module is operated (deployed). When installing the air bag module to the tire wheel, make sure the padded surface is facing up.

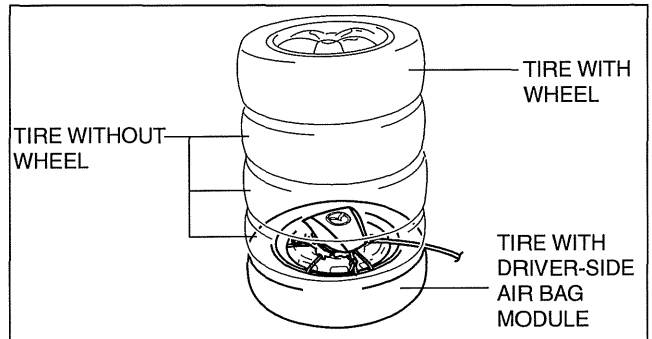
- Stack three tires without wheels on top of the tire with the driver-side air bag module, and then stack another tire with a wheel on the very top.

- Secure the tires with wire.

- Connect the **SSTs (Deployment tool)** to the **SSTs (Adapter harness)**.
- Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
- Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
- Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

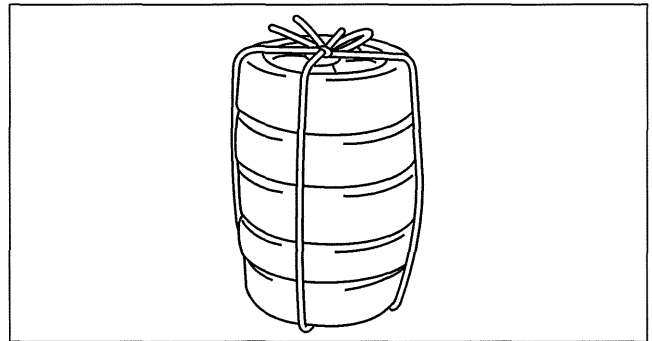


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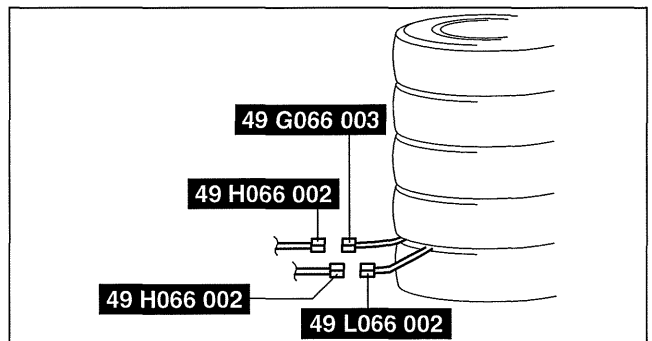


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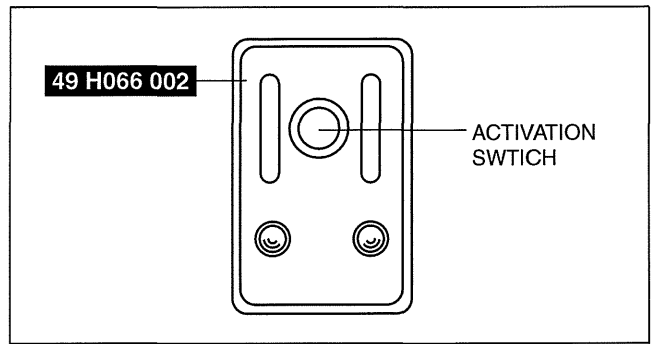
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AIR BAG SYSTEM

10. Press the activation switch on the **SST (Deployment tool)** connected with **49 L066 002** (a yellow connector) of the **SST (Adapter harness)**, and **after 3 s**, press the activation switch on the other **SST (Deployment tool)** to operate (deploy) the air bag module (both inflators).

Warning

- **Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury if the air bag module operates (deploy) unexpectedly. If the two operation (explosive) sounds are not heard, perform Step 10 again. If a total of two operation (explosive) sounds cannot be verified even though Step 10 is performed again, leave the air bag module alone for 30 min or more before approaching it again.**
- **The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.**



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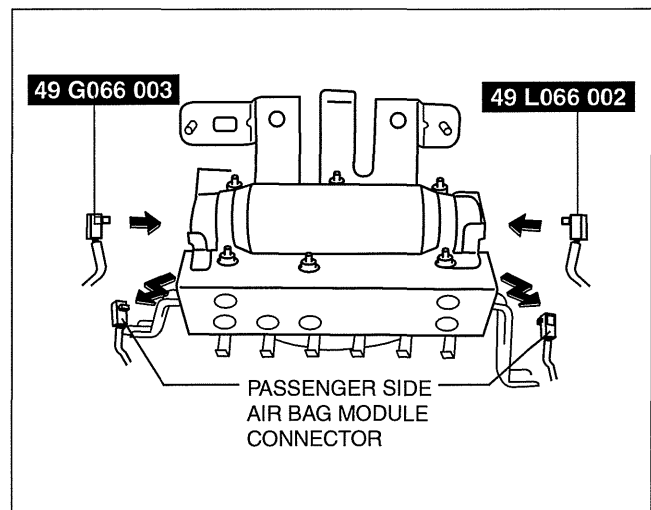
11. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.

Passenger-side Air Bag Module

Warning

- **The passenger-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both passenger-side air bag module inflators simultaneously, following the procedure below.**

1. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) SIRIUS satellite radio unit (with SIRIUS satellite radio system) (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)
 - (7) Passenger-side air bag module (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
2. Disconnect the passenger-side air bag module connector.
3. Connect the **SSTs (Adapter harness)** to the passenger-side air bag module as shown in the figure.



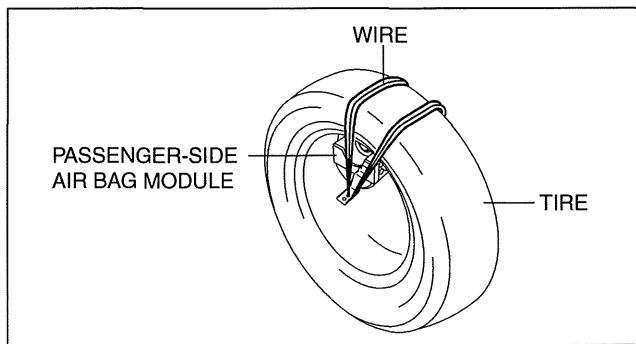
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AIR BAG SYSTEM

4. Place the padded surface of the passenger-side air bag module facing the center of the tire as shown in the figure. To secure the air bag module to the tire wheel, wrap a wire (cross section **1.25 mm²{0.002 in²}** or more) through the tire and the bolt installation holes **at least 4 times** as shown in the figure.

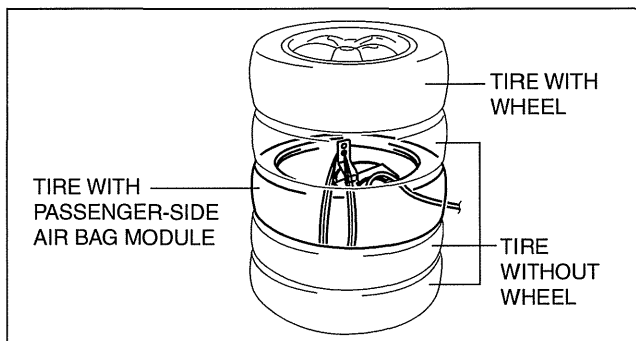
Warning

- **If the air bag module is not properly secured to the tire, the tires may fall over by the impact of operation (deployment) and cause serious injury. To prevent this, secure the air bag module properly with the padded surface facing the center of the tire.**



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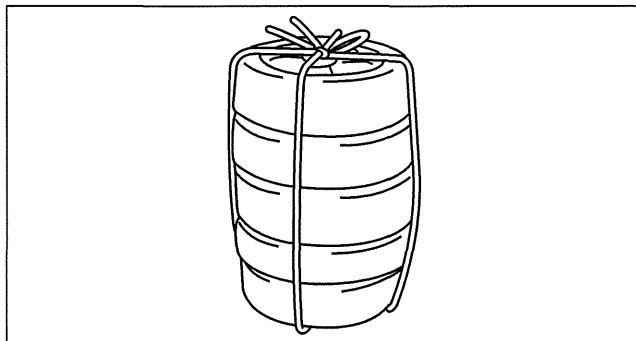
5. Stack the tire with the passenger-side air bag module on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the passenger-side air bag module, and then stack another tire with a wheel on the very top.



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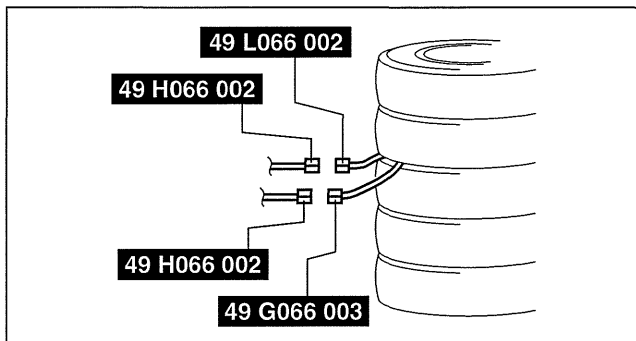
08-10

6. Secure the tires with wire.



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7. Connect the **SSTs (Deployment tool)** to the **SSTs (Adapter harness)**.
8. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
9. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
10. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.



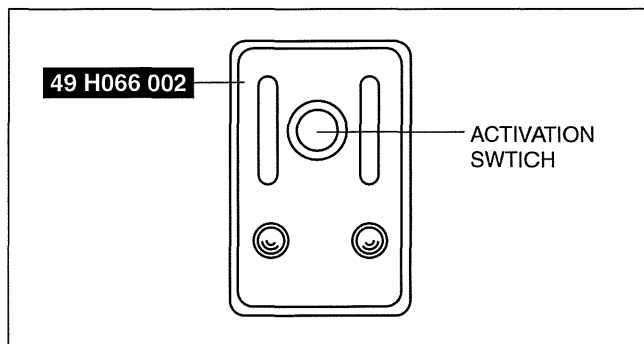
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AIR BAG SYSTEM

11. Press the activation switch on the **SST (Deployment tool)** connected with **49 L066 002** (a yellow connector) of the **SST (Adapter harness)**, and **after 3 s**, press the activation switch on the other **SST (Deployment tool)** to operate (deploy) the air bag module (both inflators).

Warning

- **Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury if the air bag module operates (deploy) unexpectedly. If the two operation (explosive) sounds are not heard, perform Step 11 again. If a total of two operation (explosive) sounds cannot be verified even though Step 11 is performed again, leave the air bag module alone for 30 min or more before approaching it again.**
- **The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.**

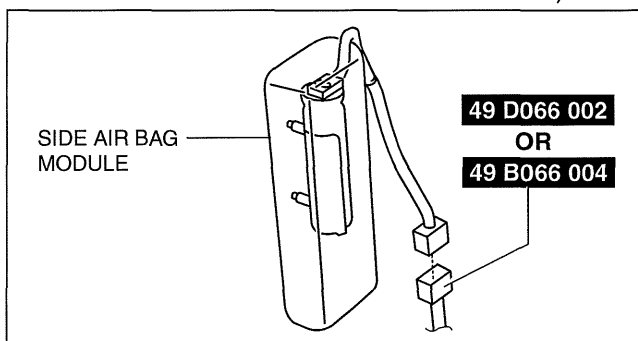


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12. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.

Side Air Bag Module

1. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
2. Remove the front seat back trim and pad. (See 09-13-13 FRONT SEAT BACK TRIM REMOVAL/INSTALLATION.)
3. Remove the side air bag module. (See 08-10-10 SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
4. Connect the **SST (Adapter harness)** to the side air bag module as shown in the figure.

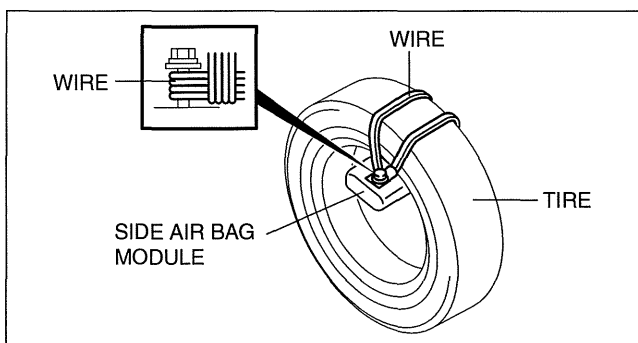


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5. Put the side air bag module inside the tire and secure it to the tire by wrapping a wire (cross section of 1.25 mm^2 { 0.002 in^2 } or more) through the tire and the bolt **at least 4 times**.

Warning

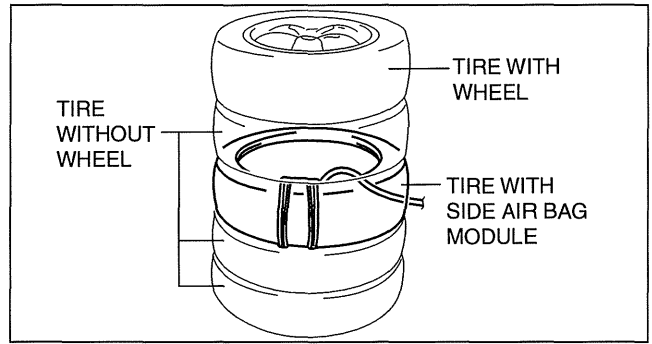
- **If the air bag module is not properly secured to the tire, the tires may fall over by the impact of operation (deployment) and cause serious injury. To prevent this, secure the air bag module properly with the padded surface facing the center of the tire.**



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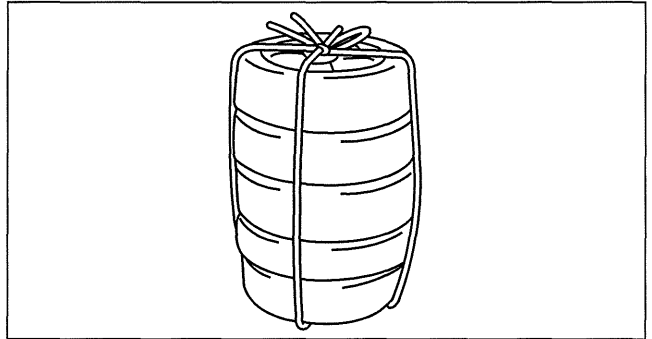
AIR BAG SYSTEM

- Stack the tire with the side air bag module on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the side air bag module, and then stack another tire with a wheel on the very top.



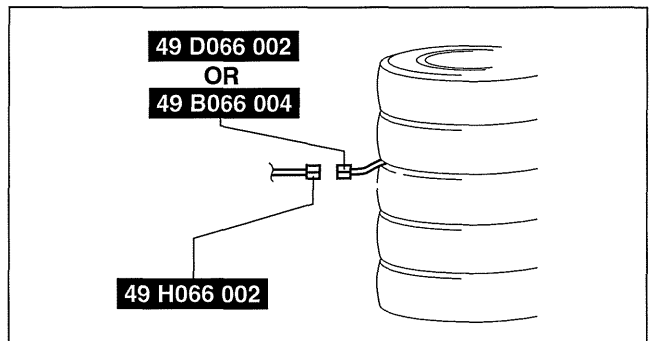
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- Secure the tires with wire.



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- Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
- Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
- Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
- Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.



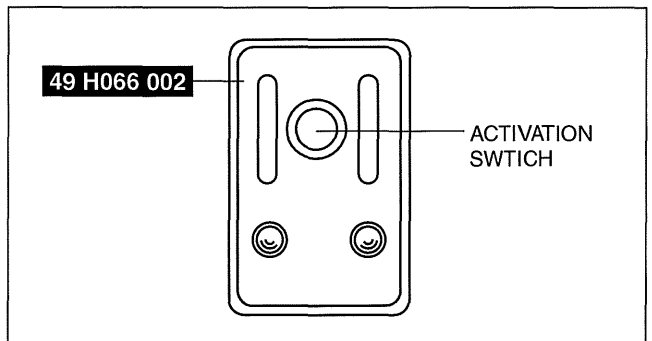
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- Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the side air bag module.

Warning

- The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.

- Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.



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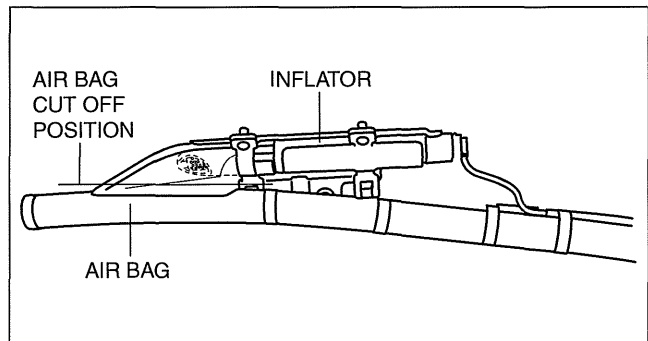
AIR BAG SYSTEM

Curtain Air Bag Module

1. Partially peel back the seaming welt.
2. Remove the rain sensor cover. (Vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
3. Disconnect the rain sensor connector. (Vehicles with auto light/wiper system)
4. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof system)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Interior light (See 09-18-69 INTERIOR LIGHT REMOVAL/INSTALLATION.)
 - (14) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (15) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (16) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
 - (17) Remove the curtain air bag module. (See 08-10-11 CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.)
5. Cut off the air bag part of the curtain air bag module at the position shown in the figure.

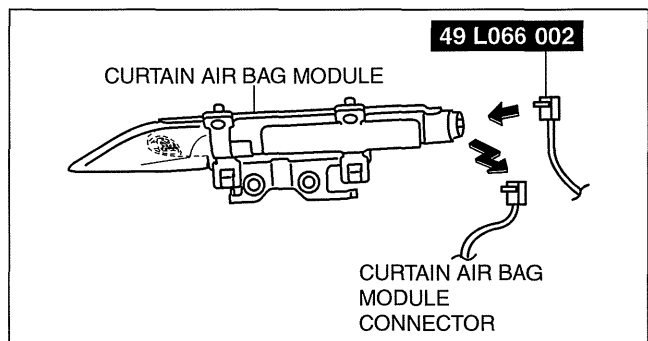
Warning

- Be sure not to crush the pipe on the side where it is cut. If it is crushed completely, the interior pressure of the pipe will build up and can cause it to explode during air bag module operation (deployment).



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6. Disconnect the curtain air bag module connector.
7. Connect the **SST (Adapter harness)** to the curtain air bag module as shown in the figure.

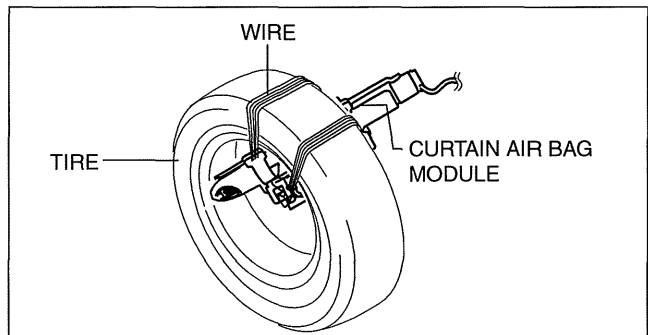


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8. Secure the curtain air bag module to the tire, by wrapping a wire (cross section **1.25 mm² {0.002 in²} or more**) through the tire and the bolt installation holes **at least 4 times** as shown in the figure.

Warning

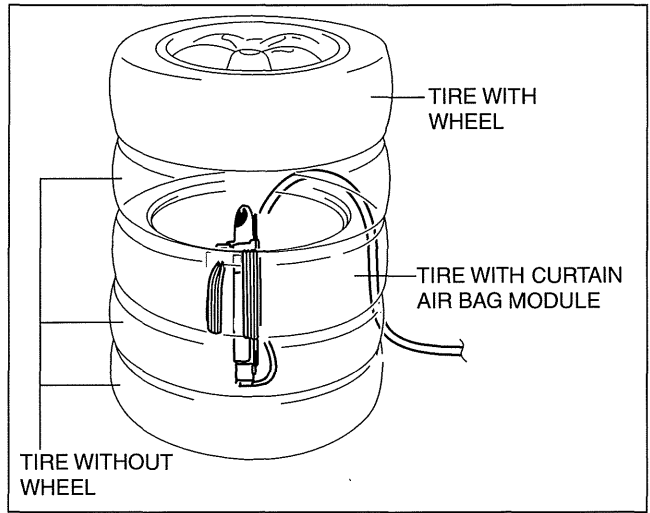
- If the air bag module is not properly installed to the tire, serious injury may occur when the module is operated (deployed). Make sure to install the air bag module securely.



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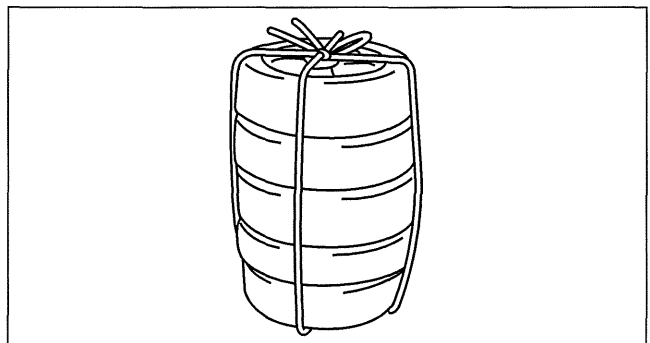
AIR BAG SYSTEM

9. Stack the tire with the curtain air bag module on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the curtain air bag module, and then stack another tire with a wheel on the very top.



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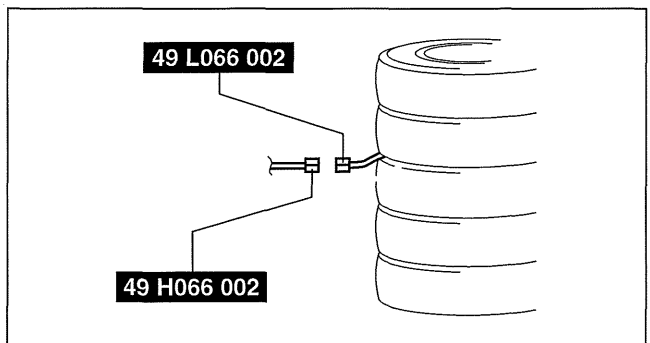
10. Secure the tires with wire.



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11. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
12. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
13. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
14. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.



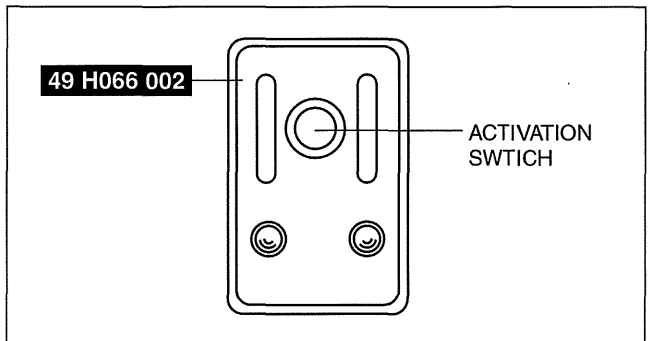
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15. Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the curtain air bag module.

Warning

- The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.

16. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.

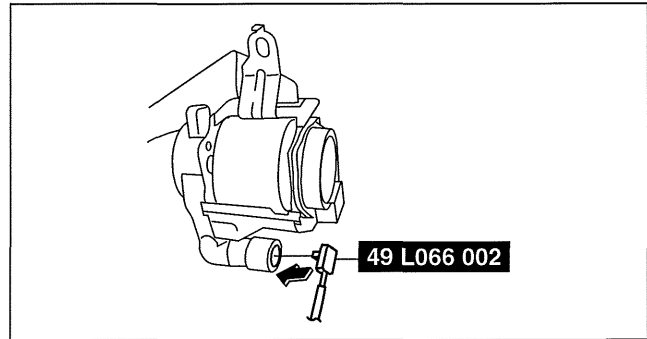


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AIR BAG SYSTEM

Pre-tensioner Seat Belt

1. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
3. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
4. Remove the pre-tensioner seat belt and connect the **SST (Adapter harness)** as shown in the figure. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)

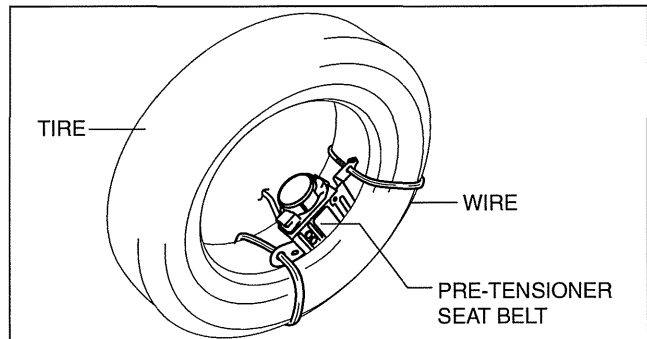


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5. Put the pre-tensioner seat belt inside the tire and secure it to the tire by wrapping a wire (cross section of 1.25 mm^2 {0.002 in²} or more) through the tire and the bolt installation holes at least 4 times.

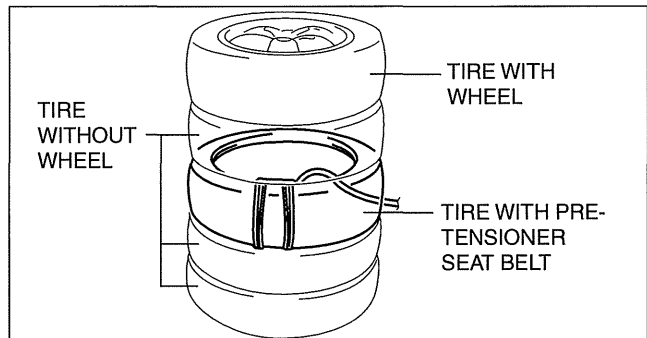
Warning

- If the pre-tensioner seat belt is not properly installed to the tire, serious injury may occur when the pre-tensioner part is operated (deployed). When installing the pre-tensioner seat belt to the tire, make sure the pre-tensioner part is inside the tire.



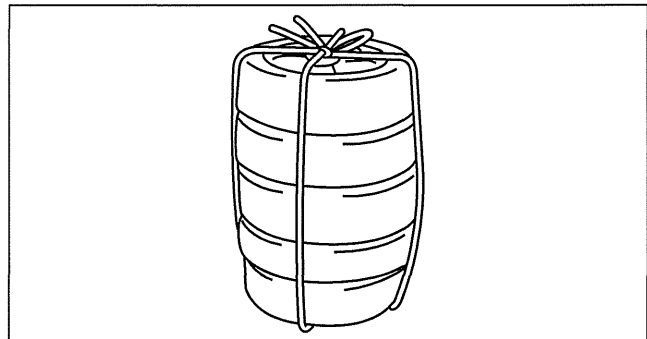
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6. Stack the tire with the pre-tensioner seat belt on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the pre-tensioner seat belt, and then stack another tire with a wheel on the very top.



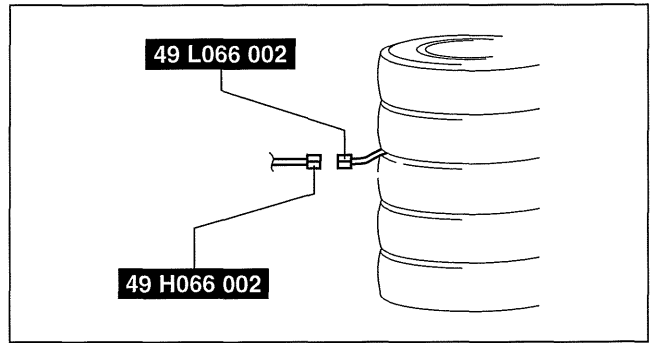
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7. Secure the tires with wire.



AIR BAG SYSTEM

8. Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
9. Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
10. Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
11. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.



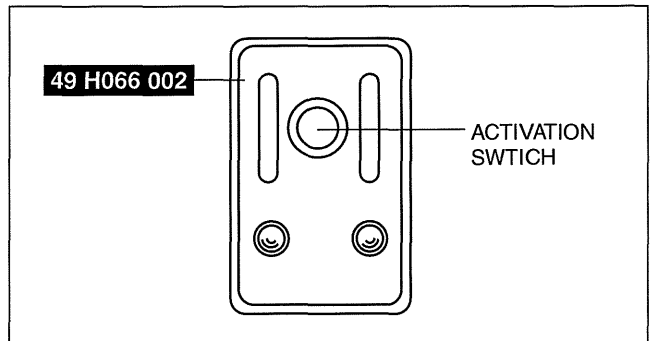
am6xuw0000203

12. Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the pre-tensioner seat belt.

Warning

- **The pre-tensioner seat belt is very hot immediately after it is operated (deployed). You can be burned. Do not touch the pre-tensioner seat belt for at least 15 min after deployment.**

13. Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.

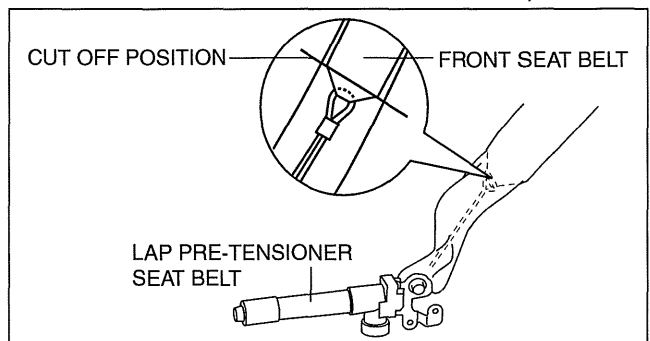


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08-10

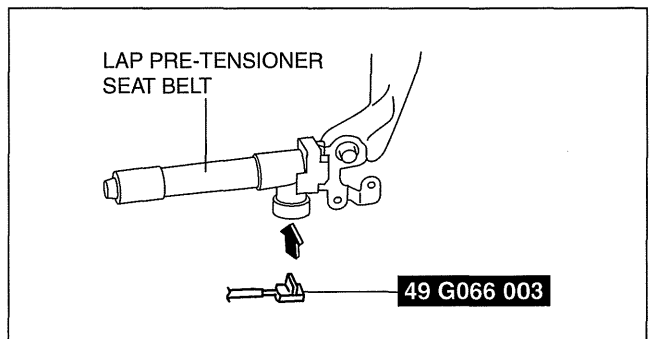
Lap Pre-tensioner Seat Belt

1. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
3. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
4. Cut off the seat belt part of the lap pre-tensioner seat belt at the position shown in the figure.



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5. Remove the lap pre-tensioner seat belt and connect the **SST (Adapter harness)** as shown in the figure. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)



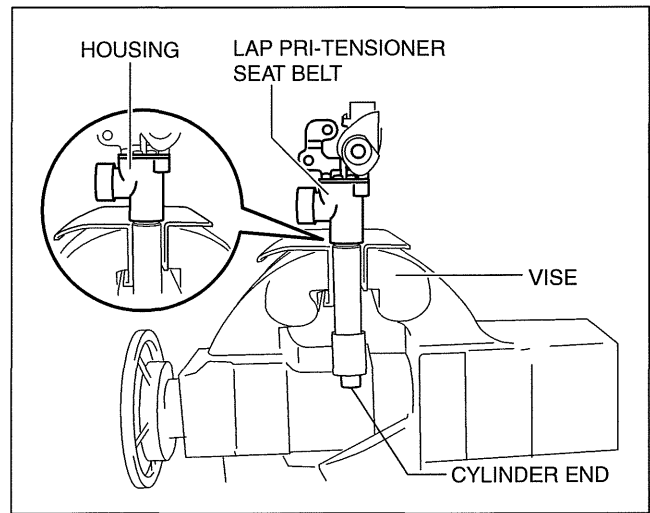
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AIR BAG SYSTEM

- Secure the lap pre-tensioner seat belt to the vise as shown in the figure. Set the lap pre-tensioner piston so that the ejection end is pointed downward. Place the bottom surface of the housing so that it contacts the upper surface of the vise.

Warning

- When the lap pre-tensioner seat belt operates (deploys), the piston ejects from the end of the cylinder. If an object lies in the ejection path within 40 mm of the cylinder end, the piston could hit the object, rebound and hit the lap pre-tensioner seat belt. The force of the piston hitting the lap pre-tensioner seat belt could dislodge it from the vise and cause injury. When securing the lap pre-tensioner in the vise, position it so that there is no obstruction in the ejection path within 40 mm of the cylinder end.

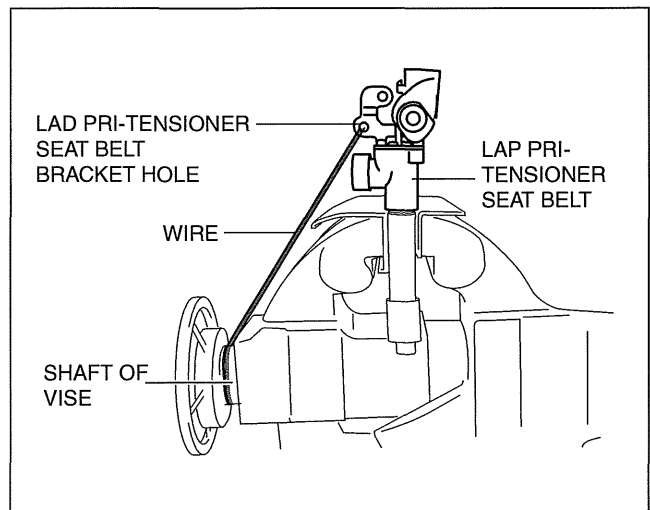


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- Put the lap pre-tensioner seat belt secure it to the vise by hold a wire (cross section of 1.25 mm^2 { 0.002 in^2 } or more) through the shaft of vise and the lap pre-tensioner seat belt bracket hole at least 4 times.

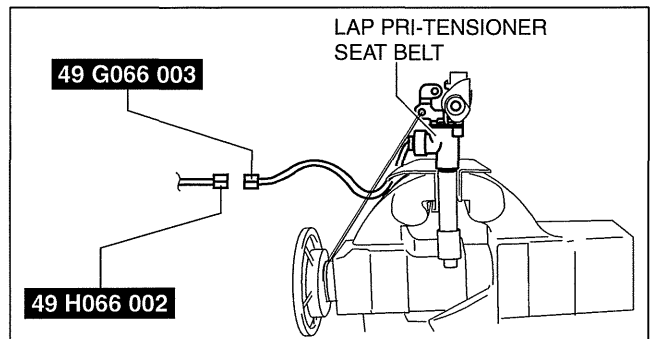
Warning

- If the lap pre-tensioner seat belt is not properly installed to the vise, serious injury may occur when the lap pre-tensioner part is operated (deployed). When installing the lap pre-tensioner seat belt to the vise, make sure the lap pre-tensioner part is properly installed to the vise.



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- Connect the **SST (Deployment tool)** to the **SST (Adapter harness)**.
- Connect the **SST (Deployment tool)** to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
- Verify that the red lamp on the **SST (Deployment tool)** is illuminated.
- Verify that all persons are standing at least 6 m {20 ft} away from the vehicle.



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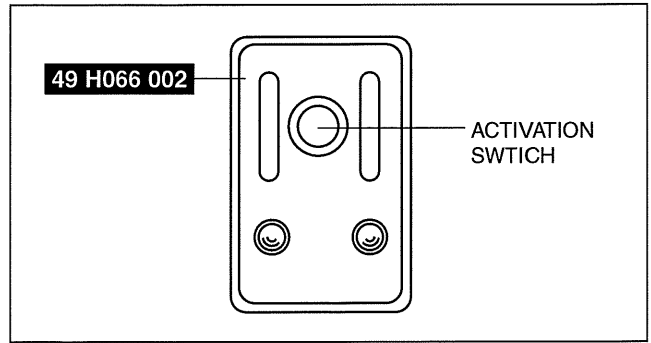
AIR BAG SYSTEM

- Press the activation switch on the **SST (Deployment tool)** to operate (deploy) the lap pre-tensioner seat belt.

Warning

- The lap pre-tensioner seat belt is very hot immediately after it is operated (deployed). You can be burned. Do not touch the lap pre-tensioner seat belt for at least 15 min after deployment.

- Disconnect the **SST (Deployment tool)** from the **SST (Adapter harness)**.



am6zzw000095

AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DISPOSAL PROCEDURES

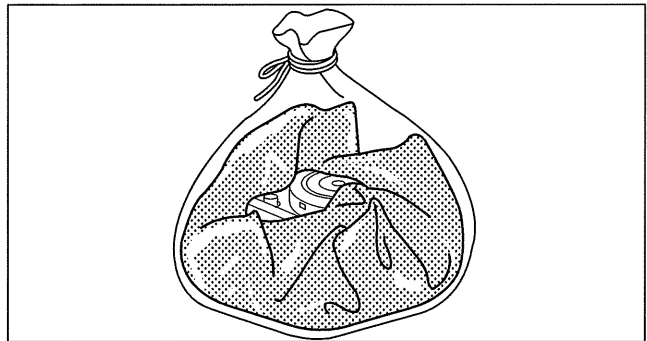
id081000801200

Warning

- A live (undeployed) air bag module or pre-tensioner seat belt may accidentally operate (deploy) when it is disposed of and cause serious injury. Always refer to the “AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES” and dispose of air bag modules and pre-tensioner seat belts in a deployed condition.
- The air bag modules and the pre-tensioner seat belts are very hot immediately after they are deployed. You can be burned. Do not touch an air bag module and pre-tensioner seat belt for at least 15 min after deployment.
- Pouring water on the deployed air bag module and pre-tensioner seat belt is dangerous. The water will mix with the residual gases to form a gas that can make breathing difficult. Do not pour water on the deployed air bag module and pre-tensioner seat belt.
- The deployed air bag module or pre-tensioner seat belt may contain deposits of sodium hydroxide, a caustic byproduct of the gas-generated combustion. If this substance gets into your eyes or on your hands, it can cause irritation and itching. When handling the deployed air bag module and pre-tensioner seat belt, wear gloves and safety glasses.
- Due to the adoption of 2-step deployment control in both the driver and passenger-side air bag modules, depending on the impact force, it is possible that inflator No.2 might not operate (deploy). Before disposing of the air bag module, always follow the inflator deployment procedures and verify the complete operation (deployment) of inflators No.1 and 2.

08-10

- Remove the deployed air bag module or pre-tensioner seat belt.
- Put the air bag module or pre-tensioner seat belt in a plastic bag, seal the bag, and then dispose of it.



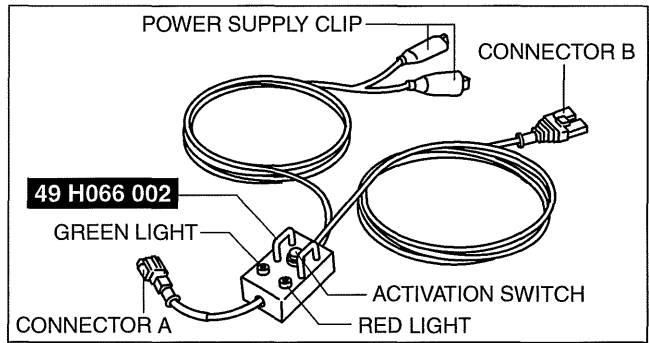
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AIR BAG SYSTEM

INSPECTION OF SST (DEPLOYMENT TOOL)

id081000801000

1. Before using the SST (49 H066 002), inspect its operation.



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Inspection Procedure

1. Follow the steps below to inspect the SST (49 H066 002).
 - If not as indicated in the table, replace the SST (49 H066 002) because it has a malfunction.

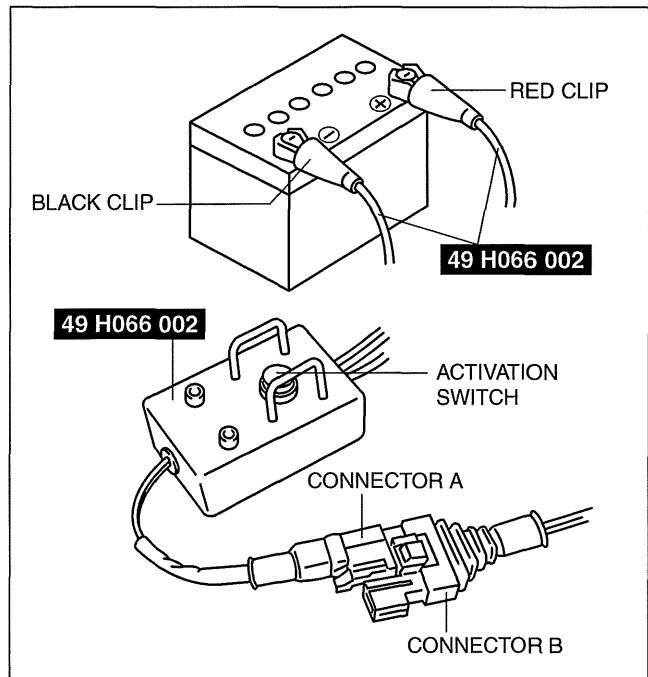
Warning

- Do not use a malfunctioning SST (49 H066 002), otherwise it could cause the air bag module or pre-tensioner seat belt to accidentally operate (deploy).

Caution

- Because the permissible voltage for the SST (49 H066 002) is 12 V, do not connect a 24 V power source because it will damage the SST. Always connect only a 12 V power source.

Step	Inspection procedure	Light condition	
		Green	Red
1	Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.	On	Off
2	Connect connectors A and B.	Off	On
3	Press the activation switch.	On	Off



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SEAT BELT

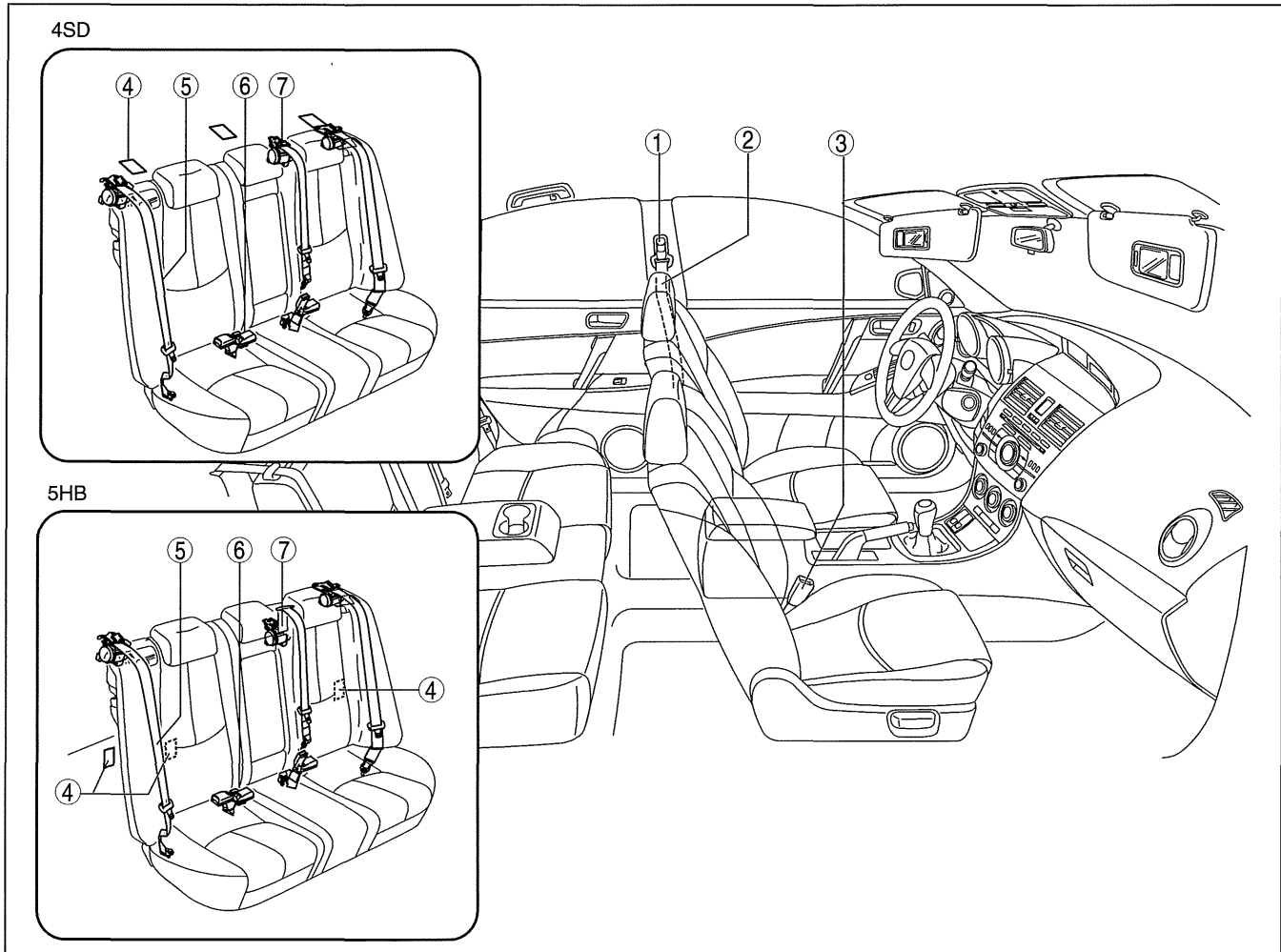
08-11 SEAT BELT

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SEAT BELT

SEAT BELT LOCATION INDEX

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1	Adjuster anchor (See 08-11-6 ADJUSTER ANCHOR REMOVAL/ INSTALLATION.)
2	Front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/ INSTALLATION.) (See 08-11-10 SEAT BELT INSPECTION.)
3	Front buckle (See 08-11-12 FRONT BUCKLE REMOVAL/ INSTALLATION.) (See 08-11-13 BUCKLE SWITCH INSPECTION.)
4	Child-restraint seat anchor (See 08-11-14 CHILD-RESTRAINT SEAT ANCHOR REMOVAL/INSTALLATION.)

5	Rear seat belt (See 08-11-6 REAR SEAT BELT REMOVAL/ INSTALLATION.) (See 08-11-10 SEAT BELT INSPECTION.)
6	Rear buckle (See 08-11-12 REAR BUCKLE REMOVAL/ INSTALLATION.) (See 08-11-13 BUCKLE SWITCH INSPECTION.)
7	Rear center seat belt (See 08-11-8 REAR CENTER SEAT BELT REMOVAL/INSTALLATION.)

SEAT BELT

FRONT SEAT BELT REMOVAL/INSTALLATION

id081100800600

Warning

- Handling the front seat belt (pre-tensioner seat belt) improperly can accidentally deploy the pre-tensioner seat belt, which may seriously injure you. Read the air bag system service warnings and cautions before handling the front seat belt. (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.) (See 08-10-5 AIR BAG SYSTEM SERVICE CAUTIONS.)

Warning

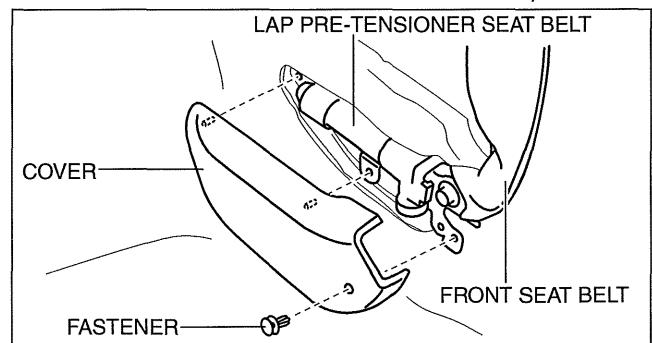
- The side air bag sensor is attached to the lower part of the B-pillar. When working around the B-pillar, disconnect the negative battery cable avoiding excessive impact to the lower part of the B-pillar.

Caution

- The ELR (emergency locking retractor) has a spring that will unwind if the retractor cover is removed. The spring cannot be rewound by hand. If this occurs, the ELR will not work properly. Therefore, do not disassemble the retractor.

Driver Side

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1min or more**.
3. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
4. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
5. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
6. Remove the fastener.
7. Remove the cover.

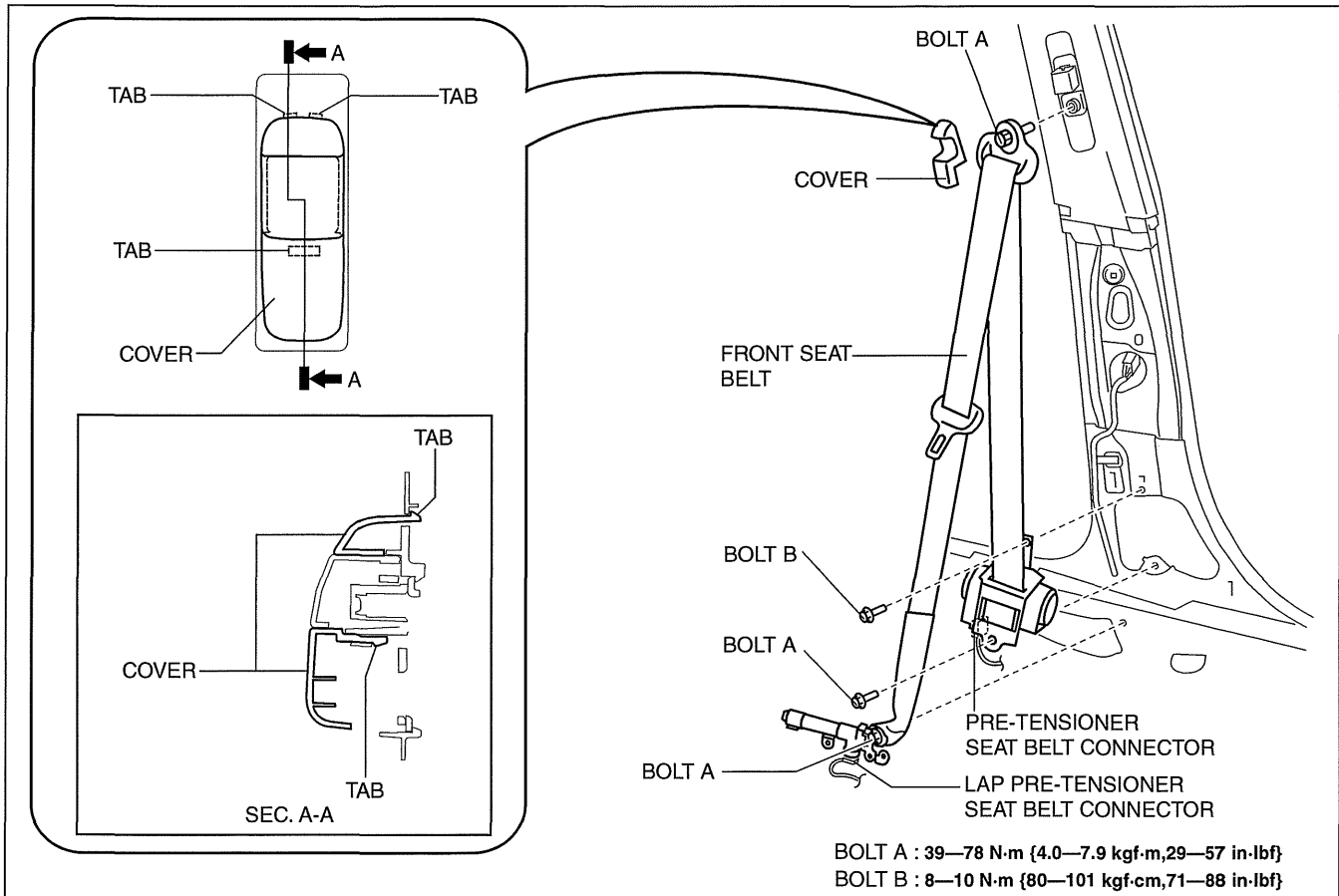


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08-11

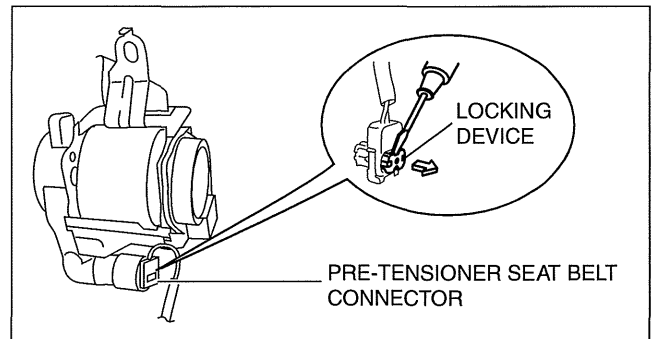
SEAT BELT

8. Remove the bolt A.



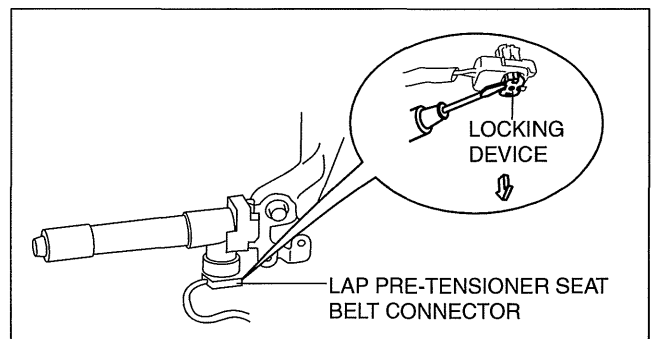
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9. Remove the bolt B.
10. Remove the front seat belt.
11. Using a flathead screwdriver, lift the locking device carefully, however do not remove it.



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12. Disconnect the pre-tensioner seat belt connector.
13. Disconnect the lap pre-tensioner seat belt connector.
14. Install in the reverse order of removal.
15. Switch the ignition to ON.
16. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light dose not operate, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)

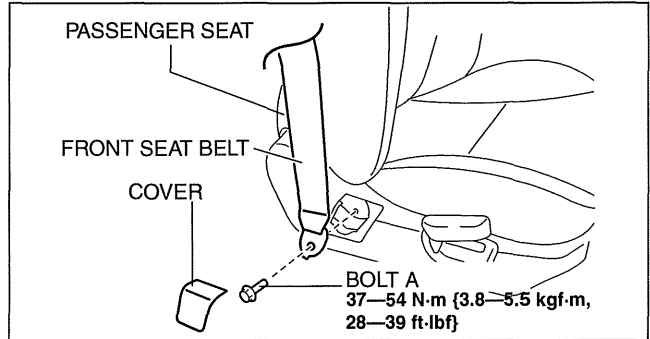


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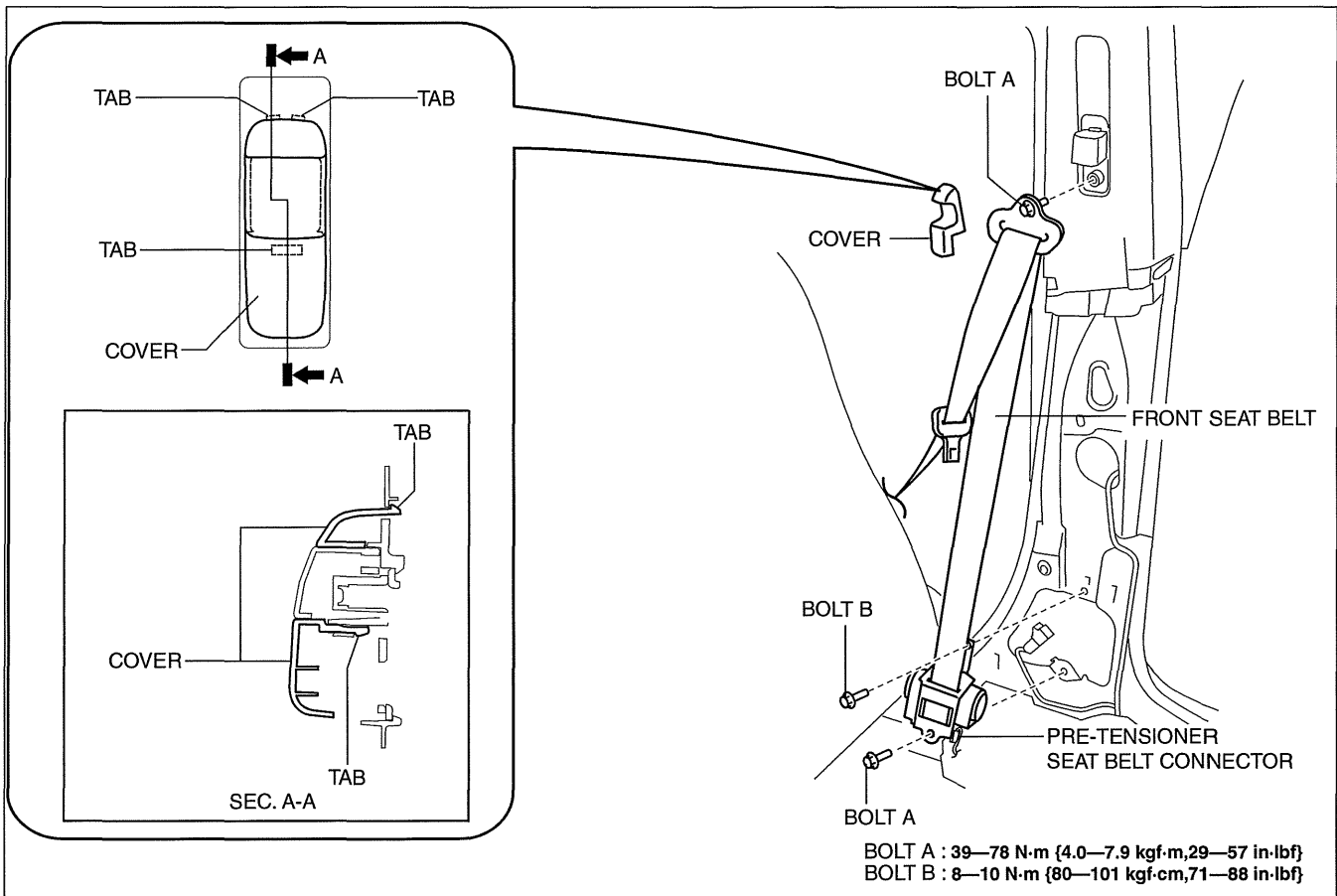
SEAT BELT

Passenger Side

1. Switch the ignition to off.
2. Disconnect the negative battery cable and wait for **1min or more**.
3. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
4. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
5. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
6. Remove the cover.
7. Remove the bolt A.



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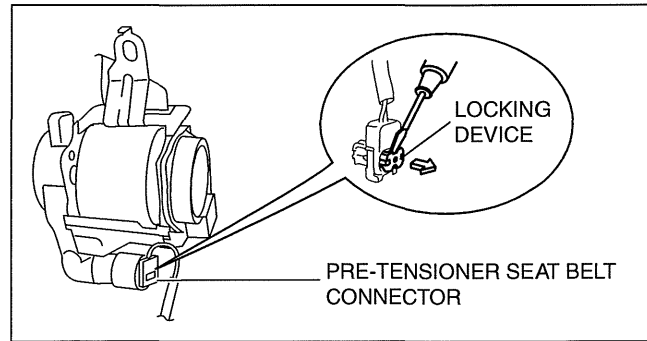
08-11

am3uuw000375

8. Remove the bolt B.
9. Remove the front seat belt.

SEAT BELT

- Using a flathead screwdriver, lift the locking device carefully, however do not remove it.
- Disconnect the pre-tensioner seat belt connector.
- Install in the reverse order of removal.
- Switch the ignition to ON.
- Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light dose not operate, refer to the on-board diagnostic system (air bag system) and perform inspection of the system. (See 08-02-4 FLOWCHART.)



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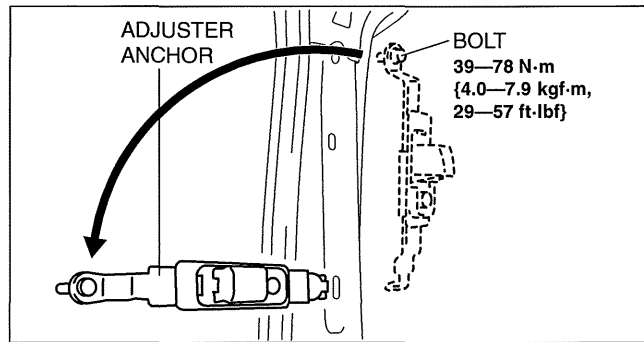
ADJUSTER ANCHOR REMOVAL/INSTALLATION

id081100802000

Warning

- The side air bag sensor is attached to the lower part of the B-pillar. When working around the B-pillar, disconnect the negative battery cable or work carefully, avoiding excessive impact to the lower part of the B-pillar.**

- Remove the following parts:
 - Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - Front seat belt upper anchor installation bolt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
- Remove bolts.
- Remove the adjuster anchor.
- Install in the reverse order of removal.



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REAR SEAT BELT REMOVAL/INSTALLATION

id081100800800

Caution

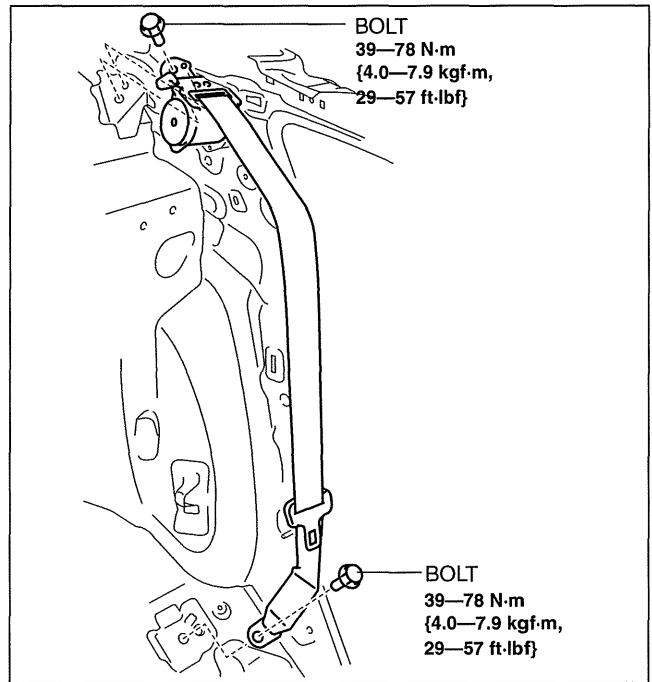
- The ELR (emergency locking retractor) has a spring that will unwind if the retractor cover is removed. The spring cannot be rewound by hand. If this occurs, the ELR will not work properly. Therefore, do not disassemble the retractor.**

4SD

- Remove the following parts:
 - Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - Rear package trim. (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)

SEAT BELT

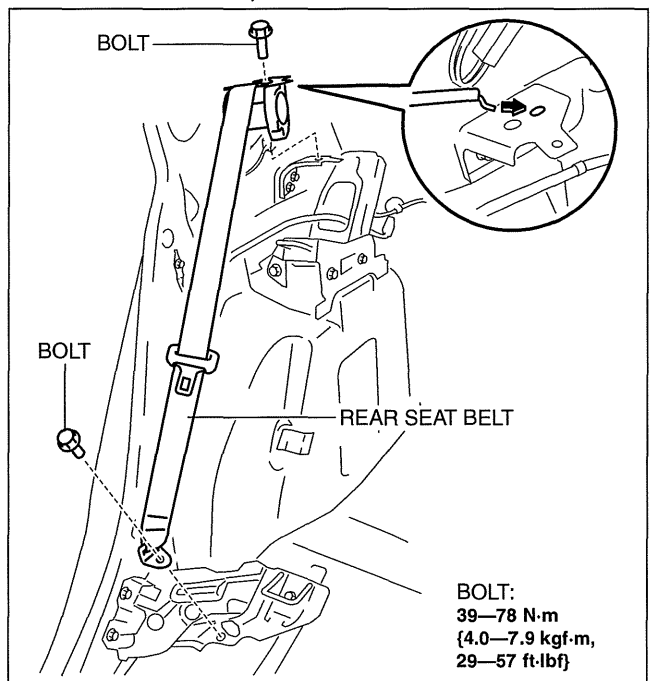
2. Remove the bolt.
3. Remove the rear seat belt.
4. Install in the reverse order of removal.



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5HB

1. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (3) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (4) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (5) Trunk side upper trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (6) C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
2. Remove the bolt.
3. Remove the rear seat belt.
4. Install in the reverse order of removal.



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08-11

SEAT BELT

REAR CENTER SEAT BELT REMOVAL/INSTALLATION

id081100800900

Caution

- The ELR (emergency locking retractor) has a spring that will unwind if the retractor cover is removed. The spring cannot be rewound by hand. If this occurs, the ELR will not work properly. Therefore, do not disassemble the retractor.

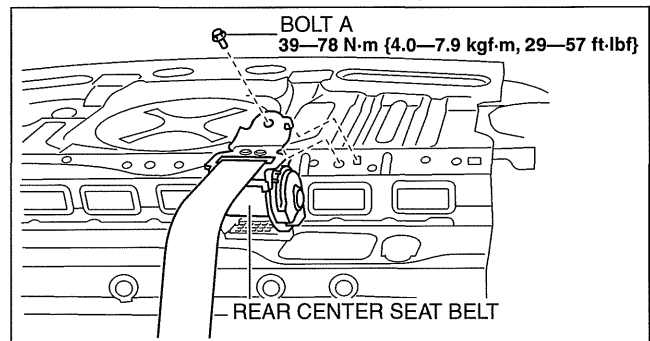
4SD

1. Remove the following parts:

- (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
- (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (3) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
- (4) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
- (5) C-pillar trim. (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
- (6) Rear package trim. (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)

2. Remove the bolt A.

3. Remove the rear center seat belt.

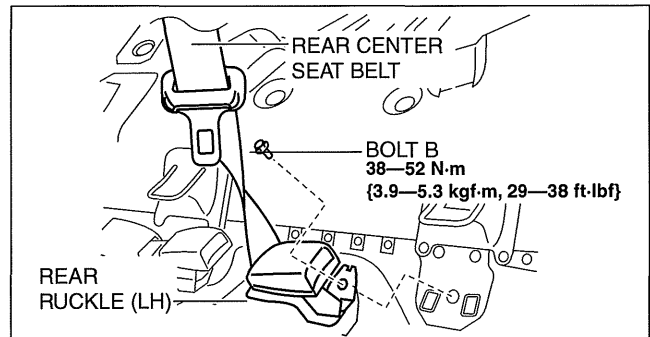


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4. Remove the bolt B.

5. Remove the rear center seat belt.

6. Install in the reverse order of removal. (See 08-11-9 Rear Center Seat Belt Installation Note.)

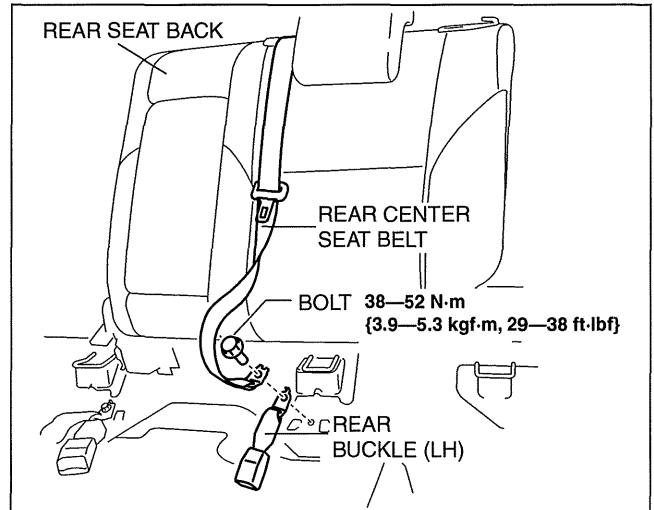


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SEAT BELT

5HB

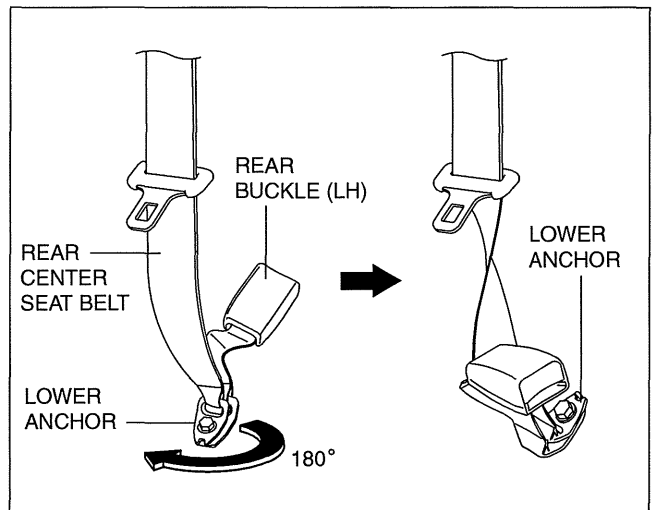
1. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove the bolt.
3. Remove the rear center seat belt with the rear seat back (See 09-13-33 REAR SEAT BACK FRAME REMOVAL/INSTALLATION.)
4. Install in the reverse order of removal. (See 08-11-9 Rear Center Seat Belt Installation Note.)



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Rear Center Seat Belt Installation Note

- Rotate the rear center seat belt lower anchor clockwise 180° and install it.



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08-11

SEAT BELT

SEAT BELT INSPECTION

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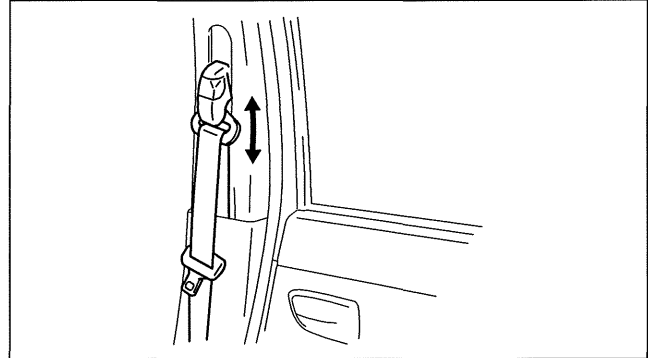
Belt

1. Verify that the belt is installed properly with no twists or kinks.
2. Verify that there is no damage to the seat belt and no deformation of the metal fittings.
 - If there is any malfunction, replace the seat belt.

ELR

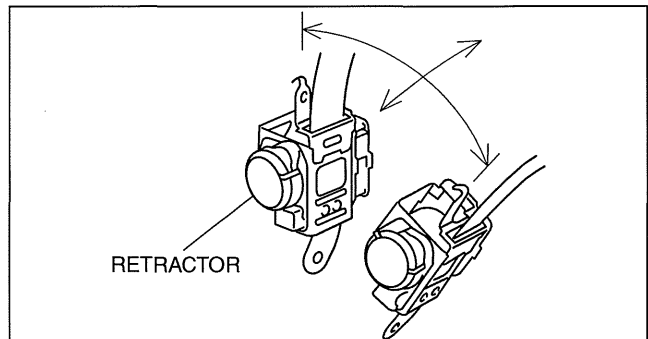
Except 5HB (rear center seat belt)

1. Verify that the belt can be pulled out smoothly, and that it retracts smoothly.
 - If there is any malfunction, replace the seat belt.
2. Verify that the retractor locks when the belt is pulled quickly.
 - If there is any malfunction, replace the seat belt.
3. Remove the retractor.



acxuuw00002083

4. While pulling the seat belt out, make sure that the seat belt does not lock when the retractor is tilted slowly up to 15° from the mounted position and locks when the retractor is tilted 40° or more.
 - If there is any malfunction, replace the seat belt.



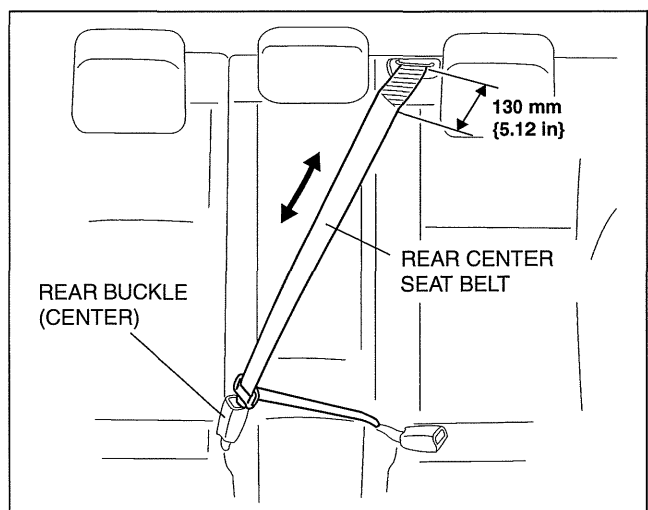
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5HB (rear center seat belt)

Caution

- **The rear center seat belt ELR only becomes operable after a certain amount of belt webbing is pulled out. For the ELR inspection, fasten the rear center seat belt to the rear buckle (center) and perform the inspection after pulling out the rear center seat belt 130 mm {5.12 in} (ELR operable condition). If the inspection is performed while the ELR is not in an operable condition, the integrity of the system cannot be determined.**

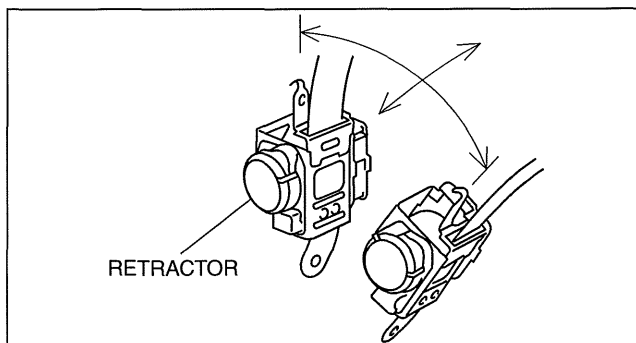
1. Fasten the rear center seat belt to the rear buckle (center) and pull out the rear center seat belt **130 mm {5.12 in}**.
2. Verify that the belt can be pulled out smoothly, and that it retracts smoothly.
 - If there is any malfunction, replace the seat belt.
3. Verify that the retractor locks when the belt is pulled quickly.
 - If there is any malfunction, replace the seat belt.
4. Remove the rear center seat belt retractor.



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SEAT BELT

5. While pulling the seat belt out, make sure that the seat belt does not lock when the retractor is tilted slowly up to 15° from the mounted position and locks when the retractor is tilted 40° or more.
 - If there is any malfunction, replace the seat belt.



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ALR

1. Pull the belt out fully to change the lock mode from ELR to ALR.
2. Verify that retractor makes a clicking sound as the belt slowly retracts. If no sound is heard, the lock mode has not changed to ALR. If necessary, repeat Step 1.
 - If there is any malfunction, replace the seat belt.
3. Verify that the retractor locks when pulled.
 - If there is any malfunction, replace the seat belt.
4. Verify that the lock mode changes to ELR when the belt is fully pulled out.
 - If there is any malfunction, replace the seat belt.

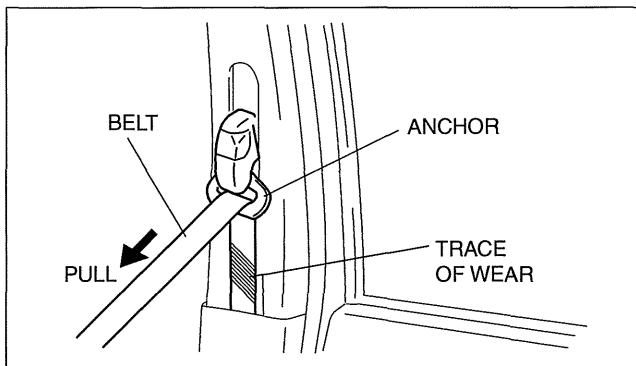
Load Limiter Retractor

Warning

- **When the load limiter operates, the belt and anchor rub against each other strongly leaving wear tracks. If the seat belt is used in this state, the seat belt will not function at its full capability and there is the possibility of serious injury to passengers. Be sure to replace the seat belt once the load limiter operates.**

08-11

1. If the vehicle has been subjected to a shock in an accident, pull the belt from the retractor and confirm that there are no wear tracks (the load limiter has not operated) by visually inspecting and feeling the belt.
 - If there is any malfunction, replace the seat belt.



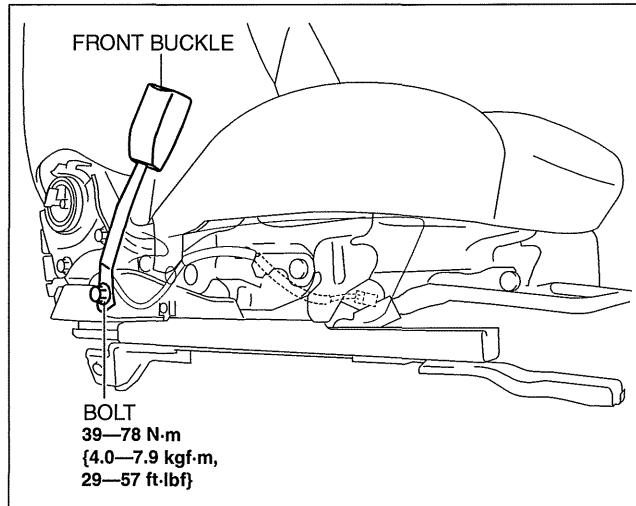
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SEAT BELT

FRONT BUCKLE REMOVAL/INSTALLATION

id081100800400

1. Switch the ignition to off.
2. Disconnect the negative battery cable.
3. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
4. Remove the bolt.
5. Remove the front buckle.
6. Install in the reverse order of removal.



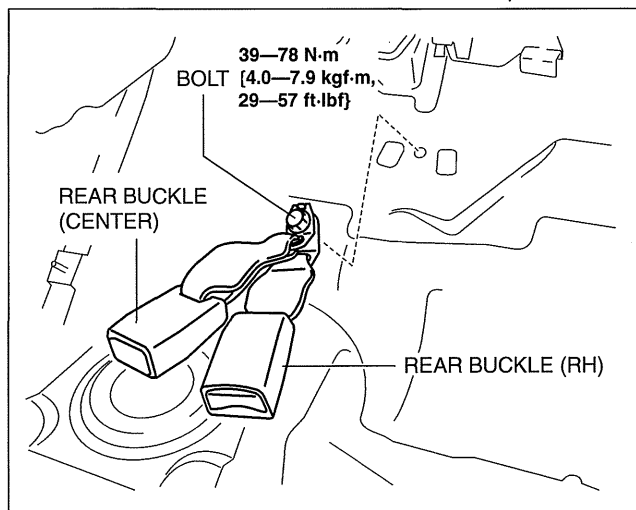
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REAR BUCKLE REMOVAL/INSTALLATION

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Rear Buckle (RH) and Rear Buckle (Center)

1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove the bolt.
3. Remove the rear buckle (RH) and rear buckle (center).
4. Install in the reverse order of removal.



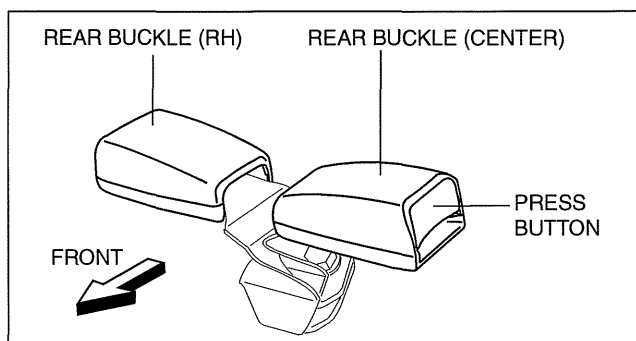
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Rear Buckle (LH)

1. When removing or installing the rear buckle, refer to the rear center seat belt removal/installation procedure. (See 08-11-8 REAR CENTER SEAT BELT REMOVAL/INSTALLATION.)

Rear Buckle Installation Note

- After installing the rear seat cushion, position the rear buckle (RH) and rear buckle (center) with the rear buckle (RH) and rear buckle (center) buttons facing upward as shown in the figure.



am3uuw0000547

SEAT BELT

id081100803000

BUCKLE SWITCH INSPECTION

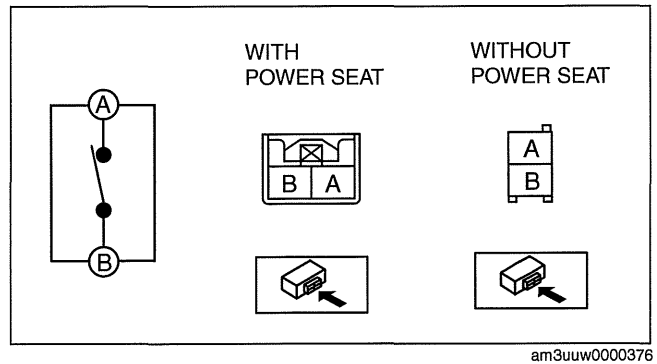
Driver Side

1. Switch the ignition to off.
2. Disconnect the negative battery cable.
3. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
4. Remove the front buckle. (See 08-11-12 FRONT BUCKLE REMOVAL/INSTALLATION.)
5. Inspect for continuity between the buckle switch terminals using a tester.
 - If not as indicated in the table, replace the front buckle.

○—○ : Continuity

Seat belt	Terminal	
	A	B
Fastened		
Unfastened	○—○	○—○

am6xuw00001840



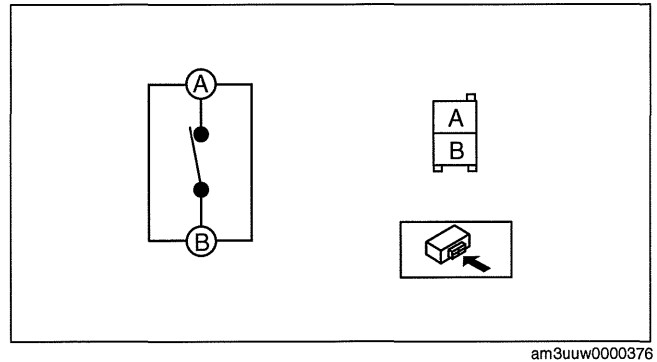
Passenger Side

1. Switch the ignition to off.
2. Disconnect the negative battery cable.
3. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
4. Remove the front buckle. (See 08-11-12 FRONT BUCKLE REMOVAL/INSTALLATION.)
5. Inspect for continuity between the buckle switch terminals using a tester.
 - If not as indicated in the table, replace the front buckle.

○—○ : Continuity

Seat belt	Terminal	
	A	B
Fastened		
Unfastened	○—○	○—○

am6xuw00001840



08-11

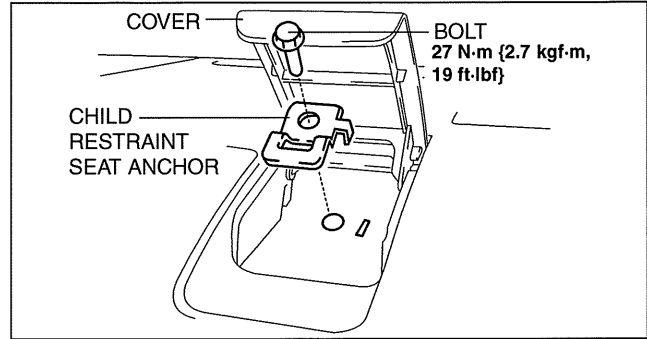
SEAT BELT

CHILD-RESTRAINT SEAT ANCHOR REMOVAL/INSTALLATION

id081100800100

4SD

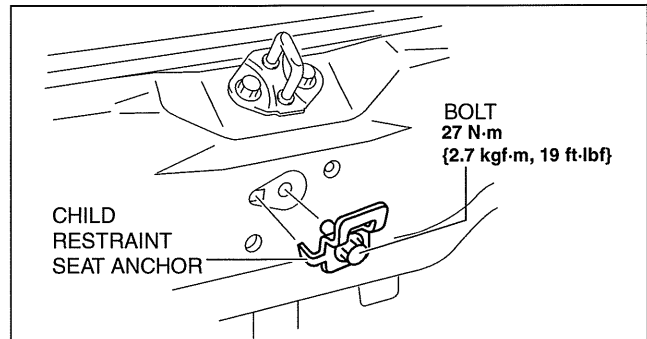
1. Remove the cover.
2. Remove the bolt and child-restraint seat anchor.
3. Install in the reverse order of removal.



am3uuw0000496

5HB

1. Remove the trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
2. Remove the bolt and child-restraint seat anchor.
3. Install in the reverse order of removal.



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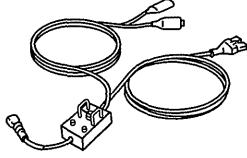
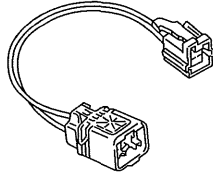


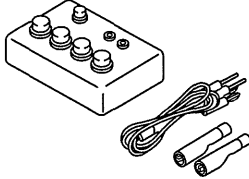
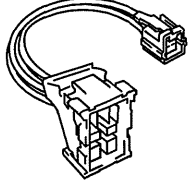
SERVICE TOOLS

08-60 SERVICE TOOLS

RESTRAINTS SST 08-60-1

RESTRAINTS SST

id086000800100

<p>49 H066 002</p> <p>Deployment tool</p> 	<p>49 D066 002</p> <p>Adapter harness</p> 	<p>49 L066 002</p> <p>Adapter harness</p> 
<p>49 G066 003</p> <p>Adapter harness</p> 	<p>49 N088 0A0</p> <p>Fuel and Thermometer checker</p> 	<p>49 B066 004</p> <p>Adapter harness</p> 

08-60

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09-02A

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09-02A ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

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DTC B1026:71 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-02A-22	DTC B112A:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-02A-50
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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

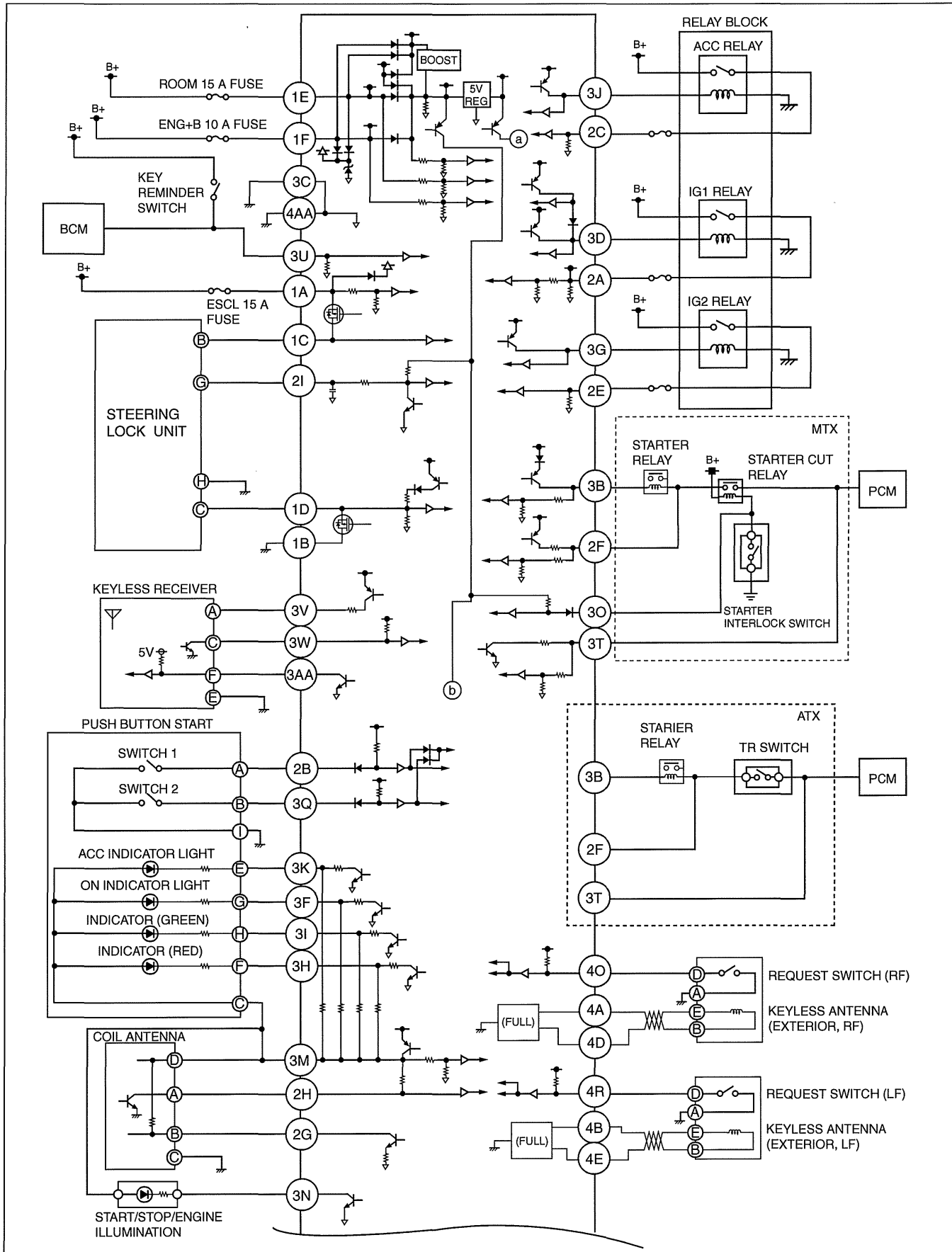
<p>DTC P0560:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-64</p> <p>DTC P0560:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-66</p> <p>DTC P0615:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-67</p> <p style="padding-left: 20px;">ATX 09-02A-67</p> <p style="padding-left: 20px;">MTX 09-02A-70</p> <p>DTC P0615:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-73</p> <p style="padding-left: 20px;">ATX 09-02A-73</p> <p style="padding-left: 20px;">MTX 09-02A-76</p> <p>DTC P0615:13 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-78</p> <p>DTC P081C:62 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-80</p> <p>DTC P081D:62 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-82</p> <p>DTC P0830:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-84</p> <p>DTC P0850:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-86</p> <p>DTC P1708:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-89</p> <p>DTC P1794:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-92</p> <p>DTC P1794:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-94</p> <p>DTC U0028:87 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-95</p> <p>DTC U0401:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-97</p> <p>DTC U0415:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-98</p>	<p>DTC U201F:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-99</p> <p>DTC U2100:00 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-101</p> <p>DTC U3000:49 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-102</p> <p>DTC U3000:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-103</p> <p>DTC U3003:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-104</p> <p>DTC U3003:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-106</p> <p>DTC U3004:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-107</p> <p>DTC U3004:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-108</p> <p>DTC U3004:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-110</p> <p>DTC U3004:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-112</p> <p>PID/DATA MONITOR INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-113</p> <p>PID/DATA MONITOR TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-114</p> <p>ACTIVE COMMAND MODES INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-115</p> <p>ACTIVE COMMAND MODES TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM] 09-02A-115</p>
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09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

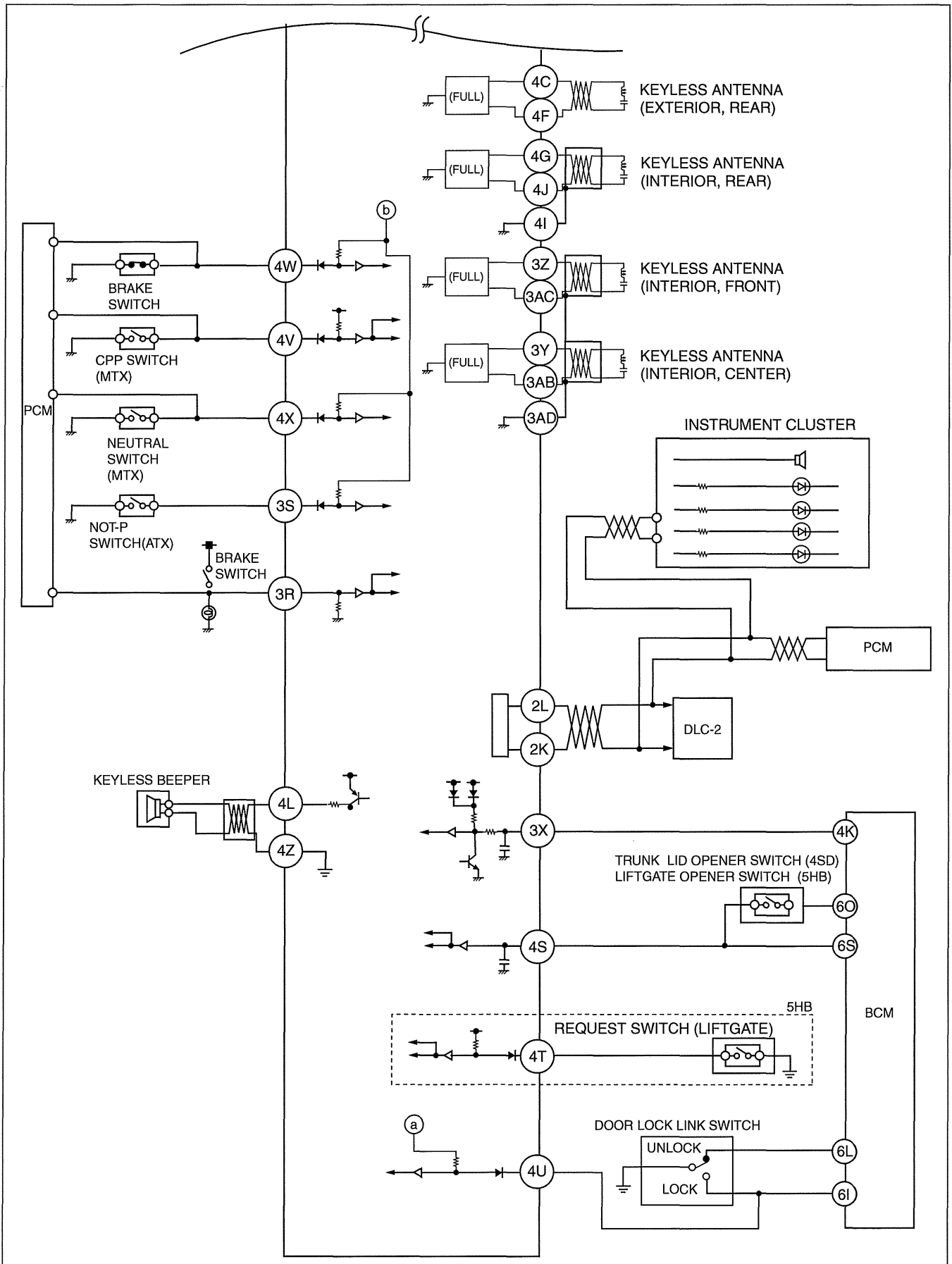
ON-BOARD DIAGNOSTIC WIRING DIAGRAM [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960000



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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]



09-02A

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

FOREWORD [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

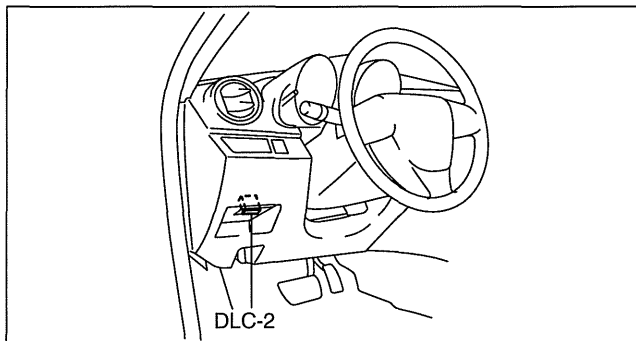
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- The OBD (on-board diagnostic) system has the following functions:
 - Malfunction detection function: Detects malfunctions in the advanced keyless entry and push button start system and outputs DTCs.
 - PID/data monitor function: Reads out specific input/output signals and the system status.
- Diagnostic DTCs can be read/cleared using the M-MDS.

DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960300

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RKE".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the keyless control module.
(See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

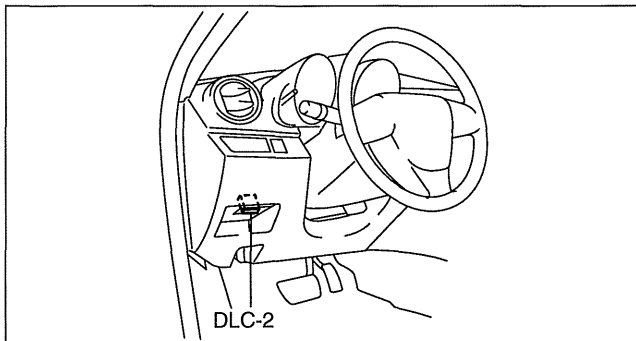


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CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RKE".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform the DTC inspection. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
8. Verify that no DTCs are displayed.



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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960500

DTC	Description	Reference
M-MDS display		
B100B:11	Short to ground in steering lock unit ground circuit	(See 09-02A-12 DTC B100B:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B100B:15	Open circuit or short to power supply in steering lock unit ground circuit	(See 09-02A-14 DTC B100B:15 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B100C:11	Short to ground in steering lock unit power supply circuit	(See 09-02A-16 DTC B100C:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B100C:12	Short to power supply in steering lock unit power supply circuit	(See 09-02A-18 DTC B100C:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1026:08	Receiving erratic signal from steering lock unit	(See 09-02A-20 DTC B1026:08 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1026:51	Steering lock unit programming error	(See 09-02A-21 DTC B1026:51 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1026:71	Steering lock unit malfunction	(See 09-02A-22 DTC B1026:71 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1026:87	Communication error between keyless control module and steering lock unit	(See 09-02A-23 DTC B1026:87 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1026:92	Incorrect operation of steering lock unit	(See 09-02A-25 DTC B1026:92 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1026:96	Steering lock unit internal malfunction	(See 09-02A-27 DTC B1026:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B102B:51	No programmed transmitter	(See 09-02A-28 DTC B102B:51 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B108B:23	Short to ground in push button start 1 circuit	(See 09-02A-29 DTC B108B:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B108B:29	Mismatch state of push button start 1 and 2	(See 09-02A-30 DTC B108B:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B108C:23	Short to ground in push button start 2 circuit	(See 09-02A-32 DTC B108C:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B10C6:1F	Erratic signal of keyless antenna (exterior, rear)	(See 09-02A-34 DTC B10C6:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B10C7:1F	Erratic signal of keyless antenna (interior, rear)	(See 09-02A-36 DTC B10C7:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B10C9:1F	Erratic signal of keyless antenna (interior, front)	(See 09-02A-38 DTC B10C9:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B10E7:11	Short to ground in IG1 relay circuit	(See 09-02A-40 DTC B10E7:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B10E7:12	Short to power supply in IG1 relay circuit	(See 09-02A-41 DTC B10E7:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B10E7:16	Low voltage in IG1 monitor input circuit	(See 09-02A-43 DTC B10E7:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC	Description	Reference
M-MDS display		
B10E7:17	High voltage in IG1 monitor input circuit	(See 09-02A-45 DTC B10E7:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B112A:11	Short to ground in IG2 relay circuit	(See 09-02A-47 DTC B112A:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B112A:12	Short to power supply in IG2 relay circuit	(See 09-02A-48 DTC B112A:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B112A:16	Low voltage in IG2 monitor input circuit	(See 09-02A-50 DTC B112A:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B112A:17	High voltage in IG2 monitor input circuit	(See 09-02A-52 DTC B112A:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B11FD:1F	Erratic signal of keyless antenna (exterior, LF)	(See 09-02A-54 DTC B11FD:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1210:1F	Erratic signal of keyless antenna (exterior, RF)	(See 09-02A-56 DTC B1210:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
B1239:1F	Erratic signal of keyless antenna (interior, center)	(See 09-02A-58 DTC B1239:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
C0040:29 ^{*2}	Erratic signal of brake switch	(See 09-02A-61 DTC C0040:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0560:16	Low voltage in power supply circuit (+B3)	(See 09-02A-64 DTC P0560:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0560:17	High voltage in power supply circuit (+B3)	(See 09-02A-66 DTC P0560:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0615:11	Short to ground in starter relay circuit	(See 09-02A-67 DTC P0615:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0615:12	Short to power supply in starter relay circuit	(See 09-02A-73 DTC P0615:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0615:13	Open circuit in starter relay circuit	(See 09-02A-78 DTC P0615:13 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P081C:62 ^{*2}	Mis-match signal between CAN and P range switch	(See 09-02A-80 DTC P081C:62 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P081D:62 ^{*1}	Mis-match signal between CAN and neutral switch	(See 09-02A-82 DTC P081D:62 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0830:23 ^{*1}	Short to ground in CPP switch circuit	(See 09-02A-84 DTC P0830:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P0850:29 ^{*2}	Erratic signal of TR switch	(See 09-02A-86 DTC P0850:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P1708:29 ^{*1}	Erratic signal of CPP switch and/or starter interlock switch	(See 09-02A-89 DTC P1708:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
P1794:16	Low voltage in power supply circuit (+B2)	(See 09-02A-92 DTC P1794:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

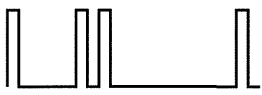
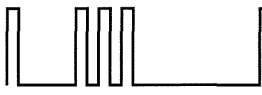
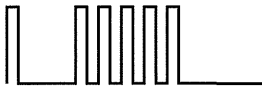


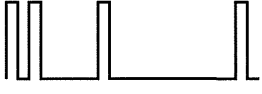
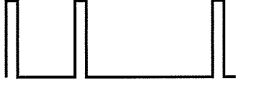


DTC	Description	Reference
M-MDS display		
P1794:17	High voltage in power supply circuit (+B2)	(See 09-02A-94 DTC P1794:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U0001:88	Keyless control module communication error (HS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0028:87	Communication error with BCM	(See 09-02A-95 DTC U0028:87 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U0100:00	Communication error with PCM	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0101:00* ²	Communication error with TCM	
U0121:00	Communication error with ABS HU/CM or DSC HU/CM	
U0401:68	Receiving erratic data from PCM	(See 09-02A-97 DTC U0401:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U0415:68	Receiving erratic data from ABS HU/CM or DSC HU/CM	(See 09-02A-98 DTC U0415:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U201F:11	Short to ground in keyless receiver circuit	(See 09-02A-99 DTC U201F:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U2100:00	Incomplete configuration	(See 09-02A-101 DTC U2100:00 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3000:49	Keyless control module internal malfunction	(See 09-02A-102 DTC U3000:49 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3000:96	Keyless control module internal malfunction	(See 09-02A-103 DTC U3000:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3003:16	Low voltage in power supply circuit (+B1)	(See 09-02A-104 DTC U3003:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3003:17	High voltage in power supply circuit (+B1)	(See 09-02A-106 DTC U3003:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3004:11	Short to ground in ACC relay circuit	(See 09-02A-107 DTC U3004:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3004:12	Short to power supply in ACC relay circuit	(See 09-02A-108 DTC U3004:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3004:16	Low voltage in ACC monitor input circuit	(See 09-02A-110 DTC U3004:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
U3004:17	High voltage in ACC monitor input circuit	(See 09-02A-112 DTC U3004:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

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*1 : MTX
*2 : ATX

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Vehicles With Immobilizer System

DTC		Description	Reference
M-MDS display	Security light flashing pattern		
B10D5:13		Coil antenna malfunction	(See 09-02B-11 SECURITY LIGHT: 12, DTC: B10D5:13/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10D7:05		Key ID number error	(See 09-02B-13 SECURITY LIGHT: 13, DTC: B10D7:05/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10D7:51		Unprogrammed key ID number	(See 09-02B-19 SECURITY LIGHT: 15, DTC: B10D7:51/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10D7:81		Receiving erratic serial data	(See 09-02B-17 SECURITY LIGHT: 14, DTC: B10D7:81/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10D7:94		Key ID number error	(See 09-02B-15 SECURITY LIGHT: 13, DTC: B10D7:94/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10D8:00		Shortage of programmed key	(See 09-02B-22 SECURITY LIGHT: 21, DTC: B10D8:00/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10D9:87		Communication error with coil antenna	(See 09-02B-8 SECURITY LIGHT: 11, DTC: B10D9:87/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10DA:51		Communication error with PCM (Data transfer failure)	(See 09-02B-24 SECURITY LIGHT: 22, DTC: B10DA:51/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10DA:62		Communication error with PCM (Data mis-match)	(See 09-02B-26 SECURITY LIGHT: 23, DTC: B10DA:62/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
B10E6:11	Not illuminated	Short to ground in coil antenna power supply circuit	(See 09-02B-27 SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:11/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC		Description	Reference
M-MDS display	Security light flashing pattern		
B10E6:12	Not illuminated	Short to power supply in coil antenna power supply circuit	(See 09-02B-29 SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:12/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
U0100:87		Communication error with PCM (No response)	(See 09-02B-21 SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B100B:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

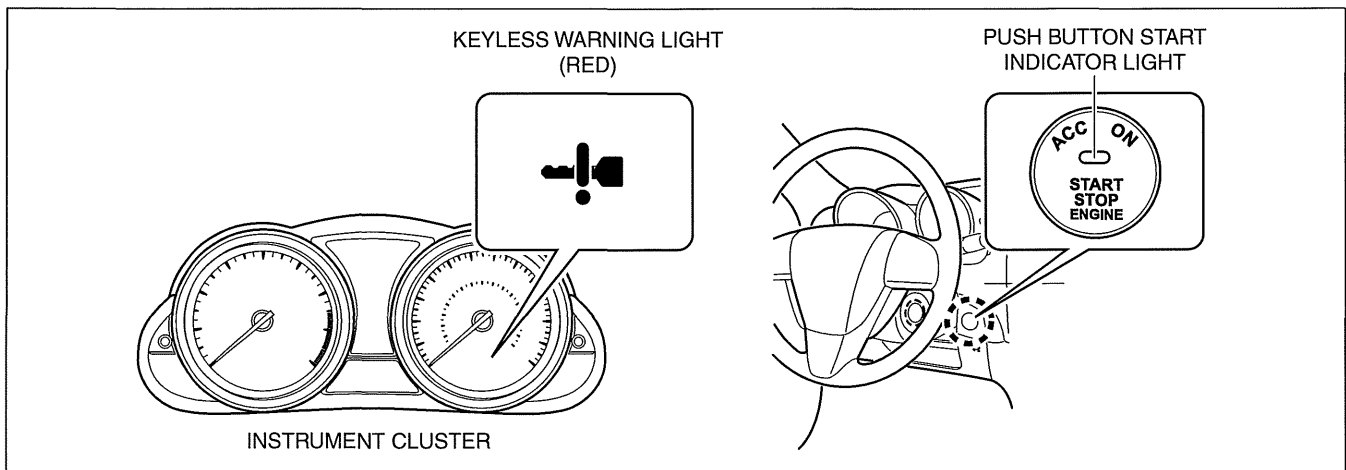
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Warning

- If this DTC is detected, the system will enter the fail-safe function to ensure safety. If the vehicle is left as it is for a specified time limit or more, or the ignition is operated a specified number of times or more while the fail-safe function is operating, the ignition will remain stuck in off and it is possible that the engine cannot be started. Therefore, perform the malfunction diagnosis while the engine can be started. In addition, after having performed the malfunction diagnosis, verify that this DTC is not detected with the steering wheel locked. If the DTC is not detected, the system returns to normal from the fail-safe function.

Note

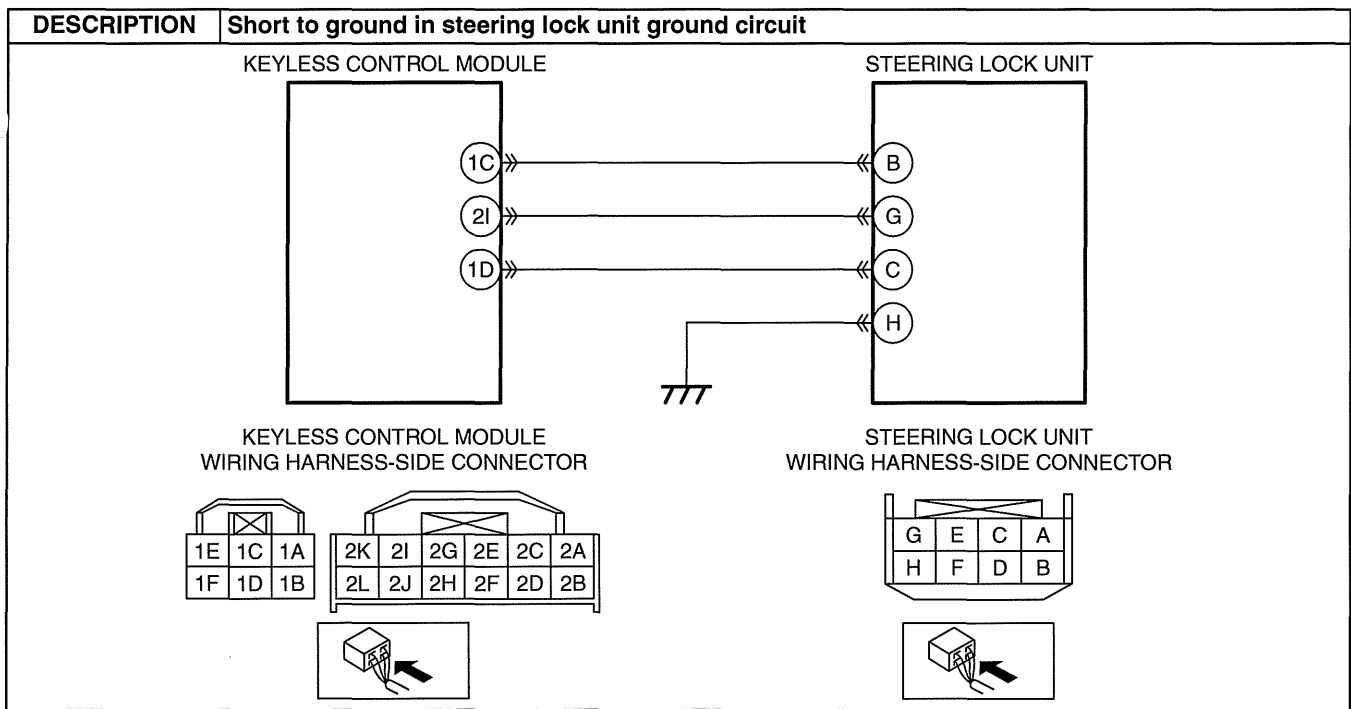
- When the system enters the fail-safe function, the keyless warning light and the push button start indicator light illuminate as follows:
 - When the clutch pedal (MTX) or the brake pedal (ATX) is depressed while the ignition is switched off, both lights illuminate (red).
 - When the ignition is switched to ACC or ON, both lights illuminate (red) constantly.



am3uuw0000510

DESCRIPTION	Short to ground in steering lock unit ground circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • Steering lock unit ground terminal voltage is less than 1.1 V for 3 s when the steering lock unit ground transistor is not active.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Steering lock unit connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering lock unit terminal C—Keyless control module terminal 1D • Steering lock unit malfunction • Keyless control module malfunction

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]



Diagnostic Procedure

Step	Inspection		Action
1	INSPECT STEERING LOCK UNIT CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the steering lock unit connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT STEERING LOCK UNIT GROUND CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Steering lock unit and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Steering lock unit terminal C • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> • Reconnect the steering lock unit connector. • Reconnect the negative battery cable. • Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.

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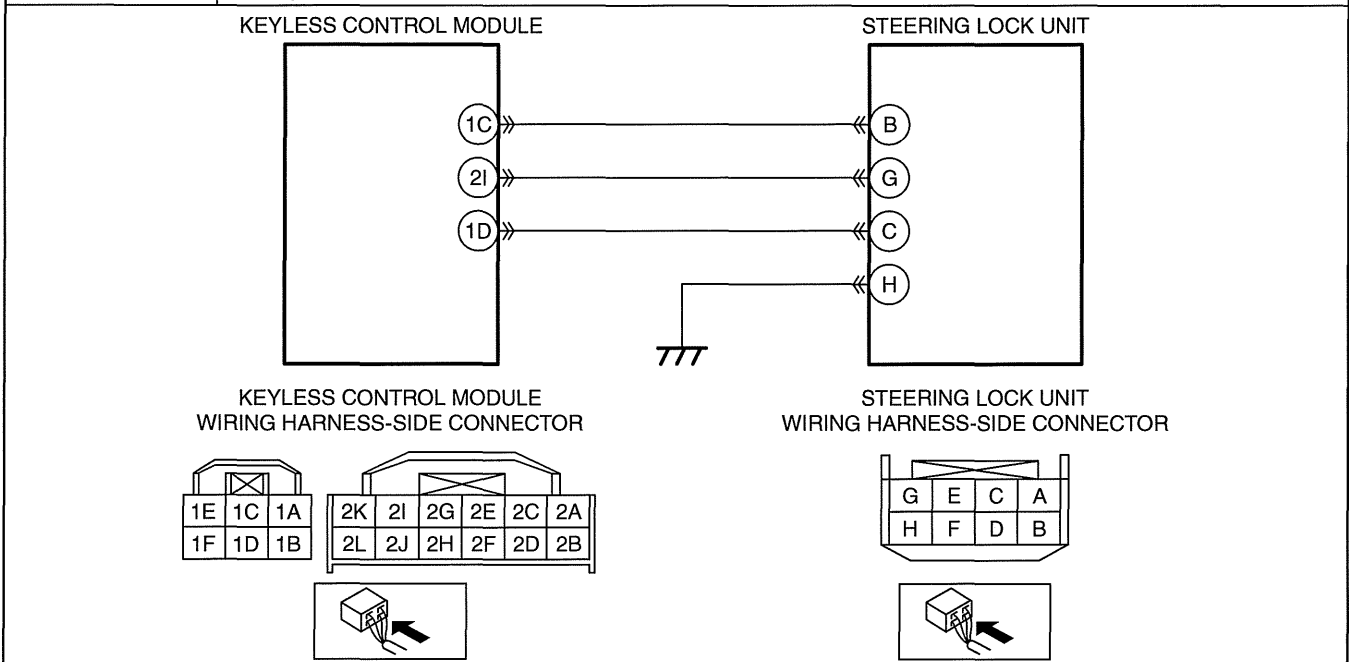
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection		Action
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Perform the following procedure within 5 min. <ol style="list-style-type: none"> 1. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) 2. Switch the ignition to off, then open the door to lock the steering. 3. Operate the advanced key to activate the keyless control module. 4. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B100B:15 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c395600

DESCRIPTION	Open circuit or short to power supply in steering lock unit ground circuit
DETECTION CONDITION	<ul style="list-style-type: none"> Steering lock unit ground terminal voltage is 1.7 V or more for 0.2 s when the steering lock unit ground transistor is active. Steering lock unit ground terminal voltage is 3.4 V or more for 0.2 s when the steering lock unit ground transistor is not active.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering lock unit connector or terminals malfunction Keyless control module connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering lock unit terminal C—Keyless control module terminal 1D Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering lock unit terminal C—Keyless control module terminal 1D Steering lock unit malfunction Keyless control module malfunction



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT STEERING LOCK UNIT CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the steering lock unit connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT STEERING LOCK UNIT GROUND CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Steering lock unit and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Steering lock unit terminal C • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
4	INSPECT STEERING LOCK UNIT GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Steering lock unit and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Steering lock unit terminal C—Keyless control module terminal 1D • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> • Reconnect the steering lock unit connector. • Reconnect the negative battery cable. • Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key, then open the door to lock the steering. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No DTC troubleshooting completed.

DTC B100C:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c395700

DESCRIPTION	Short to ground in steering lock unit power supply circuit
DETECTION CONDITION	<ul style="list-style-type: none"> Steering lock unit power supply monitor is off for 0.2 s when the steering lock unit power supply transistor is active.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering lock unit connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: — Steering lock unit terminal B—Keyless control module terminal 1C Steering lock unit malfunction Keyless control module malfunction
<p>The diagram shows the Keyless Control Module (KCM) on the left and the Steering Lock Unit (SLU) on the right. The KCM has terminals 1C, 2I, and 1D. The SLU has terminals B, G, C, and H. Terminal H is connected to ground. Below the main diagram are two connector diagrams: the Keyless Control Module Wiring Harness-Side Connector (with terminals 1E, 1C, 1A, 1F, 1D, 1B) and the Steering Lock Unit Wiring Harness-Side Connector (with terminals G, E, C, A, H, F, D, B).</p>	

Diagnostic Procedure

Step	Inspection	Action
1	INSPECT STEERING LOCK UNIT CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the steering lock unit connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 5.
		No Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 5.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
3	INSPECT STEERING LOCK UNIT POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Steering lock unit and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Steering lock unit terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> • Reconnect the steering lock unit connector. • Reconnect the negative battery cable. • Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key, then open the door to lock the steering. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B100C:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

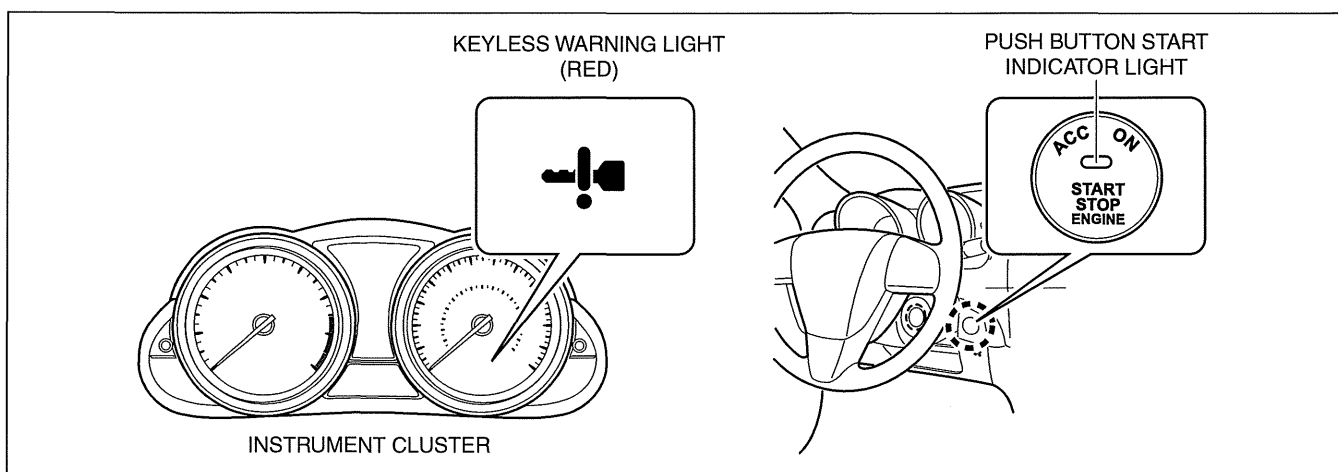
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Warning

- If this DTC is detected, the system will enter the fail-safe function to ensure safety. If the vehicle is left as it is for a specified time limit or more, or the ignition is operated a specified number of times or more while the fail-safe function is operating, the ignition will remain stuck in off and it is possible that the engine cannot be started. Therefore, perform the malfunction diagnosis while the engine can be started. In addition, after having performed the malfunction diagnosis, verify that this DTC is not detected with the steering wheel locked. If the DTC is not detected, the system returns to normal from the fail-safe function.

Note

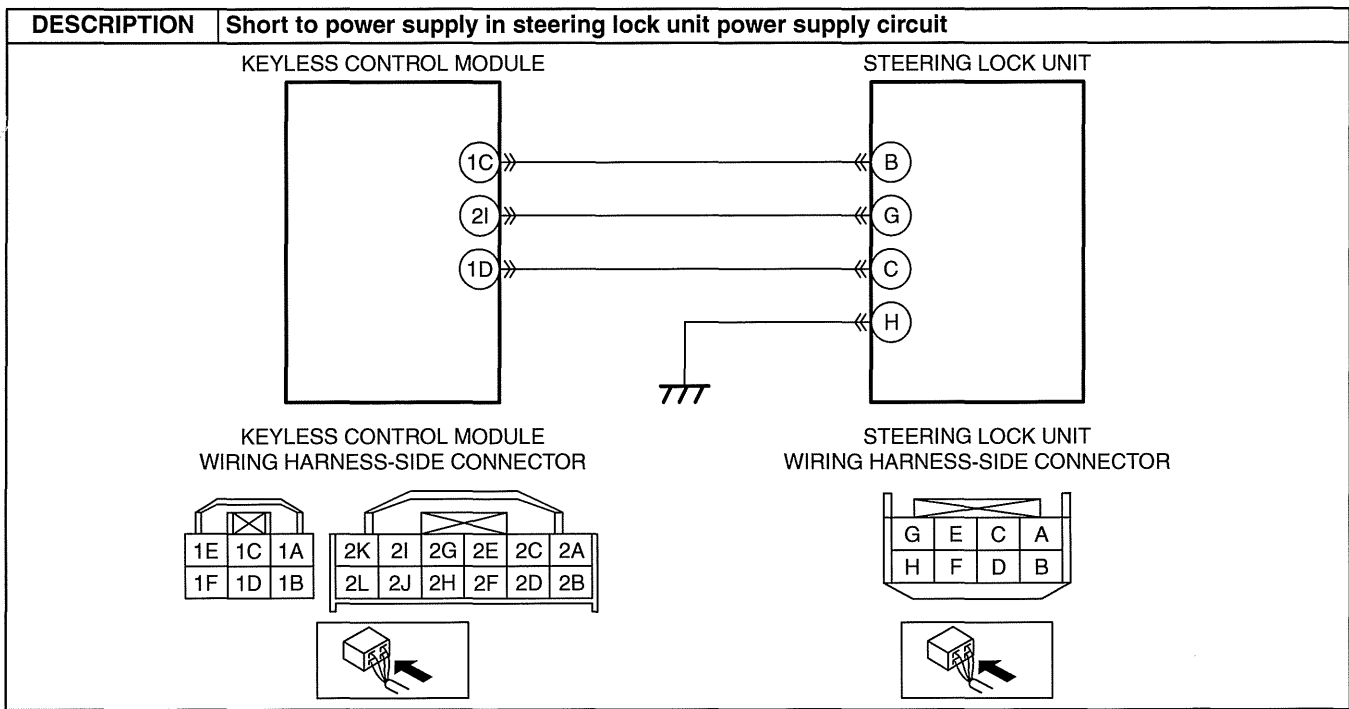
- When the system enters the fail-safe function, the keyless warning light and the push button start indicator light illuminate as follows:
 - When the clutch pedal (MTX) or the brake pedal (ATX) is depressed while the ignition is switched off, both lights illuminate (red).
 - When the ignition is switched to ACC or ON, both lights illuminate (red) constantly.



am3uuw000510

DESCRIPTION	Short to power supply in steering lock unit power supply circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • Steering lock unit power supply moitor is on for 3 s when the steering lock unit power supply transistor is not active.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Steering lock unit connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering lock unit terminal B—Keyless control module terminal 1C • Steering lock unit malfunction • Keyless control module malfunction

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]



Diagnostic Procedure

Step	Inspection		Action
1	INSPECT STEERING LOCK UNIT CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the steering lock unit connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT STEERING LOCK UNIT POWER SUPPLY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Steering lock unit and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Steering lock unit terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 5.
		No	Go to the next step.
4	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Reconnect the steering lock unit connector. • Reconnect the negative battery cable. • Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Perform the following procedure within 5 min. <ol style="list-style-type: none"> 1. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) 2. Switch the ignition to off, then open the door to lock the steering. 3. Operate the advanced key to activate the keyless control module. 4. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B1026:08 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c395900

DESCRIPTION	Receiving erratic signal from steering lock unit
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module receives the corrupt ID or wrong response from the steering lock unit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Steering lock unit programming error • Steering lock unit malfunction • Keyless control module malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	PERFORM STEERING LOCK UNIT PROGRAMMING <ul style="list-style-type: none"> • Perform the steering lock unit programming. (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.) • Switch the ignition to off, then open the door to lock the steering. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then open the door to lock the steering. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 4.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
2	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Switch the ignition to off, then open the door to lock the steering. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to off, then open the door to lock the steering. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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DTC B1026:51 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c387000

DESCRIPTION	Steering lock unit programming error
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module receives unprogrammed signal from the steering lock unit. No steering lock unit programming record in keyless control module.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering lock unit programming error Steering lock unit malfunction Keyless control module malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	PERFORM STEERING LOCK UNIT PROGRAMMING <ul style="list-style-type: none"> Perform the steering lock unit programming. (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.) Switch the ignition to off, then open the door to lock the steering. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 4.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action
2	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Switch the ignition to off, then open the door to lock the steering. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No DTC troubleshooting completed.

DTC B1026:71 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c396800

DESCRIPTION	Steering lock unit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module receives the erratic signal from the steering lock unit after a lock command.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering lock unit malfunction Keyless control module malfunction

Diagnostic Procedure

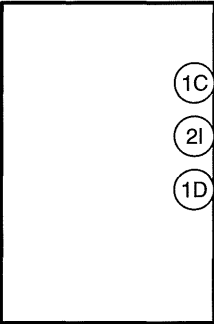
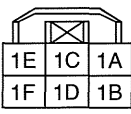
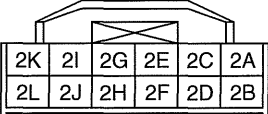
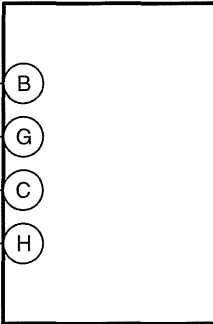
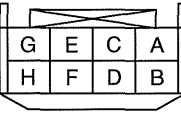

Step	Inspection	Action
1	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Switch the ignition to off, then open the door to lock the steering. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to off, then open the door to lock the steering. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection		Action
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B1026:87 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c387100

DESCRIPTION	Communication error between keyless control module and steering lock unit	
DETECTION CONDITION	<ul style="list-style-type: none"> No response from the steering lock unit. Keyless control module receives the signal of communication error from the steering lock unit. Keyless control module receives unexpected message from the steering lock unit. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering lock unit connector or terminals malfunction Keyless control module connector or terminals malfunction Open circuit in wiring harness between the following terminals: — Steering lock unit terminal G—Keyless control module terminal 2I Steering lock unit malfunction Keyless control module malfunction 	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  <p>KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>   </div> <div style="text-align: center;"> <p>STEERING LOCK UNIT</p>  <p>STEERING LOCK UNIT WIRING HARNESS-SIDE CONNECTOR</p>  </div> </div> <p style="text-align: center; margin-top: 10px;">  </p>		

09-02A

Diagnostic Procedure

Step	Inspection		Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC B1026:08, B1026:51, B1026:71 or B1026:96 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-20 DTC B1026:08 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-02A-21 DTC B1026:51 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-02A-22 DTC B1026:71 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-02A-27 DTC B1026:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	INSPECT STEERING LOCK UNIT CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the steering lock unit connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT STEERING LOCK UNIT COMMUNICATION CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Steering lock unit and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Steering lock unit terminal G—Keyless control module terminal 2I • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> • Reconnect the steering lock unit connector. • Reconnect the negative battery cable. • Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then open the door to lock the steering. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B1026:92 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

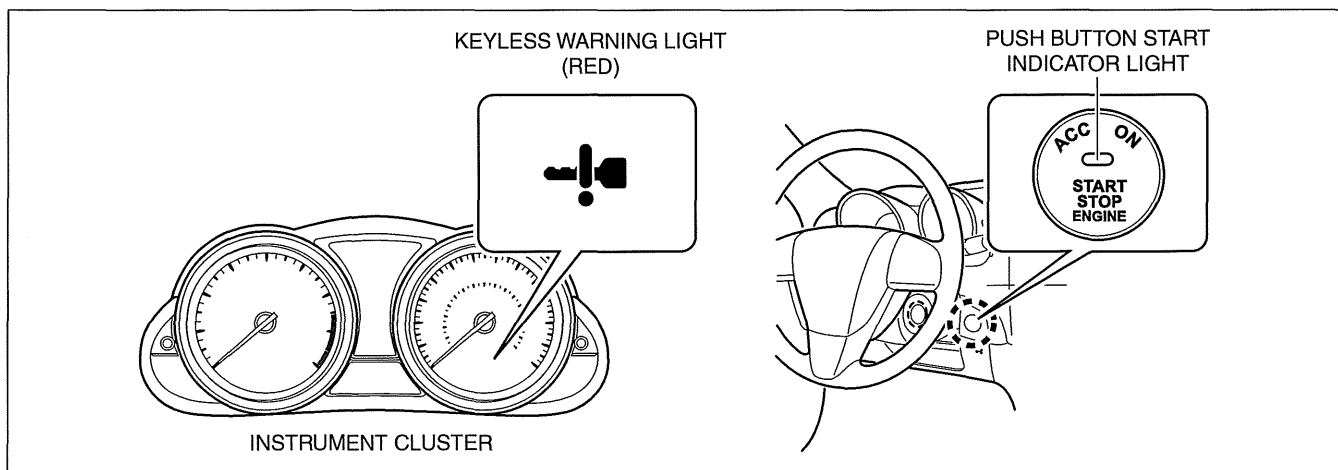
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Warning

- If this DTC is detected, the system will enter the fail-safe function to ensure safety. If the vehicle is left as it is for a specified time limit or more, or the ignition is operated a specified number of times or more while the fail-safe function is operating, the ignition will remain stuck in off and it is possible that the engine cannot be started. Therefore, perform the malfunction diagnosis while the engine can be started. In addition, after having performed the malfunction diagnosis, verify that this DTC is not detected with the steering wheel locked. If the DTC is not detected, the system returns to normal from the fail-safe function.

Note

- When the system enters the fail-safe function, the keyless warning light and the push button start indicator light illuminate as follows:
 - When the clutch pedal (MTX) or the brake pedal (ATX) is depressed while the ignition is switched off, both lights illuminate (red).
 - When the ignition is switched to ACC or ON, both lights illuminate (red) constantly.



09-02A

am3uuw0000510

DESCRIPTION	Incorrect operation of steering lock unit
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module receives the position signal indicating a serious malfunction from steering lock unit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Steering lock unit malfunction • Keyless control module malfunction

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> • Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Perform the following procedure within 5 min. <ol style="list-style-type: none"> 1. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) 2. Switch the ignition to off, then open the door to lock the steering. 3. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B1026:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c387200

DESCRIPTION	Steering lock unit internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module receives the signal of the steering lock unit internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering lock unit malfunction Keyless control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none"> Inspect the steering lock unit. (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the steering lock unit and perform the steering lock unit programming, then go to the next step. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
		No	Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Switch the ignition to off, then open the door to lock the steering. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to off, then open the door to lock the steering. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B102B:51 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c387300

DESCRIPTION	No programmed transmitter
DETECTION CONDITION	<ul style="list-style-type: none"> There is no record that an transmitter was programmed (programming is never performed in past). <p>Note</p> <ul style="list-style-type: none"> If the transmitter has never been programmed, DTC B102B:51 cannot be detected even if the transmitter is cleared.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Transmitter programming error Keyless control module malfunction

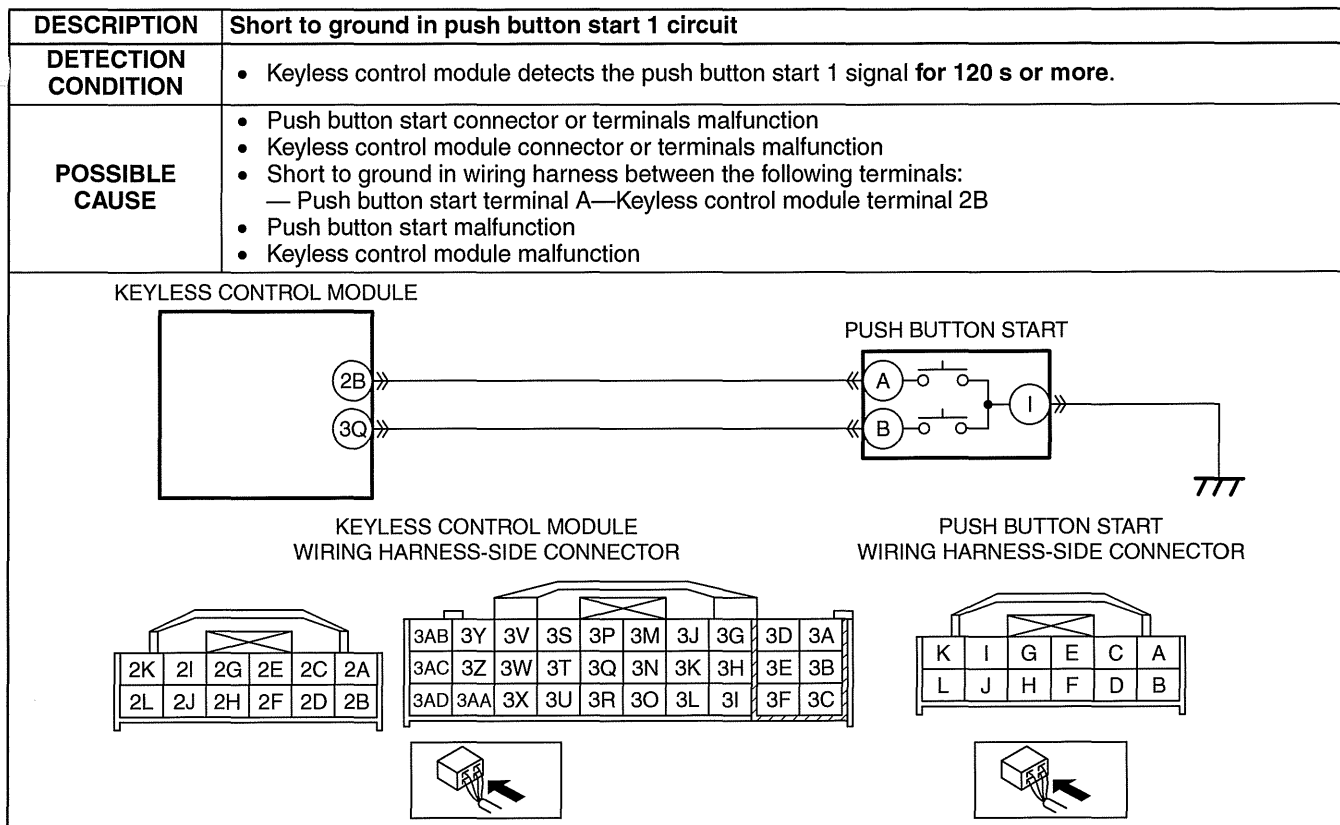
Diagnostic Procedure

Step	Inspection	Action
1	VERIFY NUMBER OF PROGRAMMED TRANSMITTER <ul style="list-style-type: none"> Perform the PID/data monitor inspection using the M-MDS. (See 09-02A-113 PID/DATA MONITOR INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) — NUM_TRNSMs (See 09-02A-114 PID/DATA MONITOR TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there a programmed transmitter? 	Yes Go to the next step.
		No Program a new transmitter, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B108B:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c398800



09-02A

Diagnostic Procedure

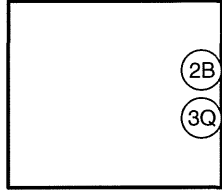
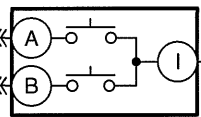
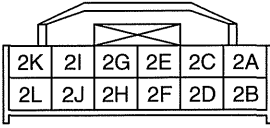
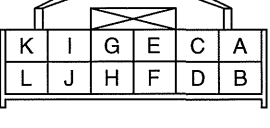
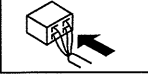
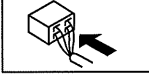
Step	Inspection		Action
1	INSPECT PUSH BUTTON START CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the push button start connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT PUSH BUTTON START CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Push button start and keyless control module connectors are disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Push button start terminal A Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT PUSH BUTTON START <ul style="list-style-type: none"> Inspect the push button start. (See 09-21-9 PUSH BUTTON START INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the push button start, then go to the next step. (See 09-21-8 PUSH BUTTON START REMOVAL/ INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection		Action
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B108B:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c398900

DESCRIPTION	Mismatch state of push button start 1 and 2
DETECTION CONDITION	<ul style="list-style-type: none"> A combination of the push button start 1 and 2 signals is abnormal.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Push button start connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Push button start terminal A—Keyless control module terminal 2B — Push button start terminal B—Keyless control module terminal 3Q Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Push button start terminal A—Keyless control module terminal 2B — Push button start terminal B—Keyless control module terminal 3Q Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Push button start terminal A—Keyless control module terminal 2B — Push button start terminal B—Keyless control module terminal 3Q Push button start malfunction Keyless control module malfunction
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  <p>KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>PUSH BUTTON START</p>  <p>PUSH BUTTON START WIRING HARNESS-SIDE CONNECTOR</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: center; margin-top: 20px;">   </div>	

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT PUSH BUTTON START CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the push button start connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
3	INSPECT PUSH BUTTON START CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Push button start and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Push button start terminal A — Push button start terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 7.
		No	Go to the next step.
4	INSPECT PUSH BUTTON START CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Push button start and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Push button start terminal A — Push button start terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
5	INSPECT PUSH BUTTON START CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Push button start and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Push button start terminal A—Keyless control module terminal 2B — Push button start terminal B—Keyless control module terminal 3Q • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 7.
6	INSPECT PUSH BUTTON START <ul style="list-style-type: none"> • Inspect the push button start. (See 09-21-9 PUSH BUTTON START INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the push button start, then go to the next step. (See 09-21-8 PUSH BUTTON START REMOVAL/ INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.

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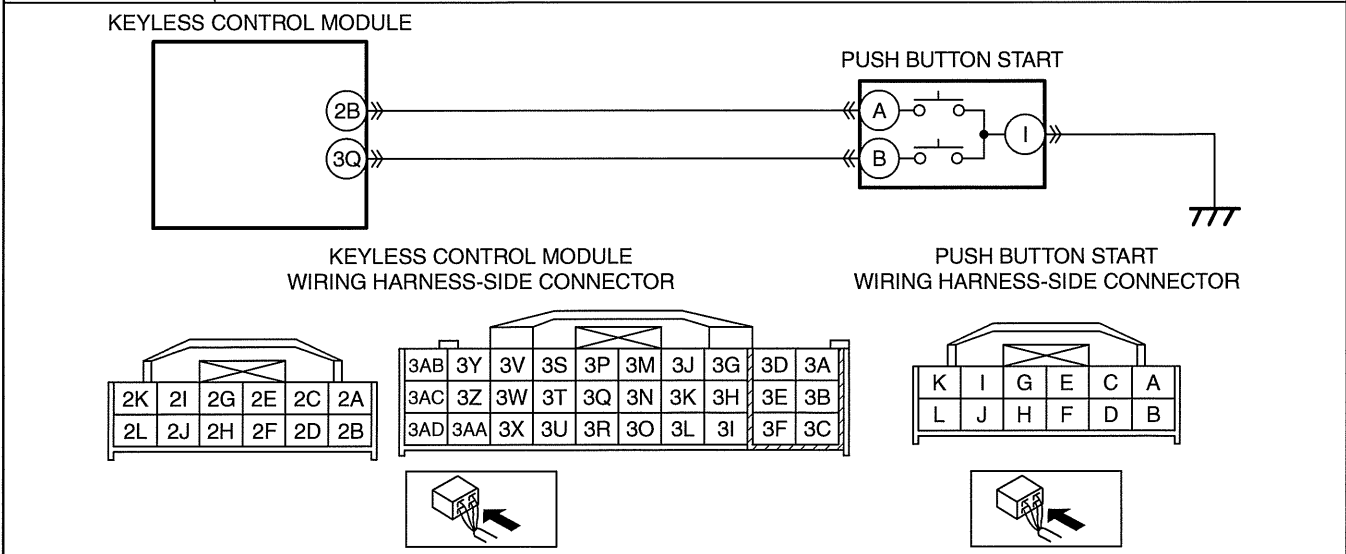
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B108C:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c399600

DESCRIPTION	Short to ground in push button start 2 circuit
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the push button start 2 signal for 120 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Push button start connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: — Push button start terminal B—Keyless control module terminal 3Q Push button start malfunction Keyless control module malfunction



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT PUSH BUTTON START CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the push button start connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT PUSH BUTTON START CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Push button start and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Push button start terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT PUSH BUTTON START <ul style="list-style-type: none"> • Inspect the push button start. (See 09-21-9 PUSH BUTTON START INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the push button start, then go to the next step. (See 09-21-8 PUSH BUTTON START REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B10C6:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c387700

DESCRIPTION	Erratic signal of keyless antenna (exterior, rear)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the open circuit in keyless antenna (exterior, rear) circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless antenna (exterior, rear) connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (exterior, rear) terminal A—Keyless control module terminal 4C Keyless antenna (exterior, rear) terminal B—Keyless control module terminal 4F Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (exterior, rear) terminal A—Keyless control module terminal 4C Keyless antenna (exterior, rear) terminal B—Keyless control module terminal 4F Keyless antenna (exterior, rear) malfunction Keyless control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT KEYLESS ANTENNA (EXTERIOR, REAR) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the keyless antenna (exterior, rear) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS ANTENNA (EXTERIOR, REAR) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Keyless antenna (exterior, rear) and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Keyless antenna (exterior, rear) terminal A Keyless antenna (exterior, rear) terminal B Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS ANTENNA (EXTERIOR, REAR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless antenna (exterior, rear) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless antenna (exterior, rear) terminal A—Keyless control module terminal 4C — Keyless antenna (exterior, rear) terminal B—Keyless control module terminal 4F • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	VERIFY KEYLESS ANTENNA (EXTERIOR, REAR) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless antenna (exterior, rear), then go to the next step. (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B10C7:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c387800

DESCRIPTION	Erratic signal of keyless antenna (interior, rear)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the open circuit in keyless antenna (interior, rear) circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless antenna (interior, rear) connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (interior, rear) terminal A—Keyless control module terminal 4G Keyless antenna (interior, rear) terminal B—Keyless control module terminal 4J Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (interior, rear) terminal A—Keyless control module terminal 4G Keyless antenna (interior, rear) terminal B—Keyless control module terminal 4J Keyless antenna (interior, rear) malfunction Keyless control module malfunction
<p>The diagram illustrates the electrical connections for the keyless antenna system. On the left, the KEYLESS CONTROL MODULE has terminals 4G and 4J. On the right, the KEYLESS ANTENNA (INTERIOR, REAR) has terminals A and B. Terminal 4G is connected to terminal A, and terminal 4J is connected to terminal B. Below the main diagram, a KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR is shown with a grid of terminals: 4Y, 4V, 4S, 4P, 4M, 4J, 4G, 4D, 4A in the first row; 4Z, 4W, 4T, 4Q, 4N, 4K, 4H, 4E, 4B in the second row; and 4AA, 4X, 4U, 4R, 4O, 4L, 4I, 4F, 4C in the third row. An arrow points to terminal 4G. To the right, a KEYLESS ANTENNA (INTERIOR, REAR) WIRING HARNESS-SIDE CONNECTOR is shown with terminals B and A. An arrow points to terminal A.</p>	

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT KEYLESS ANTENNA (INTERIOR, REAR) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the keyless antenna (interior, rear) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS ANTENNA (INTERIOR, REAR) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Keyless antenna (interior, rear) and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Keyless antenna (interior, rear) terminal A Keyless antenna (interior, rear) terminal B Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS ANTENNA (INTERIOR, REAR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless antenna (interior, rear) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless antenna (interior, rear) terminal A—Keyless control module terminal 4G — Keyless antenna (interior, rear) terminal B—Keyless control module terminal 4J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	VERIFY KEYLESS ANTENNA (INTERIOR, REAR) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless antenna (interior, rear), then go to the next step. (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

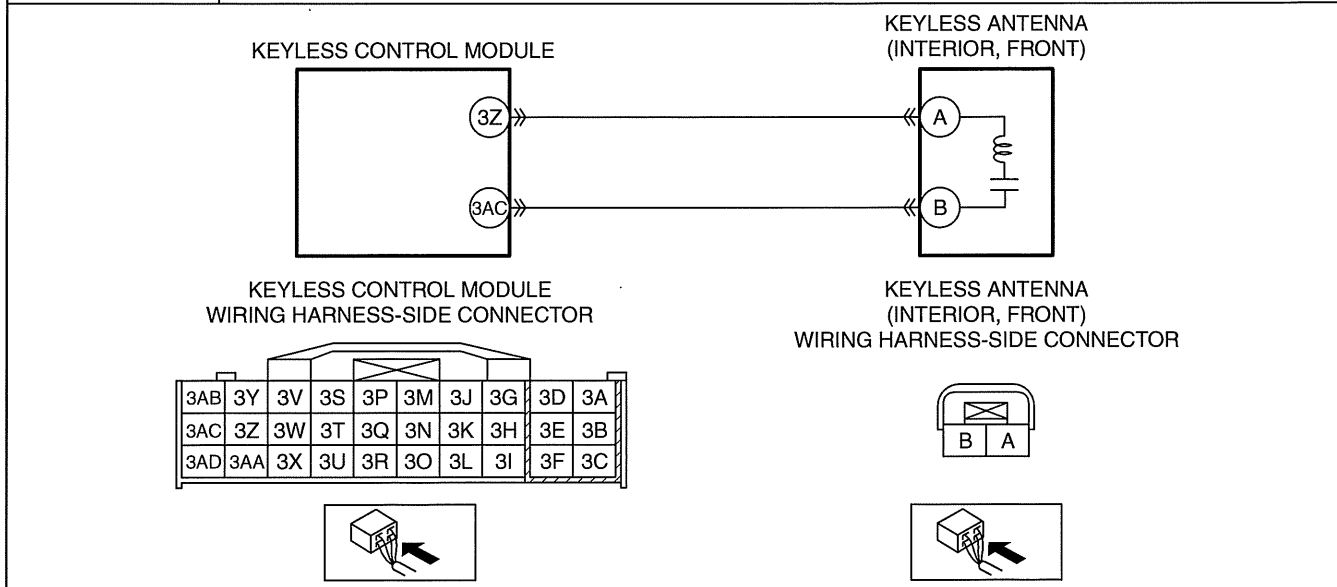
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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B10C9:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c388000

DESCRIPTION	Erratic signal of keyless antenna (interior, front)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the open circuit in keyless antenna (interior, front) circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless antenna (interior, front) connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (interior, front) terminal A—Keyless control module terminal 3Z Keyless antenna (interior, front) terminal B—Keyless control module terminal 3AC Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (interior, front) terminal A—Keyless control module terminal 3Z Keyless antenna (interior, front) terminal B—Keyless control module terminal 3AC Keyless antenna (interior, front) malfunction Keyless control module malfunction



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT KEYLESS ANTENNA (INTERIOR, FRONT) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the keyless antenna (interior, front) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
3	INSPECT KEYLESS ANTENNA (INTERIOR, FRONT) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Keyless antenna (interior, front) and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Keyless antenna (interior, front) terminal A Keyless antenna (interior, front) terminal B Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

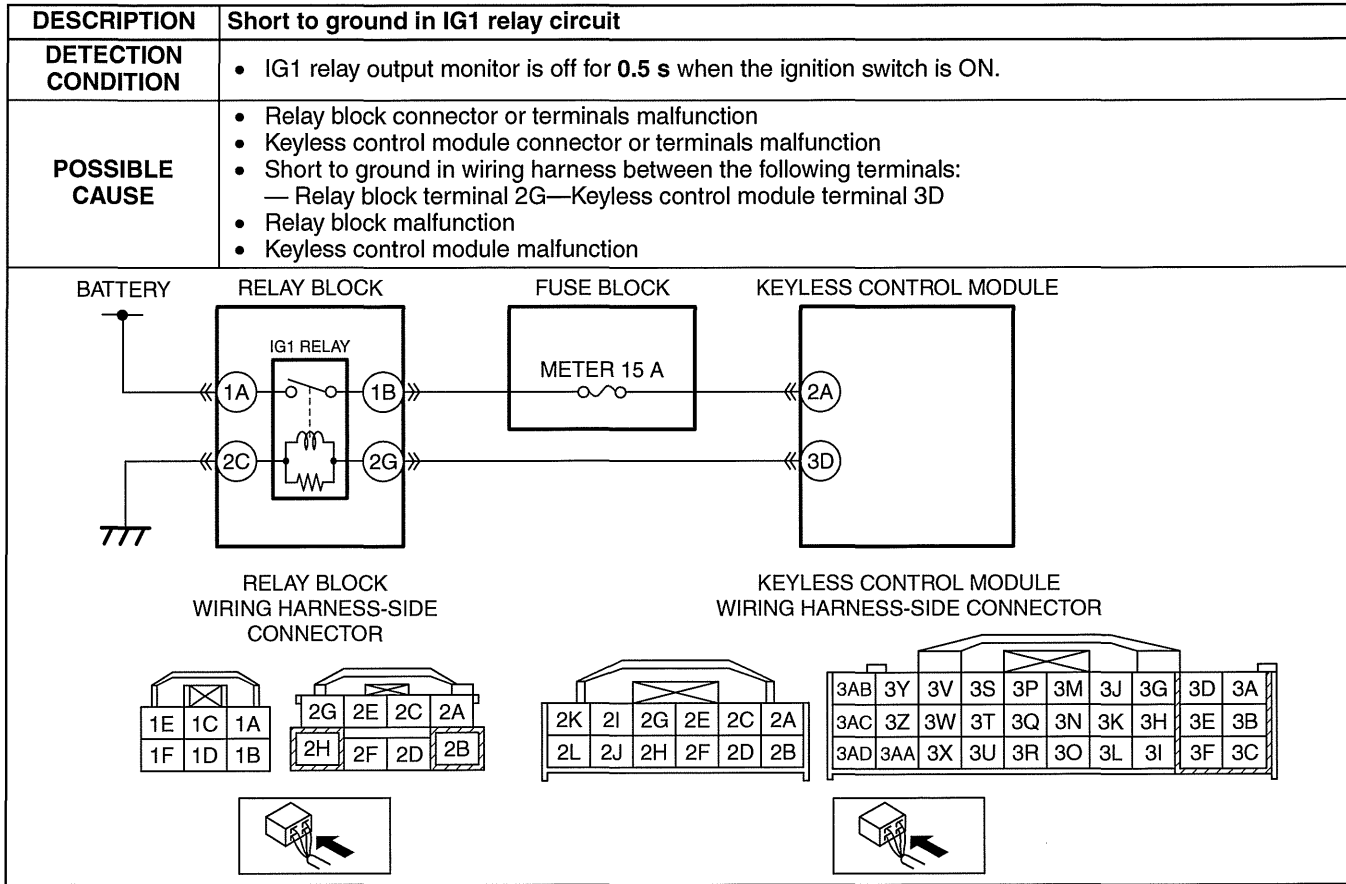
Step	Inspection	Action	
4	INSPECT KEYLESS ANTENNA (INTERIOR, FRONT) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless antenna (interior, front) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless antenna (interior, front) terminal A—Keyless control module terminal 3Z — Keyless antenna (interior, front) terminal B—Keyless control module terminal 3AC • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	VERIFY KEYLESS ANTENNA (INTERIOR, FRONT) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless antenna (interior, front), then go to the next step. (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B10E7:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c401900



Diagnostic Procedure

Step	Inspection		Action
1	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT IG1 RELAY OUTPUT CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Relay block and keyless control module connectors are disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Relay block terminal 2G Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT RELAY BLOCK <ul style="list-style-type: none"> Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

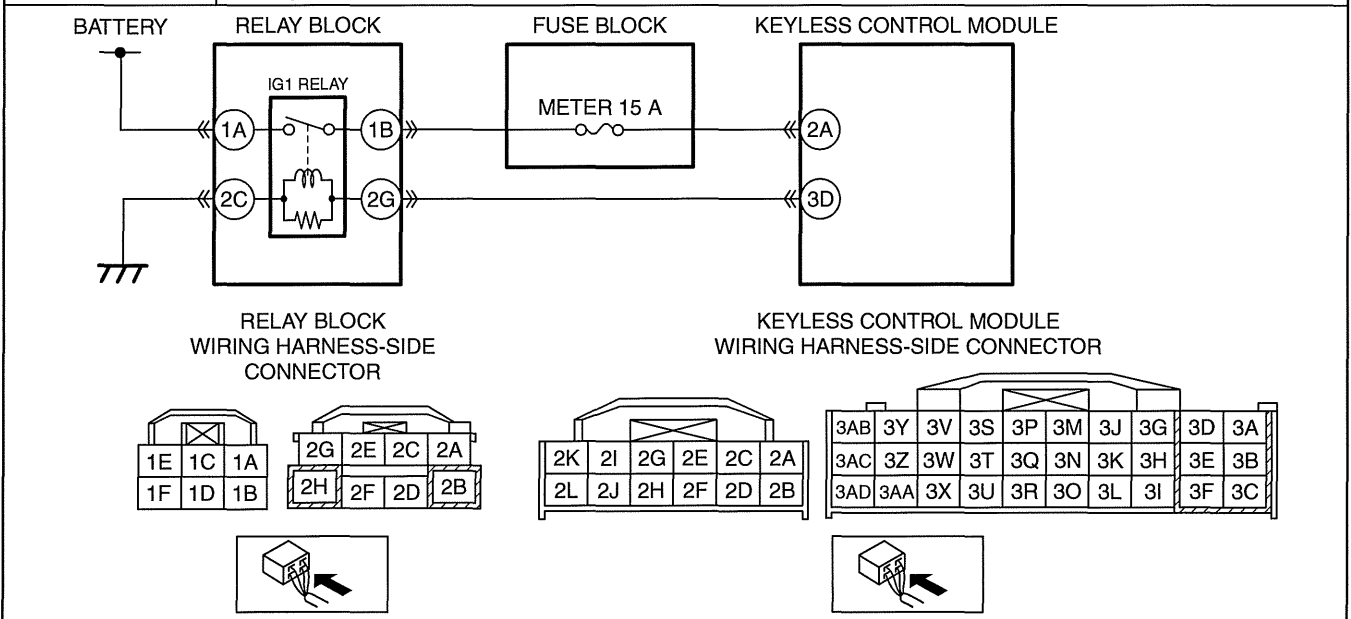
Step	Inspection	Action	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B10E7:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c399700

DESCRIPTION	Short to power supply in IG1 relay circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • IG1 relay output monitor is on for 0.5 s when the ignition switch is off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Relay block connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Relay block terminal 2G—Keyless control module terminal 3D • Relay block malfunction • Keyless control module malfunction

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

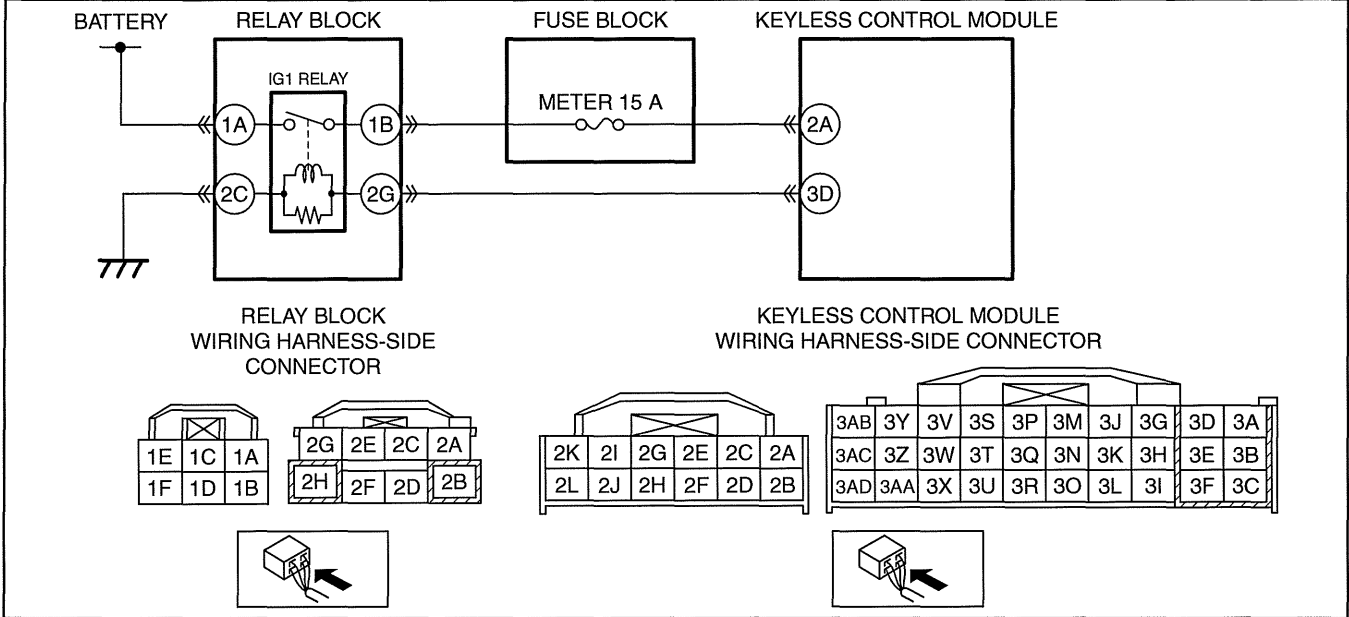
Step	Inspection	Action	
1	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the relay block connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT IG1 RELAY OUTPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Relay block terminal 2G • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 5.
		No	Go to the next step.
4	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B10E7:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c388300

DESCRIPTION	Low voltage in IG1 monitor input circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • IG1 monitor voltage is less than 2.5 V for 1 s when the ignition switch is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Relay block connector or terminals malfunction • Keyless control module connector or terminals malfunction • Open circuit or short to ground in IG1 monitor input circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between relay block terminal 1B and keyless control module terminal 2A — METER 15 A fuse malfunction — Open circuit in wiring harness between relay block terminal 1B and keyless control module terminal 2A • Relay block malfunction • Keyless control module malfunction



09-02A

Diagnostic Procedure

Step	Inspection		Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC B10E7:11 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-40 DTC B10E7:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the relay block connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

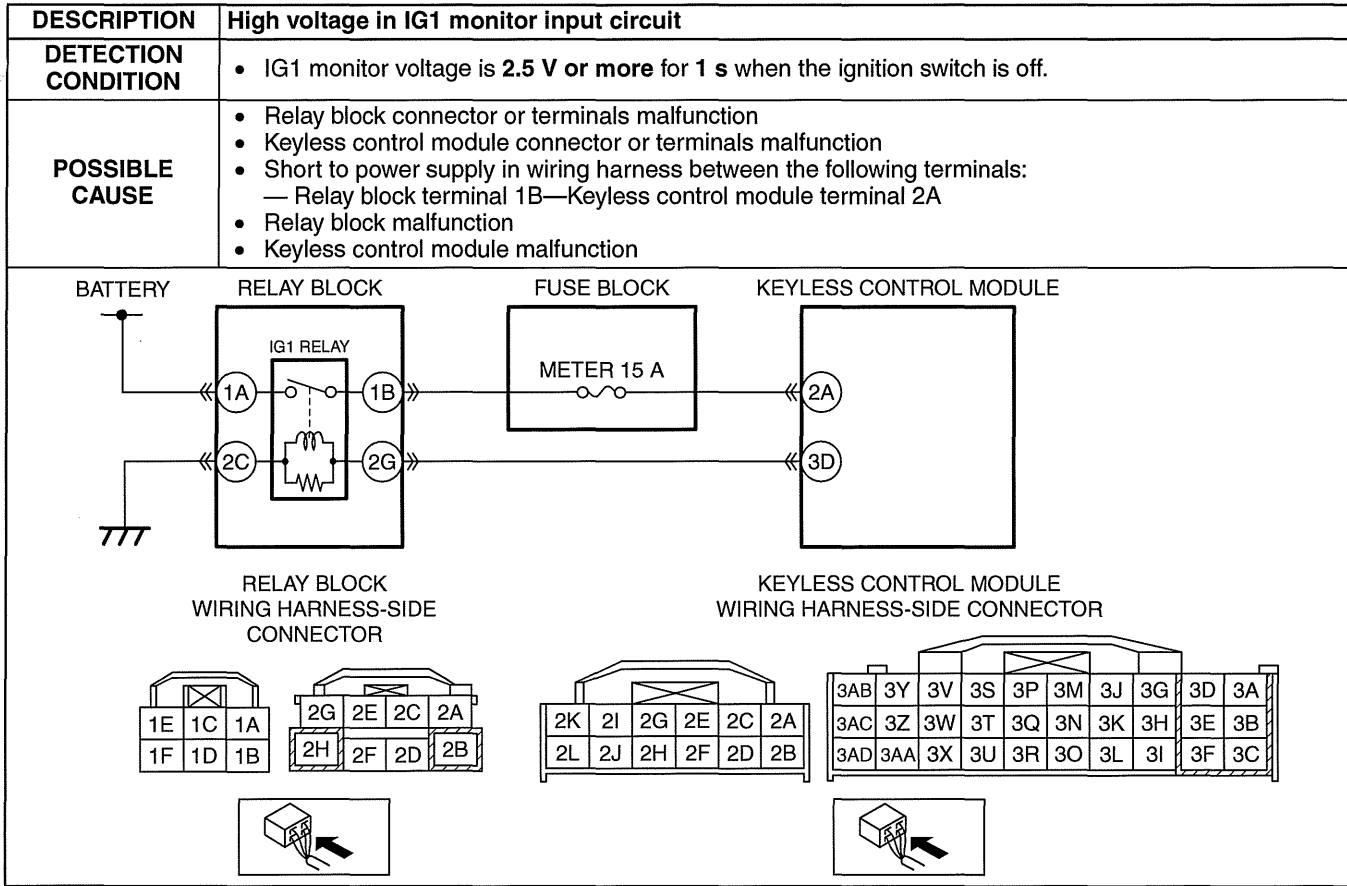
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT IG1 MONITOR INPUT CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the relay block connector. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 2A • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the METER 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 6.
5	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B10E7:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c401600



09-02A

Diagnostic Procedure

Step	Inspection		Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC B10E7:12 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-41 DTC B10E7:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

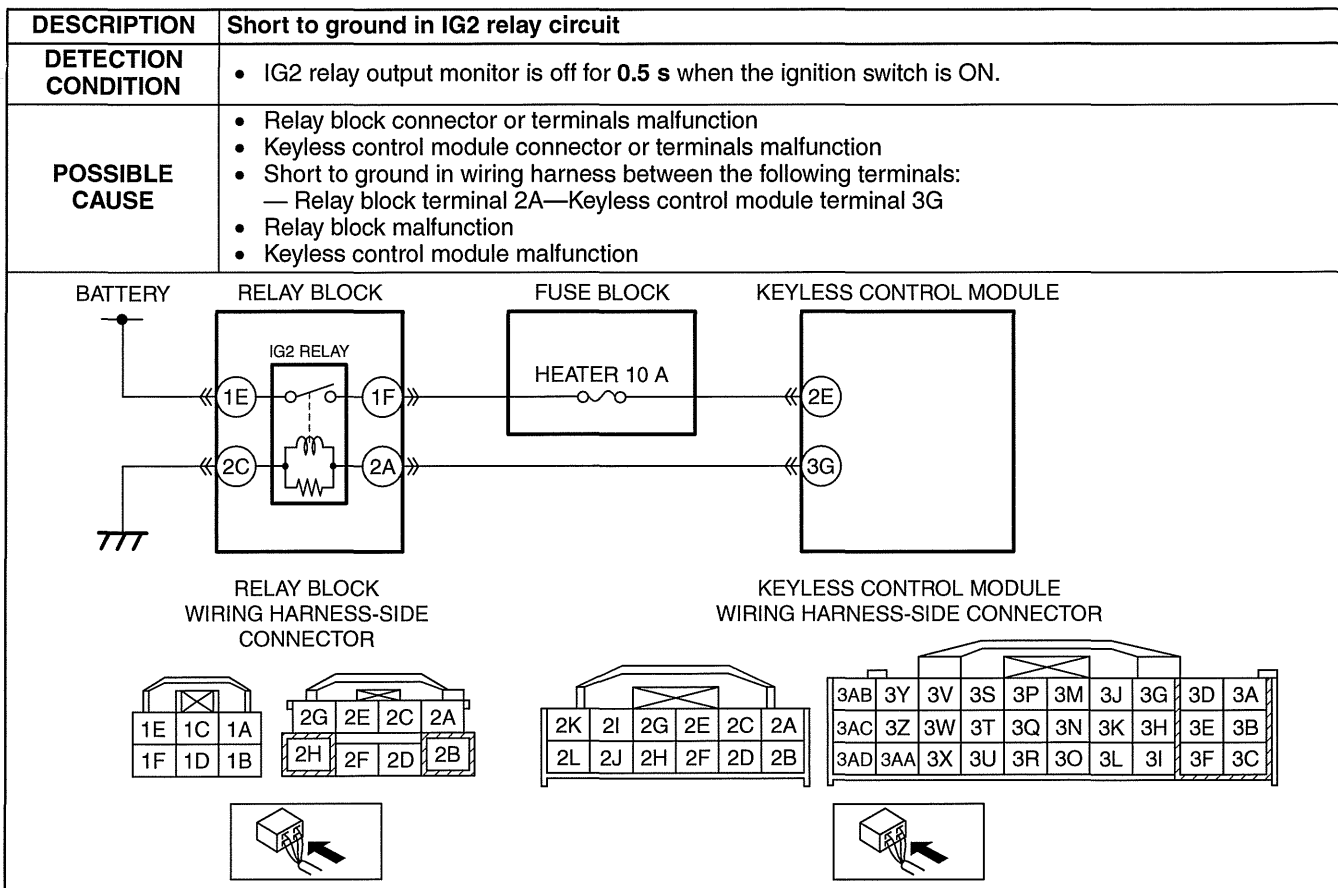
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT IG1 MONITOR INPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 2A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC B10E7:17 present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B112A:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c404600



09-02A

Diagnostic Procedure

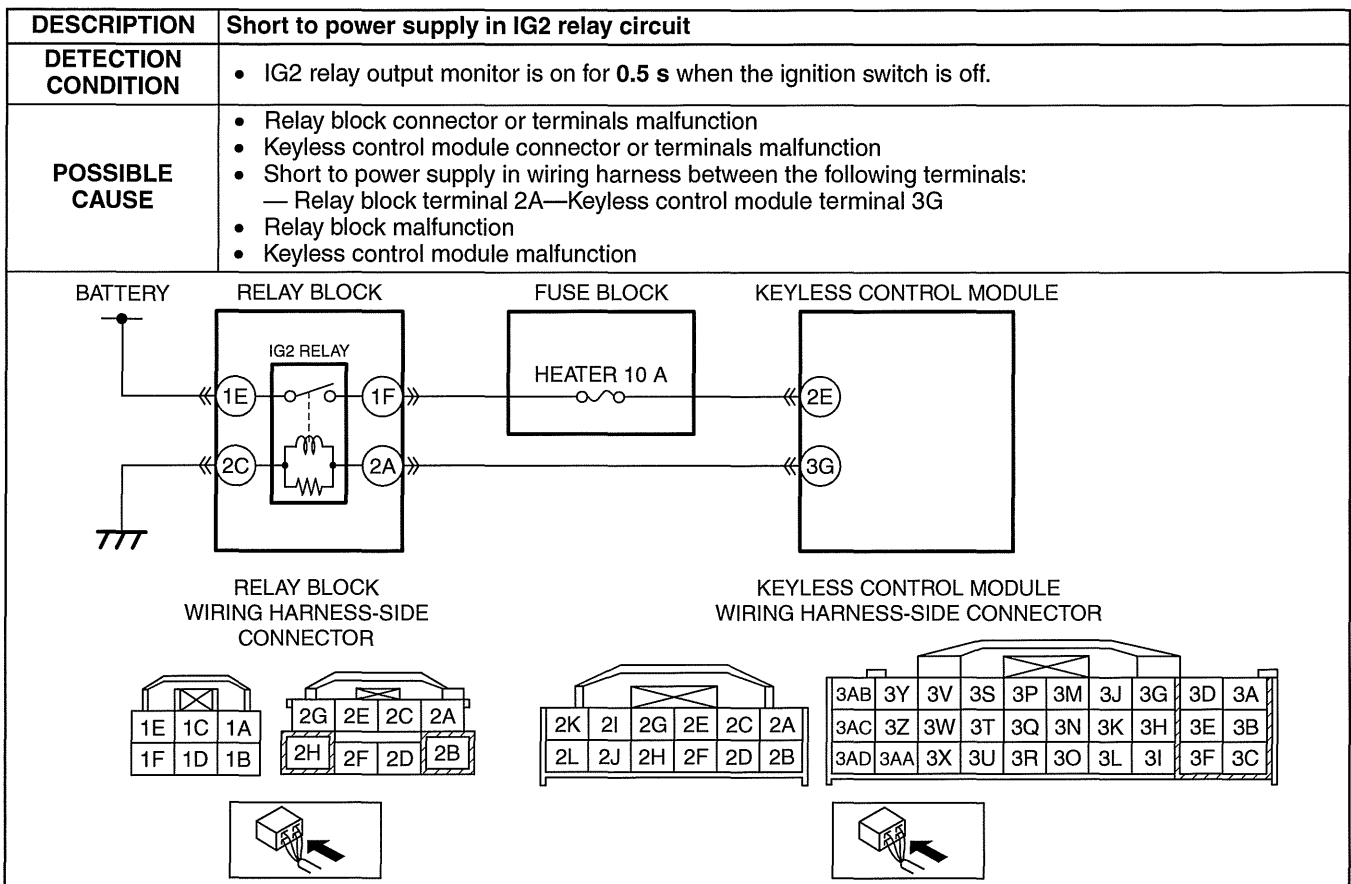
Step	Inspection		Action
1	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT IG2 RELAY OUTPUT CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Relay block and keyless control module connectors are disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> Relay block terminal 2A Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT RELAY BLOCK <ul style="list-style-type: none"> Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC B112A:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c404700



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

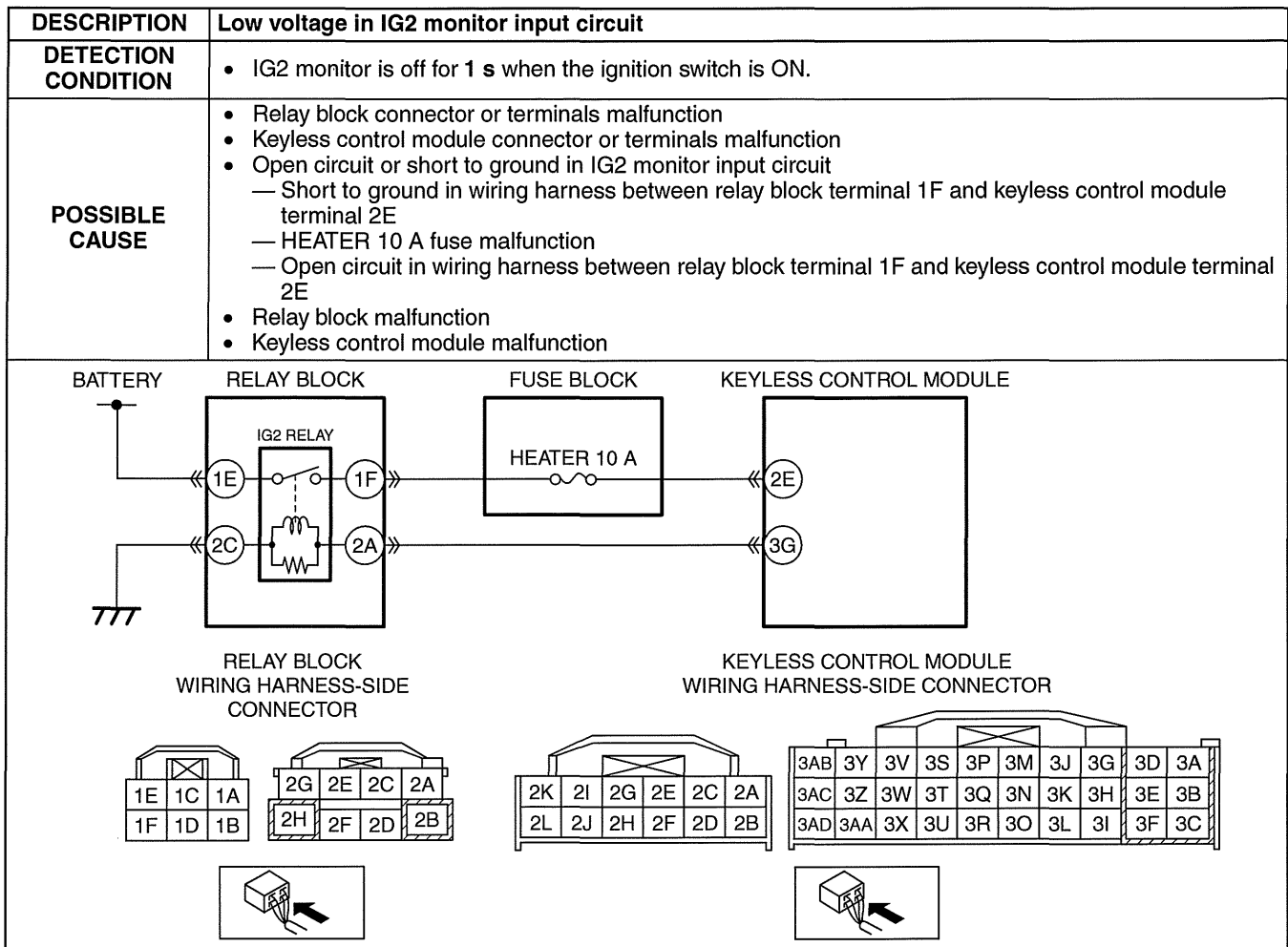
Step	Inspection	Action	
1	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the relay block connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT IG2 RELAY OUTPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Relay block terminal 2A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 5.
		No	Go to the next step.
4	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B112A:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c404800



Diagnostic Procedure

Step	Inspection		Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC B112A:11 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-47 DTC B112A:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

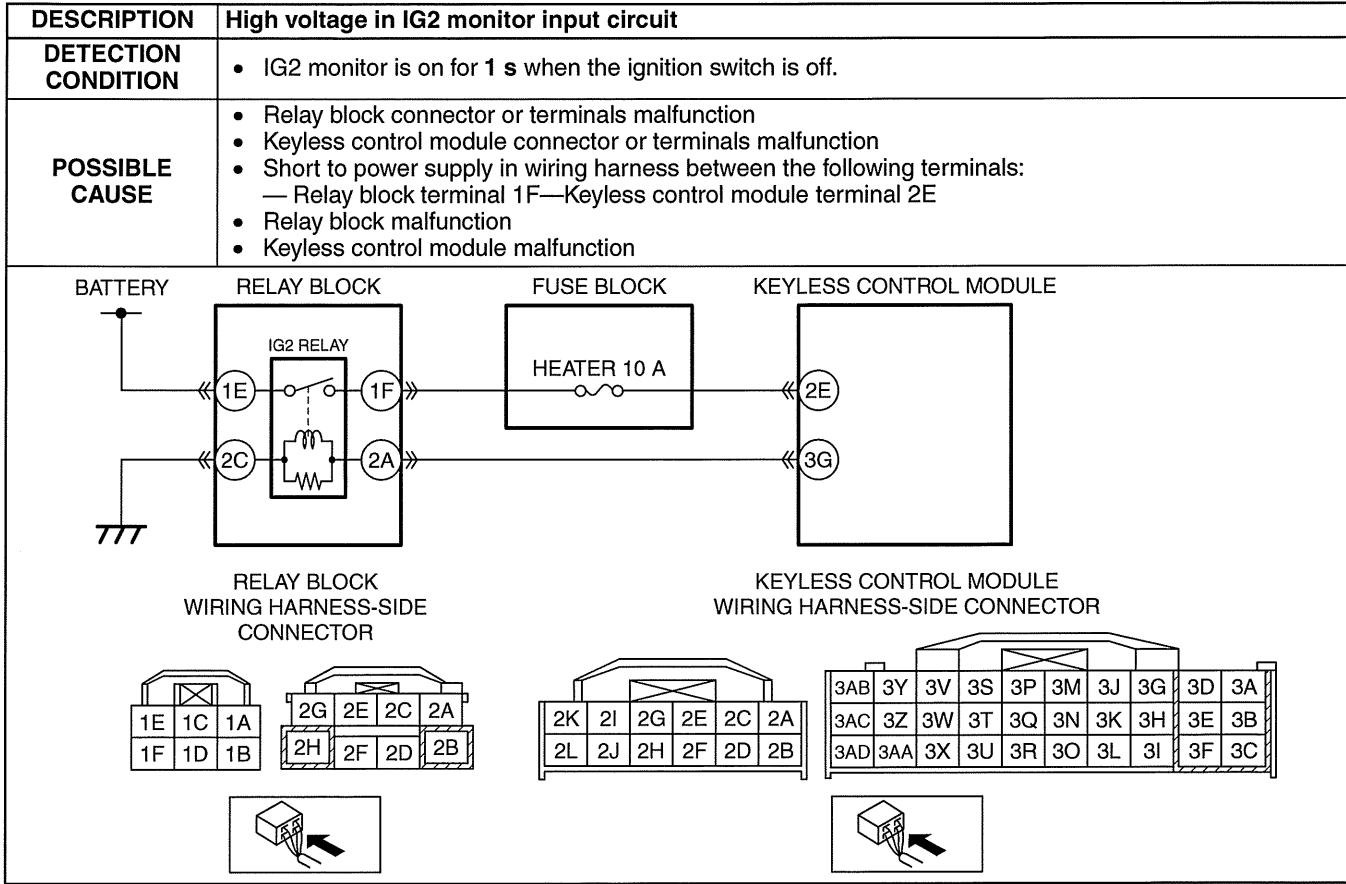
Step	Inspection	Action	
4	INSPECT IG2 MONITOR INPUT CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the relay block connector. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 2E • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the HEATER 10 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 6.
5	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC B112A:16 present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B112A:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c404900



Diagnostic Procedure

Step	Inspection		Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC B112A:12 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-48 DTC B112A:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT IG2 MONITOR INPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 2E • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC B112A:17 present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B11FD:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c388500

DESCRIPTION	Erratic signal of keyless antenna (exterior, LF)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the open circuit in keyless antenna (exterior, LF) circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front outer handle (LH) connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> Front outer handle (LH) terminal E—Keyless control module terminal 4B Front outer handle (LH) terminal B—Keyless control module terminal 4E Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> Front outer handle (LH) terminal E—Keyless control module terminal 4B Front outer handle (LH) terminal B—Keyless control module terminal 4E Keyless antenna (exterior, LF) malfunction Keyless control module malfunction
<p>The diagram illustrates the electrical connections for the keyless antenna system. It shows the Keyless Control Module with terminals 4B and 4E. The Keyless Antenna (Exterior, LF) has terminals E and B. The Keyless Control Module Wiring Harness-Side Connector has terminals 4Y, 4V, 4S, 4P, 4M, 4J, 4G, 4D, 4A, 4Z, 4W, 4T, 4Q, 4N, 4K, 4H, 4E, 4B, 4AA, 4X, 4U, 4R, 4O, 4L, 4I, 4F, 4C. The Front Outer Handle (LH) Wiring Harness-Side Connector has terminals D, A, E, B, F, C. Arrows indicate the signal flow between the module and the antenna, and the physical layout of the connectors.</p>	

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT FRONT OUTER HANDLE (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front outer handle (LH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS ANTENNA (EXTERIOR, LF) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Front outer handle (LH) and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Front outer handle (LH) terminal E Front outer handle (LH) terminal B Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS ANTENNA (EXTERIOR, LF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front outer handle (LH) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Front outer handle (LH) terminal E— Keyless control module terminal 4B — Front outer handle (LH) terminal B— Keyless control module terminal 4E • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	INSPECT KEYLESS ANTENNA (EXTERIOR, LF) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless antenna (exterior, LF), then go to the next step. (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

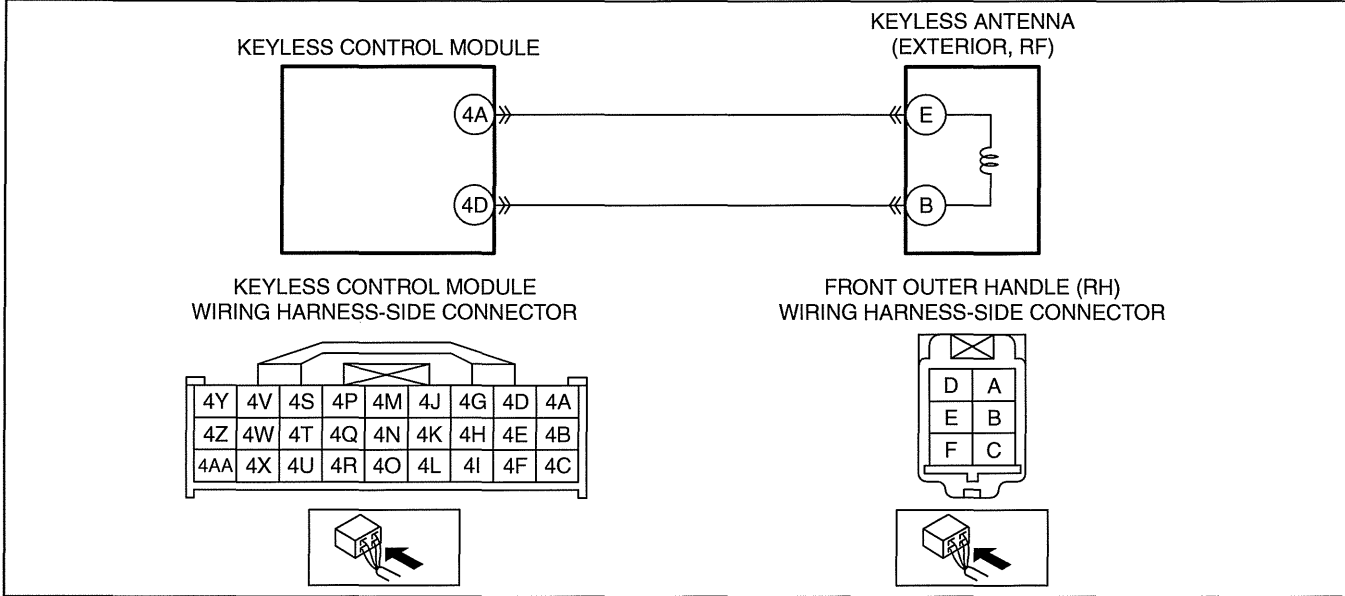
09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B1210:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c388600

DESCRIPTION	Erratic signal of keyless antenna (exterior, RF)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless-control module detects the open circuit in keyless antenna (exterior, RF) circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front outer handle (RH) connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> Front outer handle (RH) terminal E—Keyless control module terminal 4A Front outer handle (RH) terminal B—Keyless control module terminal 4D Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> Front outer handle (RH) terminal E—Keyless control module terminal 4A Front outer handle (RH) terminal B—Keyless control module terminal 4D Keyless antenna (exterior, RF) malfunction Keyless control module malfunction



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT FRONT OUTER HANDLE (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front outer handle (RH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
3	INSPECT KEYLESS ANTENNA (EXTERIOR, RF) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Front outer handle (RH) and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Front outer handle (RH) terminal E Front outer handle (RH) terminal B Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS ANTENNA (EXTERIOR, RF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front outer handle (RH) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Front outer handle (RH) terminal E— Keyless control module terminal 4A — Front outer handle (RH) terminal B— Keyless control module terminal 4D • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	INSPECT KEYLESS ANTENNA (EXTERIOR, RF) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless antenna (exterior, RF), then go to the next step. (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC B1239:1F [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c930400

DESCRIPTION	Erratic signal of keyless antenna (interior, center)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the open circuit in keyless antenna (interior, center) circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless antenna (interior, center) connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (interior, center) terminal A—Keyless control module terminal 3Y Keyless antenna (interior, center) terminal B—Keyless control module terminal 3AB Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> Keyless antenna (interior, center) terminal A—Keyless control module terminal 3Y Keyless antenna (interior, center) terminal B—Keyless control module terminal 3AB Keyless antenna (interior, center) malfunction Keyless control module malfunction
<p>The diagram illustrates the electrical connection between the Keyless Control Module and the Keyless Antenna (interior, center). The Keyless Control Module has terminals 3Y and 3AB. The Keyless Antenna has terminals A and B. Terminal 3Y is connected to terminal A, and terminal 3AB is connected to terminal B. The antenna circuit includes a coil and a battery symbol. Below the main diagram are two terminal block diagrams: one for the Keyless Control Module (Wiring Harness-Side Connector) with terminals 3AB, 3Y, 3V, 3S, 3P, 3M, 3J, 3G, 3D, 3A, 3AC, 3Z, 3W, 3T, 3Q, 3N, 3K, 3H, 3E, 3B, 3AD, 3AA, 3X, 3U, 3R, 3O, 3L, 3I, 3F, 3C; and another for the Keyless Antenna (Wiring Harness-Side Connector) with terminals B and A. Arrows point to the physical connector locations on the components.</p>	

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT KEYLESS ANTENNA (INTERIOR, CENTER) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the keyless antenna (interior, center) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
3	INSPECT KEYLESS ANTENNA (INTERIOR, CENTER) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless antenna (interior, center) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless antenna (interior, center) terminal A — Keyless antenna (interior, center) terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
4	INSPECT KEYLESS ANTENNA (INTERIOR, CENTER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless antenna (interior, center) and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless antenna (interior, center) terminal A—Keyless control module terminal 3Y — Keyless antenna (interior, center) terminal B—Keyless control module terminal 3AB • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	VERIFY KEYLESS ANTENNA (INTERIOR, CENTER) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless antenna (interior, center), then go to the next step. (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

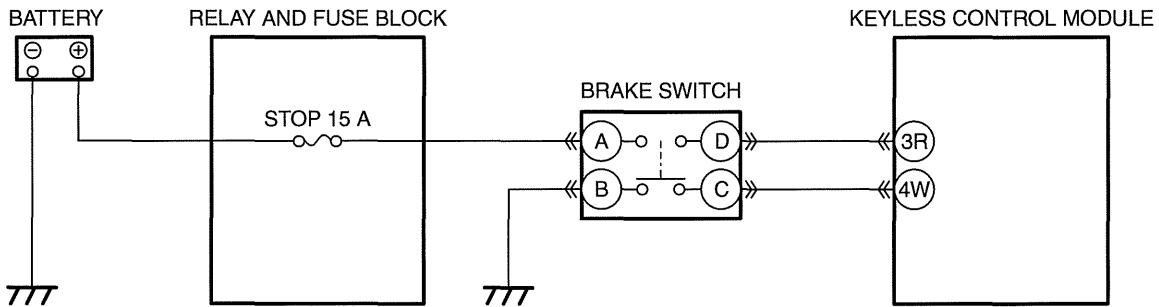
Step	Inspection	Action	
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Open any door or trunk/liftgate, then close all doors or the trunk/liftgate with the ignition switched off. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

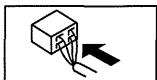
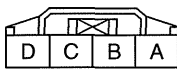
DTC C0040:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c405400

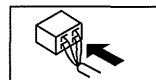
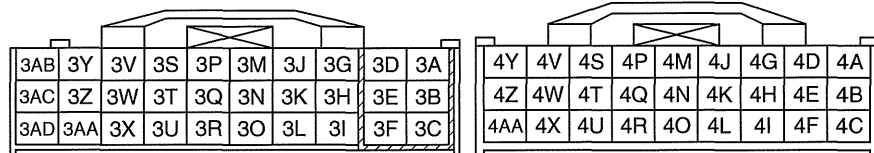
DESCRIPTION	Erratic signal of brake switch
DETECTION CONDITION	<ul style="list-style-type: none"> A combination of the brake switch 1 and 2 signals is abnormal.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Brake switch connector or terminals malfunction Open circuit or short to ground in brake switch power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and brake switch terminal A — STOP 15 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and brake switch terminal A Open circuit in wiring harness between the following: <ul style="list-style-type: none"> — Brake switch terminal B—Body ground Keyless control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Brake switch terminal C—Keyless control module terminal 4W — Brake switch terminal D—Keyless control module terminal 3R Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Brake switch terminal D—Keyless control module terminal 3R Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Brake switch terminal C—Keyless control module terminal 4W — Brake switch terminal D—Keyless control module terminal 3R Brake switch malfunction Keyless control module malfunction



BRAKE SWITCH WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT BRAKE SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the brake switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
2	INSPECT BRAKE SWITCH CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Brake switch terminal A • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the STOP 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 8.
3	INSPECT BRAKE SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch connector is disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Brake switch terminal B • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
4	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT BRAKE SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Brake switch and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Brake switch terminal C — Brake switch terminal D • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
6	INSPECT BRAKE SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Brake switch and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Brake switch terminal D • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
7	INSPECT BRAKE SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake switch and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Brake switch terminal C—Keyless control module terminal 4W — Brake switch terminal D—Keyless control module terminal 3R • Is there continuity? 	Yes	Replace the brake switch, then go to the next step. (See 04-11-8 BRAKE PEDAL REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P0560:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c933500

DESCRIPTION	Low voltage in power supply circuit (+B3)
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module power supply circuit (+B3) voltage is less than 8.5 V for 5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Charging system malfunction <ul style="list-style-type: none"> — PCM DTC is stored • Battery malfunction • Generator malfunction • Keyless control module connector or terminals malfunction • Open circuit or short to ground in keyless control module power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and keyless control module terminal 1A — ESCL 15 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and keyless control module terminal 1A • Keyless control module malfunction
<p style="text-align: center;">KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>	

Diagnostic Procedure

Step	Inspection		Action
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT (+B3) FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless control module connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 1A • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ESCL 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P0560:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c405700

DESCRIPTION	High voltage in power supply circuit (+B3)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module power supply circuit (+B3) voltage is 16.5 V or more for 0.5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Generator malfunction Keyless control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

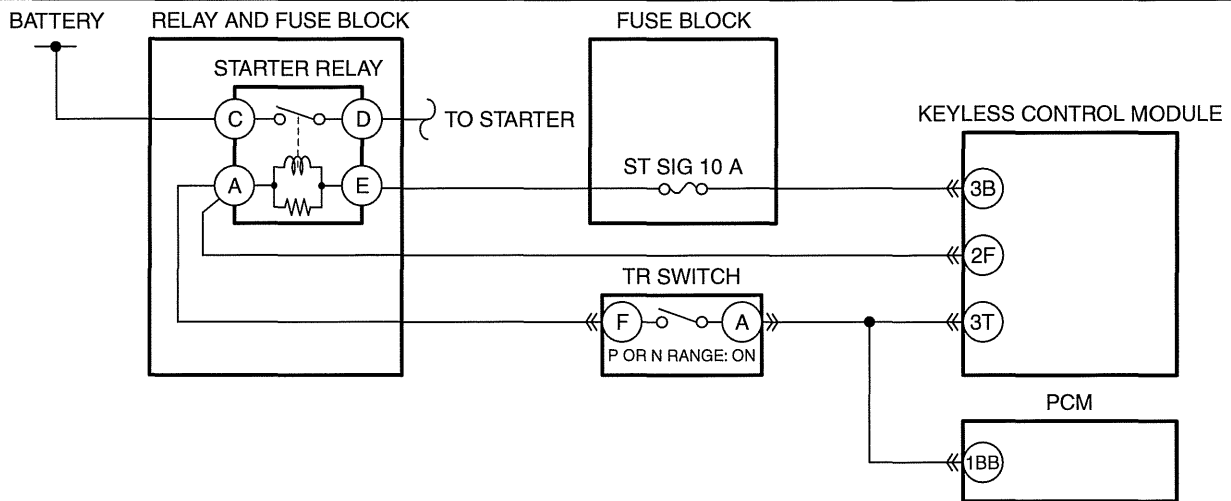
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P0615:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

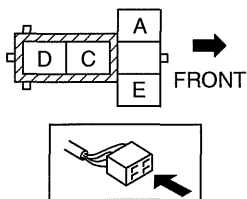
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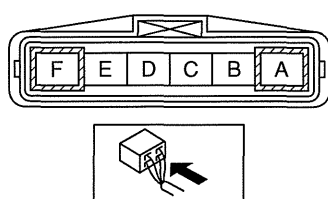
DESCRIPTION	Short to ground in starter relay circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • Starter monitor input voltage is less than the specification for 0.075 s when the ignition switch is off. • Starter relay input voltage is less than the specification for 0.050 s during cranking the engine.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Starter relay malfunction • TR switch connector or terminals malfunction • TR switch malfunction • PCM connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to ground in starter relay circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> • Starter relay terminal E—Keyless control module terminal 3B • Starter relay terminal A—Keyless control module terminal 2F • Starter relay terminal A—TR switch terminal F • TR switch terminal A—PCM terminal 1BB • TR switch terminal A—Keyless control module terminal 3T — ST SIG 10 A fuse malfunction • PCM malfunction • Keyless control module malfunction



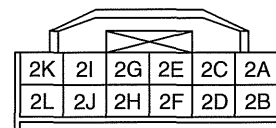
STARTER RELAY (RELAY AND FUSE BLOCK)



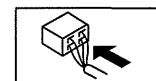
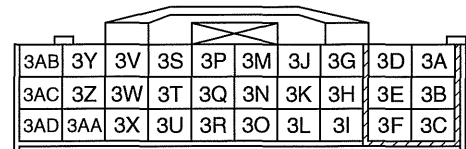
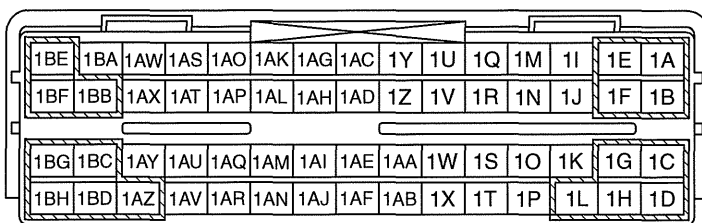
TR SWITCH WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the starter relay. • Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the relay, then go to Step 8.
		No	Install the relay, then go to the next step.
2	INSPECT TR SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the TR switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT TR SWITCH <ul style="list-style-type: none"> • Reconnect the TR switch connector. • Reconnect the negative battery cable. • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the TR switch, then go to Step 8. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the PCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT STARTER RELAY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • PCM and keyless control module connectors are disconnected. • Remove the starter relay. • Disconnect the TR switch connector. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless control module terminal 3B — Keyless control module terminal 2F — TR switch terminal F — PCM terminal 1BB — Keyless control module terminal 3T • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground. Inspect the ST SIG 10 A fuse. <ul style="list-style-type: none"> • Replace the fuse, if necessary. Go to Step 8.
		No	Go to the next step.
7	INSPECT PCM <ul style="list-style-type: none"> • Install the starter relay. • Reconnect the TR switch, PCM, and keyless control module connectors. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — PCM terminal 1BB • Is the voltage normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

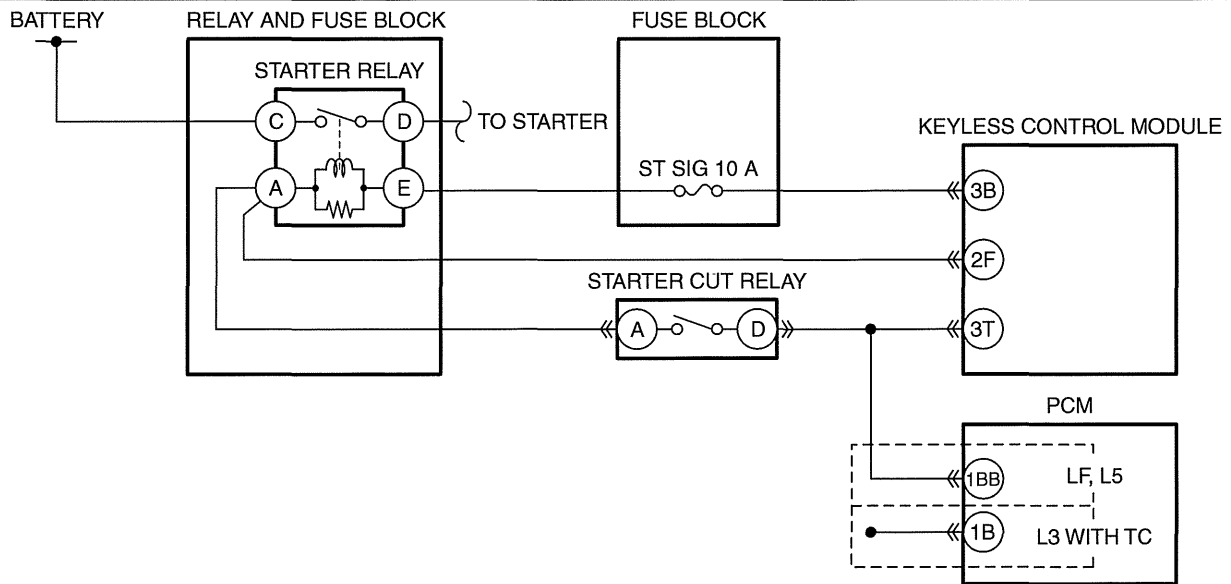
STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Crank the engine. • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

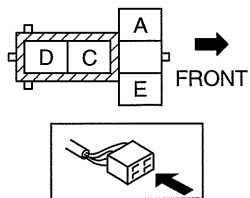
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

MTX

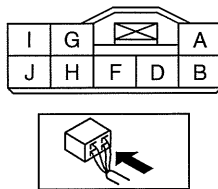
DESCRIPTION	Short to ground in starter relay circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • Starter monitor input voltage is less than the specification for 0.075 s when the ignition switch is off. • Starter relay input voltage is less than the specification for 0.050 s during cranking the engine.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Starter relay malfunction • Starter cut relay connector or terminals malfunction • Starter cut relay malfunction • PCM connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to ground in starter relay circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> • Starter relay terminal E—Keyless control module terminal 3B • Starter relay terminal A—Keyless control module terminal 2F • Starter relay terminal A—Starter cut relay terminal A • Starter cut relay terminal D—PCM terminal 1BB (LF, L5) • Starter cut relay terminal D—PCM terminal 1B (L3 WITH TC) • Starter cut relay terminal D—Keyless control module terminal 3T — ST SIG 10 A fuse malfunction • PCM malfunction • Keyless control module malfunction



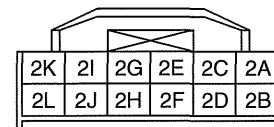
STARTER RELAY (RELAY AND FUSE BLOCK)



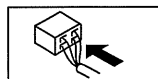
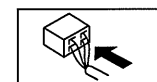
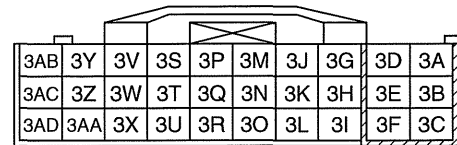
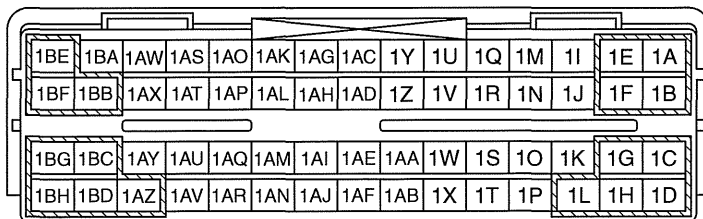
STARTER CUT RELAY WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the starter relay. • Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the relay, then go to Step 8.
		No	Go to the next step.
2	INSPECT STARTER CUT RELAY CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the starter cut relay connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT STARTER CUT RELAY <ul style="list-style-type: none"> • Inspect the starter cut relay. (See 09-21-15 STARTER CUT RELAY INSPECTION [MTX].) • Is there any malfunction? 	Yes	Replace the starter cut relay, then go to Step 8. (See 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT STARTER RELAY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Starter relay is removed. • Starter cut relay, PCM and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless control module terminal 3B — Keyless control module terminal 2F — Starter cut relay terminal A — PCM terminal 1BB (LF, L5) — PCM terminal 1B (L3 WITH TC) — Keyless control module terminal 3T • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground. Inspect the ST SIG 10 A fuse. <ul style="list-style-type: none"> • Replace the fuse, if necessary. Go to Step 8.
		No	Go to the next step.
7	INSPECT PCM <ul style="list-style-type: none"> • Install the starter relay. • Reconnect the starter cut relay, PCM, and keyless control module connectors. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — PCM terminal 1BB (LF, L5) — PCM terminal 1B (L3 WITH TC) • Is the voltage normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Crank the engine. • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

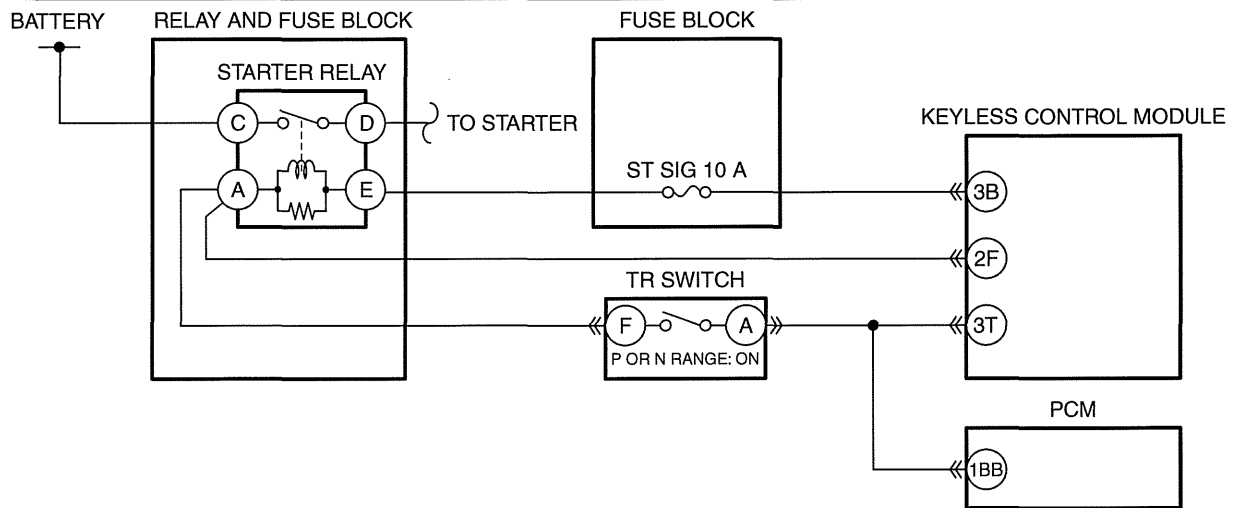
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P0615:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

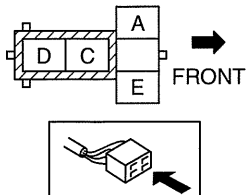
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ATX

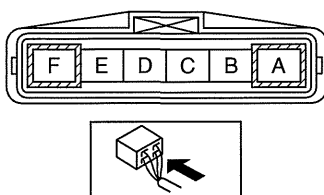
DESCRIPTION	Short to power supply in starter relay circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • Starter relay input voltage is above the specification for 0.075 s when the ignition switch is off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Starter relay malfunction • TR switch connector or terminals malfunction • TR switch malfunction • PCM connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter relay terminal E—Keyless control module terminal 3B — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—TR switch terminal F — TR switch terminal A—PCM terminal 1BB — TR switch terminal A—Keyless control module terminal 3T • PCM malfunction • Keyless control module malfunction



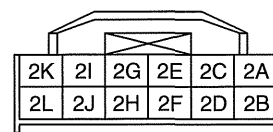
STARTER RELAY (RELAY AND FUSE BLOCK)



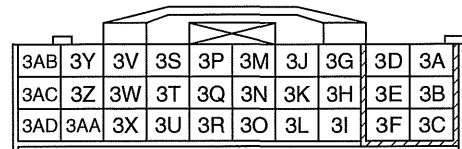
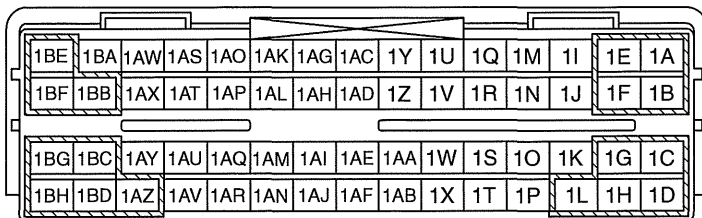
TR SWITCH WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the starter relay. • Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the relay, then go to Step 8.
		No	Install the relay, then go to the next step.
2	INSPECT TR SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the TR switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT TR SWITCH <ul style="list-style-type: none"> • Reconnect the TR switch connector. • Reconnect the negative battery cable. • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the TR switch, then go to Step 8. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the PCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT STARTER RELAY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • PCM and keyless control module connectors are disconnected. • Inspect the wiring harness between the following terminals (wiring harness-side) for short to power supply: <ul style="list-style-type: none"> — Starter relay terminal E—Keyless control module terminal 3B — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—TR switch terminal F — TR switch terminal A—PCM terminal 1BB — TR switch terminal A—Keyless control module terminal 3T • Is there any malfunction? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT PCM <ul style="list-style-type: none"> • Install the starter relay. • Reconnect all disconnected connectors. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — PCM terminal 1BB • Is the voltage normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

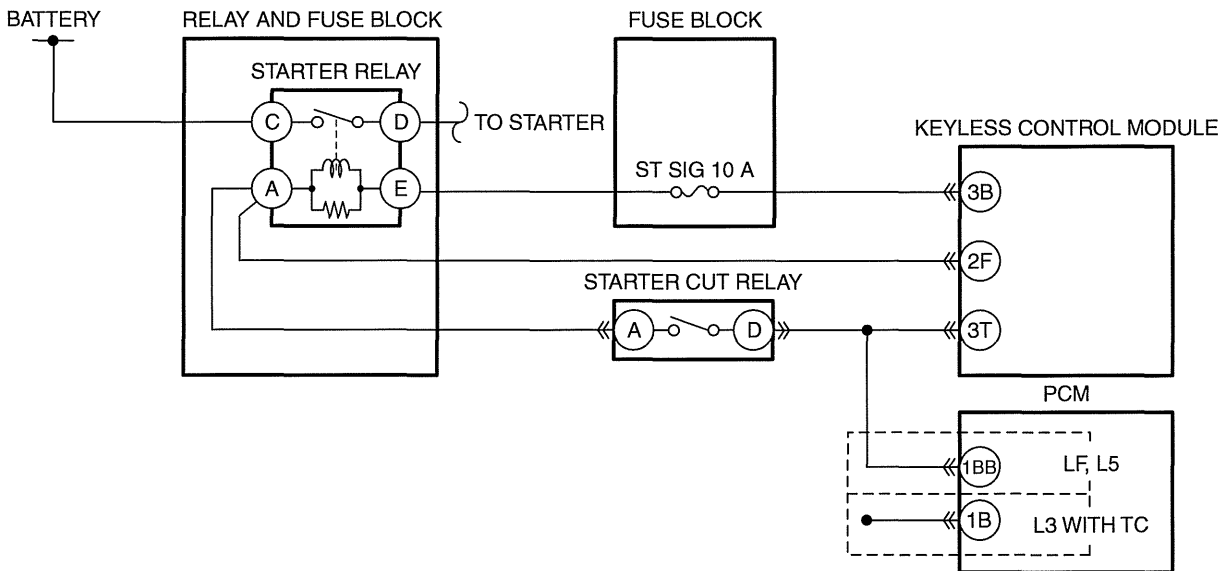
Step	Inspection	Action	
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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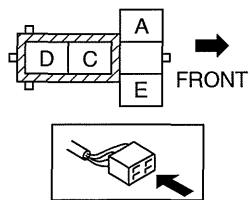
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

MTX

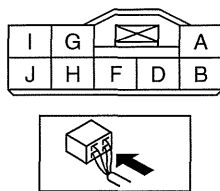
DESCRIPTION	Short to power supply in starter relay circuit
DETECTION CONDITION	<ul style="list-style-type: none"> Starter relay input voltage is above the specification for 0.075 s when the ignition switch is off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Starter relay malfunction Starter cut relay connector or terminals malfunction Starter cut relay malfunction PCM connector or terminals malfunction Keyless control module connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> Starter relay terminal E—Keyless control module terminal 3B Starter relay terminal A—Keyless control module terminal 2F Starter relay terminal A—Starter cut relay terminal A Starter cut relay terminal D—PCM terminal 1BB (LF, L5) Starter cut relay terminal D—PCM terminal 1B (L3 WITH TC) Starter cut relay terminal D—Keyless control module terminal 3T PCM malfunction Keyless control module malfunction



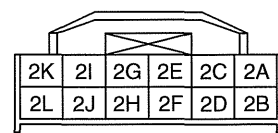
STARTER RELAY (RELAY AND FUSE BLOCK)



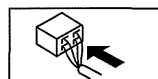
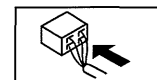
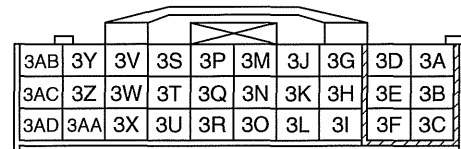
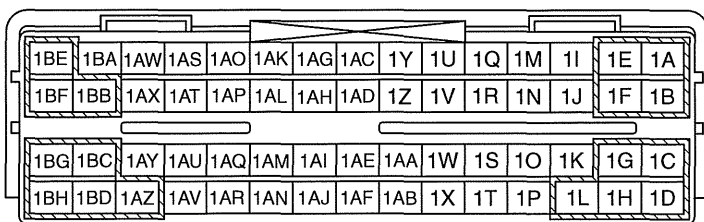
STARTER CUT RELAY WIRING HARNESS-SIDE CONNECTOR



KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the starter relay. • Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the relay, then go to Step 8.
		No	Go to the next step.
2	INSPECT STARTER CUT RELAY CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the starter cut relay connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT STARTER CUT RELAY <ul style="list-style-type: none"> • Inspect the starter cut relay. (See 09-21-15 STARTER CUT RELAY INSPECTION [MTX].) • Is there any malfunction? 	Yes	Replace the starter cut relay, then go to Step 8. (See 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX].)
		No	Go to the next step.
4	INSPECT PCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT STARTER RELAY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Starter relay is removed. • Starter cut relay, PCM and keyless control module connectors are disconnected. • Inspect the wiring harness between the following terminals (wiring harness-side) for short to power supply: <ul style="list-style-type: none"> — Starter relay terminal E—Keyless control module terminal 3B — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—Starter cut relay terminal A — Starter cut relay terminal D—PCM terminal 1BB (LF, L5) — Starter cut relay terminal D—PCM terminal 1B (L3 WITH TC) — Starter cut relay terminal D—Keyless control module terminal 3T • Is there any malfunction? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT PCM <ul style="list-style-type: none"> • Install the starter relay. • Reconnect all disconnected connectors. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — PCM terminal 1BB (LF, L5) — PCM terminal 1B (L3 WITH TC) • Is the voltage normal? (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) 	Yes	Go to the next step.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)

09-02A

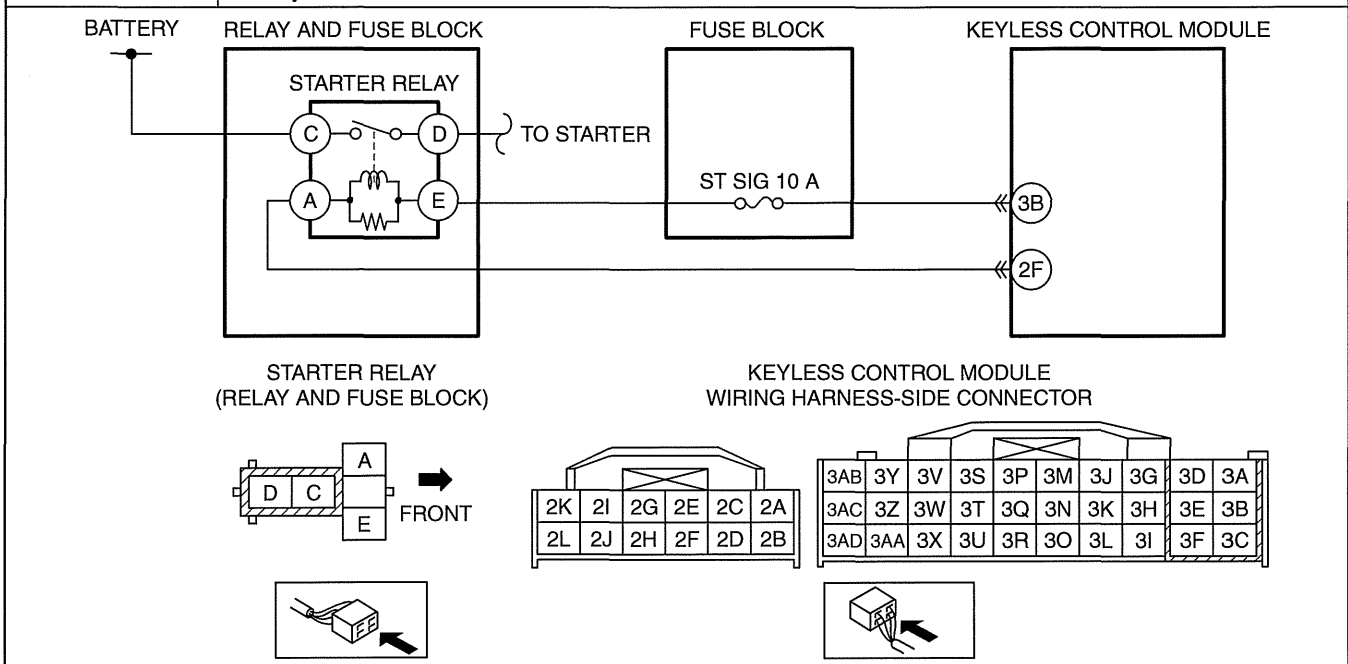
ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection		Action
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC P0615:13 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406000

DESCRIPTION	Open circuit in starter relay circuit
DETECTION CONDITION	<ul style="list-style-type: none"> • Starter relay input voltage less than threshold and a starter monitor input voltage which exceeds threshold is detected for 0.075 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Starter relay malfunction • Keyless control module connector or terminals malfunction • Open circuit in starter relay circuit <ul style="list-style-type: none"> — Open circuit in wiring harness between keyless control module terminal 3B and starter relay terminal E — ST SIG 10 A fuse malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter relay terminal A—Keyless control module terminal 2F • Keyless control module malfunction



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

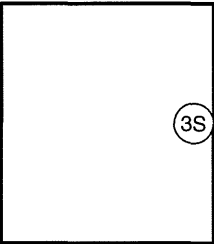
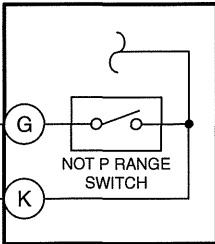
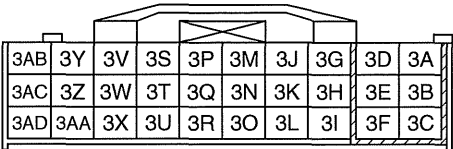
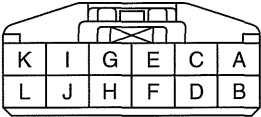
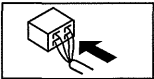
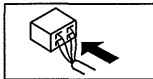
STEP	INSPECTION	ACTION	
1	INSPECT RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the starter relay. • Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the relay, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT STARTER RELAY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Starter relay is removed. • Keyless control module connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Keyless control module terminal 3B— Starter relay terminal E • Is there continuity? 	Yes	Go to the next step.
		No	Inspect the ST SIG 10 A fuse. <ul style="list-style-type: none"> • If the fuse is deterioration: — Replace the fuse. • If the fuse is normal: — Repair or replace the wiring harness for a possible open circuit. Go to Step 5.
4	INSPECT STARTER RELAY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Starter relay is removed. • Keyless control module connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Starter relay terminal A—Keyless control module terminal 2F • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P081C:62 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406100

DESCRIPTION	Mis-match signal between CAN and P range switch
DETECTION CONDITION	<ul style="list-style-type: none"> CAN and P range switch signals do not correspond when the ignition switch is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Multiplex communication system DTC is stored Selector lever component connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Selector lever component terminal G—Keyless control module terminal 3S Short to power supply in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Selector lever component terminal G—Keyless control module terminal 3S Selector lever component malfunction Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Selector lever component terminal G—Keyless control module terminal 3S Keyless control module malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  </div> <div style="text-align: center;"> <p>SELECTOR LEVER COMPONENT</p>  </div> </div> <p style="text-align: center;">TTT</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>  </div> <div style="text-align: center;"> <p>SELECTOR LEVER COMPONENT WIRING HARNESS-SIDE CONNECTOR</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>	

Diagnostic Procedure

Step	Inspection		Action
1	<p>VERIFY RELATED STORED DTC</p> <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC U0001:88 or U0101:00 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
2	<p>INSPECT SELECTOR LEVER COMPONENT CONNECTOR</p> <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the selector lever component connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	<p>INSPECT KEYLESS CONTROL MODULE CONNECTOR</p> <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT SELECTOR LEVER COMPONENT CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Selector lever component and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Selector lever component terminal G • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
5	INSPECT SELECTOR LEVER COMPONENT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Selector lever component and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Selector lever component terminal G • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT SELECTOR LEVER COMPONENT <ul style="list-style-type: none"> • Inspect the selector lever component. (See 05-18-11 SELECTOR LEVER INSPECTION.) • Is there any malfunction? 	Yes	Replace the selector lever component, then go to Step 8. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	INSPECT SELECTOR LEVER COMPONENT CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Selector lever component and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Selector lever component terminal G— Keyless control module terminal 3S • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC P081C:62 present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

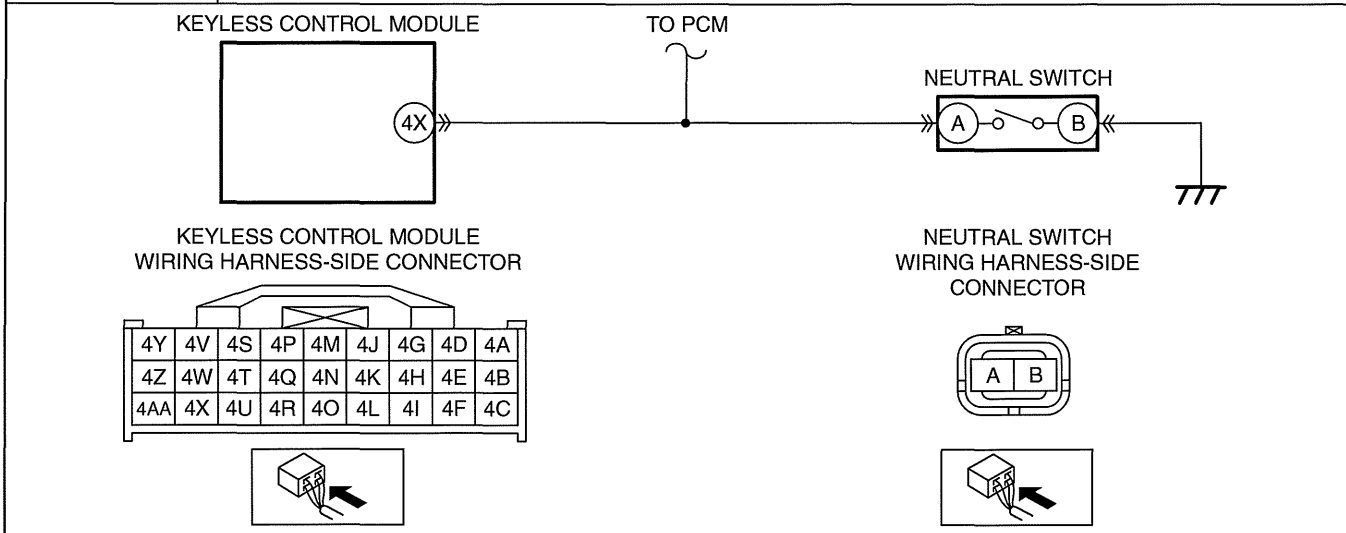
09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P081D:62 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406200

DESCRIPTION	Mis-match signal between CAN and neutral switch
DETECTION CONDITION	<ul style="list-style-type: none"> Neutral switch signal is detected as continuously ON in spite of vehicle speed increasing from 0 km/h {0 mph} to 10 km/h {6.2 mph}. CAN and neutral switch signals do not correspond when the ignition switch is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Multiplex communication system DTC is stored Neutral switch connector or terminals malfunction Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Neutral switch terminal B—Body ground Neutral switch malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Neutral switch terminal A—Keyless control module terminal 4X Short to power supply in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Neutral switch terminal A—Keyless control module terminal 4X Open circuit in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Neutral switch terminal A—Keyless control module terminal 4X Keyless control module malfunction



Diagnostic Procedure

Step	Inspection	Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC U0001:88, U0100:00 or U0121:00 also present? 	Yes Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No Go to the next step.
2	INSPECT NEUTRAL SWITCH CONNECTOR <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the neutral switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 9.
		No Go to the next step.
3	INSPECT NEUTRAL SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Neutral switch connector is disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Neutral switch terminal B Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 9.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action
4	INSPECT NEUTRAL SWITCH <ul style="list-style-type: none"> • Inspect the neutral switch. (See 01-40A-23 NEUTRAL SWITCH INSPECTION [LF, L5].) (See 01-40B-23 NEUTRAL SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes Replace the neutral switch, then go to Step 9. (See 05-15A-1 NEUTRAL SWITCH REMOVAL/INSTALLATION [G35M-R].) (See 05-15B-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [G66M-R].) (See 05-15C-2 NEUTRAL SWITCH REMOVAL/INSTALLATION [A26M-R].)
		No Go to the next step.
5	INSPECT KEYLESS CONTROL MODULE CONNECTOR <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 9.
		No Go to the next step.
6	INSPECT NEUTRAL SWITCH POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Neutral switch and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Neutral switch terminal A • Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No Go to the next step.
7	INSPECT NEUTRAL SWITCH POWER SUPPLY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Neutral switch and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): — Neutral switch terminal A • Is there any voltage? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No Go to the next step.
8	INSPECT NEUTRAL SWITCH POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Neutral switch and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): — Neutral switch terminal A—Keyless control module terminal 4X • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC P081D:62 present? 	Yes Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.

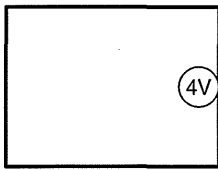
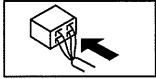
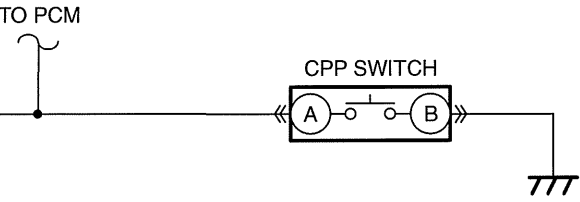
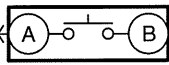

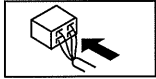
09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action
10	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No DTC troubleshooting completed.

DTC P0830:23 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406300

DESCRIPTION	Short to ground in CPP switch circuit																											
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects CPP switch ON signal and starter interlock switch off signal for 10 min or more. 																											
POSSIBLE CAUSE	<ul style="list-style-type: none"> CPP switch connector or terminals malfunction CPP switch malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> — CPP switch terminal A—Keyless control module terminal 4V Keyless control module malfunction 																											
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  <p>KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p> <table border="1" style="margin: 0 auto;"> <tr><td>4Y</td><td>4V</td><td>4S</td><td>4P</td><td>4M</td><td>4J</td><td>4G</td><td>4D</td><td>4A</td></tr> <tr><td>4Z</td><td>4W</td><td>4T</td><td>4Q</td><td>4N</td><td>4K</td><td>4H</td><td>4E</td><td>4B</td></tr> <tr><td>4AA</td><td>4X</td><td>4U</td><td>4R</td><td>4O</td><td>4L</td><td>4I</td><td>4F</td><td>4C</td></tr> </table>  </div> <div style="text-align: center;"> <p>TO PCM</p>  <p>CPP SWITCH</p>  <p>CPP SWITCH WIRING HARNESS-SIDE CONNECTOR</p>   </div> </div>		4Y	4V	4S	4P	4M	4J	4G	4D	4A	4Z	4W	4T	4Q	4N	4K	4H	4E	4B	4AA	4X	4U	4R	4O	4L	4I	4F	4C
4Y	4V	4S	4P	4M	4J	4G	4D	4A																				
4Z	4W	4T	4Q	4N	4K	4H	4E	4B																				
4AA	4X	4U	4R	4O	4L	4I	4F	4C																				

Diagnostic Procedure

Step	Inspection	Action
1	INSPECT CPP SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the CPP switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 5.
		No Go to the next step.
2	INSPECT CPP SWITCH <ul style="list-style-type: none"> Inspect the CPP switch. (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].) (See 01-40B-23 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the CPP switch, then go to Step 5. (See 05-10-6 CLUTCH PEDAL REMOVAL/ INSTALLATION.)
		No Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 5.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT CPP SWITCH POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • CPP switch and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — CPP switch terminal A • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to the next step.
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

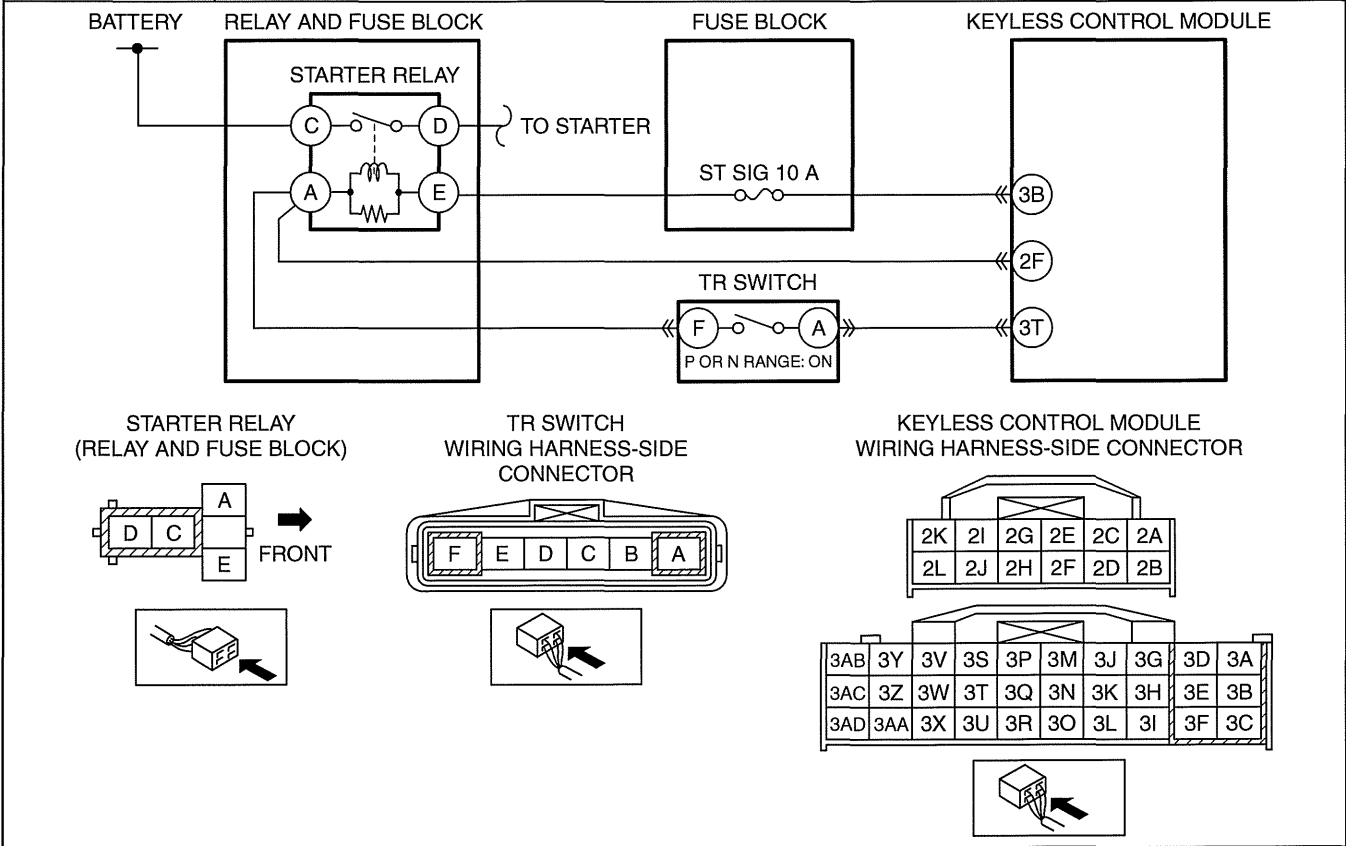
09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P0850:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406400

DESCRIPTION	Erratic signal of TR switch
DETECTION CONDITION	<ul style="list-style-type: none"> • CAN and TR switch signals do not correspond. <ul style="list-style-type: none"> — Keyless control module detects that the TR switch stuck off for 5 s while the ignition is ON. <ul style="list-style-type: none"> • Starter monitor input voltage is above the specification when the CAN signal is P or N range. — Keyless control module detects that the TR switch stuck ON for 5 s while the ignition is ON. <ul style="list-style-type: none"> • Starter monitor input voltage is less than the specification when the CAN signal is R or D range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Starter relay malfunction • TR switch connector or terminals malfunction • TR switch malfunction • Keyless control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—TR switch terminal F — TR switch terminal A—Keyless control module terminal 3T • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—TR switch terminal F — TR switch terminal A—Keyless control module terminal 3T • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—TR switch terminal F — TR switch terminal A—Keyless control module terminal 3T • Keyless control module malfunction



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT STARTER RELAY <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Remove the starter relay. • Inspect the starter relay. (See 09-21-17 RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the relay, then go to Step 8.
		No	Install the relay, then go to the next step.
2	INSPECT TR SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the TR switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT TR SWITCH <ul style="list-style-type: none"> • Reconnect the TR switch connector. • Reconnect the negative battery cable. • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the TR switch, then go to Step 8. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
4	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT TR SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless control module connector is disconnected. • Remove the starter relay. • Disconnect the TR switch connector. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Starter relay terminal A — TR switch terminal A • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
6	INSPECT TR SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Starter relay is removed. • Keyless control module connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Starter relay terminal A — TR switch terminal A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

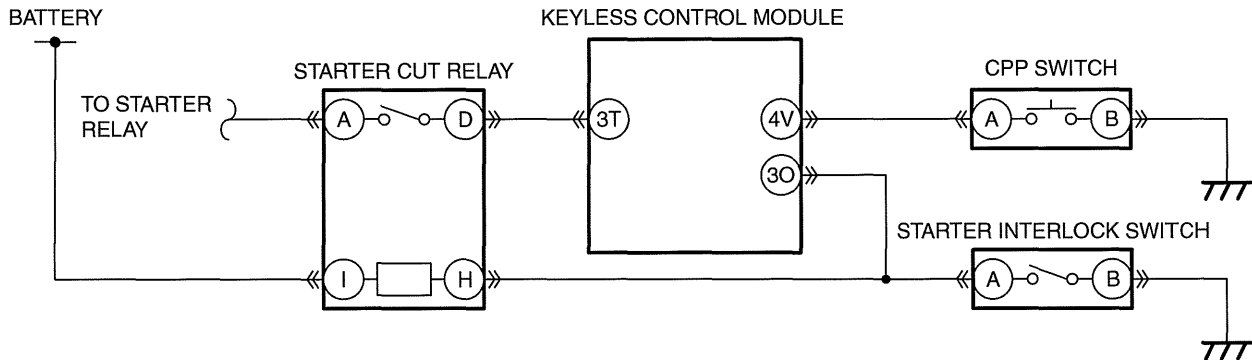
Step	Inspection	Action	
7	INSPECT TR SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Starter relay is removed, and TR switch and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Starter relay terminal A—Keyless control module terminal 2F — Starter relay terminal A—TR switch terminal F — TR switch terminal A—Keyless control module terminal 3T • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to ON using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

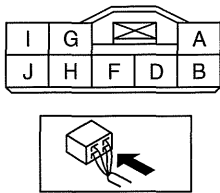
DTC P1708:29 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

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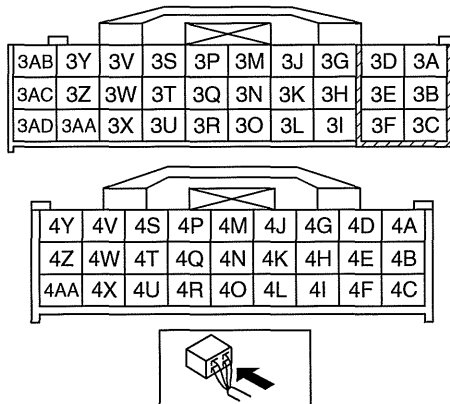
DESCRIPTION	Erratic signal of CPP switch and/or starter interlock switch
DETECTION CONDITION	<ul style="list-style-type: none"> • CPP switch and starter interlock switch signals do not correspond. — Starter interlock switch stuck on for 0.2 s when the CPP switch is off. — CPP switch stuck off when the starter interlock switch on. — Starter cut relay stuck on for 0.075 s when the starter interlock switch is off. — Starter cut relay stuck off for 0.075 s when the starter interlock switch is on.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Starter interlock switch connector or terminals malfunction • Starter interlock switch malfunction • Keyless control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter interlock switch terminal A—Keyless control module terminal 3O • CPP switch connector or terminals malfunction • CPP switch malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — CPP switch terminal A—Keyless control module terminal 4V — CPP switch terminal B—Body ground • Starter cut relay connector or terminals malfunction • Starter cut relay malfunction • Short to ground or open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter relay—Starter cut relay terminal A • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Starter cut relay terminal D—Keyless control module terminal 3T • Keyless control module malfunction



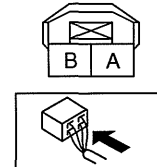
STARTER CUT RELAY WIRING HARNESS-SIDE CONNECTOR



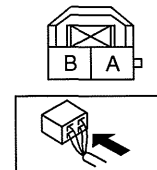
KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



CPP SWITCH WIRING HARNESS-SIDE CONNECTOR



STARTER INTERLOCK SWITCH WIRING HARNESS-SIDE CONNECTOR



09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT STARTER INTERLOCK SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the starter interlock switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 12.
		No	Go to the next step.
2	INSPECT STARTER INTERLOCK SWITCH <ul style="list-style-type: none"> • Inspect the starter interlock switch. (See 01-19A-8 STARTER INTERLOCK SWITCH INSPECTION [LF, L5].) • (See 01-19B-8 STARTER INTERLOCK SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the starter interlock switch, then go to Step 12.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 12.
		No	Go to the next step.
4	INSPECT STARTER INTERLOCK SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Starter interlock switch and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Starter interlock switch terminal A • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 12.
		No	Go to the next step.
5	INSPECT CPP SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the CPP switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 12.
		No	Go to the next step.
6	INSPECT CPP SWITCH <ul style="list-style-type: none"> • Inspect the CPP switch. (See 01-40A-22 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [LF, L5].) • (See 01-40B-23 CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the CPP switch, then go to Step 12. (See 05-10-6 CLUTCH PEDAL REMOVAL/ INSTALLATION.)
		No	Go to the next step.
7	INSPECT CPP SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Starter interlock switch, CPP switch and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — CPP switch terminal A—Keyless control module terminal 4V — CPP switch terminal B—Body ground • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.
8	INSPECT STARTER CUT RELAY CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the starter cut relay connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 12.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
9	INSPECT STARTER CUT RELAY <ul style="list-style-type: none"> • Inspect the starter cut relay. (See 09-21-15 STARTER CUT RELAY INSPECTION [MTX].) • Is there any malfunction? 	Yes	Replace the starter cut relay, then go to Step 12. (See 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX].)
		No	Go to the next step.
10	INSPECT STARTER CUT RELAY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Starter interlock switch, CPP switch, starter cut relay and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): — Starter cut relay terminal A • Is there any voltage? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible short to ground or open circuit, then go to Step 12.
11	INSPECT STARTER CUT RELAY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Starter interlock switch, CPP switch, starter cut relay and keyless control module connectors are disconnected. • Measure the voltage at the following terminal (wiring harness-side): — Starter cut relay terminal D • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
12	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
13	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P1794:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c933100

DESCRIPTION	Low voltage in power supply circuit (+B2)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless-control module power supply circuit (+B2) voltage is less than 8.5 V for 5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Charging system malfunction <ul style="list-style-type: none"> — PCM DTC is stored Battery malfunction Generator malfunction Keyless control module connector or terminals malfunction Open circuit or short to ground in keyless control module power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and keyless control module terminal 1F — ENG+B 10 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and keyless control module terminal 1F Keyless control module malfunction
<p style="text-align: center;">KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>	

Diagnostic Procedure

Step	Inspection		Action
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT (+B2) FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless control module connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 1F • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ENG+B 10 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC P1794:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c933200

DESCRIPTION	High voltage in power supply circuit (+B2)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module power supply circuit (+B2) voltage is 16.5 V or more for 0.5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Generator malfunction Keyless control module malfunction

Diagnostic Procedure

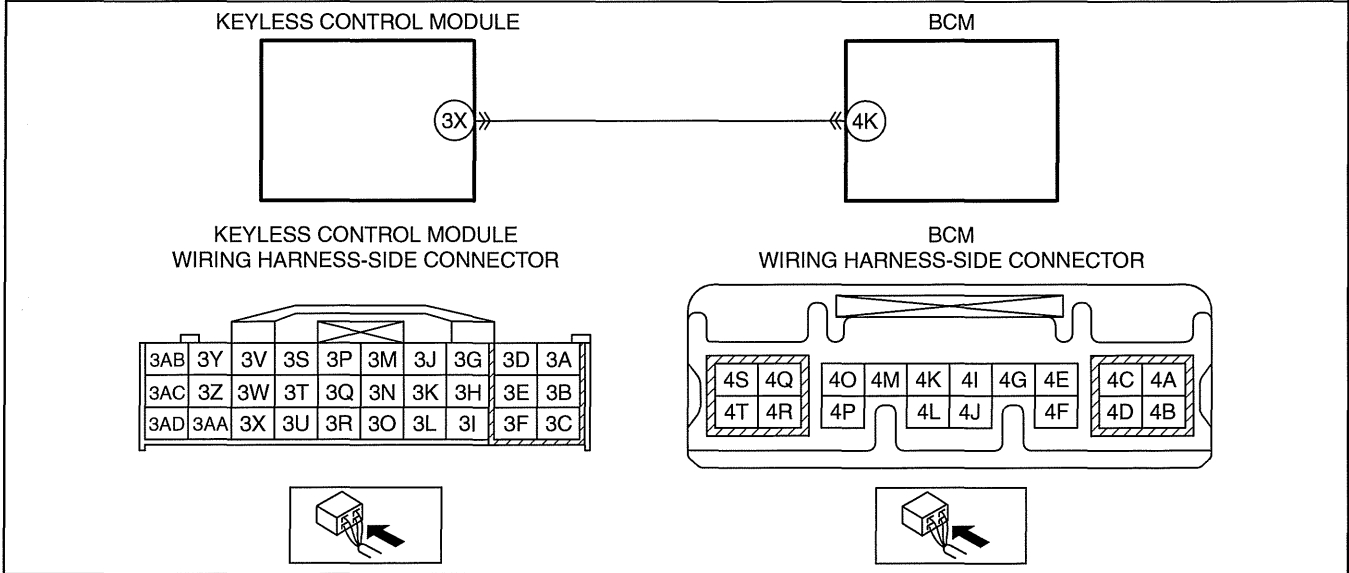
Step	Inspection		Action
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U0028:87 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c399500

DESCRIPTION	Communication error with BCM
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module receives the erratic signal from BCM. • Keyless control module cannot receive the signal from BCM.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • BCM DTC is stored • BCM connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: — BCM terminal 4K—Keyless control module terminal 3X • Short to power supply in wiring harness between the following terminals: — BCM terminal 4K—Keyless control module terminal 3X • Open circuit in wiring harness between the following terminals: — BCM terminal 4K—Keyless control module terminal 3X • BCM malfunction • Keyless control module malfunction



09-02A

Diagnostic Procedure

Step	Inspection	Action	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.
2	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT COMMUNICATION CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • BCM and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — BCM terminal 4K • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
5	INSPECT COMMUNICATION CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • BCM and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 4K • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT COMMUNICATION CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • BCM and keyless control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 4K—Keyless control module terminal 3X • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	VERIFY BCM MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC U0401:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c399300

09-02A

DESCRIPTION	Receiving erratic data from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module receives the erratic data from PCM when the ignition switch is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored PCM malfunction Keyless control module malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to off, then to ON. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].)
		No	Go to Step 4.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC U0415:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c930600

DESCRIPTION	Receiving erratic data from ABS HU/CM or DSC HU/CM
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module receives the erratic data from ABS HU/CM or DSC HU/CM, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ABS HU/CM or DSC HU/CM DTC is stored • ABS HU/CM or DSC HU/CM malfunction • Keyless control module malfunction

Diagnostic Procedure


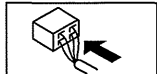
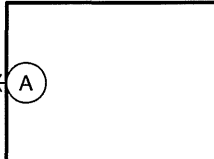
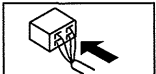
Step	Inspection	Action	
1	CONFIRM ABS HU/CM OR DSC HU/CM DTC <ul style="list-style-type: none"> • Perform the ABS HU/CM or DSC HU/CM DTC inspection using the M-MDS. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
2	VERIFY ABS HU/CM OR DSC HU/CM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off, then to ON. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the ABS HU/CM or DSC HU/CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.) (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection		Action
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to off, then to ON. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC U201F:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c930500

DESCRIPTION	Short to ground in keyless receiver circuit																																				
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless receiver power supply monitor voltage is less than 7.5 V for 0.5 s. 																																				
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless receiver connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in the wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless receiver terminal A—Keyless control module terminal 3V Keyless receiver malfunction Keyless control module malfunction 																																				
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  <p>KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p> <table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr><td>3AB</td><td>3Y</td><td>3V</td><td>3S</td><td>3P</td><td>3M</td><td>3J</td><td>3G</td><td>3D</td><td>3A</td></tr> <tr><td>3AC</td><td>3Z</td><td>3W</td><td>3T</td><td>3Q</td><td>3N</td><td>3K</td><td>3H</td><td>3E</td><td>3B</td></tr> <tr><td>3AD</td><td>3AA</td><td>3X</td><td>3U</td><td>3R</td><td>3O</td><td>3L</td><td>3I</td><td>3F</td><td>3C</td></tr> </table>  </div> <div style="text-align: center;"> <p>KEYLESS RECEIVER</p>  <p>KEYLESS RECEIVER WIRING HARNESS-SIDE CONNECTOR</p> <table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr><td>F</td><td>E</td><td>D</td><td>C</td><td>B</td><td>A</td></tr> </table>  </div> </div>		3AB	3Y	3V	3S	3P	3M	3J	3G	3D	3A	3AC	3Z	3W	3T	3Q	3N	3K	3H	3E	3B	3AD	3AA	3X	3U	3R	3O	3L	3I	3F	3C	F	E	D	C	B	A
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F	E	D	C	B	A																																

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT KEYLESS RECEIVER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless receiver connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT KEYLESS RECEIVER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless receiver and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless receiver terminal A • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT KEYLESS RECEIVER <ul style="list-style-type: none"> • Reconnect the keyless receiver and the keyless control module connectors. • Inspect the keyless receiver. (See 09-14-82 KEYLESS RECEIVER INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the keyless receiver, then go to the next step. (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U2100:00 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c399000

DESCRIPTION	Incomplete configuration
DETECTION CONDITION	<ul style="list-style-type: none"> Configuration was not completed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module configuration error Keyless control module malfunction

Diagnostic Procedure

Step	Inspection	Action
1	PERFORM KEYLESS CONTROL MODULE CONFIGURATION <ul style="list-style-type: none"> Perform the keyless control module configuration using the M-MDS. (See 09-14-72 KEYLESS CONTROL MODULE CONFIGURATION.) Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes Perform the keyless control module configuration again, then go to the next step. (See 09-14-72 KEYLESS CONTROL MODULE CONFIGURATION.)
		No Go to Step 3.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U3000:49 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

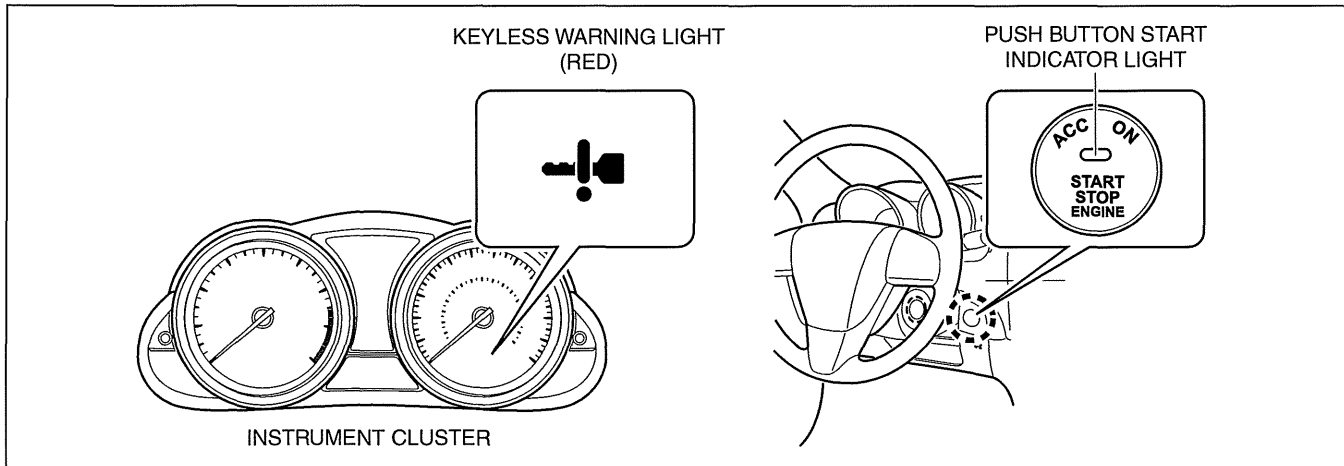
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Warning

- If this DTC is detected, the system will enter the fail-safe function to ensure safety. If the vehicle is left as it is for a specified time limit or more, or the ignition is operated a specified number of times or more while the fail-safe function is operating, the ignition will remain stuck in off and it is possible that the engine cannot be started. Therefore, perform the malfunction diagnosis while the engine can be started. In addition, after having performed the malfunction diagnosis, verify that this DTC is not detected with the steering wheel locked. If the DTC is not detected, the system returns to normal from the fail-safe function.

Note

- When the system enters the fail-safe function, the keyless warning light and the push button start indicator light illuminate as follows:
 - When the clutch pedal (MTX) or the brake pedal (ATX) is depressed while the ignition is switched off, both lights illuminate (red).
 - When the ignition is switched to ACC or ON, both lights illuminate (red) constantly.



am3uuw0000510

DESCRIPTION	Keyless control module internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module detects the internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Keyless control module malfunction

Diagnostic Procedure

Step	Inspection	Action
1	VERIFY KEYLESS CONTROL MODULE MALFUNCTION <ul style="list-style-type: none"> • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U3000:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c930700

DESCRIPTION	Keyless control module internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module detects the internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module malfunction

Diagnostic Procedure

Step	Inspection		Action
1	VERIFY KEYLESS CONTROL MODULE MALFUNCTION <ul style="list-style-type: none"> Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U3003:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c930800

DESCRIPTION	Low voltage in power supply circuit (+B1)
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module power supply circuit (+B1) voltage is 5.0 V—8.5 V for 5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Charging system malfunction <ul style="list-style-type: none"> — PCM DTC is stored • Battery malfunction • Generator malfunction • Keyless control module connector or terminals malfunction • Open circuit or short to ground in keyless control module power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between battery positive terminal and keyless control module terminal 1E — ROOM 15 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and keyless control module terminal 1E • Keyless control module malfunction
<p style="text-align: center;">KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>	

Diagnostic Procedure

Step	Inspection		Action
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
4	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT (+B1) FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless control module connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 1E • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ROOM 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Operate the advanced key to activate the keyless control module. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Operate the advanced key to activate the keyless control module. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U3003:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c933300

DESCRIPTION	High voltage in power supply circuit (+B1)
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module power supply circuit (+B1) voltage is 16.5 V or more for 0.5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Generator malfunction Keyless control module malfunction

Diagnostic Procedure

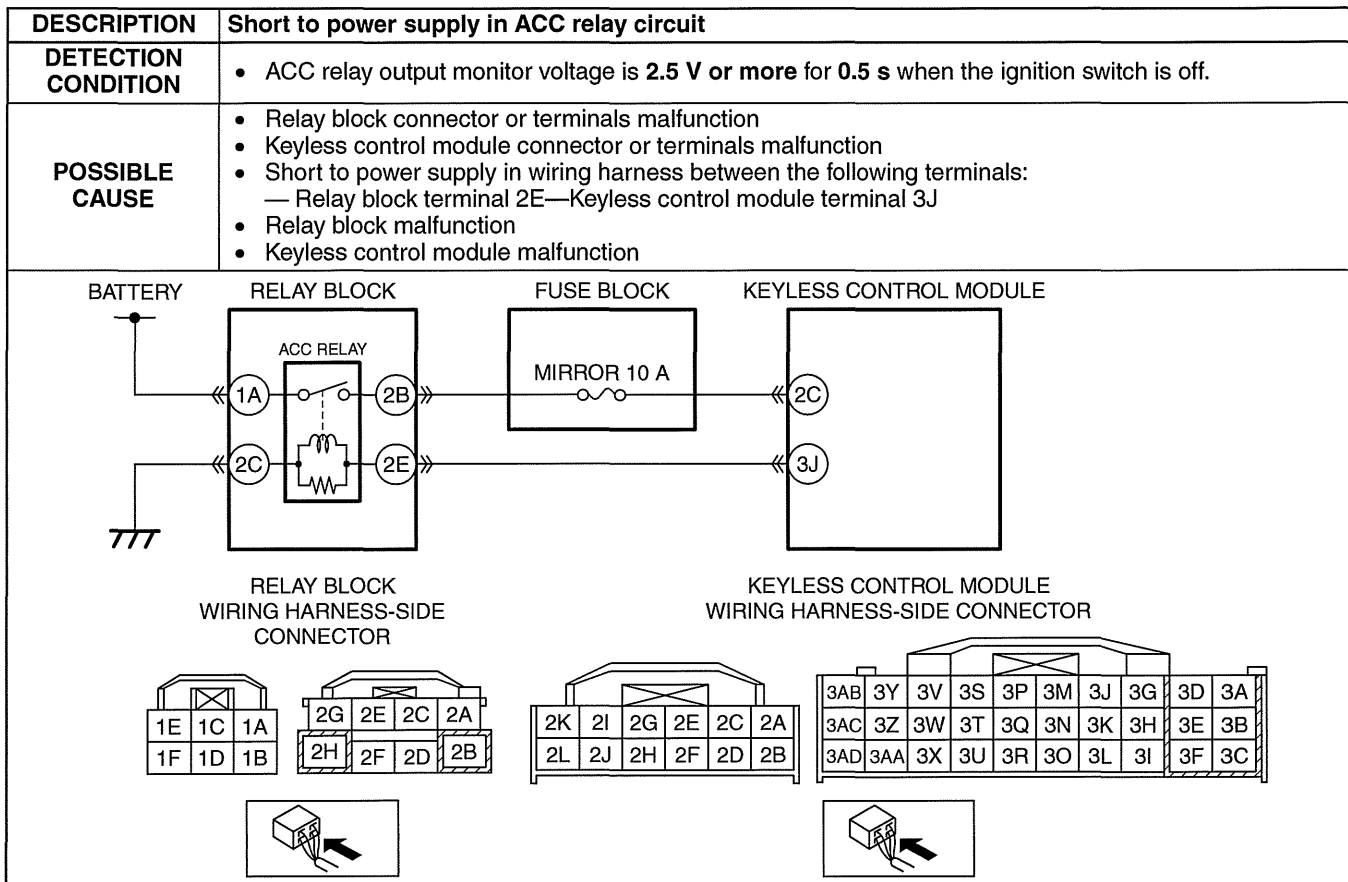
Step	Inspection		Action
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Operate the advanced key to activate the keyless control module. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Operate the advanced key to activate the keyless control module. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Switch the ignition to ACC. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to ACC. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

DTC U3004:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406800



ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	INSPECT ACC RELAY OUTPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Relay block and keyless control module connectors are disconnected. Reconnect the negative battery cable. Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Relay block terminal 2E Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 5.
		No	Go to the next step.
4	INSPECT RELAY BLOCK <ul style="list-style-type: none"> Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Switch the ignition to off using the advanced key. Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Switch the ignition to off using the advanced key. Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

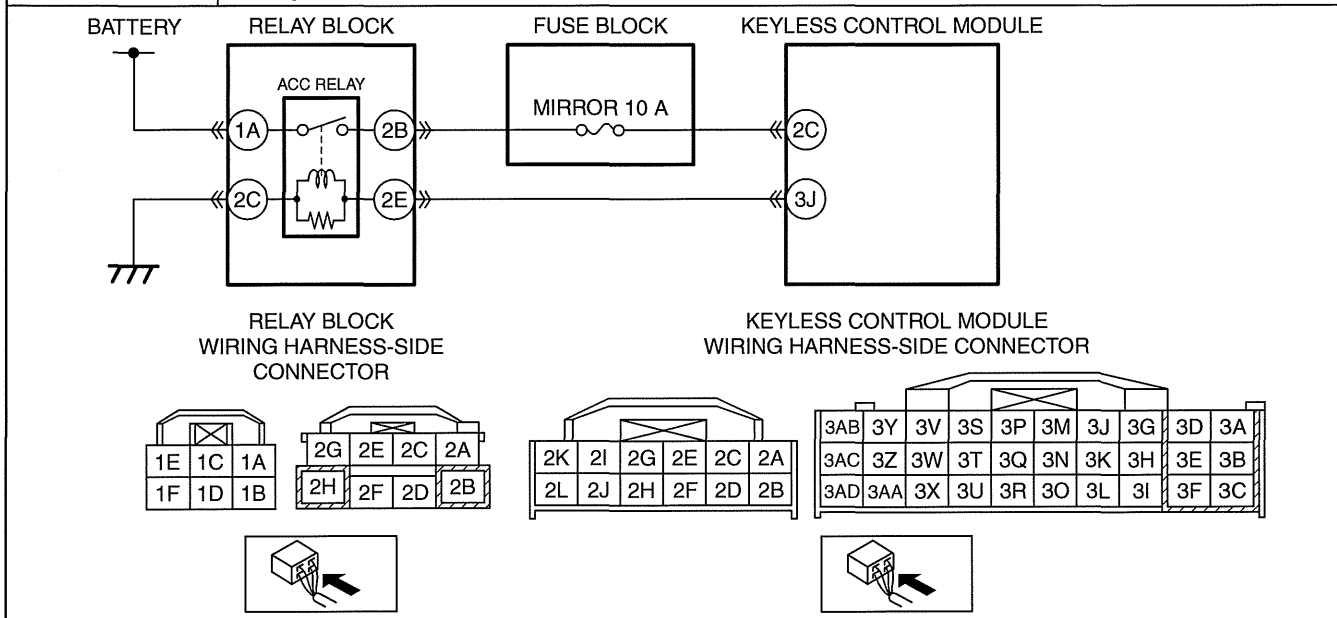
09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U3004:16 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c399200

DESCRIPTION	Low voltage in ACC monitor input circuit
DETECTION CONDITION	<ul style="list-style-type: none"> ACC monitor is off for 1 s when the ignition switch is ACC.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Relay block connector or terminals malfunction Keyless control module connector or terminals malfunction Open circuit or short to ground in ACC monitor input circuit <ul style="list-style-type: none"> Short to ground in wiring harness between relay block terminal 2B and keyless control module terminal 2C MIRROR 10 A fuse malfunction Open circuit in wiring harness between relay block terminal 2B and keyless control module terminal 2C Relay block malfunction Keyless control module malfunction



Diagnostic Procedure

Step	Inspection	Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC U3004:11 also present? 	Yes Go to the applicable DTC inspection. (See 09-02A-107 DTC U3004:11 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No Go to the next step.
2	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

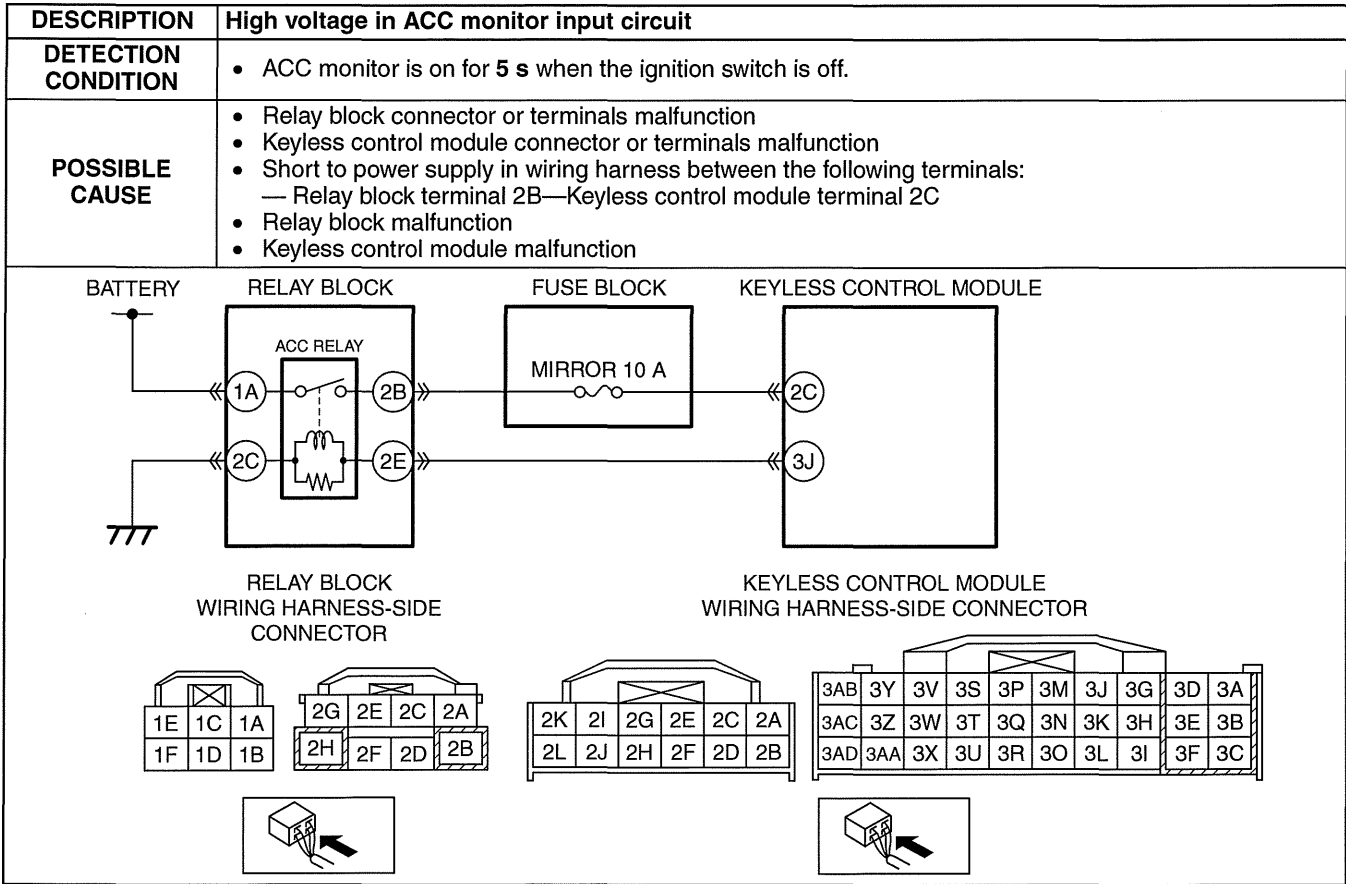
Step	Inspection	Action	
4	INSPECT ACC MONITOR INPUT CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Reconnect the relay block connector. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 2C • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the MIRROR 10 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 6.
5	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to ACC. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC U3004:16 present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

DTC U3004:17 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c406900



Diagnostic Procedure

Step	Inspection		Action
1	VERIFY RELATED STORED DTC <ul style="list-style-type: none"> Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the DTC U3004:12 also present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-108 DTC U3004:12 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	INSPECT RELAY BLOCK CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the relay block connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

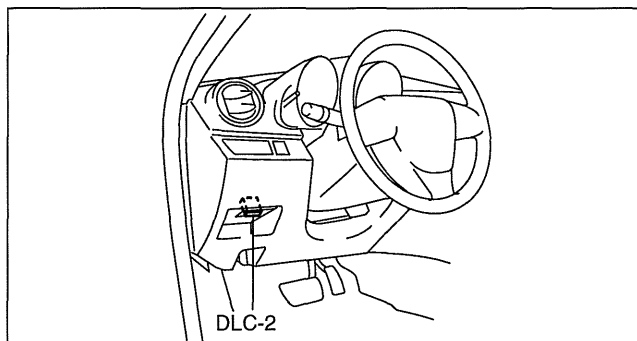
Step	Inspection	Action	
4	INSPECT ACC MONITOR INPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Relay block and keyless control module connectors are disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 2C • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT RELAY BLOCK <ul style="list-style-type: none"> • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is there any malfunction? 	Yes	Replace the relay block, then go to the next step. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to off using the advanced key. • Clear the DTC from the keyless control module using the M-MDS. (See 09-02A-6 CLEARING DTC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to off using the advanced key. • Perform the advanced keyless entry and push button start system DTC inspection using the M-MDS. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the DTC U3004:17 present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	DTC troubleshooting completed.

09-02A

PID/DATA MONITOR INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "RKE".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



am3uuw0000266

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

PID/DATA MONITOR TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Id09021c960700

PID Name	Unit/Status	Description	Inspection Item	Terminal
BRAKE_SW_2	Off/On	<ul style="list-style-type: none"> Brake pedal depressed: On Brake pedal not depressed: Off 	Brake switch	4W
CLUTCH_SW*2	Off/On	<ul style="list-style-type: none"> Clutch pedal pressed: On Clutch pedal released: Off 	CPP switch	4V
GND_L_ESCL	V	<ul style="list-style-type: none"> Steering lock unit ground voltage 	Steering lock unit	1D
IG_KEY_IN	Off/On	<ul style="list-style-type: none"> Key not inserted in steering lock: On Key inserted in steering lock: Off 	Key reminder switch	3U
LGATE_L_SW	Off/On	<ul style="list-style-type: none"> Request switch (liftgate) pressed: On Request switch (liftgate) released: Off 	Request switch (liftgate)	4T
LOCK_SW_D	Lock/Unlock	<ul style="list-style-type: none"> Driver-side door Unlocked: Unlocked Driver-side door Locked: Locked 	Door lock-link switch (LF)	4U
NEUTRAL_SW*2	N/Not_N	<ul style="list-style-type: none"> Shift lever in N range: N Other than these conditions: Not_N 	Neutral switch	4X
NUM_KEYS*3	—	<ul style="list-style-type: none"> Number of registered keys: 0—8 	Keyless control module	—
NUM_TRNSMs	—	<ul style="list-style-type: none"> Number of registered transmitters: 0—6 	Keyless control module	—
P_POS_SW*1	P/Not_P	<ul style="list-style-type: none"> Shift lever in P range: P Other than these conditions: Not_P 	Selector lever component	3S
PUSH_ST1	Off/On	<ul style="list-style-type: none"> Push button start pressed: On Push button start not pressed: Off 	Push button start	2B
PUSH_ST2	Off/On	<ul style="list-style-type: none"> Push button start pressed: On Push button start not pressed: Off 	Push button start	3Q
REQ_SW_L	Off/On	<ul style="list-style-type: none"> Request switch (LF) pressed: On Request switch (LF) released: Off 	Request switch (LF)	4R
REQ_SW_R	Off/On	<ul style="list-style-type: none"> Request switch (RF) pressed: On Request switch (RF) released: Off 	Request switch (RF)	4O
RLY_ACC	Off/On	<ul style="list-style-type: none"> Switch the ignition to ACC: On Switch the ignition to off: Off 	ACC relay	3J
RLY_IG1	Off/On	<ul style="list-style-type: none"> Switch the ignition to ON: On Switch the ignition to ACC or off: Off 	IG1 relay	3D
RLY_IG2	Off/On	<ul style="list-style-type: none"> Switch the ignition to ON: On Switch the ignition to ACC or off: Off 	IG2 relay	3G
SMC_MON	V	<ul style="list-style-type: none"> Starter motor control output voltage to PCM 	TR switch (ATX)/Starter cut relay (MTX)	3T
START_LC_SW*2	Off/On	<ul style="list-style-type: none"> Starter interlock switch in on position: On Starter interlock switch in off position: Off 	Starter interlock switch	3O
START_MON	V	<ul style="list-style-type: none"> Starter monitor voltage 	Starter relay	2F
START_RLY	V	<ul style="list-style-type: none"> Starter relay voltage 	Starter relay	3B
STOP_LT_SW	Off/On	<ul style="list-style-type: none"> Brake pedal depressed: On Brake pedal not depressed: Off 	Brake switch	3R
TR/LG_O_SW	Off/On	<ul style="list-style-type: none"> Trunk lid opener switch (4SD)/Liftgate opener switch (5HB) in on position: On Trunk lid opener switch (4SD)/Liftgate opener switch (5HB) in off position: Off 	Trunk lid opener switch (4SD)/Liftgate opener switch (5HB)	4S
VPWM_ENG	V	<ul style="list-style-type: none"> Keyless control module power supply voltage (ENG+B fuse) 	<ul style="list-style-type: none"> Battery ENG+B 10 A fuse 	1F
VPWM_ESCL	V	<ul style="list-style-type: none"> Keyless control module power supply voltage (ESCL fuse) 	<ul style="list-style-type: none"> Battery ESCL 15 A fuse 	1A
VPWM_ROOM	V	<ul style="list-style-type: none"> Keyless control module power supply voltage (ROOM fuse) 	<ul style="list-style-type: none"> Battery ROOM 15 A fuse 	1E

*1 : ATX

*2 : MTX

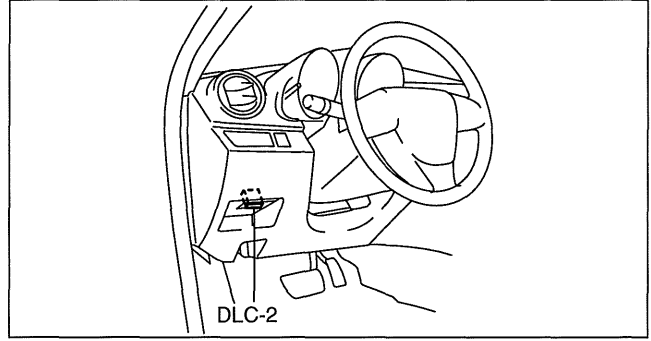
*3 : Vehicles with immobilizer system

ON-BOARD DIAGNOSTIC [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

ACTIVE COMMAND MODES INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960800

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "RKE".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "DataLogger".
3. Select the active command modes from the PID table.
4. Perform the active command modes, inspect the operations for each parts.
 - If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.



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ACTIVE COMMAND MODES TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id09021c960900

Command Name	Operation Condition	Output Part Name	Unit/Operation
OUT_BUZZER	On: Keyless beeper sounds	Keyless beeper	Off/On

09-02A

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

09-02B ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

FOREWORD [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-2	SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-21
DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-2	SECURITY LIGHT: 21, DTC: B10D8:00/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-22
Security Light	09-02B-2	SECURITY LIGHT: 22, DTC: B10DA:51/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-24
M-MDS	09-02B-3	SECURITY LIGHT: 23, DTC: B10DA:62/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-26
CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-3	SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:11/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-27
DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-4	SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:12/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-29
SECURITY LIGHT: 11, DTC: B10D9:87/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-8	PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-32
SECURITY LIGHT: 12, DTC: B10D5:13/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-11	PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-32
SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-13		
SECURITY LIGHT: 13, DTC: B10D7:94/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-15		
SECURITY LIGHT: 14, DTC: B10D7:81/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-17		
SECURITY LIGHT: 15, DTC: B10D7:51/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]	09-02B-19		

09-02B

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

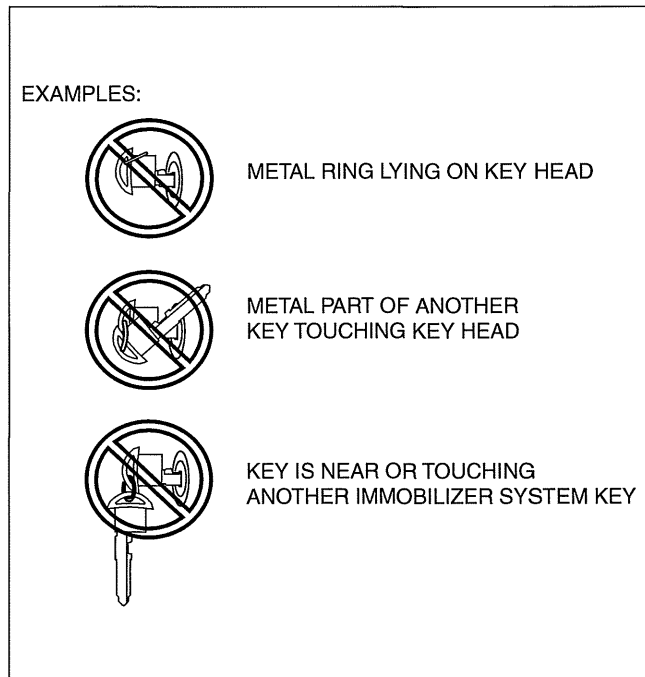
FOREWORD [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d960100

- DTCs are recorded in the PCM and keyless control module when a malfunction is detected. The stored DTCs can be verified using the flashing pattern of the security light and M-MDS. There are some DTCs which cannot be verified using the security light. Verify the DTCs that were detected using the M-MDS prior to beginning the servicing. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
- If more than one DTC is detected, the security light only displays the DTC with the lowest number. Begin repairs based on the DTC displayed by the security light. All DTCs can be read by the M-MDS.
- It is possible for several DTCs to be displayed for a one malfunction cause. Erase the DTCs after one repair and then re-inspect the DTCs.
- If immobilizer system DTCs are not recorded even if the engine cannot be started, perform symptom troubleshooting. (See 01-03A-24 NO.3 WILL NOT CRANK [LF, L5].) (See 01-03B-16 NO.3 WILL NOT CRANK [L3 WITH TC].)
- The PID/data monitor function can be used to verify the number of key ID numbers programmed for a single vehicle. (See 09-02B-32 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)

Note

- Due to the possibility that the engine cannot be started because transmission between the key and the vehicle is obstructed, do not allow the following items to contact the key ring.
 - Any metallic object
 - Spare keys or keys for other vehicles equipped with an immobilizer system
 - Any electronic device, or any credit or other card with magnetic strips



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DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

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Security Light

1. Switch the ignition to ON.
2. Verify the security light status.
 - If a malfunction is detected, the DTC pattern begins flashing after the security light flashes or illuminates for **approx. 1 min** according to the DTC. However, because there are DTCs which cannot be confirmed using the security light, verify the DTCs that were detected using the M-MDS prior to beginning the servicing.
 - DTC 16 or below: Flashes for **approx. 1 min** and the DTC flash pattern repeats **10 times**.
 - DTC 21 or higher: Illuminate for **approx. 1 min** and the DTC flash pattern repeats **10 times**.
 - If more than one DTC is detected, only the DTC with the lowest number is displayed.
 - If there is no malfunction, the security light illuminates for **approx. 3 s**, and then turns off.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

3. If there is a malfunction, verify the DTCs using the M-MDS. When several DTCs are detected, repair the malfunctioning location based on the DTC displayed by the security light.

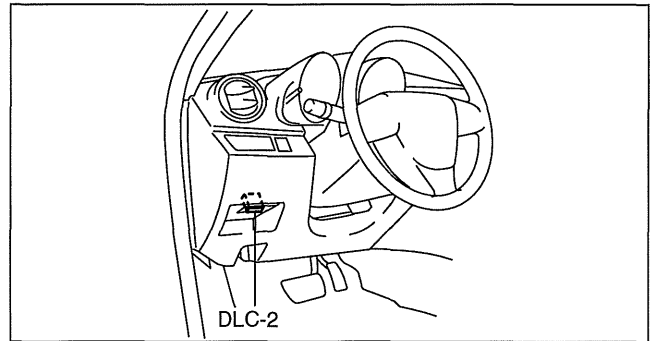
Note

- Because of the possibility that one malfunction cause could result in several DTCs being detected, erase the DTCs after the repair is completed, and then re-inspect the DTCs.

4. After completion of repairs, clear all DTCs stored in the keyless control module and PCM. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)

M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - Using the IDS (laptop PC)
 1. Select "Self test"
 2. Select "Modules"
 3. Select "RKE"
 - Using the PDS (Pocket PC):
 1. Select "Module tests"
 2. Select "RKE"
 3. Select "Self test"
3. Verify the DTC according to the directions on the screen.



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- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. When several DTCs are detected, repair the malfunctioning location based on the DTC displayed by the security light. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)

09-02B

Note

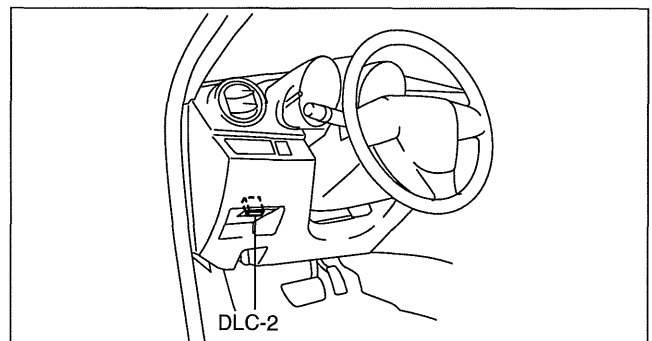
- Because of the possibility that one malfunction cause could result in several DTCs being detected, erase the DTCs after the repair is completed, and then check for DTCs again.

4. After completion of repairs, clear all DTCs stored in the keyless control module and PCM. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)

CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RKE".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
8. Verify that no DTCs are displayed.



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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]



id09021d960500

Note


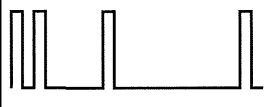
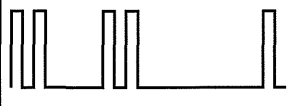
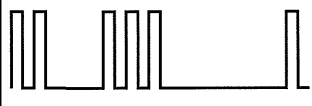
- The security light flashes or illuminates under the following conditions when the ignition is off or ACC.
 - If there is any malfunction:
 - DTC 16 or below: Flashes for **approx. 1 min** and the DTC flash pattern indicated in the table below repeats **10 times**.
 - DTC 21 or higher: Illuminates for **approx. 1 min** and the DTC flash pattern indicated in the table below repeats **10 times**.
 - If more than one DTC is detected, only the DTC with the lowest number is displayed.
 - If there is no malfunction:
 - The security light illuminates **for approx. 3 s** and then turns off.

×: Illuminated

–: Not illuminated or not applicable

Security light flashing pattern		DTC				Description	Reference
		Keyless warning light	Push button start warning light	M-MDS display*			
				Keyless control module	PCM		
11		×	×	B10D9:87	P1260:00	Communication error with coil antenna	(See 09-02B-8 SECURITY LIGHT: 11, DTC: B10D9:87/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
12		×	×	B10D5:13	P1260:00	Coil antenna malfunction	(See 09-02B-11 SECURITY LIGHT: 12, DTC: B10D5:13/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

Security light flashing pattern		DTC				Description	Reference
		Keyless warning light	Push button start warning light	M-MDS display*			
				Keyless control module	PCM		
16		-	-	U0100:87	P1260:00	Communication error with PCM (No response)	(See 09-02B-21 SECURITY LIGHT: 16, DTC: U0100:87/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
21		×	-	B10D8:00	P1260:00	Shortage of programmed key	(See 09-02B-22 SECURITY LIGHT: 21, DTC: B10D8:00/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
22		-	-	B10DA:51	P1260:00	Communication error with PCM (Data transfer failure)	(See 09-02B-24 SECURITY LIGHT: 22, DTC: B10DA:51/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
23		-	-	B10DA:62	P1260:00	Communication error with PCM (Data mismatch)	(See 09-02B-26 SECURITY LIGHT: 23, DTC: B10DA:62/ P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

Security light flashing pattern	DTC				Description	Reference
	Keyless warning light	Push button start warning light	M-MDS display*			
			Keyless control module	PCM		
-	x	x	B10E6:11	-	Short to ground in coil antenna power supply circuit	(See 09-02B-27 SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:11/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
-	x	x	B10E6:12	-	Short to power supply in coil antenna power supply circuit	(See 09-02B-29 SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:12/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
-	x	x	U0001:88	U0073:00	Keyless control module communication error (HS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
-	x	-	U0100:00	-	Communication error with PCM	
-	x	x	U3000:49	-	Keyless control module internal malfunction	(See 09-02A-102 DTC U3000:49 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
-	x	x	U3000:96	-	Keyless control module internal malfunction	(See 09-02A-103 DTC U3000:96 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

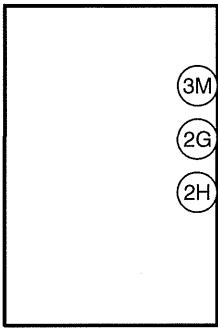
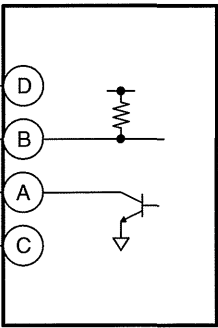
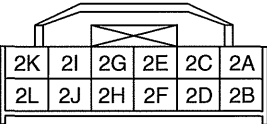
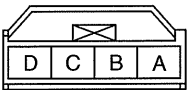
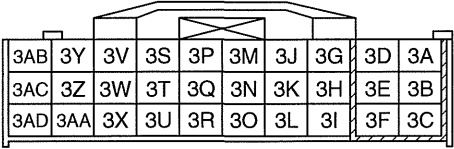
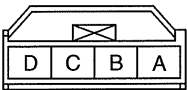
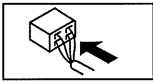
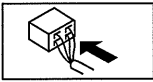
09-02B

* : The letters at the beginning of each DTC are only displayed when using the M-MDS, and refer to the following:
 B= Body system, P= Powertrain system, U= Network communication system.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 11, DTC: B10D9:87/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d353000

DTC	Security light flashing pattern		11	Communication error with coil antenna
	M-MDS display	Keyless control module	B10D9:87	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Keyless control module cannot communicate with coil antenna.
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Coil antenna connector or terminals malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Coil antenna terminal C—Body ground • Keyless control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Coil antenna terminal D—Keyless control module terminal 3M — Coil antenna terminal B—Keyless control module terminal 2G — Coil antenna terminal A—Keyless control module terminal 2H • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Coil antenna terminal D—Keyless control module terminal 3M — Coil antenna terminal B—Keyless control module terminal 2G — Coil antenna terminal A—Keyless control module terminal 2H • Coil antenna malfunction • Keyless control module malfunction
KEYLESS CONTROL MODULE		COIL ANTENNA		
				
KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR		COIL ANTENNA WIRING HARNESS-SIDE CONNECTOR		
				
				
				

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM IMMOBILIZER SYSTEM DTC <ul style="list-style-type: none"> Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Is the following DTC present? — Keyless control module: B10E6:11 	Yes Go to the applicable DTC inspection. (See 09-02B-27 SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:11/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No Go to the next step.
2	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the coil antenna connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 8.
		No Go to the next step.
3	INSPECT COIL ANTENNA GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Coil antenna connector is disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Coil antenna terminal C Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
4	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 8.
		No Go to the next step.
5	INSPECT COIL ANTENNA COMMUNICATION CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Coil antenna and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Coil antenna terminal D — Coil antenna terminal B — Coil antenna terminal A Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No Go to the next step.
6	INSPECT COIL ANTENNA COMMUNICATION CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Coil antenna and keyless control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side): — Coil antenna terminal D—Instrument cluster terminal 3M — Coil antenna terminal B—Instrument cluster terminal 2G — Coil antenna terminal A—Instrument cluster terminal 2H Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
7	VERIFY COIL ANTENNA MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? — Keyless control module: B10D9:87 — PCM: P1260:00 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 9.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? — Keyless control module: B10D9:87 — PCM: P1260:00 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 12, DTC: B10D5:13/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d353100

DTC	Security light flashing pattern		12	Coil antenna malfunction
	M-MDS display	Keyless control module	B10D5:13	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • PCM or keyless control module determines a malfunction in coil antenna.
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Coin antenna connector or terminals malfunction • Keyless control module connector or terminals malfunction • Coil antenna malfunction • PCM malfunction • Keyless control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the coil antenna connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	VERIFY COIL ANTENNA MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 6.

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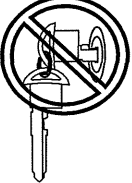
ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
4	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 6.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d353200

DTC	Security light flashing pattern		13	Key ID number error
	M-MDS display	Keyless control module	B10D7:05	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Keyless control module detects the key ID number programming failure.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Key ID number error <ul style="list-style-type: none"> — Failure during programming the key ID number PCM malfunction Keyless control module malfunction If any of the following items are touching or near key head, signal communication between key and vehicle is negatively affected, resulting in engine not starting: <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> Spare <p style="margin-left: 40px;">EXAMPLES:</p> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <p>METAL RING LYING ON KEY HEAD</p> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <p>METAL PART OF ANOTHER KEY TOUCHING KEY HEAD</p> </div> <div style="display: flex; align-items: center;">  <p>KEY IS NEAR OR TOUCHING ANOTHER IMMOBILIZER SYSTEM KEY</p> </div> <p>keys</p> <ul style="list-style-type: none"> Keys for other vehicles equipped with immobilizer system Any metallic object Any electronic device, or any credit or other card with magnetic strips

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]




Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY KEY MALFUNCTION <ul style="list-style-type: none"> • Program an additional key referring to the immobilizer system-related parts programming. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Switch the ignition to ON (engine off) using the programmed key. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 4.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 13, DTC: B10D7:94/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d356000

DTC	Security light flashing pattern		13	Key ID number error
	M-MDS display	Keyless control module	B10D7:94	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Keyless control module cannot read the key ID number data.
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Key (transponder) malfunction <ul style="list-style-type: none"> — Key ID number is not output. — There is no transponder in the key. • Coil antenna malfunction • PCM malfunction • Keyless control module malfunction <p>Note</p> <ul style="list-style-type: none"> • If any of the following items are touching or near key head, signal communication between key and vehicle is negatively affected, resulting in engine not starting <ul style="list-style-type: none"> — Spare <p style="text-align: center;">EXAMPLES:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>METAL RING LYING ON KEY HEAD</p> </div> <div style="text-align: center;">  <p>METAL PART OF ANOTHER KEY TOUCHING KEY HEAD</p> </div> <div style="text-align: center;">  <p>KEY IS NEAR OR TOUCHING ANOTHER IMMOBILIZER SYSTEM KEY</p> </div> </div> <p>keys</p> <ul style="list-style-type: none"> — Keys for other vehicles equipped with immobilizer system — Any metallic object — Any electronic device, or any credit or other card with magnetic strips

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Diagnostic Procedure

STEP	INSPECTION	ACTION				
1	<p>CONFIRM IMMOBILIZER SYSTEM DTC</p> <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: B10D7:05 — PCM: P1260:00 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Perform the security light: 13, DTC: B10D7:05/P1260:00 inspection. (See 09-02B-13 SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Perform the security light: 13, DTC: B10D7:05/P1260:00 inspection. (See 09-02B-13 SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)	No	Go to the next step.
Yes	Perform the security light: 13, DTC: B10D7:05/P1260:00 inspection. (See 09-02B-13 SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)					
No	Go to the next step.					

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]



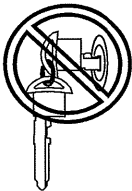
STEP	INSPECTION	ACTION				
2	VERIFY WHETHER THERE IS A VALID KEY <ul style="list-style-type: none"> • Are there any valid keys which can start the engine other than the cause of the displayed DTC? 	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td> Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) </td> </tr> </table>	Yes	Go to the next step.	No	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
Yes	Go to the next step.					
No	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)					
3	VERIFY WHETHER MALFUNCTION IS CAUSED BY KEY OR COIL ANTENNA <ul style="list-style-type: none"> • Switch the ignition to ON using the valid key other than the cause of the displayed DTC (engine off). • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? — Keyless control module: B10D7:94 — PCM: P1260:00 	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td> Dispose of the malfunctioning key and program a new key if necessary, then go to Step 6. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) </td> </tr> </table> <p style="margin-top: 10px;">Note</p> <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary. 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)	No	Dispose of the malfunctioning key and program a new key if necessary, then go to Step 6. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)					
No	Dispose of the malfunctioning key and program a new key if necessary, then go to Step 6. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)					
4	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? — Keyless control module: B10D7:94 — PCM: P1260:00 	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to Step 6.</td> </tr> </table>	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)	No	Go to Step 6.
Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)					
No	Go to Step 6.					
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? — Keyless control module: B10D7:94 — PCM: P1260:00 	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;">Yes</td> <td>Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)	No	Go to the next step.
Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)					
No	Go to the next step.					

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION		ACTION
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

SECURITY LIGHT: 14, DTC: B10D7:81/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d356600

DTC	Security light flashing pattern	14	
	M-MDS display	Keyless control module	B10D7:81
		PCM	P1260:00
DETECTION CONDITION			<ul style="list-style-type: none"> Keyless control module cannot read the key ID number data normally. Coil antenna connector or terminals malfunction Keyless control module connector or terminals malfunction Key (transponder) malfunction Coil antenna malfunction PCM malfunction Keyless control module malfunction <p>Note</p> <ul style="list-style-type: none"> If any of the following items are touching or near key head, signal communication between key and vehicle is negatively affected, resulting in engine not starting: <ul style="list-style-type: none"> — Spare <p style="margin-left: 40px;">EXAMPLES:</p> <div style="margin-left: 40px;">  <p style="margin-left: 20px;">METAL RING LYING ON KEY HEAD</p> </div> <div style="margin-left: 40px;">  <p style="margin-left: 20px;">METAL PART OF ANOTHER KEY TOUCHING KEY HEAD</p> </div> <div style="margin-left: 40px;">  <p style="margin-left: 20px;">KEY IS NEAR OR TOUCHING ANOTHER IMMOBILIZER SYSTEM KEY</p> </div> <p style="margin-left: 40px;">keys</p> <ul style="list-style-type: none"> — Keys for other vehicles equipped with an immobilizer system — Any metallic object — Any electronic device, or any credit or other card with magnetic strips
POSSIBLE CAUSE			

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the coil antenna connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	VERIFY WHETHER THERE IS A VALID KEY <ul style="list-style-type: none"> • Are there any valid keys which can start the engine other than the cause of the displayed DTC? 	Yes	Go to the next step.
		No	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4	VERIFY WHETHER MALFUNCTION IS CAUSED BY KEY OR COIL ANTENNA <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connector. • Reconnect the negative battery cable. • Switch the ignition to ON (engine off) using the valid key other than the cause of the displayed DTC. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Dispose of the malfunctioning key and program a new key if necessary, then go to Step 7. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Note <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary.
5	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 7.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connector. Reconnect the negative battery cable. Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

SECURITY LIGHT: 15, DTC: B10D7:51/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d356700

09-02B

DTC	Security light flashing pattern		15	Unprogrammed key ID number
	M-MDS display	Keyless control module	B10D7:51	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Keyless control module detects the unprogrammed key ID number.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Key malfunction <ul style="list-style-type: none"> No keys have been programmed after replacing keyless control module. Unprogrammed key is used. Programmed a ninth key. PCM malfunction Keyless control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY NUMBER OF PROGRAMMED KEYS <ul style="list-style-type: none"> Perform the PID/data monitor inspection using the M-MDS to verify the number of programmed keys. (See 09-02B-32 PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) — NUM_KEYS (See 09-02B-32 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) Are eight keys programmed? 	Yes	Erase the key ID number. Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Switch the ignition to ON (engine off) using the valid key other than the cause of the displayed DTC. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Dispose of the malfunctioning key and program a new key if necessary, then go to Step 4. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d356800

DTC	Security light flashing pattern		16	Communication error with PCM (No response)
	M-MDS display	Keyless control module	U0100:87	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Communication error between keyless control module and PCM (no response).
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Multiplex communication system DTC is stored (CAN line) • PCM malfunction • Keyless control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM MULTIPLEX COMMUNICATION SYSTEM DTC <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: U0001:88 — PCM: U0073:00 	Yes	Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: U0100:87 — PCM: 1260:00 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: U0100:87 — PCM: 1260:00 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

SECURITY LIGHT: 21, DTC: B10D8:00/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d358000

DTC	Security light flashing pattern		21	Shortage of programmed key
	M-MDS display	Keyless control module	B10D8:00	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Programmed key is only one.
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Key malfunction <ul style="list-style-type: none"> — Programmed key is only one. • PCM malfunction • Keyless control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY NUMBER OF PROGRAMMED KEYS <ul style="list-style-type: none"> • Perform the PID/data monitor inspection using the M-MDS to verify the number of programmed keys. (See 09-02B-32 PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) — NUM_KEYS (See 09-02B-32 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Are two or more keys programmed? 	Yes	Go to the next step.
		No	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) <p style="margin-top: 10px;">Note</p> <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Switch the ignition to ON (engine off) using the valid key. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

09-02B

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 22, DTC: B10DA:51/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d358500

DTC	Security light flashing pattern		22	Communication error with PCM (Data transfer failure)
	M-MDS display	Keyless control module	B10DA:51	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Communication error between keyless control module and PCM (data transfer failure).
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Multiplex communication system DTC is stored (CAN line) • Immobilizer system programming malfunction <ul style="list-style-type: none"> — Immobilizer system-related parts have not been programmed after replacing the keyless control module. — Immobilizer system-related parts have not been programmed after replacing the PCM. • PCM malfunction • Keyless control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM MULTIPLEX COMMUNICATION SYSTEM DTC <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: U0001:88 — PCM: U0073:00 	Yes	Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
2	VERIFY WHETHER PROGRAMMING OF IMMOBILIZER SYSTEM-RELATED PARTS HAS BEEN PERFORMED AFTER REPLACE KEYLESS CONTROL MODULE <ul style="list-style-type: none"> • After replace the keyless control module, has the programming of immobilizer system-related parts been performed? 	Yes	Go to the next step.
		No	Perform the programming of immobilizer system-related parts after replace the keyless control module only, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
3	VERIFY WHETHER PROGRAMMING OF IMMOBILIZER SYSTEM-RELATED PARTS HAS BEEN PERFORMED AFTER REPLACE PCM <ul style="list-style-type: none"> • After replace the PCM, has the programming of immobilizer system-related parts been performed? 	Yes	Go to the next step.
		No	Perform the programming of immobilizer system-related parts after replace the PCM only, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
4	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: B10DA:51 — PCM: P1260:00 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 6.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Keyless control module: B10DA:51 — PCM: P1260:00 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

09-02B

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: 23, DTC: B10DA:62/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d358600

DTC	Security light flashing pattern		23	Communication error with PCM (Data mis-match)
	M-MDS display	Keyless control module	B10DA:62	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Communication error between keyless control module and PCM (data mis-match).
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Immobilizer system programming malfunction — Immobilizer system-related parts have not been programmed after replacing the PCM. • PCM malfunction • Keyless control module malfunction

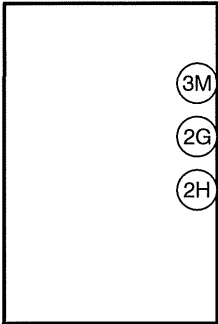
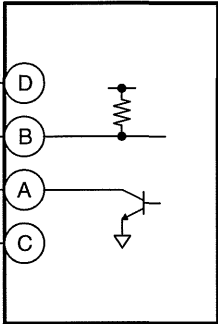
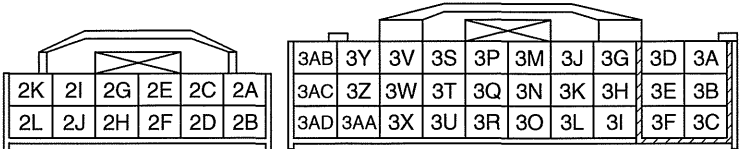
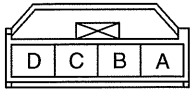
Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY WHETHER PROGRAMMING OF IMMOBILIZER SYSTEM-RELATED PARTS HAS BEEN PERFORMED AFTER REPLACE PCM <ul style="list-style-type: none"> • After replace the PCM, has the programming of immobilizer system-related parts been performed? 	Yes	Go to the next step.
		No	Perform the programming of immobilizer system-related parts after replace the PCM only, then go to the next step. (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:11/- [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d905500

DTC	Security light flashing pattern		-	Short to ground in coil antenna power supply circuit
	M-MDS display	Keyless control module	B10E6:11	
		PCM	-	
DETECTION CONDITION				<ul style="list-style-type: none"> Coil antenna power supply circuit voltage is lower than the specification when the circuit is active.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Coil antenna connector or terminals malfunction Keyless control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Coil antenna terminal D—Keyless control module terminal 3M Coil antenna malfunction Keyless control module malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  </div> <div style="text-align: center;"> <p>COIL ANTENNA</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>  </div> <div style="text-align: center;"> <p>COIL ANTENNA WIRING HARNESS-SIDE CONNECTOR</p>  </div> </div>				

09-02B

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the coil antenna connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the keyless control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

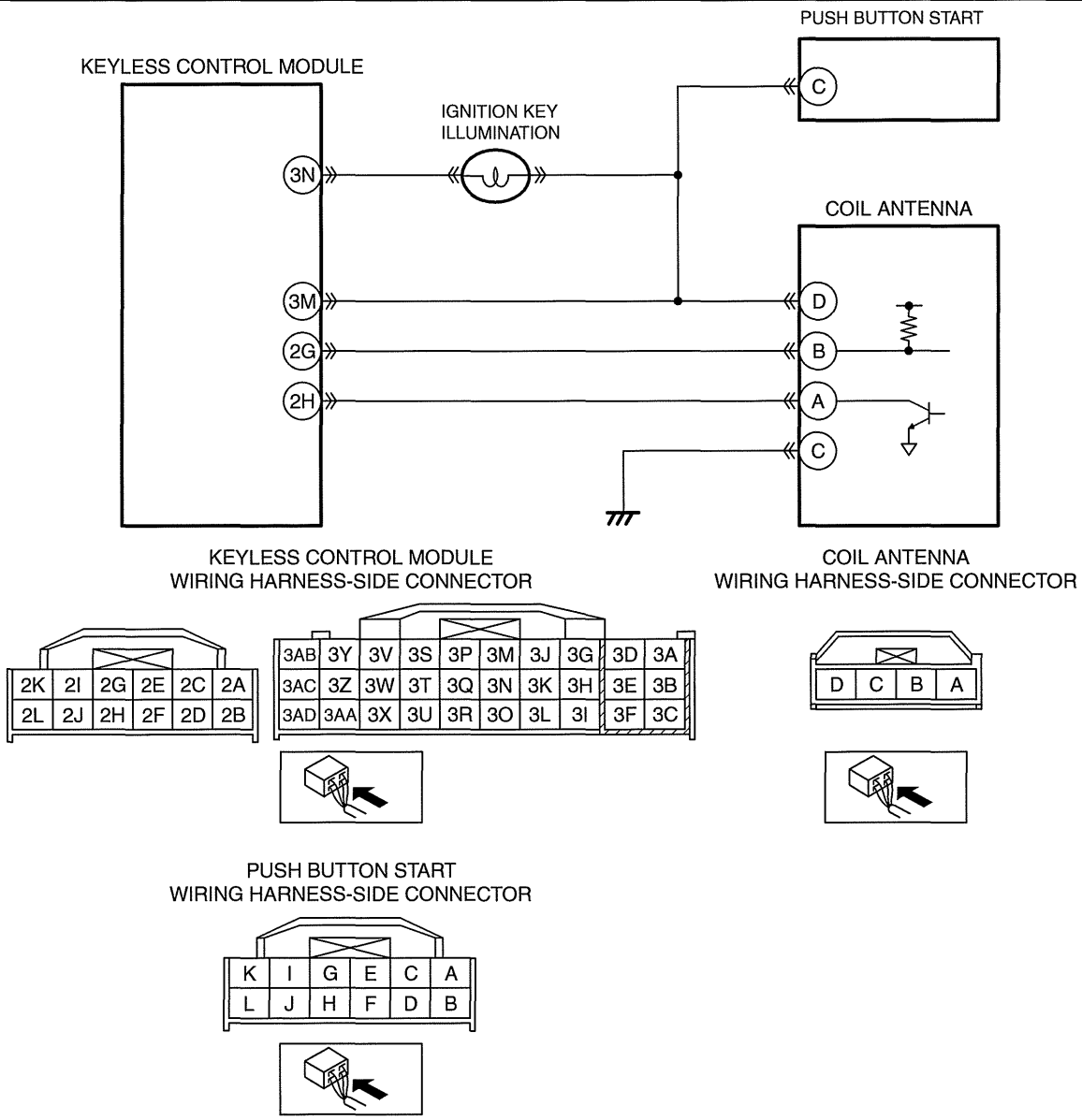
STEP	INSPECTION	ACTION	
3	INSPECT COIL ANTENNA POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Coil antenna and keyless control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Coil antenna terminal D • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	VERIFY COIL ANTENNA MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 6.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the keyless control module and PCM using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

SECURITY LIGHT: NOT ILLUMINATED, DTC B10E6:12/ [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d905600

DTC	Security light flashing pattern		-	Short to power supply in coil antenna power supply circuit
	M-MDS display	Keyless control module	B10E6:12	
		PCM	-	
DETECTION CONDITION				<ul style="list-style-type: none"> Coil antenna power supply circuit voltage is higher than the specification when the circuit is not active.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Coil antenna connector or terminals malfunction Keyless control module connector or terminals malfunction Push button start connector or terminals malfunction Short to power supply in coil antenna power supply circuit Push button start malfunction Coil antenna malfunction Keyless control module malfunction



09-02B

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT COIL ANTENNA CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the coil antenna connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to the next step.
		No	Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to the next step.
		No	Go to the next step.
3	INSPECT PUSH BUTTON START CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the push button start connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to the next step.
		No	Go to the next step.
4	INSPECT COIL ANTENNA POWER SUPPLY CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Coil antenna, keyless control module and push button start connectors are disconnected. • Reconnect the negative battery cable. • Measure the voltage at the keyless control module terminal 3M (wiring harness-side). • Is the voltage more than 3.0 V? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
5	INSPECT PUSH BUTTON START <ul style="list-style-type: none"> • Reconnect the push button start connector. • Measure the voltage at the keyless control module terminal 3M (wiring harness-side). • Is the voltage more than 3.0 V? 	Yes	Replace the push button start, then go to the next step. (See 09-21-8 PUSH BUTTON START REMOVAL/ INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
6	VERIFY COIL ANTENNA MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the keyless control module and PCM memory using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) • (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Disconnect the negative battery cable. • Reconnect the negative battery cable. <p>Note</p> <ul style="list-style-type: none"> • The keyless control module performs on-board self-diagnostics while the negative battery cable is connected. <ul style="list-style-type: none"> • Perform the immobilizer system (advanced keyless entry and push button start system) DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/ INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

STEP	INSPECTION	ACTION	
7	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the keyless control module and PCM memory using the M-MDS. (See 09-02B-3 CLEARING DTC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Disconnect the negative battery cable. • Reconnect the negative battery cable. <p>Note</p> <ul style="list-style-type: none"> • The keyless control module performs on-board self-diagnostics while the negative battery cable is connected. <ul style="list-style-type: none"> • Perform the immobilizer system (advanced keyless entry and push button start system) DTC inspection using the M-MDS. (See 09-02B-2 DTC INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].) • Is the same DTC present? 	Yes	Replace the keyless control module and program the immobilizer system-related parts, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
8	<p>VERIFY THAT NO OTHER DTCs ARE PRESENT</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02B-4 DTC TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
		No	DTC troubleshooting completed.

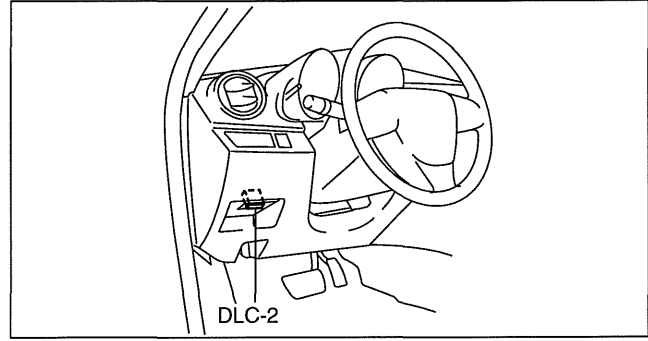
09-02B

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d960600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "RKE".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table. (See 09-02B-32 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
4. Verify the PID data according to the directions on the screen.



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Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)]

id09021d960700

PID name	Description	Unit/Status
NUM_KEYS	Number of key ID numbers programmed in the keyless control module	0—8

09-02C ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

FOREWORD [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-2

DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-2

 Security Light 09-02C-2

 M-MDS 09-02C-3

CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-3

DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-4

SECURITY LIGHT: 11, DTC: B10D9:87/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-6

SECURITY LIGHT: 12, DTC: B10D5:13/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-9

SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-10

SECURITY LIGHT: 13, DTC: B10D7:94/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-12

SECURITY LIGHT: 14, DTC: B10D7:81/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-14

SECURITY LIGHT: 15, DTC: B10D7:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-16

SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-17

SECURITY LIGHT: 21, DTC: B10D8:00/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-18

SECURITY LIGHT: 22, DTC: B10DA:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-19

SECURITY LIGHT: 23, DTC: B10DA:62/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-21

PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-22

PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)] 09-02C-22

09-02C

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

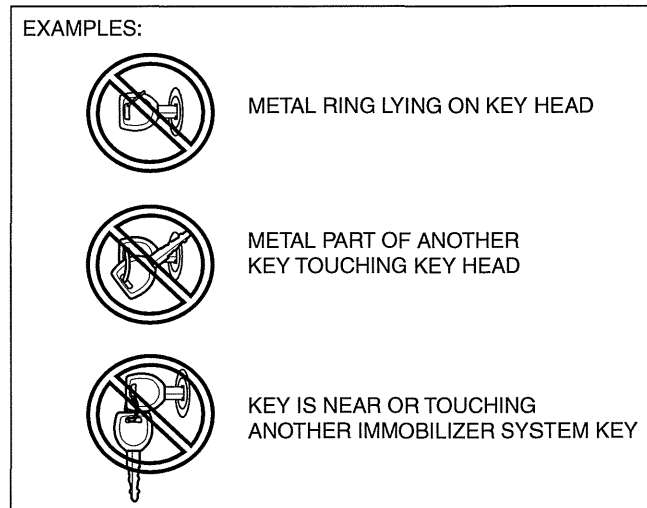
FOREWORD [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5960100

- DTCs are recorded in the PCM and instrument cluster when a malfunction is detected. The stored DTCs can be verified using the flashing pattern of the security light and M-MDS. There are some DTCs which cannot be verified using the security light. Verify the DTCs that were detected using the M-MDS prior to beginning the servicing. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
- If more than one DTC is detected, the security light only displays the DTC with the lowest number. Begin repairs based on the DTC displayed by the security light. All DTCs can be read by the M-MDS.
- It is possible for several DTCs to be displayed for one malfunction cause. Erase the DTCs after one repair and then re-inspect the DTCs.
- If immobilizer system DTCs are not recorded even if the engine cannot be started, perform symptom troubleshooting. (See 01-03A-24 NO.3 WILL NOT CRANK [LF, L5].) (See 01-03B-16 NO.3 WILL NOT CRANK [L3 WITH TC].)
- The PID/data monitor function can be used to verify the number of key ID numbers programmed for a single vehicle. (See 09-02C-22 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)

Note

- Due to the possibility that the engine cannot be started because transmission between the key and the vehicle is obstructed, do not allow the following items to contact the key ring.
 - Any metallic object
 - Spare keys or keys for other vehicles equipped with an immobilizer system
 - Any electronic device, or any credit or other card with magnetic strips



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DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5960300

Security Light

1. Switch the ignition to ON.
2. Verify the security light status.
 - If a malfunction is detected, the DTC pattern begins flashing after the security light flashes or illuminates for **approx. 1 min** according to the DTC. However, because there are DTCs which cannot be confirmed using the security light, verify the DTCs that were detected using the M-MDS prior to beginning the servicing.
 - DTC 16 or below: Flashes for **approx. 1 min** and the DTC flash pattern repeats **10 times**.
 - DTC 21 or higher: Illuminates for **approx. 1 min** and the DTC flash pattern repeats **10 times**.
 - If more than one DTC is detected, only the DTC with the lowest number is displayed.
 - If there is no malfunction, the security light illuminates for **approx. 3 s**, and then turns off.
3. If there is a malfunction, verify the DTCs using the M-MDS. When several DTCs are detected, repair the malfunctioning location based on the DTC displayed by the security light.

Note

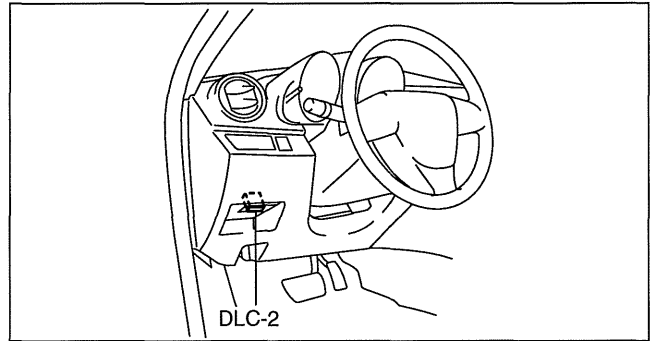
- Because of the possibility that one malfunction cause could result in several DTCs being detected, erase the DTCs after the repair is completed, and then re-inspect the DTCs.

4. After completion of repairs, clear all DTCs stored in the Instrument cluster and PCM. (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. When several DTCs are detected, repair the malfunctioning location based on the DTC displayed by the security light. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)



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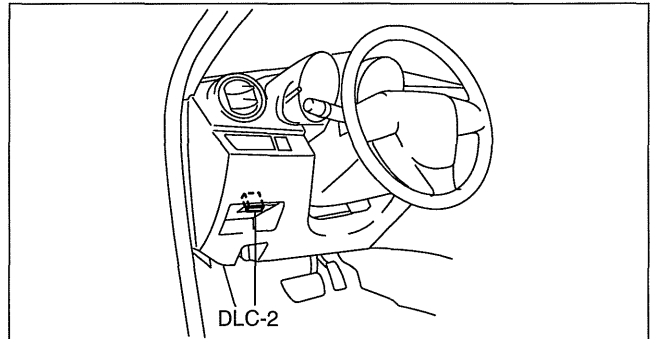
Note

- Because of the possibility that one malfunction cause could result in several DTCs being detected, erase the DTCs after the repair is completed, and then check for DTCs again.
4. After completion of repairs, clear all DTCs stored in the Instrument cluster and PCM. (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].)

CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
8. Verify that no DTCs are displayed.



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09-02C

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

SECURITY LIGHT: 15, DTC: B10D7:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]


id0902e5356700

DTC	Security light flashing pattern		15	Unprogrammed key ID number
	M-MDS display	Instrument cluster	B10D7:51	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Instrument cluster detects the unprogrammed key ID number.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Key malfunction <ul style="list-style-type: none"> No keys have been programmed after replacing instrument cluster. Unprogrammed key is used. Programmed a ninth key. PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY NUMBER OF PROGRAMMED KEYS <ul style="list-style-type: none"> Perform the PID/data monitor inspection using the M-MDS to verify the number of programmed keys. (See 09-02C-22 PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) — NUMKEYS (See 09-02C-22 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Are eight keys programmed? 	Yes Erase the key ID number. Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
		No Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) Note <ul style="list-style-type: none"> To start the engine, two or more programmed keys are necessary.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to ON (engine off) using the programmed key. Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Dispose of the malfunctioning key and program a new key if necessary, then go to Step 4. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) Note <ul style="list-style-type: none"> To start the engine, two or more programmed keys are necessary.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

DTC			Description	Reference
Security light flashing pattern	M-MDS display*			
	Instrument cluster	PCM		
23 	B10DA:62	P1260:00	Communication error with PCM (Data mis-match)	(See 09-02C-21 SECURITY LIGHT: 23, DTC: B10DA:62/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
Not illuminated	U0001:88	U0073:00	Module communication error (HS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
Not illuminated	U0100:00	—	Communication error with PCM	(See 09-02E-21 DTC U3000:41 [INSTRUMENT CLUSTER].)
Not illuminated	U3000:41	—	Instrument cluster internal malfunction	(See 09-02E-21 DTC U3000:41 [INSTRUMENT CLUSTER].)

* : The letters at the beginning of each DTC are only displayed when using the M-MDS, and refer to the following:
 B= Body system, P= Powertrain system, U= Network communication system.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

SECURITY LIGHT: 11, DTC: B10D9:87/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5353000

DTC	Security light flashing pattern		11	Communication error with coil antenna
	M-MDS display	Instrument cluster	B10D9:87	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Instrument cluster cannot communicate with coil antenna.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Coil antenna connector or terminals malfunction Open circuit or short to ground in coil antenna power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between ignition switch and coil antenna terminal D METER 15 A fuse malfunction Open circuit in wiring harness between ignition switch and coil antenna terminal D Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Coil antenna terminal C—Body ground Instrument cluster connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Coil antenna terminal B—Instrument cluster terminal 2M Coil antenna terminal A—Instrument cluster terminal 2Q Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Coil antenna terminal B—Instrument cluster terminal 2M Coil antenna terminal A—Instrument cluster terminal 2Q Coil antenna malfunction Instrument cluster malfunction

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the coil antenna connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
2	INSPECT COIL ANTENNA POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Coil antenna connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON (engine off). • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Coil antenna terminal D • Is the voltage 8 V or more? 	Yes	Go to the next step.
		No	Inspect the METER 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to Step 8.
3	INSPECT COIL ANTENNA GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Coil antenna connector is disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Coil antenna terminal C • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
4	INSPECT INSTRUMENT CLUSTER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT COIL ANTENNA COMMUNICATION CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Coil antenna and instrument cluster connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Coil antenna terminal B — Coil antenna terminal A • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
6	INSPECT COIL ANTENNA COMMUNICATION CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Coil antenna and instrument cluster connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Coil antenna terminal B—Instrument cluster terminal 2M — Coil antenna terminal A—Instrument cluster terminal 2Q • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION	ACTION	
7	VERIFY COIL ANTENNA MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 9.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

SECURITY LIGHT: 12, DTC: B10D5:13/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id09d2e5353100

DTC	Security light flashing pattern		12	Coil antenna malfunction
	M-MDS display	Instrument cluster	B10D5:13	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> PCM or instrument cluster determines a malfunction in coil antenna.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Coil antenna connector or terminals malfunction Instrument cluster connector or terminals malfunction Coil antenna malfunction PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the coil antenna connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
2	INSPECT INSTRUMENT CLUSTER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the instrument cluster connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
3	VERIFY COIL ANTENNA MALFUNCTION <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 6.
4	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 6.




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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION	ACTION
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No DTC troubleshooting completed.

SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5353200

DTC	Security light flashing pattern		13	Key ID number error
	M-MDS display	Instrument cluster	B10D7:05	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Instrument cluster detects the key ID number programming failure. Key ID number error <ul style="list-style-type: none"> — Failure during programming the key ID number PCM malfunction Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> If any of the following items are touching or near key head, signal communication between key and vehicle is negatively affected, resulting in engine not starting: <ul style="list-style-type: none"> — Spare <p>EXAMPLES:</p>
POSSIBLE CAUSE				<div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;">METAL RING LYING ON KEY HEAD</div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;">METAL PART OF ANOTHER KEY TOUCHING KEY HEAD</div> </div> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">KEY IS NEAR OR TOUCHING ANOTHER IMMOBILIZER SYSTEM KEY</div> </div> <p>keys</p> <ul style="list-style-type: none"> — Keys for other vehicles equipped with an immobilizer system — Any metallic object — Any electronic device, or any credit or other card with magnetic strips

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

Diagnostic Procedure




STEP	INSPECTION	ACTION	
1	VERIFY KEY MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
		No	Go to Step 4.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

SECURITY LIGHT: 13, DTC: B10D7:94/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5356000

DTC	Security light flashing pattern		13	Key ID number error
	M-MDS display	Instrument cluster	B10D7:94	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Instrument cluster cannot read the key ID number data.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Key (transponder) malfunction <ul style="list-style-type: none"> — Key ID number is not output. — There is no transponder in the key. Coil antenna malfunction PCM malfunction Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> If any of the following items are touching or near key head, signal communication between key and vehicle is negatively affected, resulting in the engine not starting: <ul style="list-style-type: none"> — Spare <p>EXAMPLES:</p> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;">METAL RING LYING ON KEY HEAD</div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;">METAL PART OF ANOTHER KEY TOUCHING KEY HEAD</div> </div> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">KEY IS NEAR OR TOUCHING ANOTHER IMMOBILIZER SYSTEM KEY</div> </div> </div> <p>keys</p> <ul style="list-style-type: none"> — Keys for other vehicles equipped with immobilizer system — Any metallic object — Any electronic device, or any credit or other card with magnetic strips

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM IMMOBILIZER SYSTEM DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the following DTC present? <ul style="list-style-type: none"> — Instrument cluster: B10D7:05 — PCM: P1260:00 	Yes	Perform the security light: 13, DTC: B10D7:05/P1260:00 inspection. (See 09-02C-10 SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]




STEP	INSPECTION	ACTION	
2	VERIFY WHETHER THERE IS A VALID KEY <ul style="list-style-type: none"> • Are there any valid keys which can start the engine other than the cause of the displayed DTC? 	Yes	Go to the next step.
		No	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
3	VERIFY WHETHER MALFUNCTION IS CAUSED BY KEY OR COIL ANTENNA <ul style="list-style-type: none"> • Switch the ignition to ON using the valid key other than the cause of the displayed DTC (engine off). • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? — Instrument cluster: B10D7:94 — PCM: P1260:00 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Dispose of the malfunctioning key and program a new key if necessary, then go to Step 6. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) <p style="margin-top: 10px;">Note</p> <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary.
4	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? — Instrument cluster: B10D7:94 — PCM: P1260:00 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 6.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? — Instrument cluster: B10D7:94 — PCM: P1260:00 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

SECURITY LIGHT: 14, DTC: B10D7:81/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5356600

DTC	Security light flashing pattern		14	Receiving erratic serial data
	M-MDS display	Instrument cluster	B10D7:81	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Instrument cluster cannot read the key ID number data normally.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Coil antenna connector or terminals malfunction Instrument cluster connector or terminals malfunction Key (transponder) malfunction Coil antenna malfunction PCM malfunction Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> If any of the following items are touching or near key head, signal communication between key and vehicle is negatively affected, resulting in engine not starting <ul style="list-style-type: none"> Keys for other vehicles equipped with an immobilizer system Spare <p>EXAMPLES:</p> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;">METAL RING LYING ON KEY HEAD</div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;">METAL PART OF ANOTHER KEY TOUCHING KEY HEAD</div> </div> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">KEY IS NEAR OR TOUCHING ANOTHER IMMOBILIZER SYSTEM KEY</div> </div> </div> <p>keys</p> <ul style="list-style-type: none"> Any metallic object Any electronic device, or any credit or other card with magnetic strips

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT COIL ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the coil antenna connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
2	INSPECT INSTRUMENT CLUSTER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the instrument cluster connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
3	VERIFY WHETHER THERE IS A VALID KEY <ul style="list-style-type: none"> Are there any valid keys which can start the engine other than the cause of the displayed DTC? 	Yes Go to the next step.
		No Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION	ACTION	
4	VERIFY WHETHER MALFUNCTION IS CAUSED BY KEY OR COIL ANTENNA <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connector. • Reconnect the negative battery cable. • Switch the ignition to ON (engine off) using the valid key other than the cause of the displayed DTC. • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the coil antenna, then go to the next step. (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)
		No	Dispose of the malfunctioning key and program a new key if necessary, then go to Step 7. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary.
5	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connector. • Reconnect the negative battery cable. • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

SECURITY LIGHT: 15, DTC: B10D7:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5356700

DTC	Security light flashing pattern		15	Unprogrammed key ID number
	M-MDS display	Instrument cluster	B10D7:51	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Instrument cluster detects the unprogrammed key ID number.
POSSIBLE CAUSE				<ul style="list-style-type: none"> Key malfunction <ul style="list-style-type: none"> No keys have been programmed after replacing instrument cluster. Unprogrammed key is used. Programmed a ninth key. PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY NUMBER OF PROGRAMMED KEYS <ul style="list-style-type: none"> Perform the PID/data monitor inspection using the M-MDS to verify the number of programmed keys. (See 09-02C-22 PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) — NUMKEYS (See 09-02C-22 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Are eight keys programmed? 	Yes Erase the key ID number. Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
		No Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) Note <ul style="list-style-type: none"> To start the engine, two or more programmed keys are necessary.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to ON (engine off) using the programmed key. Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Dispose of the malfunctioning key and program a new key if necessary, then go to Step 4. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) Note <ul style="list-style-type: none"> To start the engine, two or more programmed keys are necessary.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION	ACTION
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No DTC troubleshooting completed.

SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5356800

DTC	Security light flashing pattern		16	Communication error with PCM (No response)
	M-MDS display	Instrument cluster	U0100:87	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Communication error between instrument cluster and PCM (no response).
POSSIBLE CAUSE				<ul style="list-style-type: none"> Multiplex communication system DTC is stored (CAN line) PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM MULTIPLEX COMMUNICATION SYSTEM DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the "DTC INSPECTION" to confirm the multiplex communication system DTC. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the following DTC present? <ul style="list-style-type: none"> Instrument cluster: U0001:88 PCM: U0073:00 	Yes Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No Go to the next step.
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the following DTC present? <ul style="list-style-type: none"> Instrument cluster: U0100:87 PCM: 1260:00 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to Step 4.

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ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION	ACTION	
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? <ul style="list-style-type: none"> — Instrument cluster: U0100:87 — PCM: 1260:00 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

SECURITY LIGHT: 21, DTC: B10D8:00/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5358000

DTC	Security light flashing pattern		21	Shortage of programmed key
	M-MDS display	Instrument cluster	B10D8:00	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> • Programmed key is only one.
POSSIBLE CAUSE				<ul style="list-style-type: none"> • Key malfunction <ul style="list-style-type: none"> — Programmed key is only one. • PCM malfunction • Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY NUMBER OF PROGRAMMED KEYS <ul style="list-style-type: none"> • Perform the PID/data monitor inspection using the M-MDS to verify the number of programmed keys. (See 09-02C-22 PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) — NUMKEYS (See 09-02C-22 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Are two or more keys programmed? 	Yes	Go to the next step.
		No	Program an additional key referring to the immobilizer system-related parts programming, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].) <p style="margin-top: 10px;">Note</p> <ul style="list-style-type: none"> • To start the engine, two or more programmed keys are necessary.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION		ACTION
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Switch the ignition to ON (engine off) using the valid key. Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

09-02C

SECURITY LIGHT: 22, DTC: B10DA:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5358500

DTC	Security light flashing pattern		22	Communication error with PCM (Data transfer failure)
	M-MDS display	Instrument cluster	B10DA:51	
		PCM	P1260:00	
DETECTION CONDITION				<ul style="list-style-type: none"> Communication error between instrument cluster and PCM (data transfer failure).
POSSIBLE CAUSE				<ul style="list-style-type: none"> Multiplex communication system DTC is stored (CAN line) Immobilizer system-related parts have not been programmed after replacing the instrument cluster. Immobilizer system-related parts have not been programmed after replacing the PCM. PCM malfunction Instrument cluster malfunction

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM MULTIPLEX COMMUNICATION SYSTEM DTC <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the "DTC INSPECTION" to confirm the multiplex communication system DTC. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? — Instrument cluster: U0001:88 — PCM: U0073:00 	Yes	Go to the applicable DTC inspection. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	Go to the next step.
2	VERIFY WHETHER PROGRAMMING OF IMMOBILIZER SYSTEM-RELATED PARTS HAS BEEN PERFORMED AFTER REPLACE INSTRUMENT CLUSTER <ul style="list-style-type: none"> • After replace the instrument cluster, has the programming of immobilizer system-related parts been performed? 	Yes	Go to the next step.
		No	Perform the programming of immobilizer system-related parts after replace the instrument cluster only, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
3	VERIFY WHETHER PROGRAMMING OF IMMOBILIZER SYSTEM-RELATED PARTS HAS BEEN PERFORMED AFTER REPLACE PCM <ul style="list-style-type: none"> • After replace the PCM, has the programming of immobilizer system-related parts been performed? 	Yes	Go to the next step.
		No	Perform the programming of immobilizer system-related parts after replace the PCM only, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
4	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? — Instrument cluster: B10DA:51 — PCM: P1260:00 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 6.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) • Is the following DTC present? — Instrument cluster: B10DA:51 — PCM: P1260:00 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

STEP	INSPECTION		ACTION
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

SECURITY LIGHT: 23, DTC: B10DA:62/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5358600

DTC	Security light flashing pattern	23	B10DA:62	P1260:00	Communication error with PCM (Data mis-match)
	M-MDS display	Instrument cluster		PCM	
DETECTION CONDITION					<ul style="list-style-type: none"> Communication error between instrument cluster and PCM (data mis-match).
POSSIBLE CAUSE					<ul style="list-style-type: none"> Immobilizer system programming malfunction <ul style="list-style-type: none"> — Immobilizer system-related parts have not been programmed after replacing the PCM. PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	VERIFY WHETHER PROGRAMMING OF IMMOBILIZER SYSTEM-RELATED PARTS HAS BEEN PERFORMED AFTER REPLACE PCM <ul style="list-style-type: none"> After replace the PCM, has the programming of immobilizer system-related parts been performed? 	Yes	Go to the next step.
		No	Perform the programming of immobilizer system-related parts after replace the PCM only, then go to the next step. (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
2	VERIFY PCM MALFUNCTION <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster and PCM using the M-MDS. (See 01-02A-11 AFTER REPAIR PROCEDURE [LF, L5].) (See 01-02B-12 AFTER REPAIR PROCEDURE [L3 WITH TC].) (See 09-02C-3 CLEARING DTC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Perform the immobilizer system DTC inspection using the M-MDS. (See 09-02C-2 DTC INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
		No	DTC troubleshooting completed.

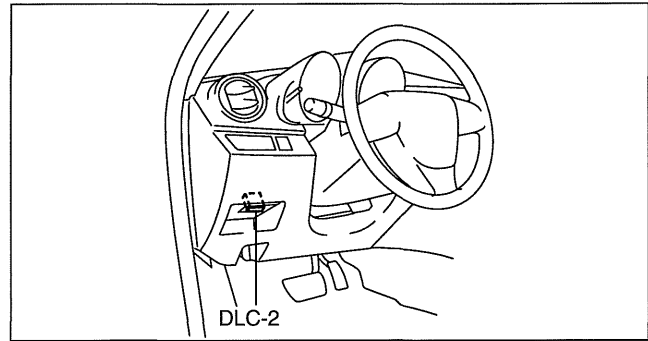
09-02C

ON-BOARD DIAGNOSTIC [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5960600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table. (See 09-02C-22 PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
4. Verify the PID data according to the directions on the screen.



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Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)]

id0902e5960700

PID Name	Description	Unit/Status
NUMKEYS	Number of key ID registered in the instrument cluster	0—8

09-02D ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

FOREWORD [MULTIPLEX COMMUNICATION SYSTEM]..... 09-02D-1
 Troubleshooting Procedure 09-02D-2

DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM]..... 09-02D-3

DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM]..... 09-02D-7
 Diagnostic Table for Determining Malfunctioning Part 09-02D-7

A..... 09-02D-11
 B..... 09-02D-12
 C..... 09-02D-13
 D..... 09-02D-14
 E..... 09-02D-15
 F..... 09-02D-16
 G..... 09-02D-17
 H..... 09-02D-18
 I..... 09-02D-19
 J..... 09-02D-20
 K..... 09-02D-21
 L..... 09-02D-22
 M..... 09-02D-23
 N..... 09-02D-24
 O..... 09-02D-25
 P..... 09-02D-26

DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM] 09-02D-27
 Diagnostic Table for Determining Malfunctioning Part 09-02D-27

A..... 09-02D-28
 B..... 09-02D-29
 C..... 09-02D-30
 D..... 09-02D-31
 E..... 09-02D-32
 F..... 09-02D-33
 G..... 09-02D-34

M-MDS AND VEHICLE NOT COMMUNICATING [MULTIPLEX COMMUNICATION SYSTEM] 09-02D-34
 Detection Condition..... 09-02D-34
 Possible Causes 09-02D-34
 Wiring Diagram 09-02D-35
 Diagnostic Procedure 09-02D-36

DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM] 09-02D-38
 Diagnostic procedure 09-02D-40

DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM] 09-02D-41
 Diagnostic procedure 09-02D-42

09-02D

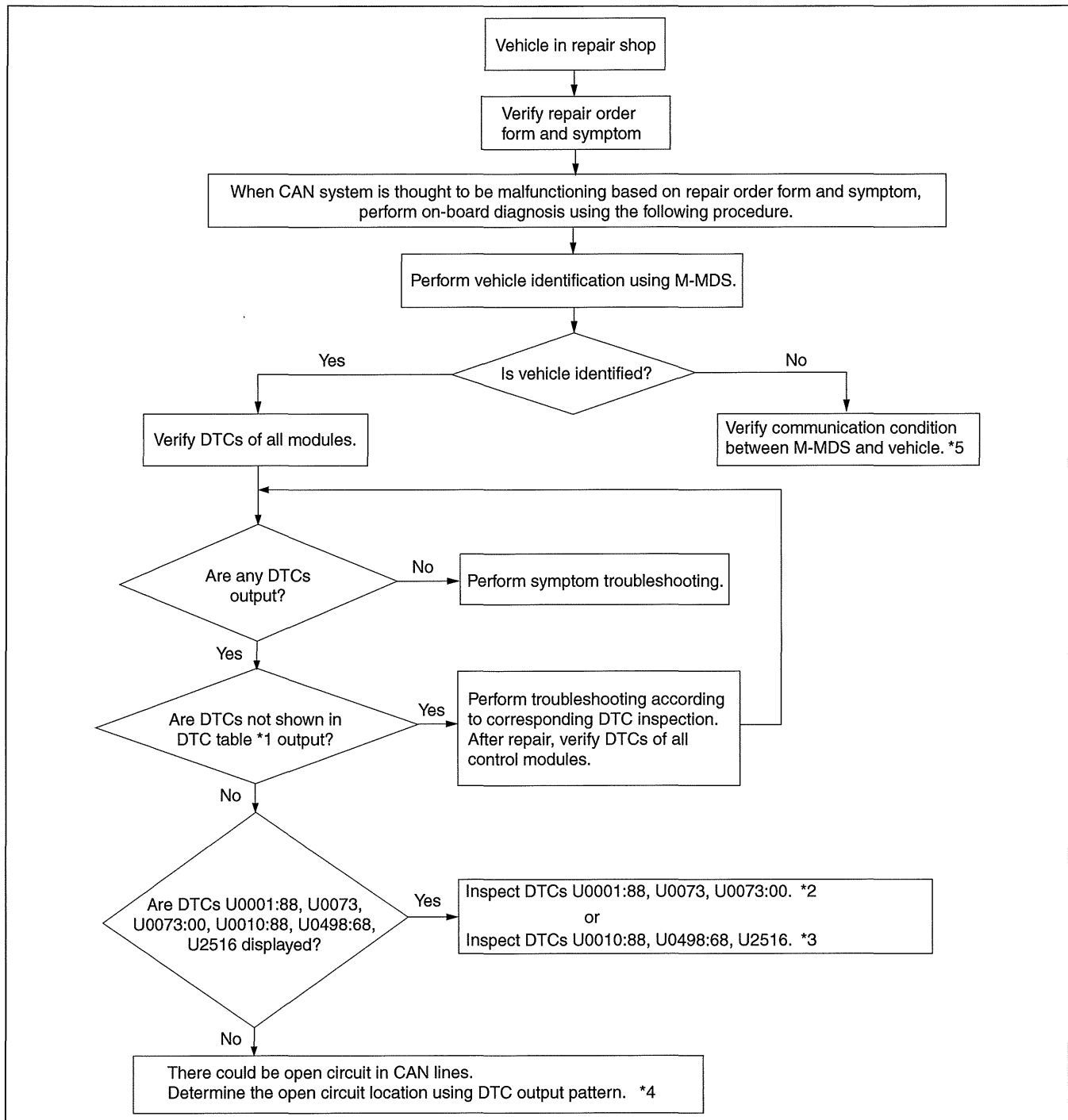
FOREWORD [MULTIPLEX COMMUNICATION SYSTEM]

id0902e6845700

- If the CAN system is considered to be the cause of the malfunction based on the repair order form and the malfunctioning symptom, follow the 09-02D-2 Troubleshooting Procedure.
- DTCs are also output due to a control module or sensor malfunction, or incorrect power supply. Verify the output DTCs and first inspect the DTCs not shown in 09-02D-3 DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM].
- If there is an open circuit in the communication lines, it is possible that signal error DTCs may be output in addition to communication error DTCs. Perform 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM], 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM] if the communication error and signal error DTCs are output simultaneously.

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Troubleshooting Procedure



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*1 : 09-02D-3 DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM]

*2 : 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM]

*3 : 09-02D-41 DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM]

*4 : 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM] / 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM]

*5 : 09-02D-34 M-MDS AND VEHICLE NOT COMMUNICATING [MULTIPLEX COMMUNICATION SYSTEM]

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM]

id0902e6845800

HS-CAN

DTC output module	DTC	Malfunction location	Reference for inspection procedure
PCM (LF, L5)	U0073:00*1	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0101:00	Communication error to TCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0121:00	Communication error to ABS HU/CM (With ABS) Communication error to DSC HU/CM (With DSC)	
	U0155:00	Communication error to instrument cluster	
PCM (L3 WITH TC)	U0073:00*1	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0121:00	Communication error to DSC HU/CM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0131:00	Communication error to EHPAS control module	
	U0140:00	Communication error to BCM	
	U0155:00	Communication error to instrument cluster	
TCM*2	U0073:00*1	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0121:00	Communication error to ABS HU/CM (With ABS) Communication error to DSC HU/CM (With DSC)	
EHPAS control module	U0073*1	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0140	Communication error to BCM	
	U0155	Communication error to instrument cluster	
	U1938*1	Fault received from BCM	(See 06-02-10 DTC U1938.)
	U2023*1	Fault received from PCM	(See 06-02-11 DTC U2023.)
ABS HU/CM*3	U0001:88*1	CAN system communication error (BUS off)	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0155:00	Communication error to instrument cluster	
DSC HU/CM*4	U0001:88*1	CAN system communication error (BUS off)	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0101:00	Communication error to TCM	
	U0140:00	Communication error to BCM	
	U0155:00	Communication error to instrument cluster	(See 04-02B-25 DTC U0401:00 [DYNAMIC STABILITY CONTROL (DSC)].)
	U0401:00*1	Signal error from PCM	
	U0402:00*1	Signal error from TCM	
	U0422:00*1	Signal error from BCM	
	U0428:62*1	Signal error from BCM	
U0428:64*1	Signal error from BCM		

09-02D

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

DTC output module	DTC	Malfunction location	Reference for inspection procedure
BCM	U0001:88* ¹	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0101:00	Communication error to TCM	
	U0151:00	Communication error to SAS control module	
	U0214:00	Communication error to keyless control module	
	U0401:68* ¹	Signal error from PCM	(See 09-02F-77 DTC U0401:68 [BCM].)
SAS control module	U0073:00* ¹	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0155:00	Communication error to instrument cluster	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
Keyless control module* ⁵	U0001:88* ¹	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0101:00	Communication error to TCM	
	U0121:00	Communication error to ABS HU/CM (With ABS) Communication error to DSC HU/CM (With DSC)	
	U0401:68* ¹	Signal error from PCM	(See 09-02A-97 DTC U0401:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
	U0415:68* ¹	Signal error from ABS HU/CM (With ABS) Signal error from DSC HU/CM (With DSC)	(See 09-02A-98 DTC U0415:68 [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
AFS control module* ⁶	U0001:88* ¹	CAN system communication error	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0140:00	Communication error to BCM	
	U0401:00* ¹	Signal error from PCM	(See 09-02I-16 DTC U0401:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
	U0422:00* ¹	Signal error from BCM	(See 09-02I-16 DTC U0422:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

DTC output module	DTC	Malfunction location	Reference for inspection procedure
Instrument cluster	U0001:88*1	CAN system communication error (HS-CAN)	(See 09-02D-38 DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:00	Communication error to PCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0100:87	Communication error to PCM (no response)	(See 09-02B-21 SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM)].)
	U0101:00	Communication error to TCM	(See 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0121:00	Communication error to ABS HU/CM (With ABS) Communication error to DSC HU/CM (With DSC)	
	U0131:00	Communication error to EHPAS control module	
	U0140:00	Communication error to BCM	
	U0151:00	Communication error to SAS control module	
	U0182:00	Communication error to AFS control module	
	U0214:00	Communication error to keyless control module	
	U0401:68*1	Signal error from PCM	
	U0401:92*1	Signal error from PCM	(See 09-02E-12 DTC U0402:92 [INSTRUMENT CLUSTER].)
	U0402:68*1	Signal error from TCM	(See 09-02E-11 DTC U0402:68 [INSTRUMENT CLUSTER].)
	U0402:92*1	Signal error from TCM	(See 09-02E-12 DTC U0402:92 [INSTRUMENT CLUSTER].)
	U0415:68*1	Signal error from ABS HU/CM (with ABS) Signal error from DSC HU/CM (with DSC)	(See 09-02E-13 DTC U0415:68 [INSTRUMENT CLUSTER].)
	U0415:92*1	Signal error from ABS HU/CM (with ABS) Signal error from DSC HU/CM (with DSC)	(See 09-02E-14 DTC U0415:92 [INSTRUMENT CLUSTER].)
	U0452:92*1	Signal error from SAS control module	(See 09-02E-15 DTC U0452:92 [INSTRUMENT CLUSTER].)
	U0483:68*1	Signal error from AFS control module	(See 09-02E-16 DTC U0483:68 [INSTRUMENT CLUSTER].)
	U0483:92*1	Signal error from AFS control module	(See 09-02E-17 DTC U0483:92 [INSTRUMENT CLUSTER].)
	U0515:68*1	Signal error from keyless control module	(See 09-02E-18 DTC U0515:68 [INSTRUMENT CLUSTER].)
U0515:92*1	Signal error from keyless control module	(See 09-02E-19 DTC U0515:92 [INSTRUMENT CLUSTER].)	

09-02D

*1 : If only the target DTCs are displayed, perform the corresponding DTC inspection without determining the open circuit location.

*2 : ATX

*3 : with ABS

*4 : with DSC

*5 : with advanced keyless entry and push button start system

*6 : with AFS (adaptive front lighting system)

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

MS-CAN

DTC output module	DTC	Malfunction location	Reference for inspection procedure
Information display* ²	U0164 EATC	Communication error to climate control unit	(See 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0181 HEC	Communication error to instrument cluster	
	U0184 ACU	Communication error to audio unit	
	U2516* ¹	CAN system communication error	(See 09-02D-41 DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM].)
Multi information display* ³	U0155	Communication error to instrument cluster	(See 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0164	Communication error to climate control unit	
	U0184	Communication error to audio unit	
	U2516* ¹	CAN system communication error	(See 09-02D-41 DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM].)
Audio unit* ⁴	U0010:88* ¹ (16:Er12)	CAN system communication error	(See 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0155:00 (16:Er11/ 17:Er12)	Communication error to instrument cluster	
	U0156:00	Communication error to multi information display/information display	
	U0193:00	Communication error to SIRIUS satellite radio unit	
	U0197:00	Communication error to Bluetooth unit	
	U0423:68	Invalid date received from Instrument cluster	
Bluetooth unit* ⁵	U0498:68* ¹ (26:Er81)	CAN system communication error	(See 09-02D-41 DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM].)
Climate control unit* ⁶	U0010:88* ¹	CAN system communication error	(See 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0155:00	Communication error to instrument cluster	
	U0156:00	Communication error to multi information display/information display	
	U0423:68	Invalid date received from Instrument cluster	
Instrument cluster	U0010:88* ¹	Module communication error (MS-CAN)	(See 09-02D-41 DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM].)
	U0156:00	Communication error to multi information display/information display	(See 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)
	U0164:00	Communication error to climate control unit	(See 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].)

*1 : If only the target DTCs are displayed, perform the corresponding DTC inspection without determining the open circuit location.

*2 : Without maintenance monitor

*3 : With maintenance monitor

*4 : With audio system

*5 : With Bluetooth system (HF/TEL system)

*6 : With full-auto air conditioner

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

ABS*2 (ABS HU/ CM)	U0100: 00	x		x		x																
	U0155: 00																				x	
ABS*3 (DSC HU/ CM)	U0100: 00	x		x		x																
	U0101: 00		x	x		x																
	U0140: 00																					
	U0155: 00																					x
	U0401: 00	-		-		-																
	U0402: 00		-	-		-																
	U0422: 00																					
	U0428: 62																					
	U0428: 64																					
GEM (BCM)	U0100: 00	x		x		x			x													
	U0101: 00		x	x		x			x													
	U0151: 00											x										
	U0214: 00													x								
	U0401: 68	-		-		-			-													
RCM (SAS control module)	U0155: 00																					x
RKE*4 (Keyless control module)	U0100: 00	x		x		x			x	x			x									
	U0101: 00		x	x		x			x	x			x									
	U0121: 00							x	x	x	x		x									
	U0401: 68	-		-		-			-	-			-									
	U0415: 68							-	-	-	-		-									
AFS*5 (AFS control module)	U0100: 00	x		x		x			x	x			x									x
	U0140: 00									x			x									x
	U0401: 00	-		-		-			-	-			-									-
	U0422: 00									-			-									-

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

IC (Instrument cluster)	U0100:00	x		x		x			x	x		x		x		x	
	U0100:87	-		-		-			-	-		-		-		-	
	U0101:00		x	x		x			x	x		x		x		x	
	U0121:00						x	x	x	x		x		x		x	
	U0131:00				x	x			x	x		x		x		x	
	U0140:00									x		x		x		x	
	U0151:00										x	x		x		x	
	U0182:00														x	x	
	U0214:00											x	x			x	
	U0401:68	-		-		-			-	-		-		-		-	
	U0401:92	-		-		-			-	-		-		-		-	
	U0402:68		-	-		-			-	-		-		-		-	
	U0402:92		-	-		-			-	-		-		-		-	
	U0415:68					-	-	-	-			-		-		-	
	U0415:92					-	-	-	-			-		-		-	
	U0452:92										-	-		-		-	
	U0483:68															-	-
	U0483:92															-	-
	U0515:68													-	-		-
U0515:92													-	-		-	
M-MDS display module	"Fail" display pattern																
PCM (LF, L5)	x		x		x				x	x		x		x		x	
PCM (L3 WITH TC)	x		x		x				x	x		x		x		x	
TCM*1		x	x		x				x	x		x		x		x	
EPS				x	x				x	x		x		x		x	
ABS*2						x			x	x		x		x		x	
ABS*3							x		x	x		x		x		x	
GEM										x		x		x		x	
RCM											x	x		x		x	
RKE*4													x	x		x	
AFS*5															x	x	
IC																	x
Item	Diagnostic result																
Possible cause and inspection item	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
Reference page	09-02D-11 A	09-02D-12 B	09-02D-13 C	09-02D-14 D	09-02D-15 E	09-02D-16 F	09-02D-17 G	09-02D-18 H	09-02D-19 I	09-02D-20 J	09-02D-21 K	09-02D-22 L	09-02D-23 M	09-02D-24 N	09-02D-25 O	09-02D-26 P	

09-02D

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

- *1 : ATX
- *2 : With ABS
- *3 : With DSC
- *4 : With advanced keyless and push button start system
- *5 : With AFS (adaptive front lighting system)

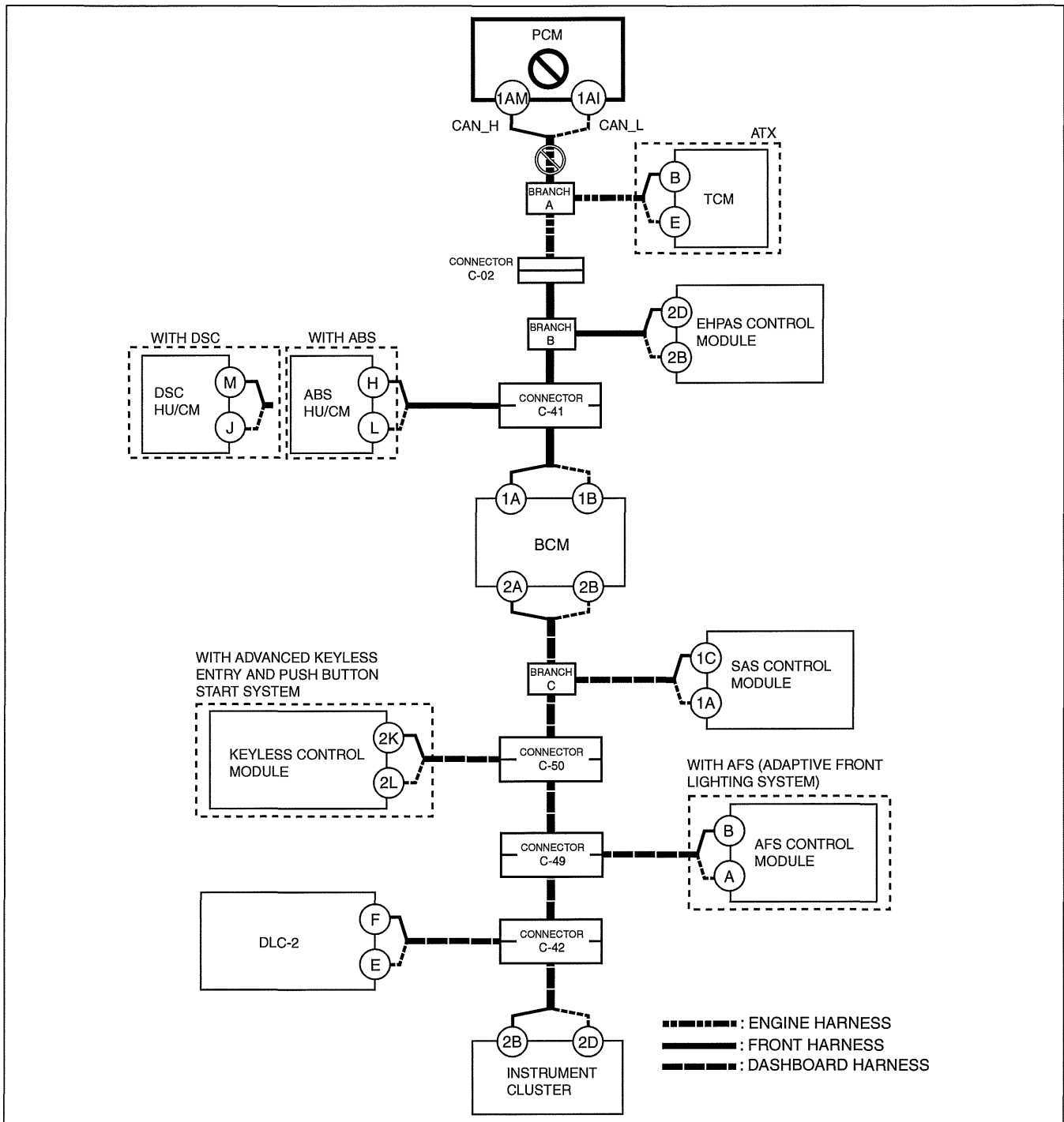
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

A

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between PCM and branch A
- PCM malfunction

System wiring diagram



09-02D

am3uuw0000568

Inspection item

- PCM connector
- Wiring harness between PCM terminal 1AM and branch A
- Wiring harness between PCM terminal 1AI and branch A
- PCM

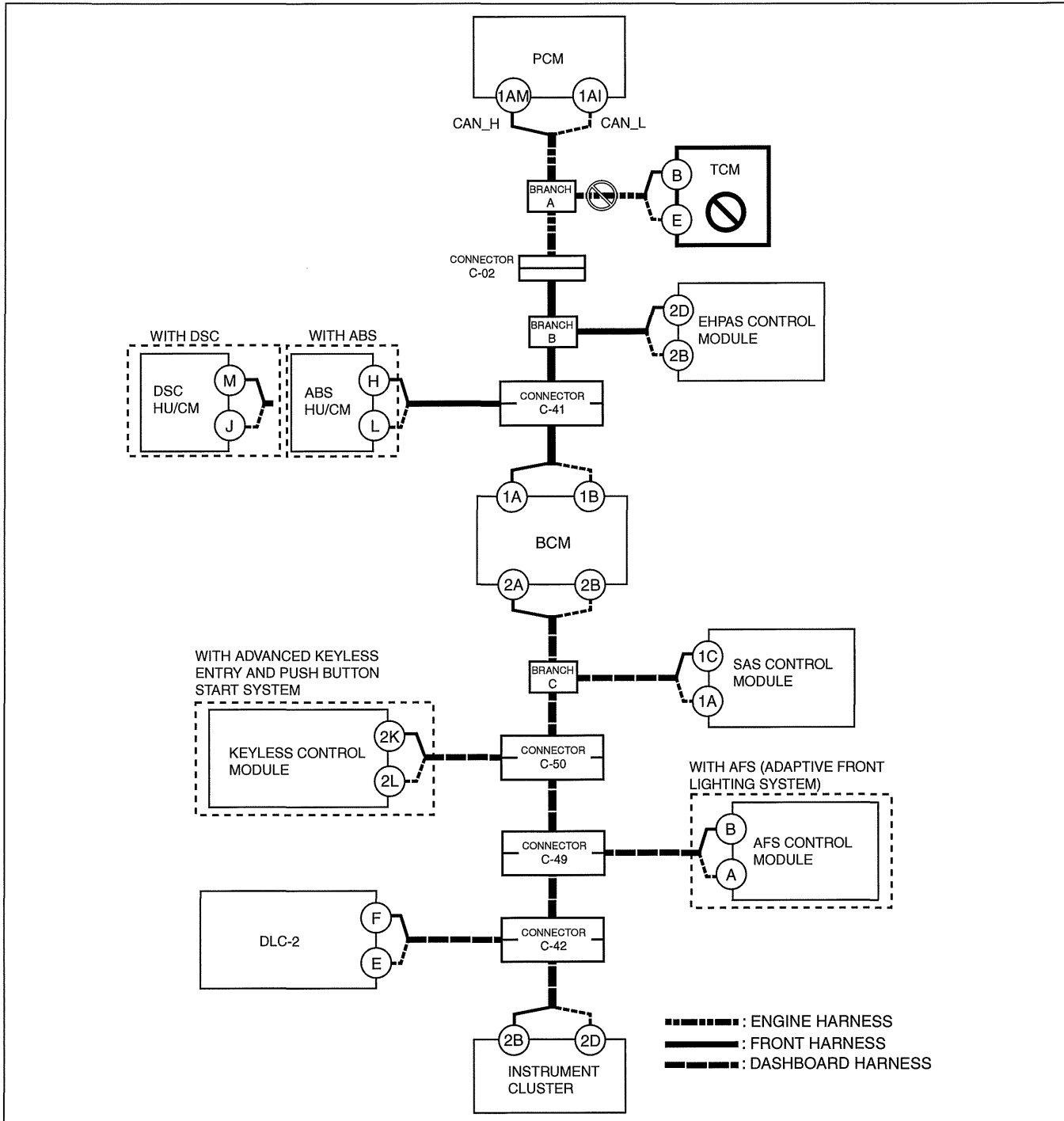
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

B

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between TCM and branch A
- TCM malfunction

System wiring diagram



am3uuw0000568

Inspection item

- TCM connector
- Wiring harness between TCM terminal B and branch A
- Wiring harness between TCM terminal E and branch A
- TCM

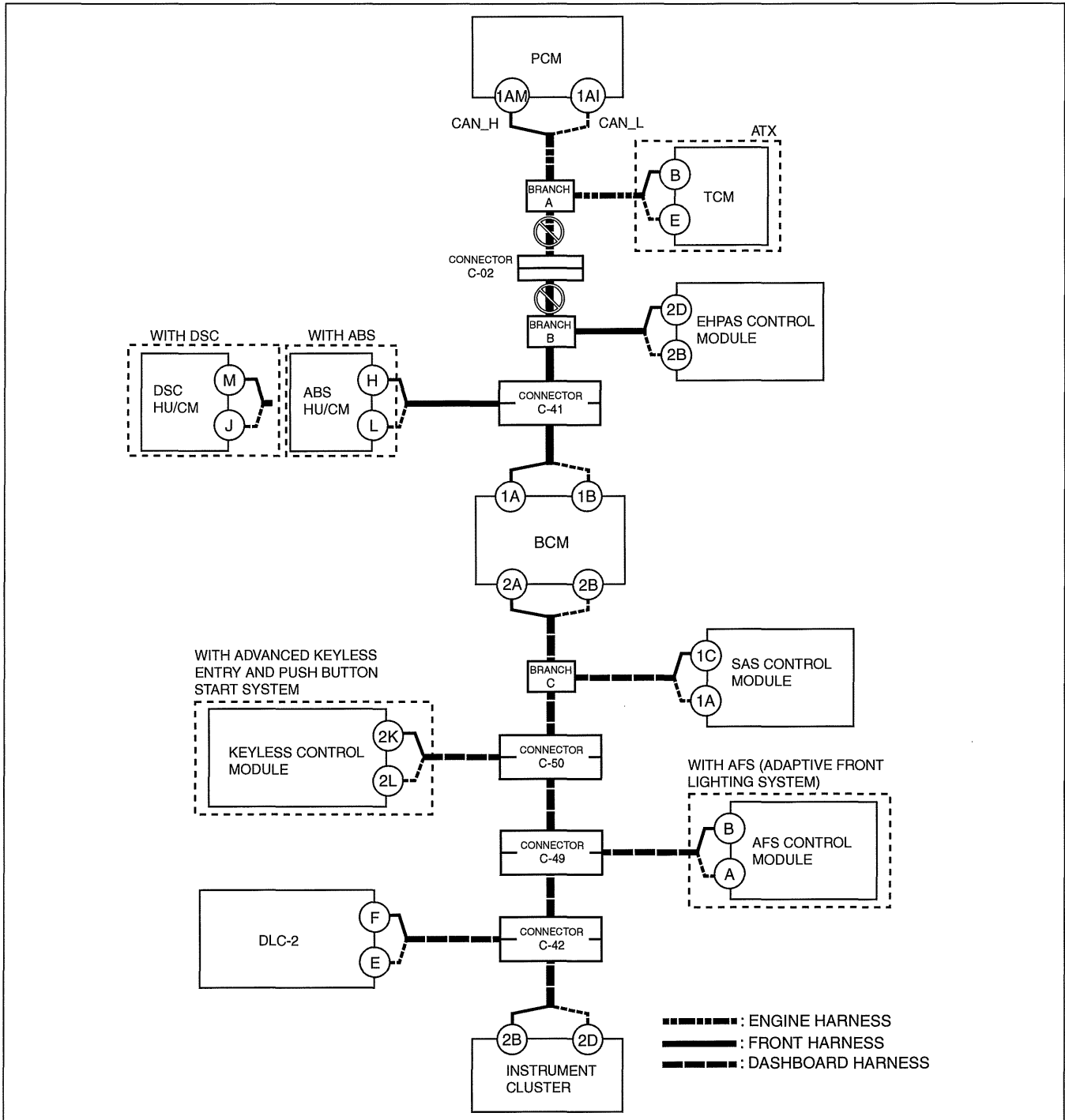
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

C

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch A and connector C-02
- Open circuit in wiring harness between connector C-02 and branch B
- Connector C-02 malfunction

System wiring diagram



09-02D

am3uuw000568

Inspection item

- Connector C-02
- Wiring harness between branch A and connector C-02
- Wiring harness between connector C-02 and branch B

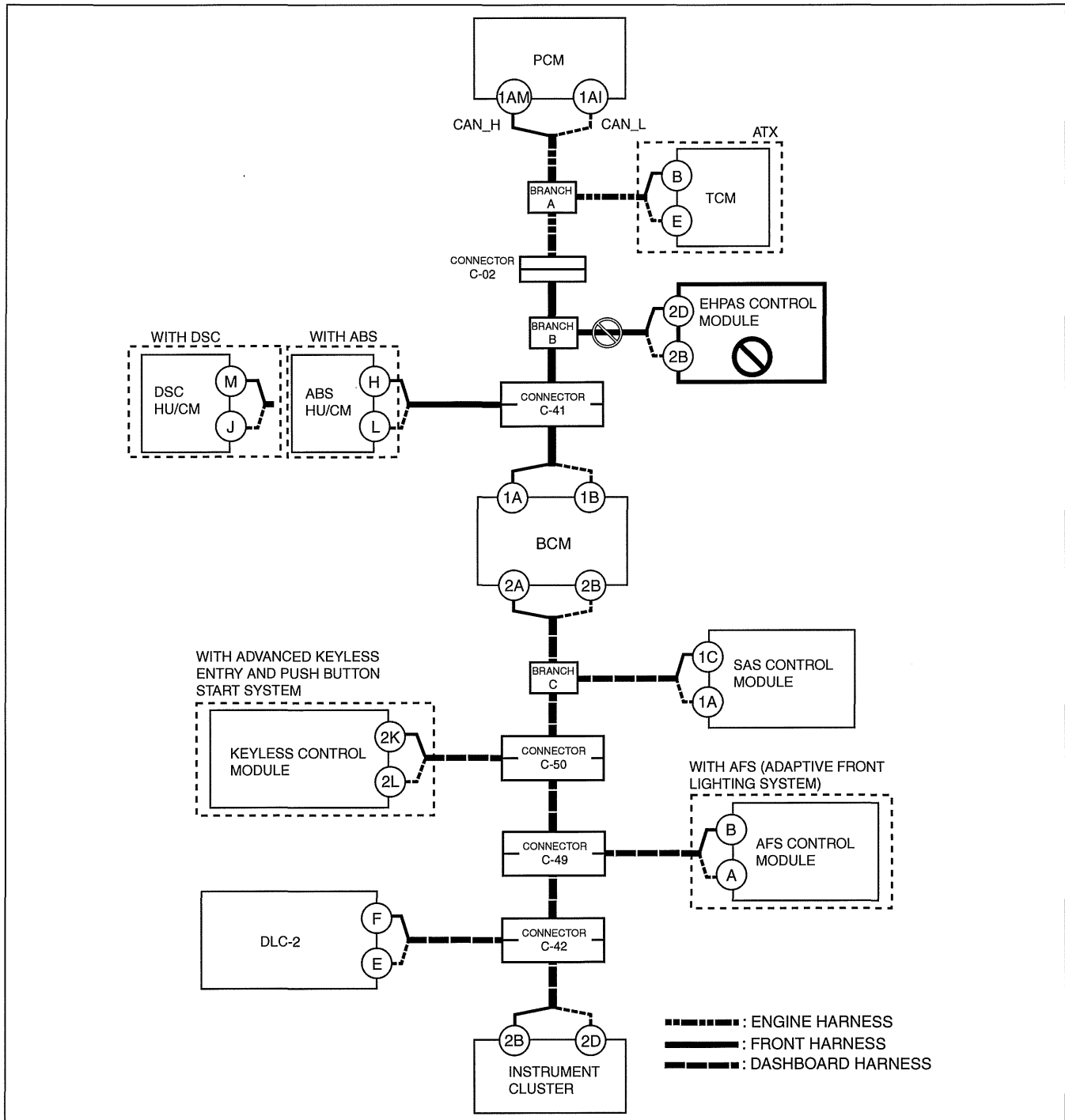
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

D

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between EHPAS control module and branch B
- EHPAS control module malfunction

System wiring diagram



am3uuw0000568

Inspection item

- EHPAS control module connector
- Wiring harness between EHPAS control module terminal 2D and branch B
- Wiring harness between EHPAS control module terminal 2B and branch B
- EHPAS control module

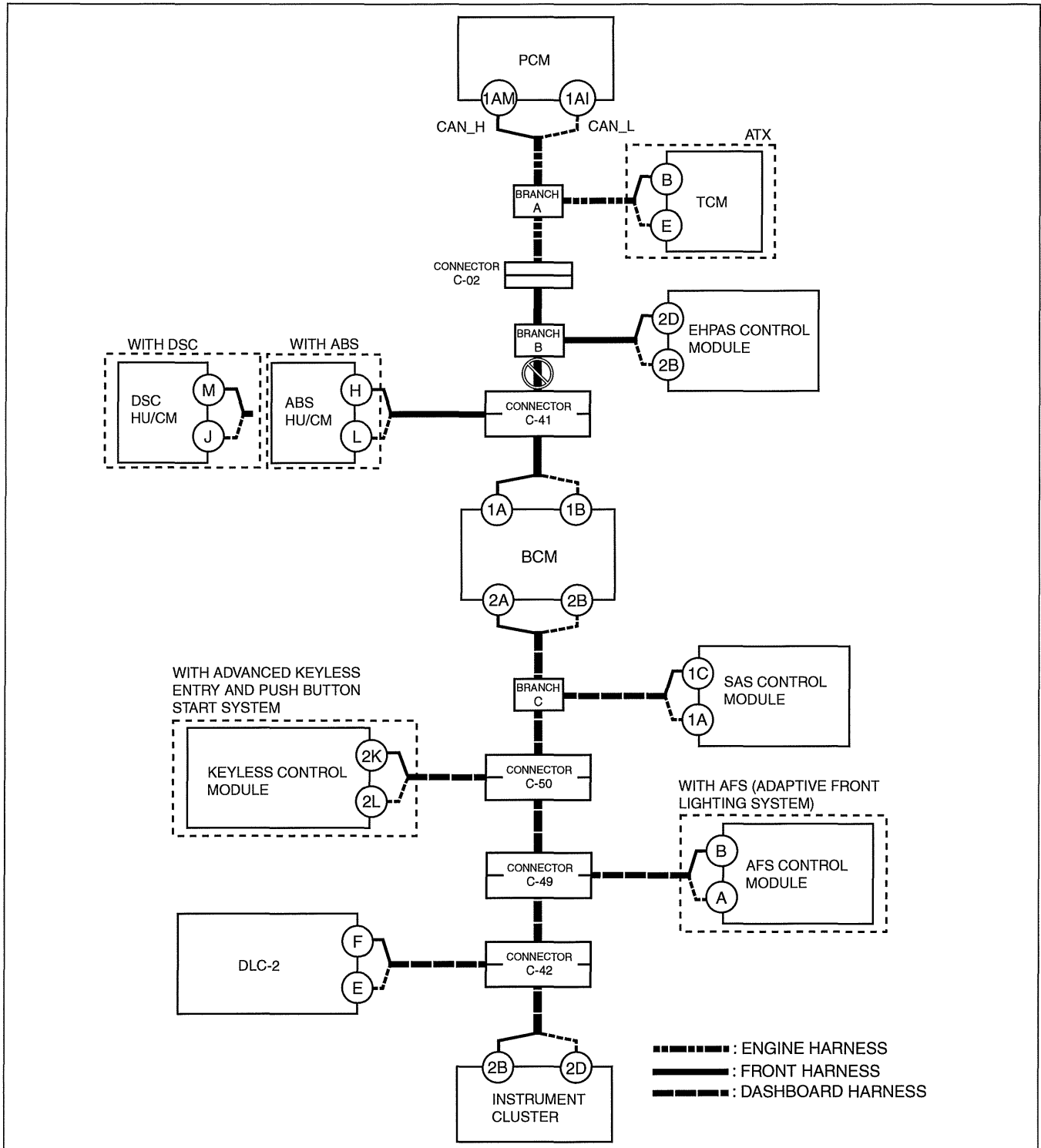
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

E

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch B and connector C-41
- Connector C-41 malfunction

System wiring diagram



09-02D

am3uuw0000568

Inspection item

- Connector C-41
- Wiring harness between branch B and connector C-41

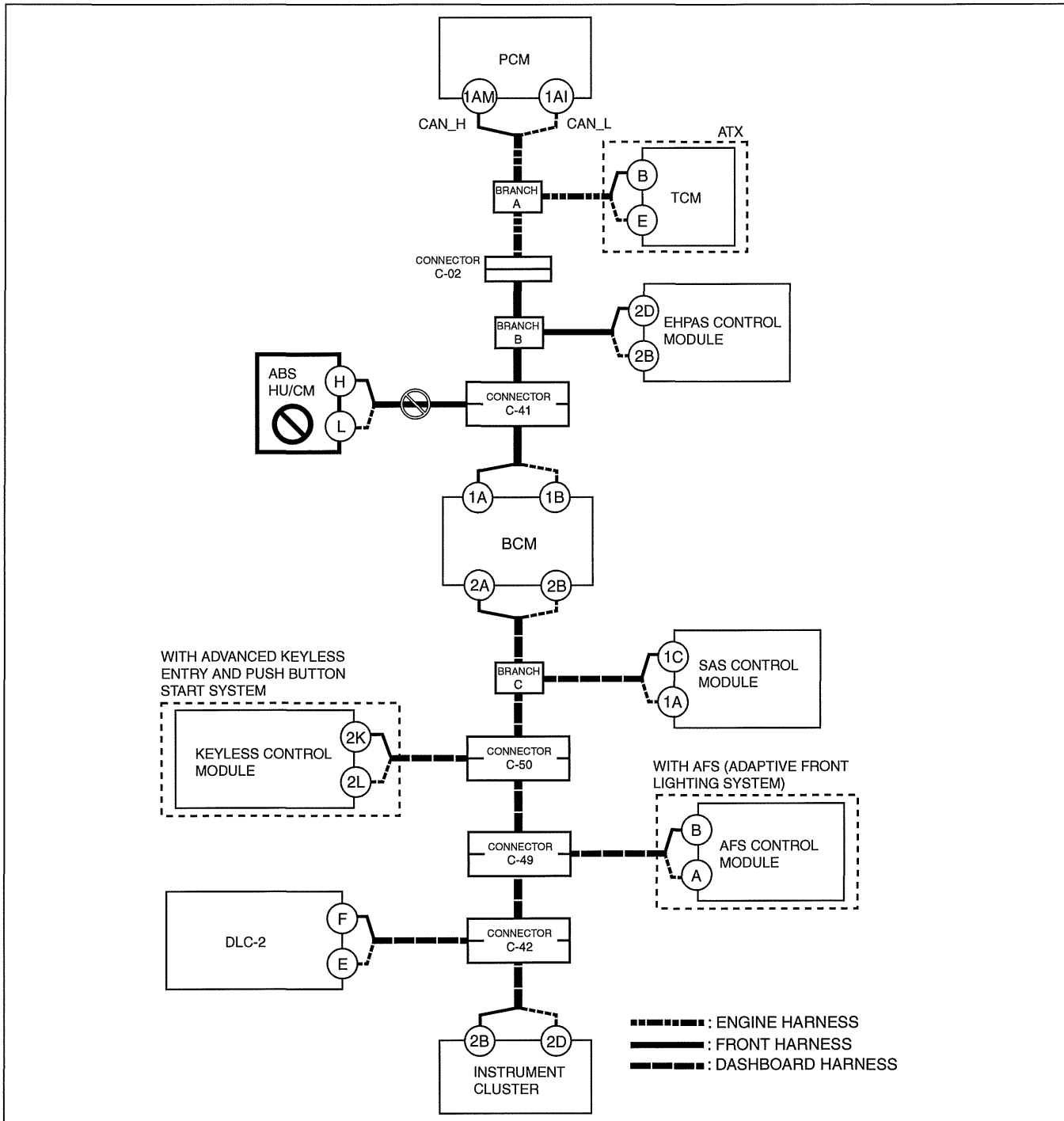
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

F

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between ABS HU/CM and connector C-41
- Connector C-41 malfunction
- ABS HU/CM malfunction

System wiring diagram



am3uuw0000568

Inspection item

- ABS HU/CM connector
- Connector C-41
- Wiring harness between ABS HU/CM terminal H and connector C-41
- Wiring harness between ABS HU/CM terminal L and connector C-41
- ABS HU/CM

09-02D-16

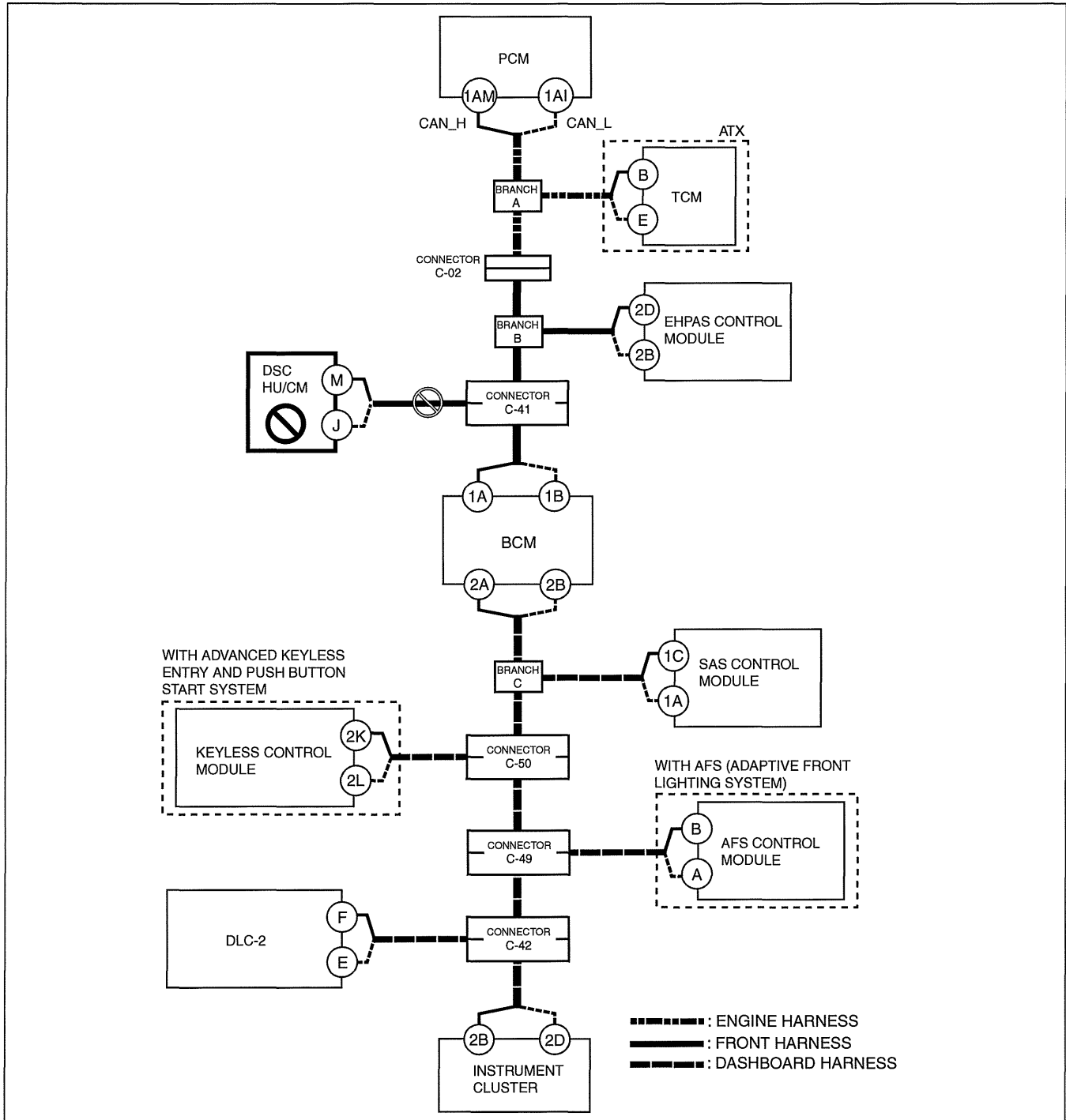
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

G

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness DSC HU/CM and connector C-41
- Connector C-41 malfunction
- DSC HU/CM malfunction

System wiring diagram



09-02D

am3uuw000568

Inspection item

- DSC HU/CM connector
- Connector C-41
- Wiring harness between DSC HU/CM terminal M and connector C-41
- Wiring harness between DSC HU/CM terminal J and connector C-41
- DSC HU/CM

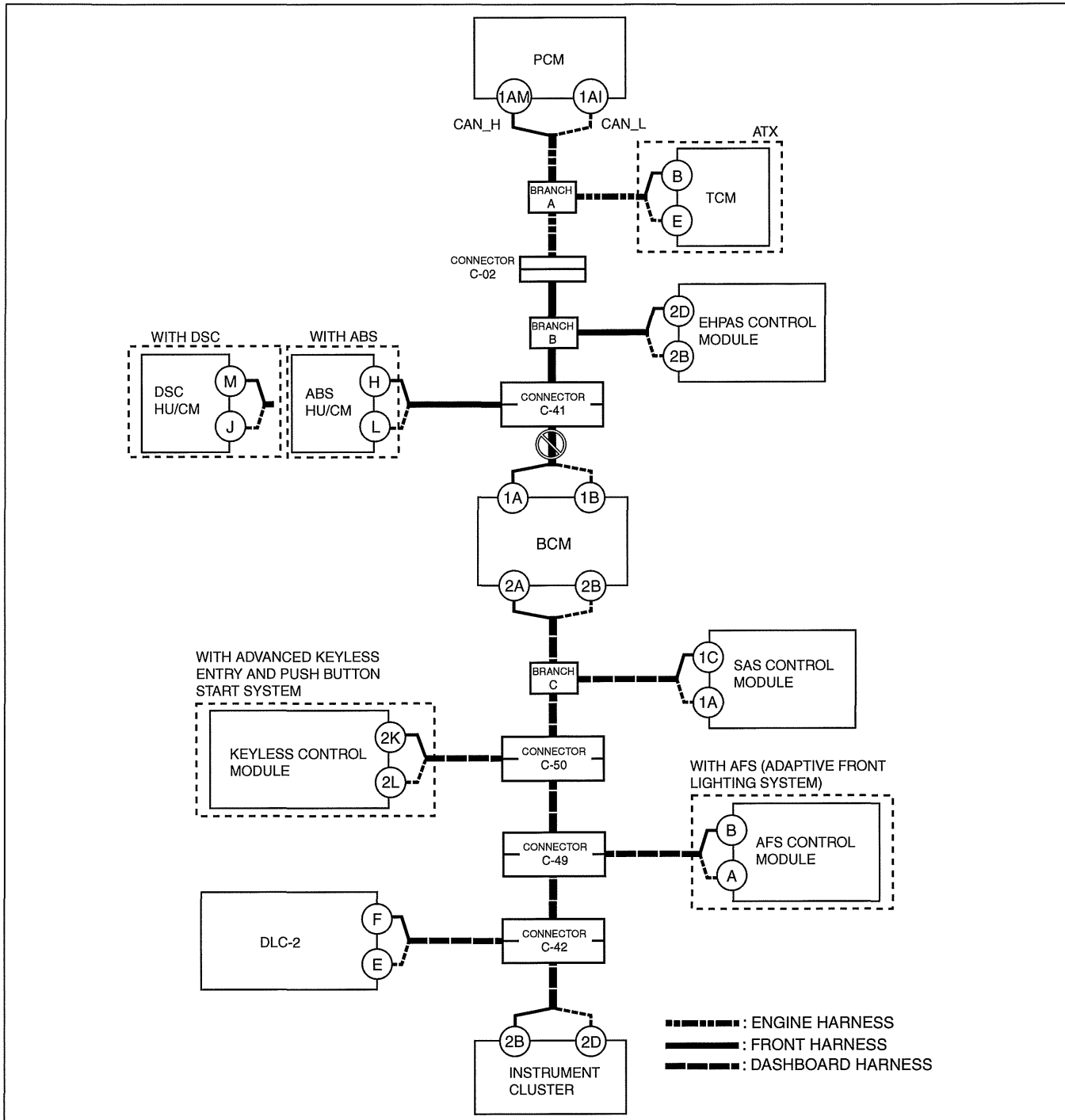
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

H

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-41 and BCM
- Connector C-41 malfunction

System wiring diagram



am3uuw0000568

Inspection item

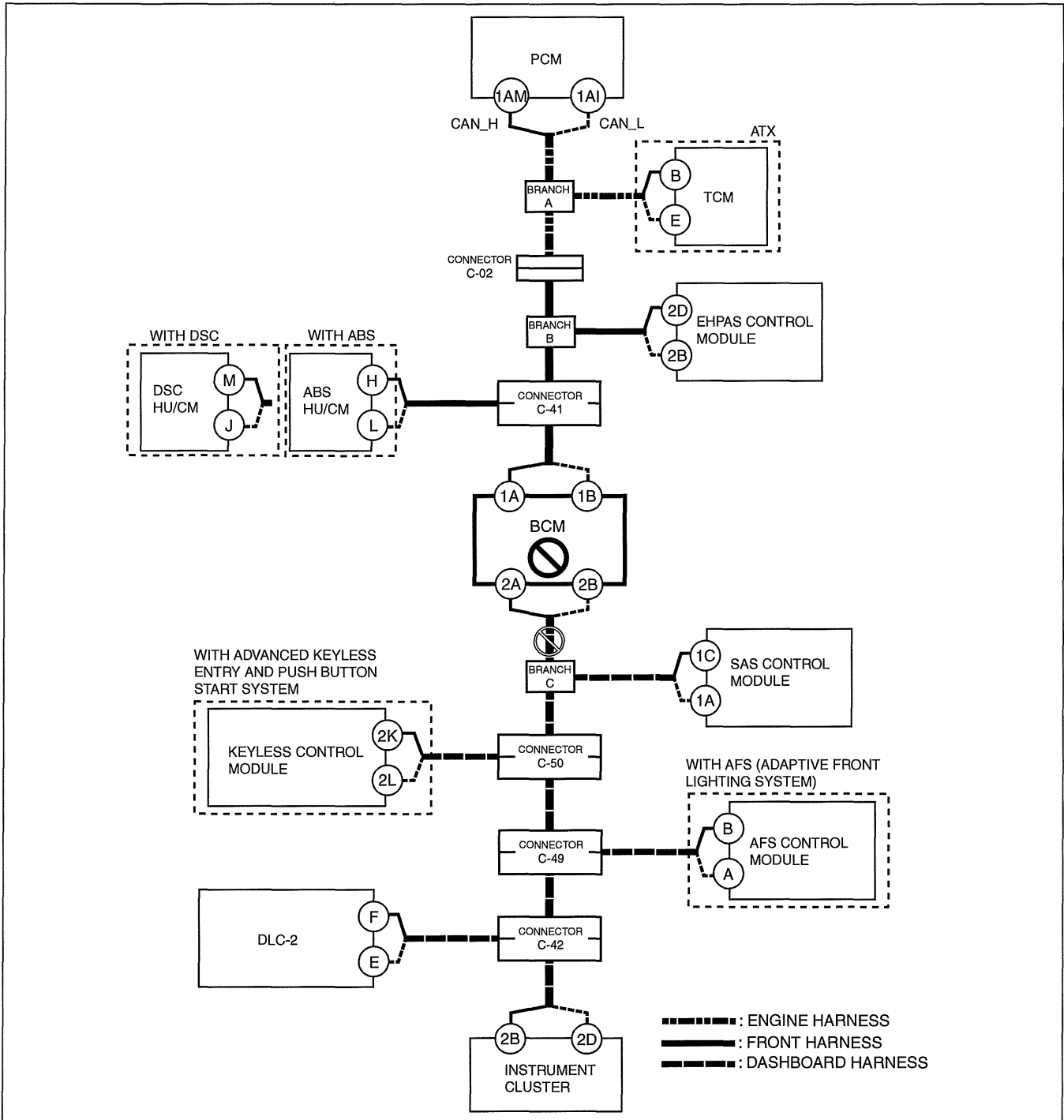
- Connector C-41
- BCM connector
- Wiring harness between BCM terminal 1A and connector C-41
- Wiring harness between BCM terminal 1B and connector C-41

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

I Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between BCM and branch C
- BCM malfunction

System wiring diagram



09-02D

am3uuw0000569

Inspection item

- BCM connector
- Wiring harness between BCM terminal 2A and branch C
- Wiring harness between BCM terminal 2B and branch C
- BCM

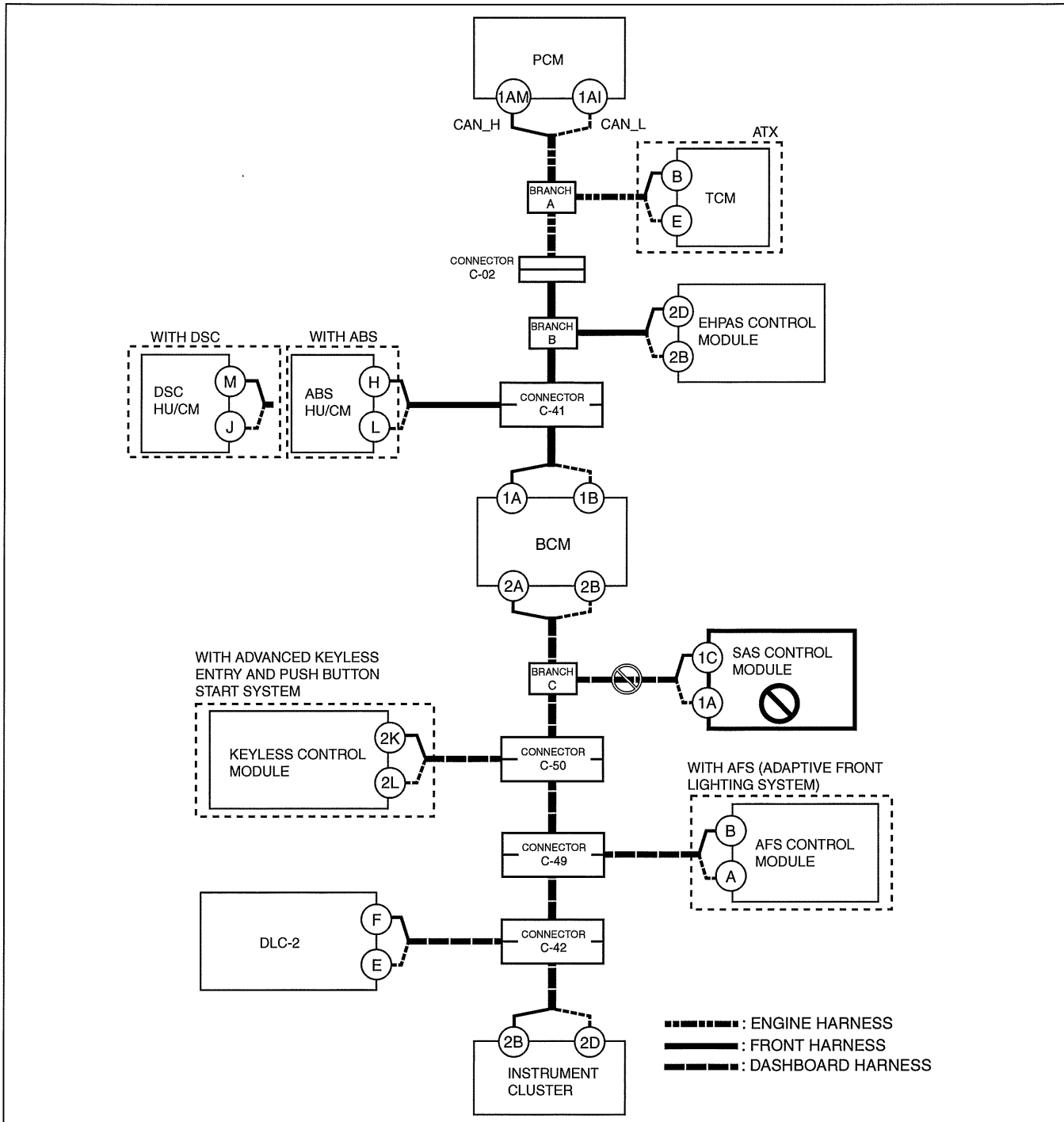
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

J

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness SAS control module and branch C
- SAS control module malfunction

System wiring diagram



am3uuw0000569

Inspection item

- SAS control module connector
- Wiring harness between SAS control module terminal 1C and branch C
- Wiring harness between SAS control module terminal 1A and branch C
- SAS control module

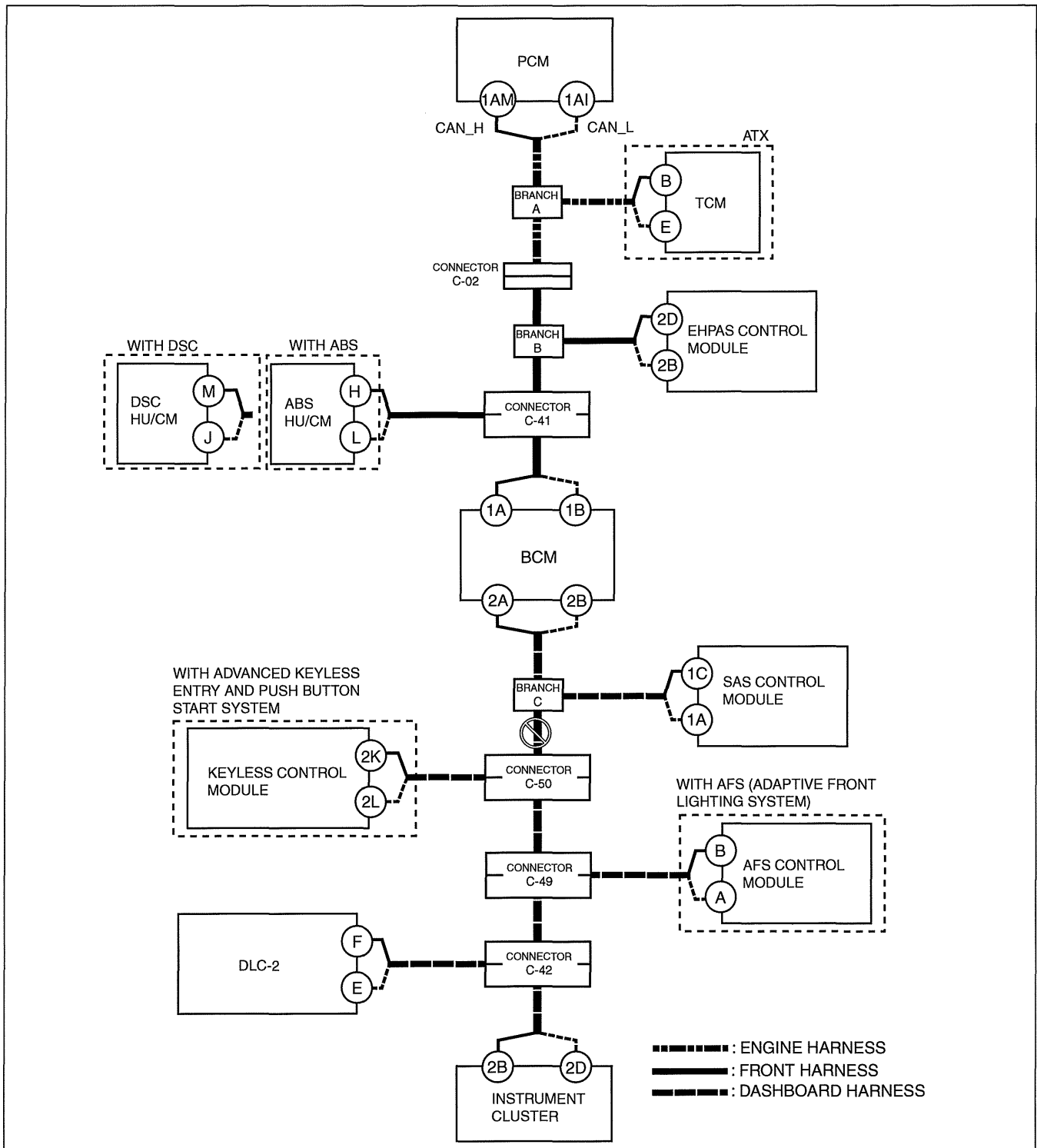
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

K

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch C and connector C-50
- Connector C-50 malfunction

System wiring diagram



09-02D

am3uuw0000569

Inspection item

- Connector C-50
- Wiring harness between branch C and connector C-50

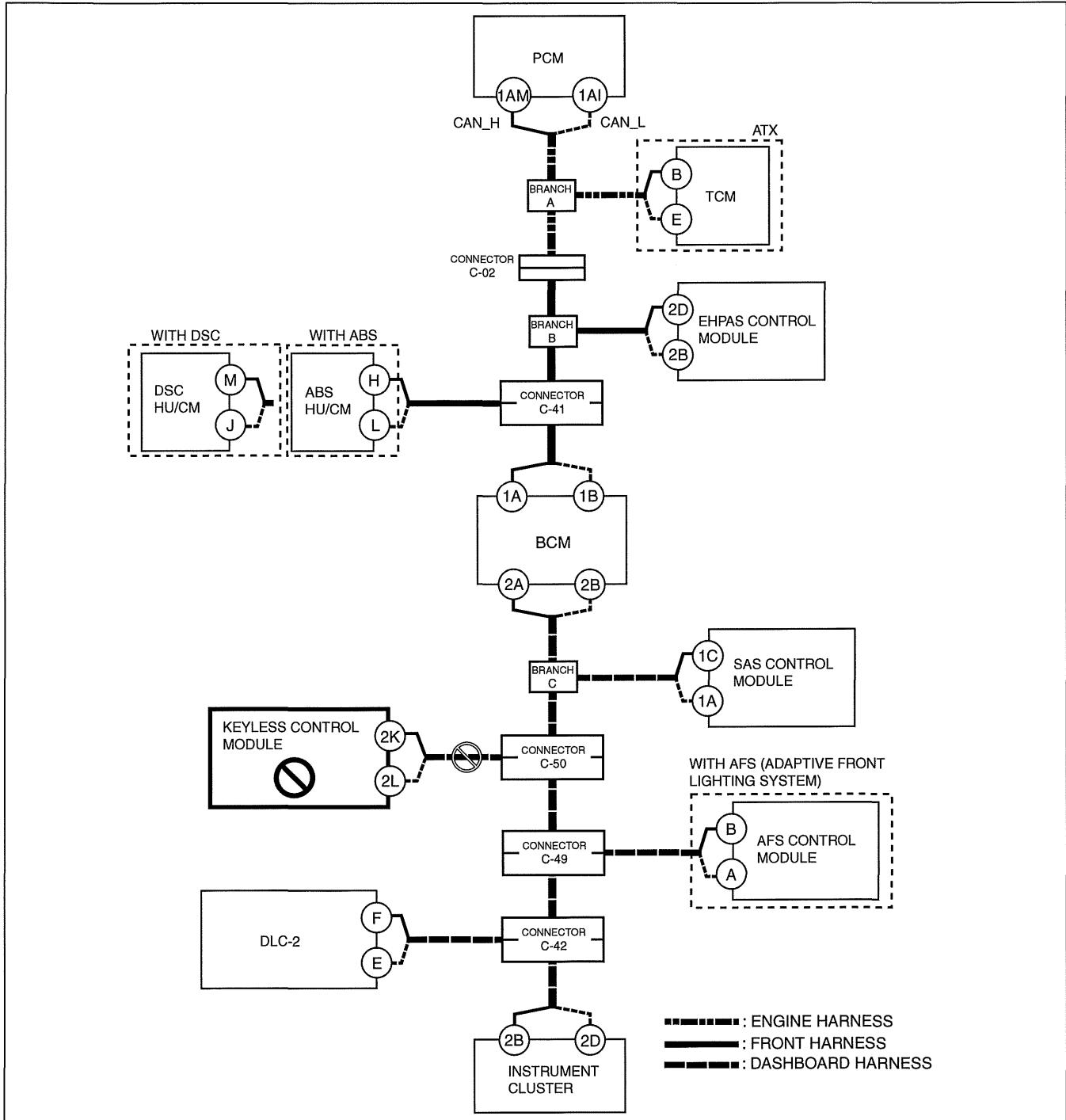
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

L

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between keyless control module and connector C-50
- Connector C-50 malfunction
- Keyless control module malfunction

System wiring diagram



am3uuw0000569

Inspection item

- Keyless control module connector
- Connector C-50
- Wiring harness between keyless control module terminal 2K and connector C-50
- Wiring harness between keyless control module terminal 2L and connector C-50
- Keyless control module

09-02D-22

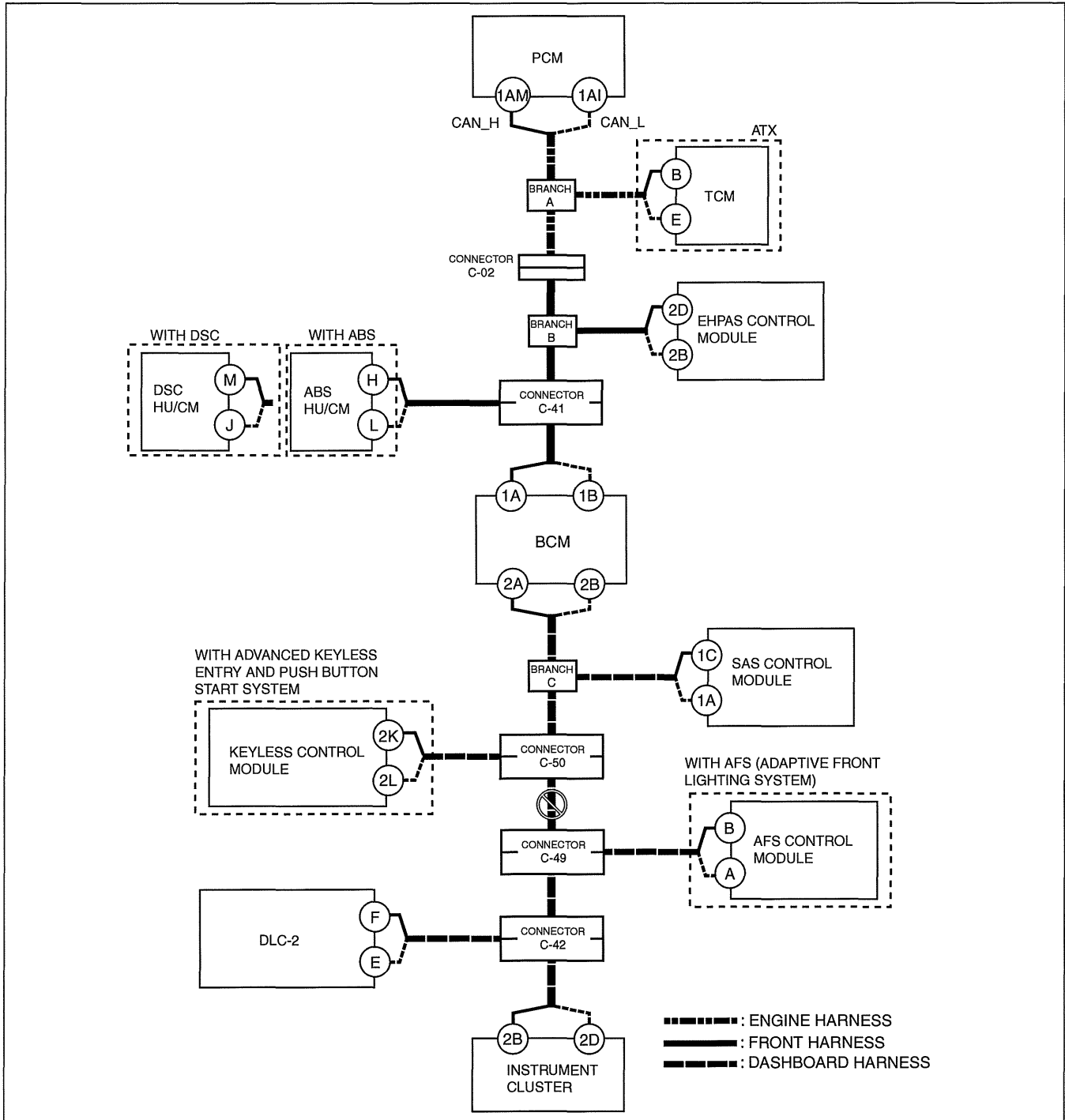
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

M

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-50 and connector C-49
- Connector C-50 malfunction
- Connector C-49 malfunction

System wiring diagram



09-02D

am3uuw000569

Inspection item

- Connector C-50
- Connector C-49
- Wiring harness between connector C-50 and connector C-49

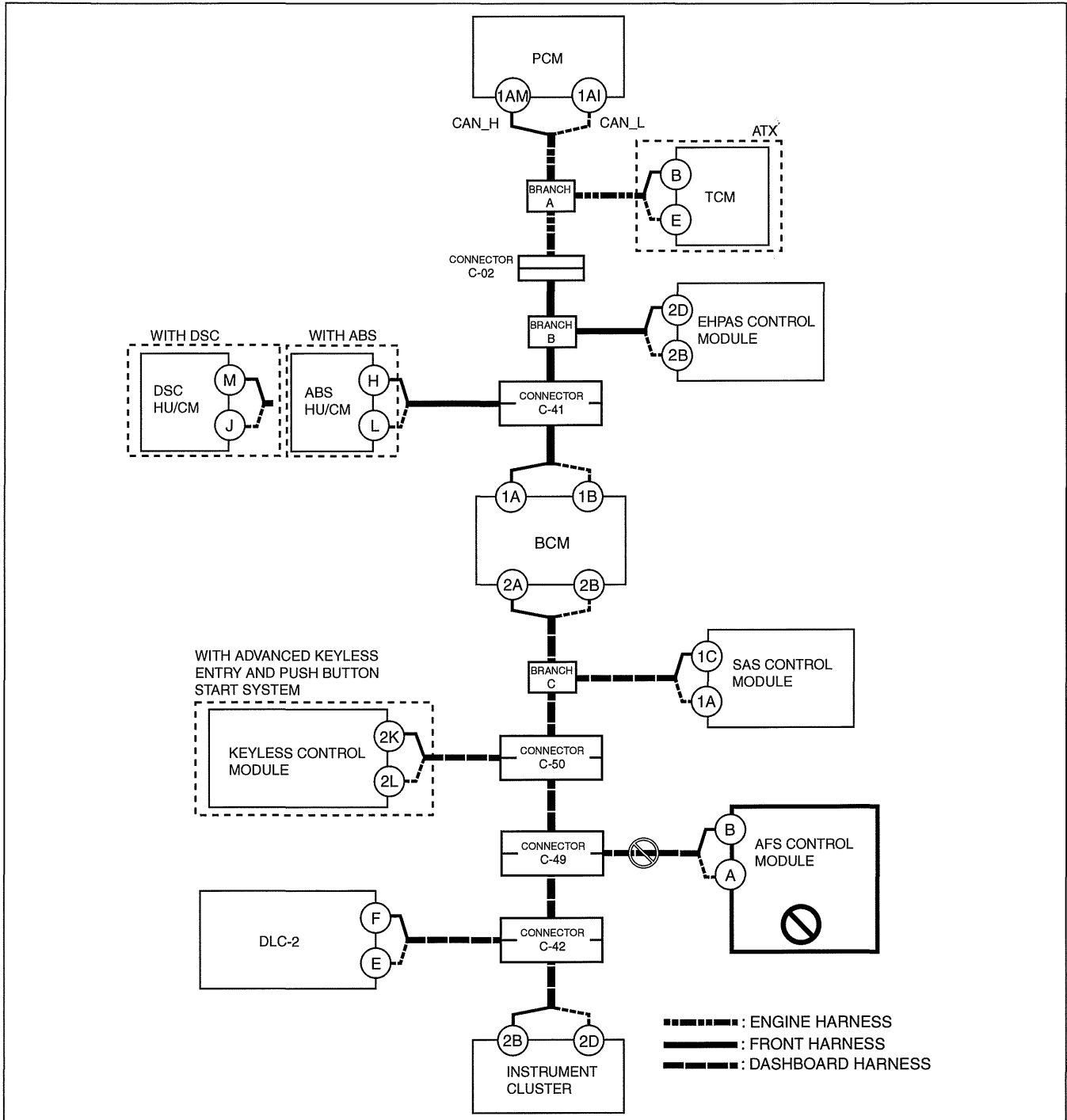
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

N

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between AFS control module and connector C-49
- Connector C-49 malfunction
- AFS control module malfunction

System wiring diagram



am3uuw0000569

Inspection item

- Connector C-49
- AFS control module connector
- Wiring harness between AFS control module terminal B and connector C-49
- Wiring harness between AFS control module terminal A and connector C-49
- AFS control module

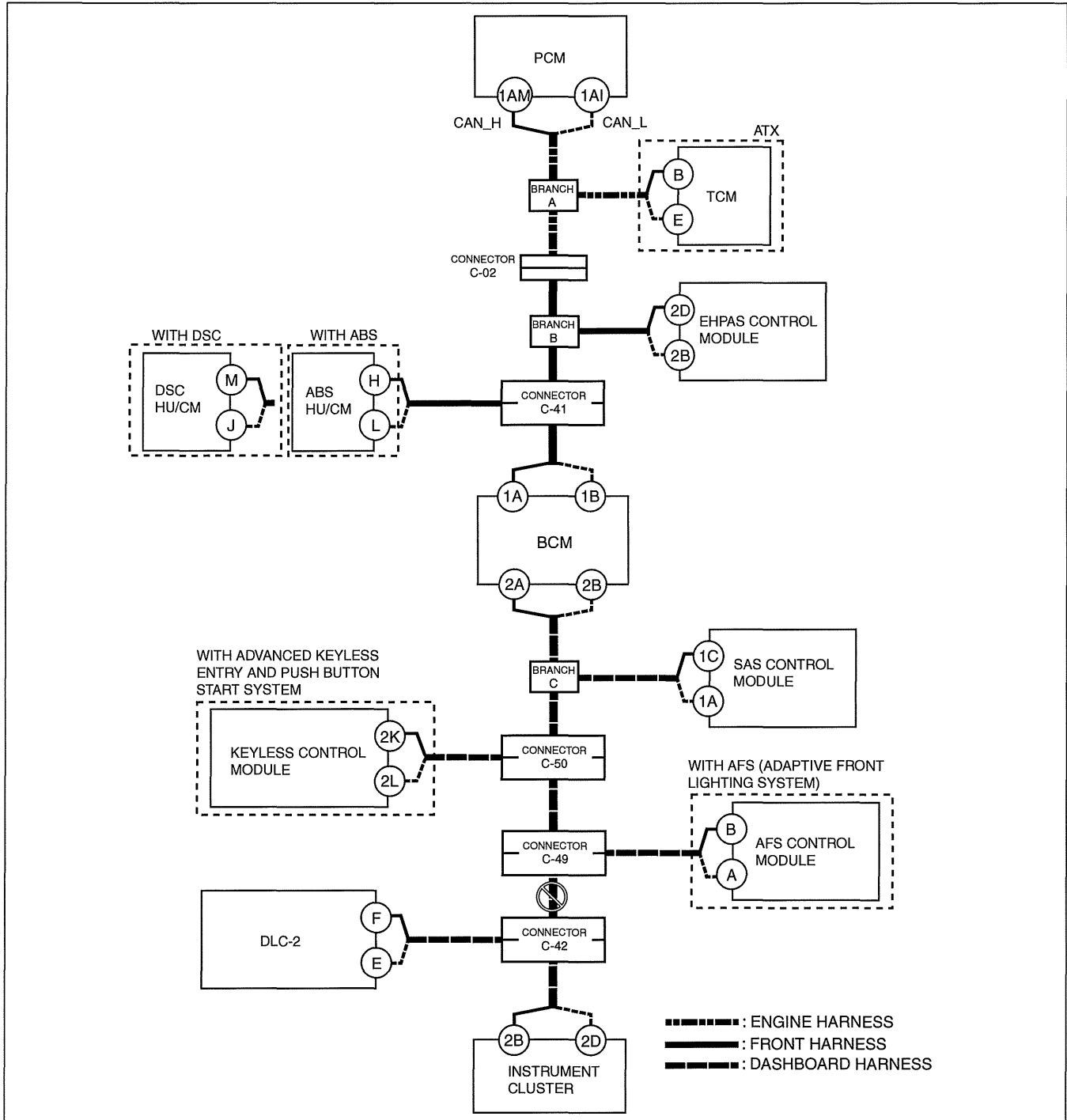
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

O

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-49 and connector C-42
- Connector C-49 malfunction
- Connector C-42 malfunction

System wiring diagram



09-02D

am3uuw000569

Inspection item

- Connector C-49
- Connector C-42
- Wiring harness between connector C-49 and Connector C-42

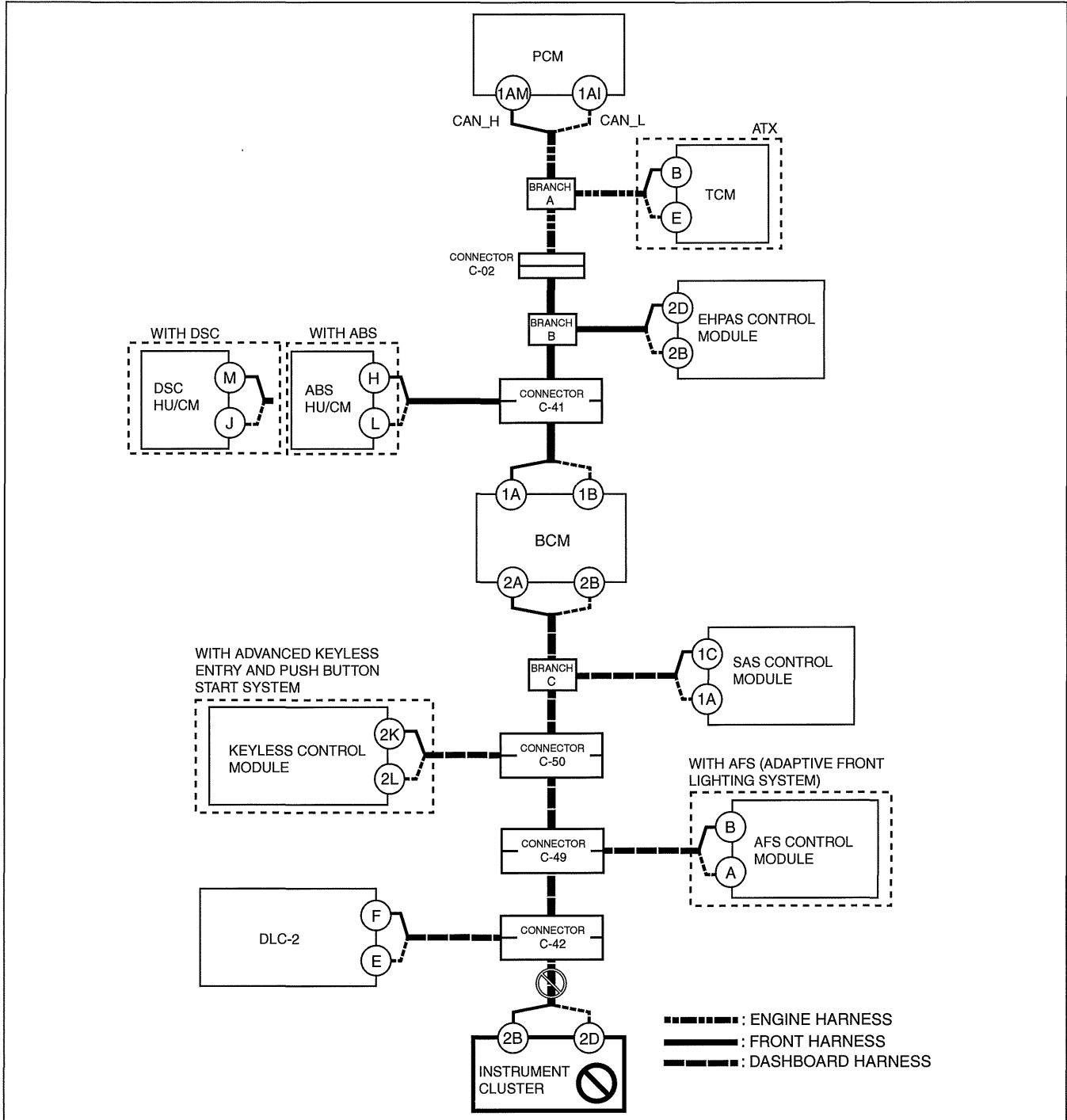
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

P

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-42 and Instrument cluster
- Connector C-42 malfunction
- Instrument cluster malfunction

System wiring diagram



am3uuw0000569

Inspection item

- Instrument cluster connector
- Connector C-42
- Wiring harness between instrument cluster terminal 2B and connector C-42
- Wiring harness between instrument cluster terminal 2D and connector C-42
- Instrument cluster

09-02D-26

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM]

id0902e6846800

Caution

- If the malfunctioning part is detected in the communication line, before disconnecting the related connector for inspection, press the connector in the connection direction to verify that there is no looseness or disconnection.
- When disconnecting the connector, verify that there is no damage, deformation, or corrosion of the connector terminals.

1. Verify the following for the modules related to the CAN system.
 - Communication error DTCs
 - Malfunctioning module
 - Display status of the air conditioner/audio control on the multi information display/information display when the climate control unit, or either the audio unit is operated.
 - The operation condition of the SIRIUS satellite radio system and the Bluetooth system.
2. Look for a DTC display pattern and system operation status in tandem which match.

Note

- A hyphen (-) in the DTC output pattern cell indicates that the DTC may or may not be displayed depending on the malfunction detection conditions. If it is not displayed, the malfunctioning location can be determined by checking the crosses (x) and asterisks (*).

3. Refer to the matching tandem diagnostic results (A to G) and inspect the possible cause and inspection item.
4. Perform the DTC inspection after the repair procedure.
 - If any DTC is displayed, return to 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].

Diagnostic Table for Determining Malfunctioning Part

09-02D

Cross (x): Displayed
Hyphen (-): May or may not be displayed
Asterisk (*): No display or no operation

DTC display		DTC display pattern						
DTC output module	DTC							
Information display*2	U0164 EATC						x	
	U0181 HEC							x
	U0184 ACU				x			
MID*1 (Multi information display)	U0155							x
	U0164					x		
	U0184				x			
ACU*1 (Audio unit)	U0155:00							x
	U0156:00	x			x			
	U0193:00			x	x			
	U0197:00		x		x			
EATC*1 (Climate control unit)	U0423:68							-
	U0155:00							x
	U0156:00	x			x			
IC*1 (Instrument cluster)	U0423:68							-
	U0156:00	x			x			
	U0164:00						x	
M-MDS display module		"Fail" display pattern						
MID		x				x		
ACU						x		
EATC							x	
IC								x
Information display display		Display pattern on information display						
None ACU*3							-	
None EATC*4								-
Audio control display							*	
Air conditioning control display								*

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

System operation	System operation pattern						
SIRIUS satellite radio system			*	*			
Bluetooth system		*		*			
Item	Diagnostic result						
Possible cause and inspection item	A	B	C	D	E	F	G
Reference page	09-02D-28 A	09-02D-29 B	09-02D-30 C	09-02D-31 D	09-02D-32 E	09-02D-33 F	09-02D-34 G

*1 : The DTC is displayed on M-MDS.

*2 : The DTC is displayed on the information display.

*3 : If "None ACU" is displayed on the multi information display/information display, no DTC is displayed.

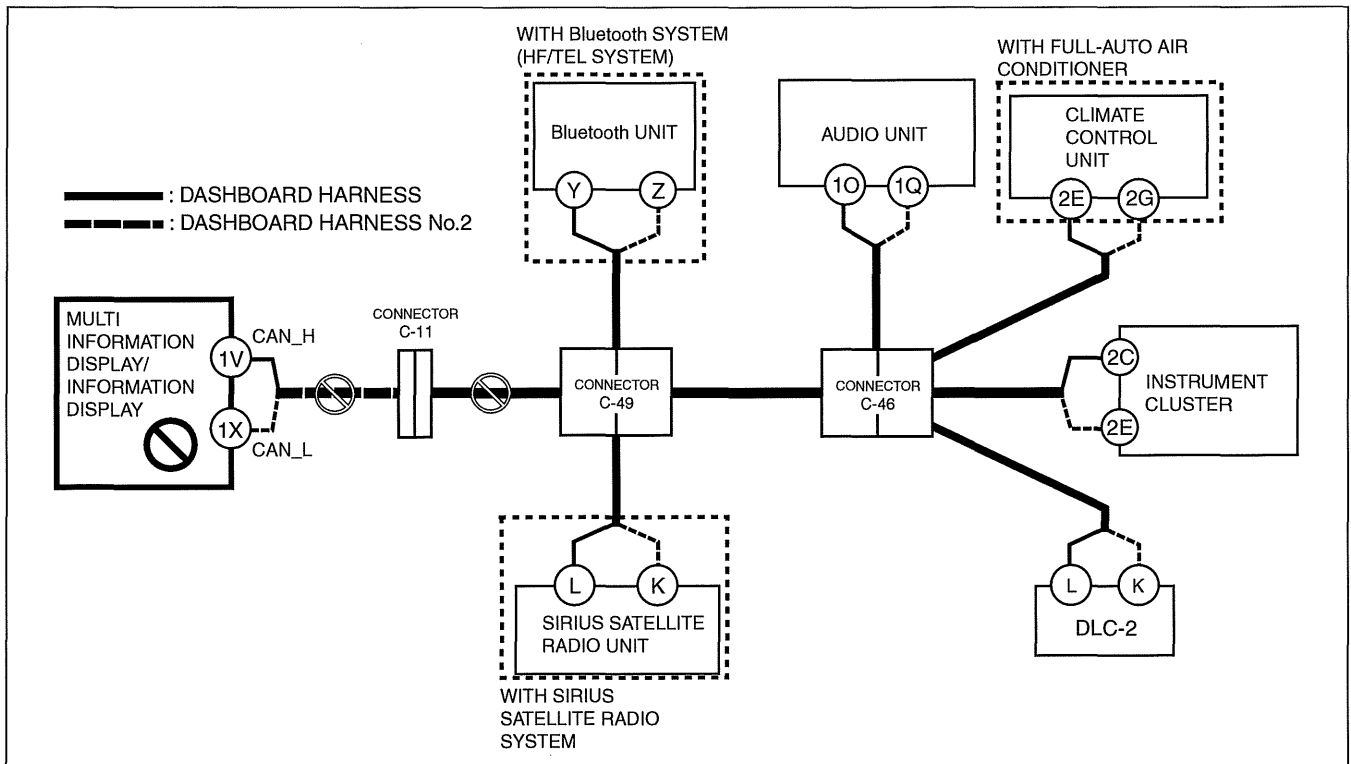
*4 : If "None EATC" is displayed on the multi information display/information display, no DTC is displayed.

A

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between multi information display/information display and connector C-11
- Open circuit in wiring harness between connector C-11 and connector C-49
- Connector C-11 malfunction
- Connector C-49 malfunction
- Multi information display/information display malfunction

System wiring diagram



am3uuw000516

Inspection item

- Multi information display/information display connector
- Connector C-11
- Connector C-49
- Wiring harness between multi information display/information display terminal 1V and connector C-11
- Wiring harness between multi information display/information display terminal 1X and connector C-11
- Wiring harness between connector C-11 and connector C-49
- Multi information display/information display

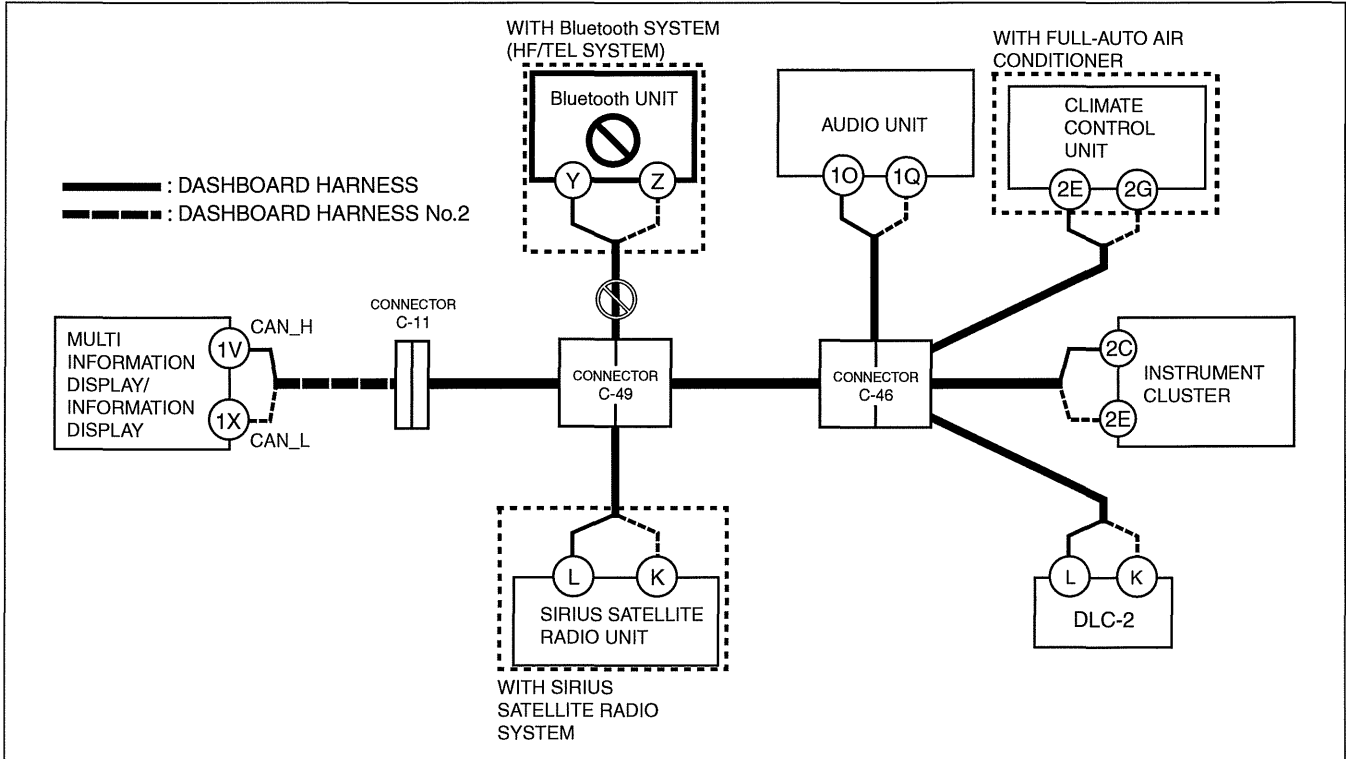
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

B

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between Bluetooth unit and connector C-49
- Connector C-49 malfunction
- Bluetooth unit malfunction

System wiring diagram



09-02D

Inspection item

- Bluetooth unit connector
- Connector C-49
- Wiring harness between Bluetooth unit terminal Y and connector C-49
- Wiring harness between Bluetooth unit terminal Z and connector C-49
- Bluetooth unit

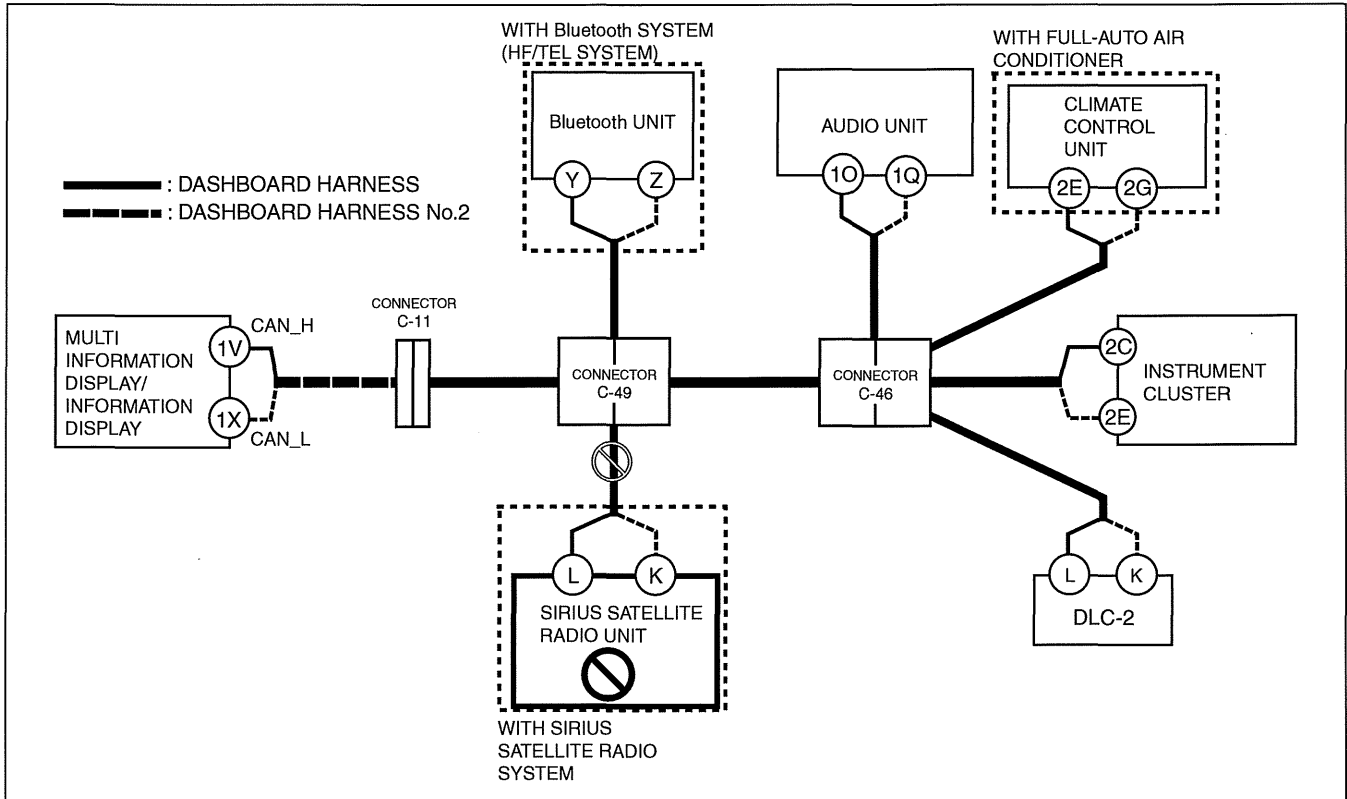
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

C

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between SIRIUS satellite radio unit and connector C-49
- Connector C-49 malfunction
- SIRIUS satellite radio unit malfunction

System wiring diagram



am3uuw0000517

Inspection item

- SIRIUS satellite radio unit connector
- Connector C-49
- Wiring harness between SIRIUS satellite radio unit terminal L and connector C-49
- Wiring harness between SIRIUS satellite radio unit terminal K and connector C-49
- SIRIUS satellite radio unit

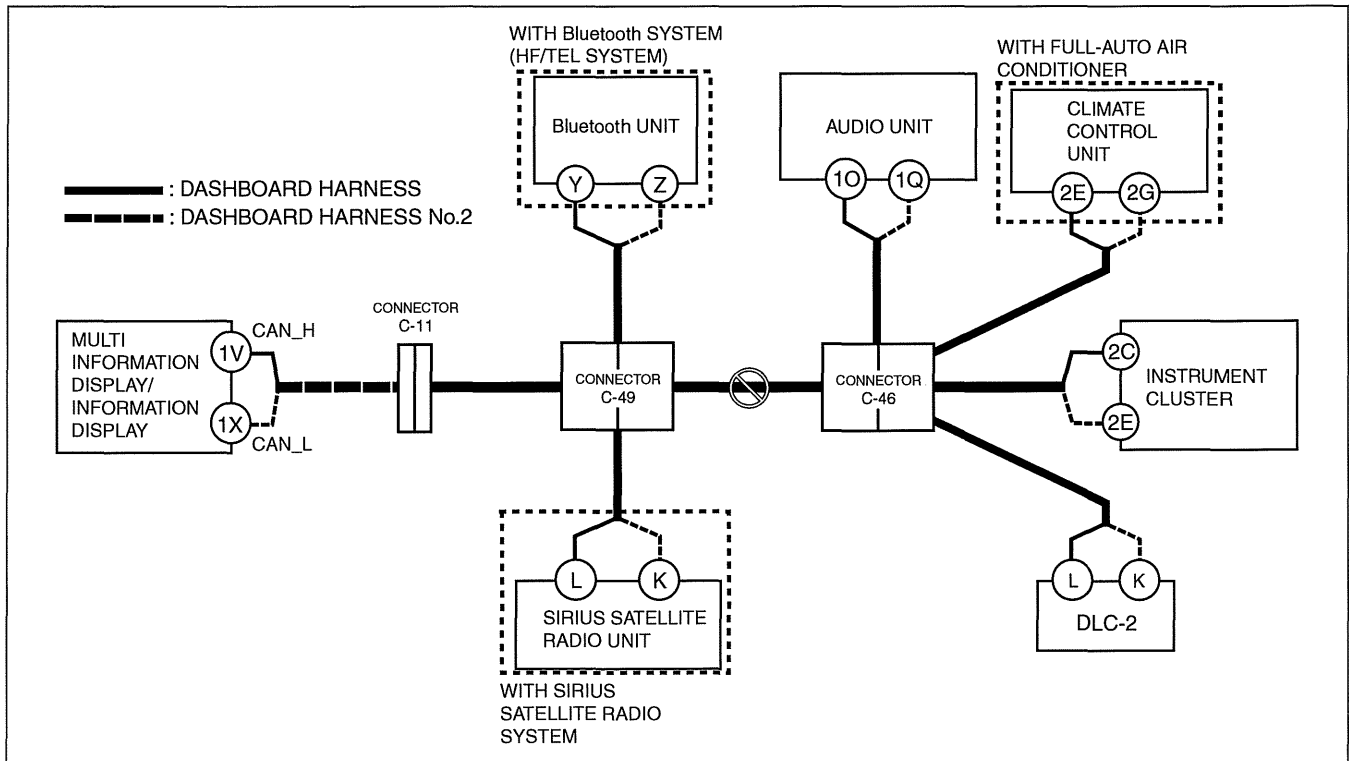
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

D

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-49 and connector C-46
- Connector C-49 malfunction
- Connector C-46 malfunction

System wiring diagram



am3uuw0000517

09-02D

Inspection item

- Connector C-49
- Connector C-46
- Wiring harness between connector C-49 and connector C-46

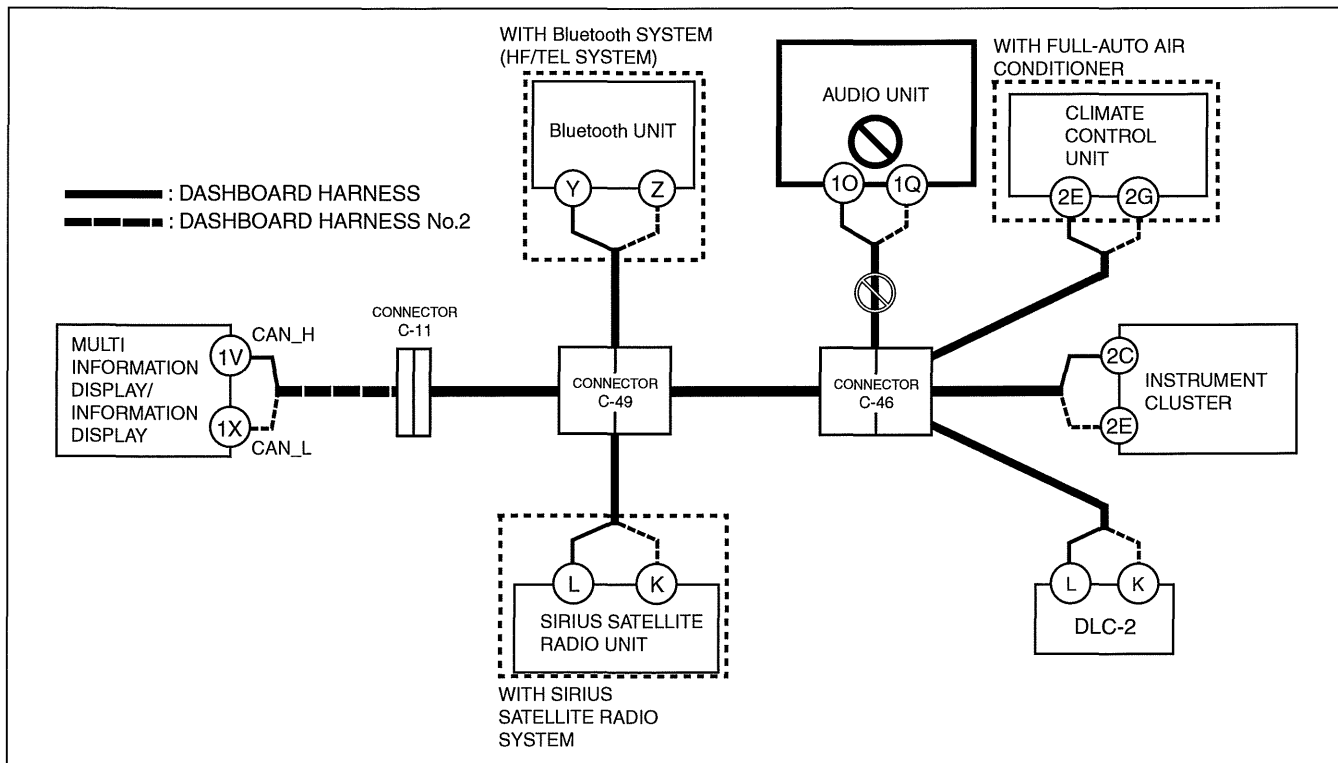
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

E

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between audio unit and connector C-46
- Connector C-46 malfunction
- Audio unit malfunction

System wiring diagram



am3uuw0000517

Inspection item

- Audio unit connector
- Connector C-46
- Wiring harness between audio unit terminal 1O and connector C-46
- Wiring harness between audio unit terminal 1Q and connector C-46
- Audio unit

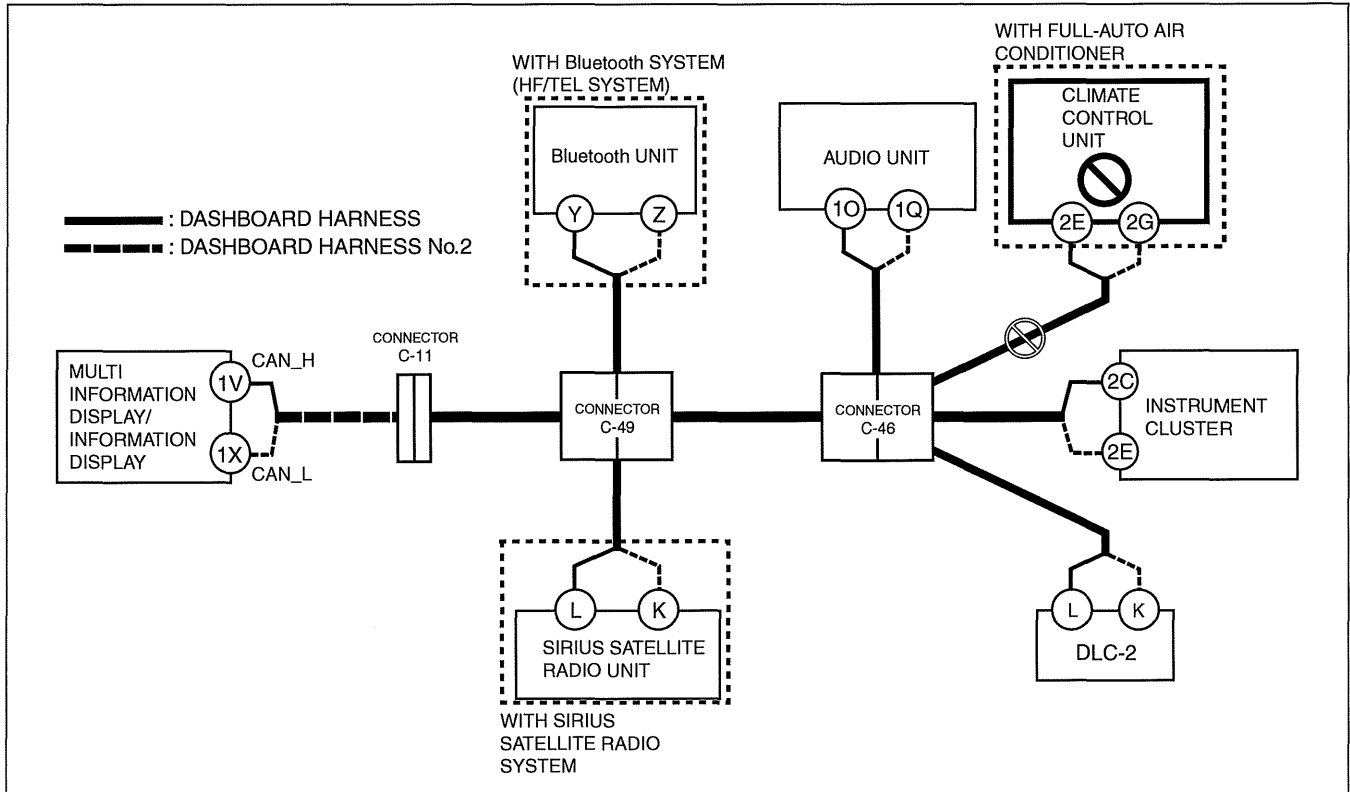
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

F

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between climate control unit and connector C-46
- Connector C-46 malfunction
- Climate control unit malfunction

System wiring diagram



am3uuw0000517

09-02D

Inspection item

- Climate control unit connector
- Connector C-46
- Wiring harness between climate control unit terminal 2E and connector C-46
- Wiring harness between climate control unit terminal 2G and connector C-46
- Climate control unit

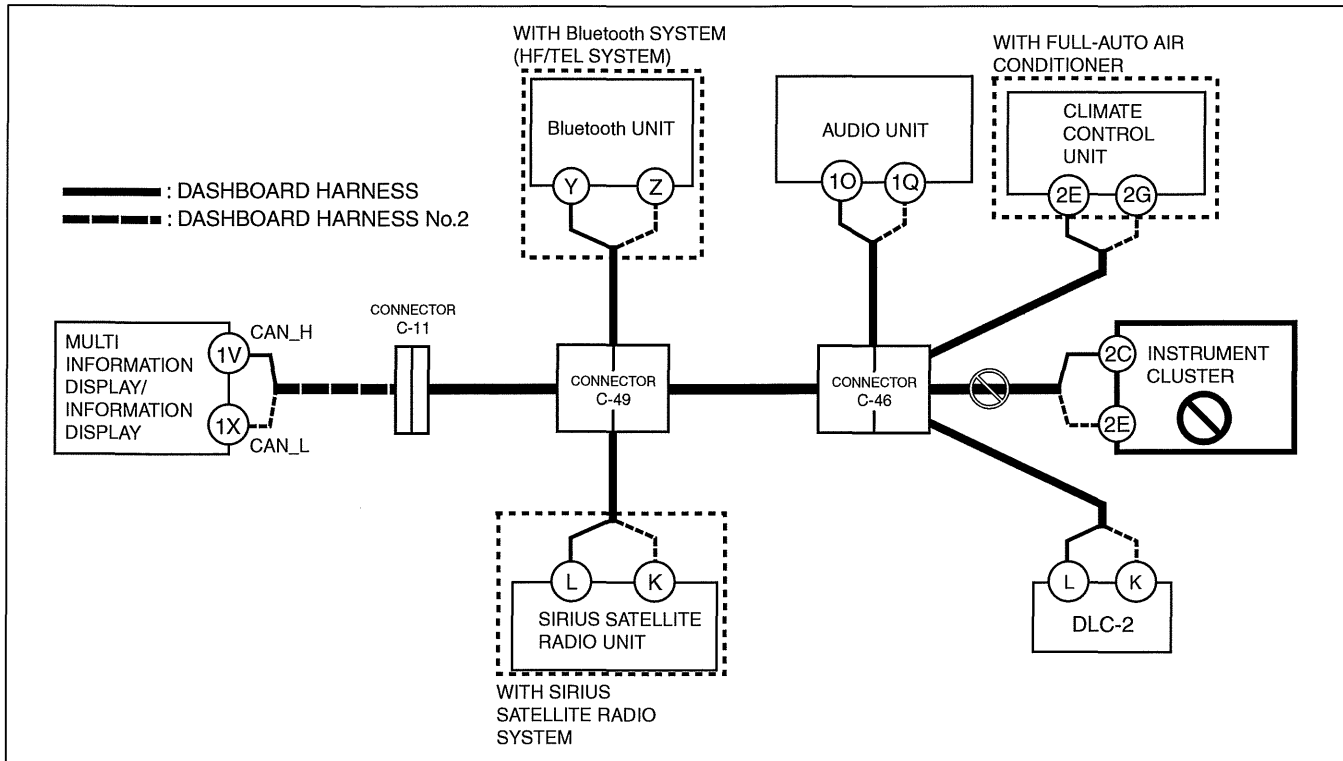
ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

G

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between instrument cluster and connector C-46
- Connector C-46 malfunction
- Instrument cluster malfunction

System wiring diagram



am3uuw000517

Inspection item

- Instrument cluster connector
- Connector C-46
- Wiring harness between instrument cluster terminal 2C and connector C-46
- Wiring harness between instrument cluster terminal 2E and connector C-46
- Instrument cluster

M-MDS AND VEHICLE NOT COMMUNICATING [MULTIPLEX COMMUNICATION SYSTEM]

id0902e6037400

Caution

- Perform the following on-board diagnosis according to 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] troubleshooting procedure.

Detection Condition

- Possible causes of communication errors between the M-MDS and vehicle include communication circuit interruption due to an open circuit in the CAN communication wiring harness, or poor contact of connector terminals, or a BUS OFF condition due to a short circuit in the CAN communication wiring harness.

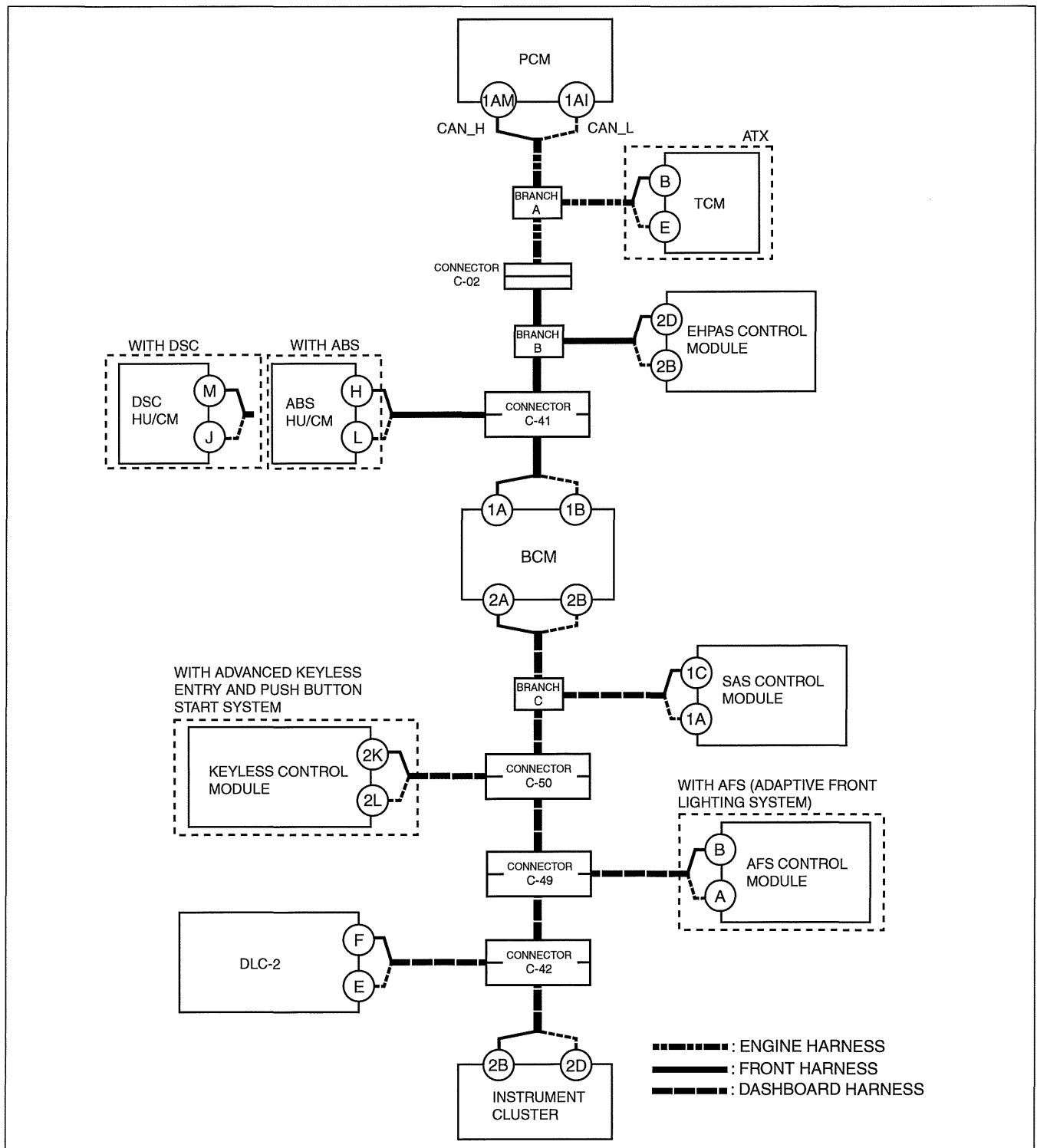
Possible Causes

- Open circuit in wiring harness between PCM and DLC-2
- Improper insertion, connector terminal damage, deformation, corrosion, or disconnection of PCM, BCM, connector C-02, connector C-41, connector C-50, connector C-49, or connector C-42
- Short circuit in wiring harness between CAN system-related module CAN_L and CAN_H lines
- Short circuit to power supply in wiring harness between CAN system-related module
- Short circuit to ground in wiring harness between CAN system-related module
- Short circuit to power supply in CAN system-related module internal CAN lines
- Short circuit to ground in CAN system-related module internal CAN lines
- Damage, deformation, corrosion, or disconnection of DLC-2

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

- PCM power supply is not normal
- PCM ground is not normal
- PCM internal resistance is not normal
- CAN system-related module malfunction

Wiring Diagram



09-02D

am3uuw0000573

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Diagnostic Procedure

Caution

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.

Step	Inspection	Action
1	VERIFICATION BEFORE SERVICING <ul style="list-style-type: none"> • Is there communication between the M-MDS and vehicle? 	Yes Go to the next step.
		No Go back to FOREWORD [MULTIPLEX COMMUNICATION SYSTEM. (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)]
2	VERIFY THAT M-MDS AND DLC-2 ARE CONNECTED <ul style="list-style-type: none"> • Verify the connection condition between the M-MDS and DLC-2. • Are the connector terminals normal without damage, deformation, corrosion, or disconnection? 	Yes Go to the next step.
		No Correct the connection condition, then go to Step 13.
3	VERIFY PCM POWER SUPPLY CONDITION <ul style="list-style-type: none"> • Refer to the PCM terminal voltage table and inspect the terminal voltage and fuse condition. (See 01-40A-8 PCM INSPECTION [LF, L5].) (See 01-40B-8 PCM INSPECTION [L3 WITH TC].) • Is the power supply condition normal? 	Yes Go to the next step.
		No Repair or replace the fuse or wiring harness, then go to Step 13.
4	VERIFY PCM BODY GROUND CONDITION <ul style="list-style-type: none"> • Inspect the PCM body ground wiring harness and ground point. • Are the ground and ground point normal? 	Yes Go to the next step.
		No Repair or replace the wiring harness, then go to Step 13.
5	INSPECT PCM CONNECTOR TERMINAL <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the PCM connector. • Are the PCM connector terminal normal without damage, deformation, corrosion, or disconnection? 	Yes Go to the next step.
		No Repair the connector terminal if necessary, then go to Step 13.
6	INSPECT PCM <ul style="list-style-type: none"> • Disconnect the PCM connector. • Measure the resistance between the following PCM connector terminals: <ul style="list-style-type: none"> — Between terminal 1AM and terminal 1AI (part side) • Is the resistance 118—130 ohms? 	Yes Go to the next step.
		No Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
7	VERIFY THAT THERE IS NO OPEN CIRCUIT IN CAN COMMUNICATION WIRING HARNESS <p>Caution</p> <ul style="list-style-type: none"> • When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. • Verify the continuity between the following terminals: <ul style="list-style-type: none"> — Between DLC-2 terminal F and PCM terminal 1AM — Between DLC-2 terminal E and PCM terminal 1AI • Is there continuity? 	Yes Go to the next step.
		No There is an open circuit in the CAN communication wiring harness. Repair or replace it, then go to Step 13.

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Step	Inspection	Action	
8	INSPECT CAN COMMUNICATION WIRING HARNESS IN BCM FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Verify the continuity between the following terminals: <ul style="list-style-type: none"> — Between BCM terminal 1A and BCM terminal 2A — Between BCM terminal 1B and BCM terminal 2B • Is there continuity? 	Yes	Go to the next step.
		No	Replace the BCM which has an open circuit in the CAN communication wiring harness in the BCM, then go to Step 13. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
9	VERIFY THAT THERE IS NO SHORT CIRCUIT IN CAN COMMUNICATION WIRING HARNESS <p>Caution</p> <ul style="list-style-type: none"> • When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. • Measure the resistance between the terminals. <ul style="list-style-type: none"> — Between DLC-2 terminal F and DLC-2 terminal E • Is the resistance 60 ohms or less? 	Yes	There is an open circuit in the CAN communication wiring harness. Repair or replace it, then go to Step 13.
		No	Go to the next step.
10	VERIFY NO SHORT CIRCUIT TO GROUND IN CAN COMMUNICATION WIRING HARNESS <p>Caution</p> <ul style="list-style-type: none"> • When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. • Verify the continuity between the following terminals: <ul style="list-style-type: none"> — Between DLC-2 terminal F and ground — Between DLC-2 terminal E and ground — Between PCM terminal 1AM and ground — Between PCM terminal 1Al and ground • Is there continuity? 	Yes	There is a short circuit to ground in the CAN communication wiring harness. Repair or replace it, then go to Step 13.
		No	Go to the next step.
11	VERIFY NO SHORT CIRCUIT TO POWER SUPPLY SYSTEM IN CAN COMMUNICATION WIRING HARNESS <p>Caution</p> <ul style="list-style-type: none"> • When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. • Verify the continuity between the following terminals: <ul style="list-style-type: none"> — Between DLC-2 terminal F and DLC-2 terminal A — Between DLC-2 terminal E and DLC-2 terminal A — Between PCM terminal 1AM and PCM terminal 1C (LF, L5) — Between PCM terminal 1Al and PCM terminal 1C (LF, L5) — Between PCM terminal 1AM and PCM terminal 1BA (L3 WITH TC) — Between PCM terminal 1Al and PCM terminal 1BA (L3 WITH TC) • Is there continuity? 	Yes	There is a short circuit to the power supply system in the CAN communication wiring harness. Repair or replace it, then go to Step 13.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Step	Inspection	Action	
12	INSPECT CAN-RELATED MODULES OTHER THAN PCM <ul style="list-style-type: none"> • Remove only one of the CAN-related modules other than those related to the PCM. • Connect the negative battery cable. • Connect the M-MDS to the DLC-2. • Does the M-MDS recognize the vehicle? 	Yes	Replace the removed module.
		No	Inspect all of the CAN-related modules other than those related to the PCM using the same procedure. After inspecting all of the modules, go to the next step.
13	PERFORM VEHICLE IDENTIFICATION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Does the M-MDS recognize the vehicle? 	Yes	DTC troubleshooting completed.
		No	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
14	PERFORM VEHICLE IDENTIFICATION <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Does the M-MDS recognize the vehicle? 	Yes	DTC troubleshooting completed.
		No	Replace the BCM. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)

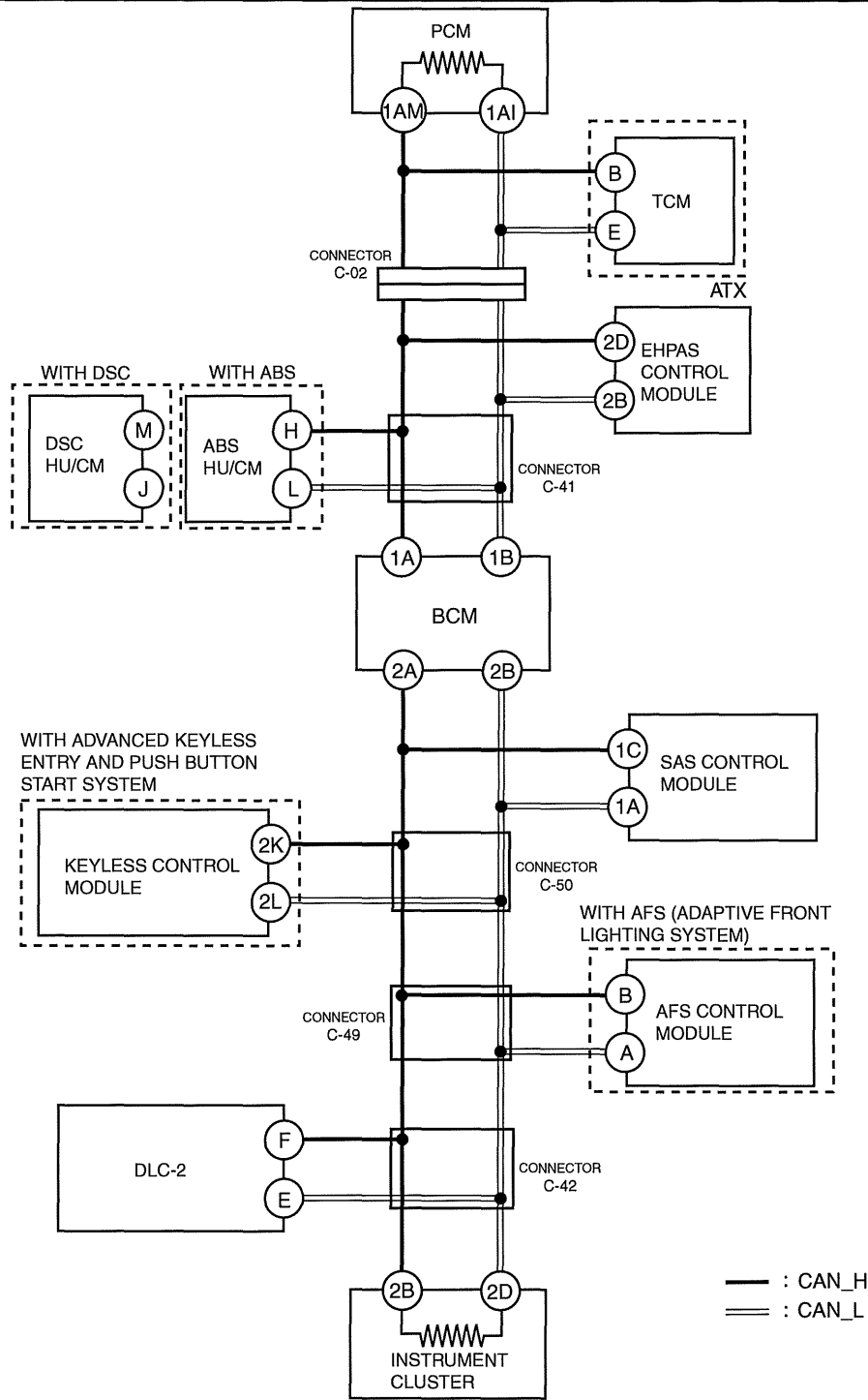
DTC U0001:88, U0073, U0073:00 [MULTIPLEX COMMUNICATION SYSTEM]

id0902e6847500

DTC	U0001:88	Module communication error
	U0073	CAN system communication error
	U0073:00	CAN system communication error
DETECTION CONDITION	Warning <ul style="list-style-type: none"> • Perform the following on-board diagnosis according to 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] troubleshooting procedure. • CAN system-related harness malfunction • CAN system-related module malfunction 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in wiring harness • Malfunction of connectors between PCM, TCM, EHPAS control module, ABS HU/CM, DSC HU/CM, BCM, SAS control module, keyless control module, AFS control module and instrument cluster • PCM malfunction • TCM malfunction • EHPAS control module malfunction • ABS HU/CM malfunction • DSC HU/CM malfunction • BCM malfunction • SAS control module malfunction • Keyless control module malfunction • AFS control module malfunction • Instrument cluster malfunction 	

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

DTC	U0001:88	Module communication error
	U0073	CAN system communication error
	U0073:00	CAN system communication error



09-02D

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Diagnostic procedure

Caution

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.

Step	Inspection		Action
1	VERIFICATION BEFORE SERVICING <ul style="list-style-type: none"> • Are any DTCs, except the following, displayed? <ul style="list-style-type: none"> — U0001:88 — U0073 — U0073:00 	Yes	Determine the open circuit location referring to 09-02D-7 DETERMINING MALFUNCTIONING PART (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].
		No	Go to the next step.
2	INSPECTION OF CONTROL MODULE CONNECTOR OUTPUTTING DTCs <ul style="list-style-type: none"> • Inspect the terminal condition of the control module connector outputting DTCs and the mid-connector. • Are the connector terminals normal without damage, deformation, corrosion, or disconnection? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
3	INSPECTION OF POWER SUPPLY OF CONTROL MODULE OUTPUTTING DTCs <ul style="list-style-type: none"> • Refer to the terminal voltage table of the control module outputting DTCs or use the PID/data monitoring function to inspect the terminal voltage and fuse condition. • Is the power supply voltage normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
4	INSPECTION OF BODY GROUND CONDITION OF CONTROL MODULE OUTPUTTING DTCs <ul style="list-style-type: none"> • Inspect the body ground wires and ground point of the control module outputting DTCs. • Are the ground and ground point normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
5	CAN SYSTEM RELATED WIRING HARNESS INSPECTION <ul style="list-style-type: none"> • CAN system related wiring harness inspection: <ul style="list-style-type: none"> — Short to ground — Short to power supply — Short between twisted pair wiring harness — Open circuit • Is the wiring harness normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
6	INSPECT PCM <ul style="list-style-type: none"> • Disconnect the PCM connector. • Measure the resistance between the following PCM connector terminals: <ul style="list-style-type: none"> — Between terminal 1AM and terminal 1AI (part side) • Is the resistance 118—130 ohms? 	Yes	Go to the next step.
		No	Replace the PCM, then go to Step 9. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
7	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Measure the resistance between the following instrument cluster connector terminals: <ul style="list-style-type: none"> — Between terminal 2B and terminal 2D (part side) • Is the resistance 118—130 ohms? 	Yes	Go to the next step.
		No	Replace the instrument cluster, then go to Step 9. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
8	CAN RELATED MODULE VERIFICATION <ul style="list-style-type: none"> • Remove only one of the CAN-related modules. • Clear DTCs using the M-MDS. • Inspect the DTCs of all modules using the M-MDS. • Are DTCs U0001:88, U0073, U0073:00 displayed? 	Yes	Reinstall the removed module, remove another module and perform the same inspection. Inspect all of the CAN-related modules using the same procedure. After inspecting all of the modules, go to the next step.
		No	Replace the removed module.

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Step	Inspection		Action
9	AFTER REPAIR VERIFICATION <ul style="list-style-type: none"> Connect all of the modules. Clear DTCs using the M-MDS. Inspect the DTCs using the M-MDS. Are DTCs displayed? 	Yes	Perform the CAN system on-board diagnosis again according to the troubleshooting procedure (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No	DTC troubleshooting completed.

DTC U0010:88, U0498:68, U2516 [MULTIPLEX COMMUNICATION SYSTEM]

id0902e6840900

DTC	U0010:88 (16:Er12)	CAN system communication error
	U0498:68 (26:Er81)	CAN system communication error
	U2516	CAN system communication error
DETECTION CONDITION	Warning <ul style="list-style-type: none"> Perform the following on-board diagnosis according to 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] troubleshooting procedure. <ul style="list-style-type: none"> CAN system-related harness malfunction CAN system-related module malfunction 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Open or short circuit in wiring harness Malfunction of connectors between instrument cluster, climate control unit, audio unit, Bluetooth unit, SIRIUS satellite radio unit and multi information display/information display Instrument cluster malfunction Climate control unit malfunction Audio unit malfunction Bluetooth unit malfunction SIRIUS satellite radio unit malfunction Multi information display/information display malfunction 	
<p style="text-align: right; margin-top: 10px;"> : CAN_H : CAN_L </p>		

09-02D

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Diagnostic procedure

Caution

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.

Step	Inspection	Action	
1	VERIFICATION BEFORE SERVICING <ul style="list-style-type: none"> • Are any DTCs, except the following, displayed? <ul style="list-style-type: none"> — U0010:88 — U0498:68 — U2516 	Yes	Determine the open circuit location referring to 09-02D-27 DETERMINING MALFUNCTIONING PART (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM].
		No	Go to the next step.
2	INSPECTION OF CONTROL MODULE CONNECTOR OUTPUTTING DTCs <ul style="list-style-type: none"> • Inspect the terminal condition of the control module connector outputting DTCs and the mid-connector. • Are the connector terminals normal without damage, deformation, corrosion, or disconnection? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
3	INSPECTION OF POWER SUPPLY OF CONTROL MODULE OUTPUTTING DTCs <ul style="list-style-type: none"> • Refer to the terminal voltage table of the control module outputting DTCs to inspect the terminal voltage and fuse condition. • Is the power supply voltage normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
4	INSPECTION OF BODY GROUND CONDITION OF CONTROL MODULE OUTPUTTING DTCs <ul style="list-style-type: none"> • Inspect the body ground wires and ground point of the control module outputting DTCs. • Are the ground and ground point normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
5	CAN SYSTEM RELATED WIRING HARNESS INSPECTION <ul style="list-style-type: none"> • CAN system related wiring harness inspection: <ul style="list-style-type: none"> — Short to ground — Short to power supply — Short between twisted pair wiring harness — Open circuit • Is the wiring harness normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
6	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Disconnect the instrument cluster connector. • Measure the resistance between the following instrument cluster connector terminals: <ul style="list-style-type: none"> — Between terminal 2C and terminal 2E (part side) • Is the resistance 118—130 ohms? 	Yes	Go to the next step.
		No	Replace the instrument cluster, then go to Step 9. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
7	INSPECT MULTI INFORMATION DISPLAY/ INFORMATION DISPLAY <ul style="list-style-type: none"> • Disconnect the multi information display/ information display connector. • Measure the resistance between the following multi information display/ information display connector terminals: <ul style="list-style-type: none"> — Between terminal 1V and terminal 1X (part side) • Is the resistance 118—130 ohms? 	Yes	Go to the next step.
		No	Replace the multi information display/information display, then go to Step 9. (See 09-22-13 INFORMATION DISPLAY REMOVAL/ INSTALLATION.)
8	CAN RELATED MODULE VERIFICATION <ul style="list-style-type: none"> • Remove only one of the CAN-related modules. • Clear DTCs. • Inspect the DTCs of all modules. • Are DTCs U0010:88, U0498:68, U2516 displayed? 	Yes	Reinstall the removed module, remove another module and perform the same inspection. Inspect all of the CAN-related modules using the same procedure. After inspecting all of the modules, go to the next step.
		No	Replace the removed module.

ON-BOARD DIAGNOSTIC [MULTIPLEX COMMUNICATION SYSTEM]

Step	Inspection	Action
9	AFTER REPAIR VERIFICATION <ul style="list-style-type: none">• Connect all of the modules.• Clear DTCs.• Inspect the DTCs.• Are DTCs displayed?	Yes Perform the CAN system on-board diagnosis again according to the troubleshooting procedure (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		No DTC troubleshooting completed.

09-02D

09-02E ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM
 [INSTRUMENT CLUSTER] 09-02E-2

DTC INSPECTION
 [INSTRUMENT CLUSTER] 09-02E-4

CLEARING DTC
 [INSTRUMENT CLUSTER] 09-02E-4

DTC TABLE
 [INSTRUMENT CLUSTER] 09-02E-5

DTC B1A84:41/U0300:00
 [INSTRUMENT CLUSTER] 09-02E-7

DTC B1A84:51/U2100:00
 [INSTRUMENT CLUSTER] 09-02E-8

DTC U0401:68
 [INSTRUMENT CLUSTER] 09-02E-9

DTC U0401:92
 [INSTRUMENT CLUSTER] 09-02E-10

DTC U0402:68
 [INSTRUMENT CLUSTER] 09-02E-11

DTC U0402:92
 [INSTRUMENT CLUSTER] 09-02E-12

DTC U0415:68
 [INSTRUMENT CLUSTER] 09-02E-13

DTC U0415:92
 [INSTRUMENT CLUSTER] 09-02E-14

DTC U0452:92
 [INSTRUMENT CLUSTER]09-02E-15

DTC U0483:68
 [INSTRUMENT CLUSTER]09-02E-16

DTC U0483:92
 [INSTRUMENT CLUSTER]09-02E-17

DTC U0515:68
 [INSTRUMENT CLUSTER]09-02E-18

DTC U0515:92
 [INSTRUMENT CLUSTER]09-02E-19

DTC U2005:86
 [INSTRUMENT CLUSTER]09-02E-20

DTC U3000:41
 [INSTRUMENT CLUSTER]09-02E-21

DTC U3003:16
 [INSTRUMENT CLUSTER]09-02E-21

PID/DATA MONITOR INSPECTION
 [INSTRUMENT CLUSTER]09-02E-23

PID/DATA MONITOR TABLE
 [INSTRUMENT CLUSTER]09-02E-23

ACTIVE COMMAND MODES INSPECTION
 [INSTRUMENT CLUSTER]09-02E-24

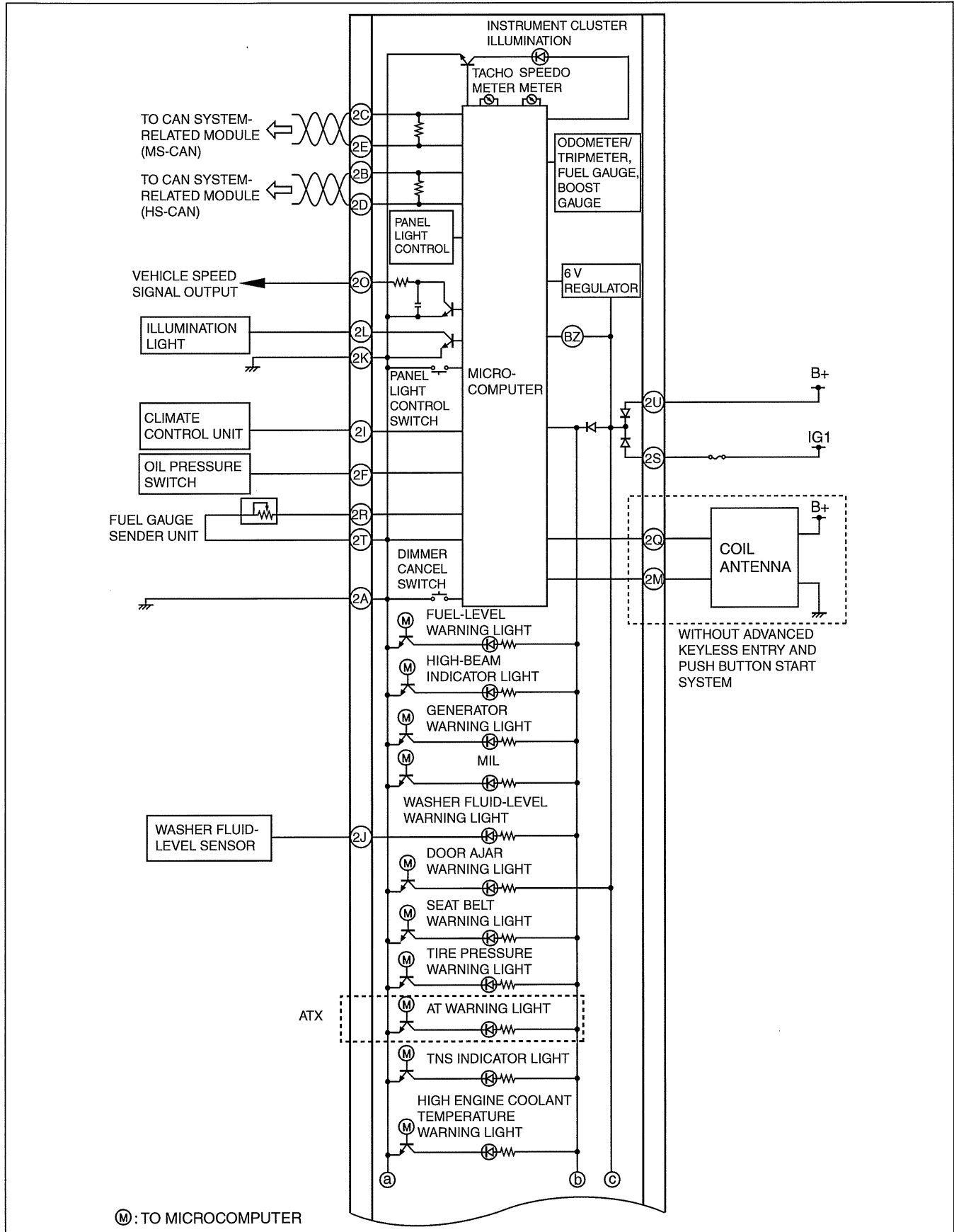
ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER]09-02E-24

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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [INSTRUMENT CLUSTER]

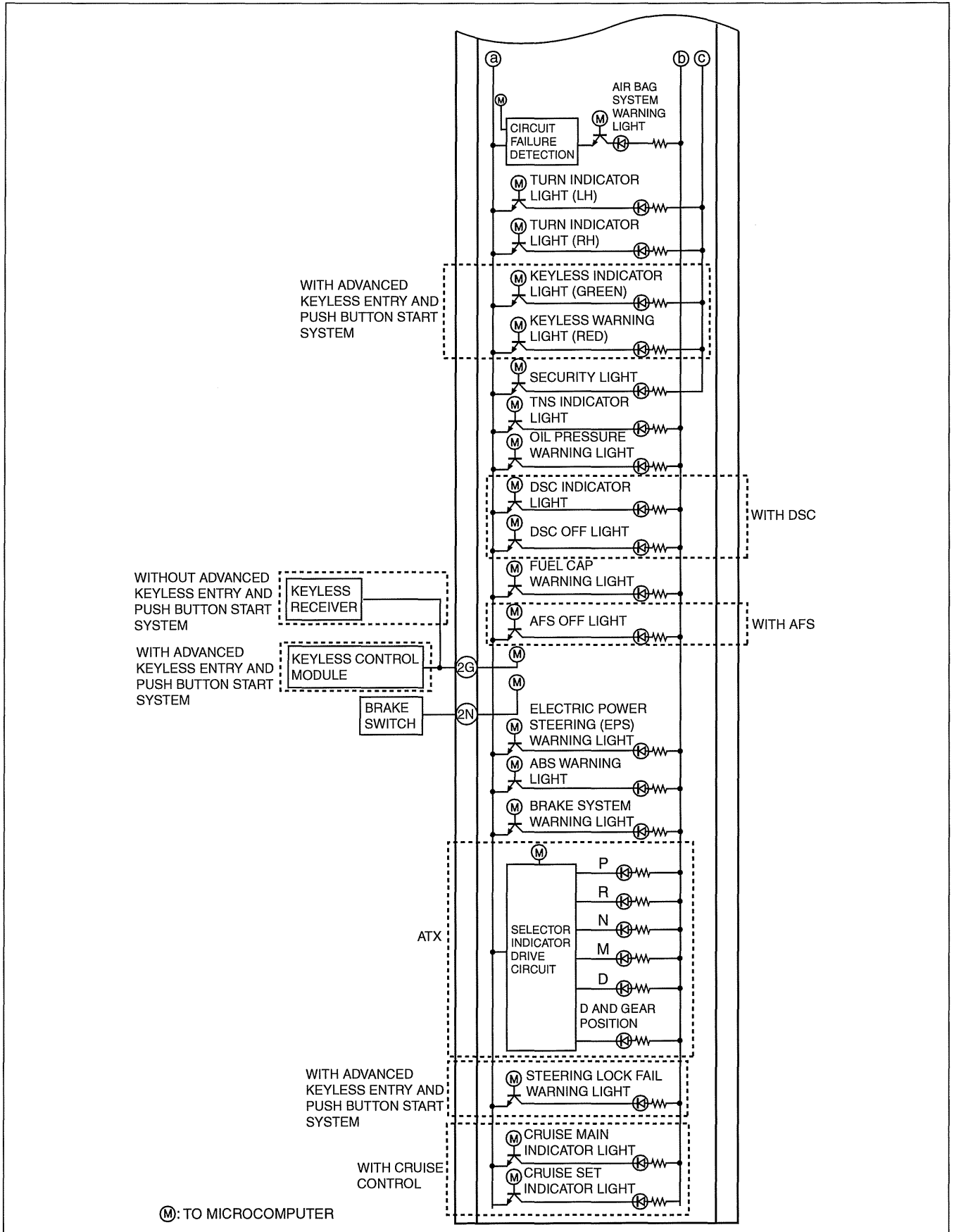
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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]



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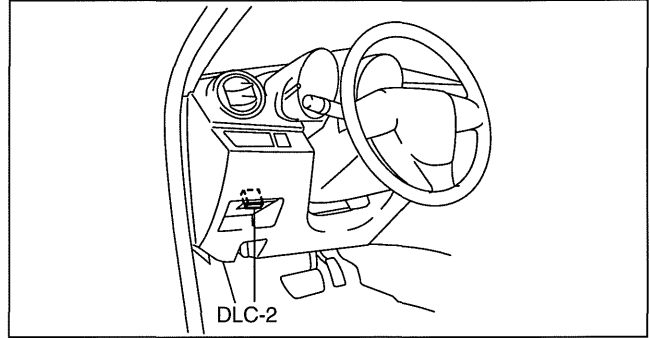
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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC INSPECTION [INSTRUMENT CLUSTER]

id0902e8960300

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the instrument cluster. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].)

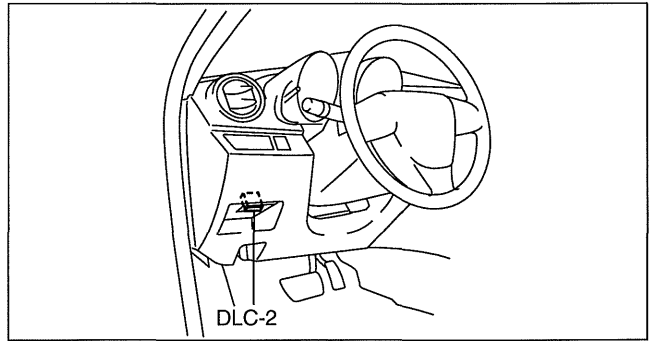


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CLEARING DTC [INSTRUMENT CLUSTER]

id0902e8960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].)
8. Verify that no DTCs are displayed.



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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC TABLE [INSTRUMENT CLUSTER]

id0902e8960500

DTC No.	Description	Reference
B10D5:13*1	Coil antenna malfunction	(See 09-02C-9 SECURITY LIGHT: 12, DTC: B10D5:13/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10D7:05*1	Key ID number error	(See 09-02C-10 SECURITY LIGHT: 13, DTC: B10D7:05/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10D7:51*1	Unprogrammed key ID number	(See 09-02C-16 SECURITY LIGHT: 15, DTC: B10D7:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10D7:81*1	Receiving erratic serial data	(See 09-02C-14 SECURITY LIGHT: 14, DTC: B10D7:81/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10D7:94*1	Key ID number error	(See 09-02C-12 SECURITY LIGHT: 13, DTC: B10D7:94/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10D8:00*1	Shortage of programmed key	(See 09-02C-18 SECURITY LIGHT: 21, DTC: B10D8:00/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10D9:87*1	Communication error with coil antenna	(See 09-02C-6 SECURITY LIGHT: 11, DTC: B10D9:87/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10DA:51*1	Communication error with PCM (Data transfer failure)	(See 09-02C-19 SECURITY LIGHT: 22, DTC: B10DA:51/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B10DA:62*1	Communication error with PCM (Data mis-match)	(See 09-02C-21 SECURITY LIGHT: 23, DTC: B10DA:62/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
B1A84:41	Configuration error	(See 09-02E-7 DTC B1A84:41/U0300:00 [INSTRUMENT CLUSTER].)
B1A84:51	Configuration error	(See 09-02E-8 DTC B1A84:51/U2100:00 [INSTRUMENT CLUSTER].)
C0077:00*2	Low tire pressure	(See 02-02-6 DTC C0077:00.)
C2011:49*2	Wheel unit No.1 internal malfunction	(See 02-02-7 DTC C2011:49/C2012:49/C2013:49/C2014:49.)
C2012:49*2	Wheel unit No.2 internal malfunction	
C2013:49*2	Wheel unit No.3 internal malfunction	
C2014:49*2	Wheel unit No.4 internal malfunction	
C2011:87*2	Wheel unit No.1 (No response)	(See 02-02-8 DTC C2011:87/C2012:87/C2013:87/C2014:87.)
C2012:87*2	Wheel unit No.2 (No response)	
C2013:87*2	Wheel unit No.3 (No response)	
C2014:87*2	Wheel unit No.4 (No response)	
U0001:88	Module communication error (HS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0010:88	Module communication error (MS-CAN)	
U0100:00	Communication error with PCM	
U0100:87*1	Communication error with PCM (No response)	(See 09-02C-17 SECURITY LIGHT: 16, DTC: U0100:87/P1260:00 [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].)
U0101:00*3	Communication error with TCM	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0121:00	Communication error with ABS HU/CM or DSC HU/CM	
U0127:00*2	Communication error with keyless receiver	(See 02-02-9 DTC U0127:00.)

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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC No.	Description	Reference
U0131:00	Communication error with EHPAS control module	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0140:00	Communication error with BCM	
U0151:00	Communication error with SAS control module	
U0156:00	Communication error with multi information display	
U0164:00 ^{*4}	Communication error with climate control unit	
U0182:00 ^{*5}	Communication error with AFS control module	
U0214:00 ^{*6}	Communication error with keyless control module	
U0300:00	Configuration error	(See 09-02E-7 DTC B1A84:41/U0300:00 [INSTRUMENT CLUSTER].)
U0401:68	Erratic signal from PCM	(See 09-02E-9 DTC U0401:68 [INSTRUMENT CLUSTER].)
U0401:92	Erratic signal from PCM	(See 09-02E-10 DTC U0401:92 [INSTRUMENT CLUSTER].)
U0402:68 ^{*3}	Erratic signal from TCM	(See 09-02E-11 DTC U0402:68 [INSTRUMENT CLUSTER].)
U0402:92 ^{*3}	Erratic signal from TCM	(See 09-02E-12 DTC U0402:92 [INSTRUMENT CLUSTER].)
U0415:68	Erratic signal from ABS HU/CM or DSC HU/CM	(See 09-02E-13 DTC U0415:68 [INSTRUMENT CLUSTER].)
U0415:92	Erratic signal from ABS HU/CM or DSC HU/CM	(See 09-02E-14 DTC U0415:92 [INSTRUMENT CLUSTER].)
U0452:92	Erratic signal from SAS control module	(See 09-02E-15 DTC U0452:92 [INSTRUMENT CLUSTER].)
U0483:68 ^{*5}	Erratic signal from AFS control module	(See 09-02E-16 DTC U0483:68 [INSTRUMENT CLUSTER].)
U0483:92 ^{*5}	Erratic signal from AFS control module	(See 09-02E-17 DTC U0483:92 [INSTRUMENT CLUSTER].)
U0515:68 ^{*6}	Erratic signal from keyless control module	(See 09-02E-18 DTC U0515:68 [INSTRUMENT CLUSTER].)
U0515:92 ^{*6}	Erratic signal from keyless control module	(See 09-02E-19 DTC U0515:92 [INSTRUMENT CLUSTER].)
U2005:86	Erratic signal from PCM	(See 09-02E-20 DTC U2005:86 [INSTRUMENT CLUSTER].)
U2100:00	Configuration error	(See 09-02E-8 DTC B1A84:51/U2100:00 [INSTRUMENT CLUSTER].)
U3000:41	Instrument cluster internal malfunction	(See 09-02E-21 DTC U3000:41 [INSTRUMENT CLUSTER].)
U3000:42 ^{*2}	Instrument cluster general memory failure	(See 02-02-15 DTC U3000:42.)
U3003:16	Power supply circuit malfunction	(See 09-02E-21 DTC U3003:16 [INSTRUMENT CLUSTER].)

*1 : Vehicles with immobilizer system

*2 : Vehicles with tire pressure monitoring system

*3 : ATX

*4 : Full-auto air conditioner

*5 : Vehicles with headlight auto leveling system

*6 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC B1A84:41/U0300:00 [INSTRUMENT CLUSTER]

id0902e8999900

DESCRIPTION	Configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster detects the configuration error when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Configuration was not done correctly Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	PERFORM INSTRUMENT CLUSTER CONFIGURATION <ul style="list-style-type: none"> Perform the "INSTRUMENT CLUSTER CONFIGURATION" using the M-MDS. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.) Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Perform the "INSTRUMENT CLUSTER CONFIGURATION" again, then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)
		No Go to Step 3.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION)
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC B1A84:51/U2100:00 [INSTRUMENT CLUSTER]

id0902e8999800

DESCRIPTION	Configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster detects the erratic configuration data.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster configuration not implemented Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	PERFORM INSTRUMENT CLUSTER CONFIGURATION <ul style="list-style-type: none"> Perform the "INSTRUMENT CLUSTER CONFIGURATION" using the M-MDS. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.) Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Perform the "INSTRUMENT CLUSTER CONFIGURATION" again, then go to the next step. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)
		No	Go to Step 3.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0401:68 [INSTRUMENT CLUSTER]

id0902e8988800

DESCRIPTION	Erratic signal from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster receives the erratic data from PCM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Turn the boost gauge display on. (L3 WITH TC) (See SERVICE HIGHLIGHTS, BOOST GAUGE CONTROL CONSTRUCTION/ OPERATION.) Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Turn the boost gauge display on. (L3 WITH TC) (See SERVICE HIGHLIGHTS, BOOST GAUGE CONTROL CONSTRUCTION/ OPERATION.) Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0401:92 [INSTRUMENT CLUSTER]

id0902e8988700

DESCRIPTION	Erratic signal from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> • Illumination command signal from PCM continues for 20 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • PCM malfunction • Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0402:68 [INSTRUMENT CLUSTER]

id0902e8988900

DESCRIPTION	Erratic signal from TCM
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster receives the erratic data from TCM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM DTC is stored TCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM TCM DTC <ul style="list-style-type: none"> Perform the Reading DTCs Procedure to confirm the TCM DTC. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0402:92 [INSTRUMENT CLUSTER]

id0902e8988600

DESCRIPTION	Erratic signal from TCM
DETECTION CONDITION	<ul style="list-style-type: none"> Illumination command signal from TCM continues for 20 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM DTC is stored TCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM TCM DTC <ul style="list-style-type: none"> Perform the Reading DTCs Procedure to confirm the TCM DTC. (See 05-02-3 ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 05-02-4 ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See 05-17-39 TCM REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0415:68 [INSTRUMENT CLUSTER]

id0902e8989000

DESCRIPTION	Erratic signal from ABS HU/CM or DSC HU/CM
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster receives the erratic data from ABS HU/CM or DSC HU/CM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ABS HU/CM or DSC HU/CM DTC is stored ABS HU/CM or DSC HU/CM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM ABS HU/CM OR DSC HU/CM DTC <ul style="list-style-type: none"> Perform the Reading DTCs Procedure to confirm the ABS HU/CM or DSC HU/CM DTC. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the ABS HU/CM or DSC HU/CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.) (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No DTC troubleshooting completed.

09-02E

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0415:92 [INSTRUMENT CLUSTER]

id0902e8988400

DESCRIPTION	Erratic signal from ABS HU/CM or DSC HU/CM
DETECTION CONDITION	<ul style="list-style-type: none"> • Illumination command signal from ABS/TCS HU/CM or DSC HU/CM continues for 20 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ABS HU/CM or DSC HU/CM DTC is stored • ABS HU/CM or DSC HU/CM malfunction • Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM ABS HU/CM OR DSC HU/CM DTC <ul style="list-style-type: none"> • Perform the Reading DTCs Procedure to confirm the ABS HU/CM or DSC HU/CM DTC. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the ABS HU/CM or DSC HU/CM, then go to the next step. (See 04-13-2 ABS HU/CM REMOVAL/INSTALLATION.) (See 04-15-2 DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0452:92 [INSTRUMENT CLUSTER]

id0902e8988200

DESCRIPTION	Erratic signal from SAS control module
DETECTION CONDITION	<ul style="list-style-type: none"> • Illumination command signal from SAS control module continues for 20 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • SAS control module DTC is stored • SAS control module malfunction • Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM SAS CONTROL MODULE DTC <ul style="list-style-type: none"> • Perform the "DTC INSPECTION" to confirm the SAS control module. (See 08-02-6 DTC INSPECTION.) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 08-02-7 DTC TABLE.)
		No Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes Replace the SAS control module, then go to the next step. (See 08-10-17 SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No DTC troubleshooting completed.

09-02E

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0483:68 [INSTRUMENT CLUSTER]

id0902e8989100

DESCRIPTION	Erratic signal from AFS control module
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster receives the erratic data from AFS control module when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> AFS DTC is stored AFS control module malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM AFS DTC <ul style="list-style-type: none"> Perform the "DTC INSPECTION" to confirm the AFS DTC. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0483:92 [INSTRUMENT CLUSTER]

id0902e8989200

DESCRIPTION	Erratic signal from AFS control module
DETECTION CONDITION	<ul style="list-style-type: none"> • Illumination command signal from AFS control module continues for 20 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • AFS DTC is stored • AFS control module malfunction • Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM AFS DTC <ul style="list-style-type: none"> • Perform the "DTC INSPECTION" to confirm the AFS DTC. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

09-02E

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0515:68 [INSTRUMENT CLUSTER]

id0902e8988000

DESCRIPTION	Erratic signal from keyless control module
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster receives the erratic data from keyless control module when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Advanced keyless entry and push button start system DTC is stored Keyless control module malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM DTC <ul style="list-style-type: none"> Perform the "DTC INSPECTION" to confirm the advanced keyless entry and push button start system DTC. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U0515:92 [INSTRUMENT CLUSTER]

id0902e8989300

DESCRIPTION	Erratic signal from keyless control module
DETECTION CONDITION	<ul style="list-style-type: none"> • Illumination command signal from keyless control module continues for 20 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Advanced keyless entry and push button start system DTC is stored • Keyless control module malfunction • Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM DTC <ul style="list-style-type: none"> • Perform the "DTC INSPECTION" to confirm the advanced keyless entry and push button start system DTC. (See 09-02A-6 DTC INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) • Switch the ignition to ON and wait for 20 s or more. • Drive the vehicle at speed of 30 km/h {19 mph} or more with 500 rpm or more. • Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) • Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

09-02E

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U2005:86 [INSTRUMENT CLUSTER]

id0902e8509800

DESCRIPTION	Erratic signal from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster receives the erratic vehicle speed data from PCM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored PCM malfunction Instrument cluster malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON and wait for 20 s or more. Drive the vehicle at speed of 30 km/h {19 mph} or more. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

DTC U3000:41 [INSTRUMENT CLUSTER]

id0902e8999500

DESCRIPTION	Instrument cluster internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster detects the internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster internal malfunction

Diagnostic Procedure

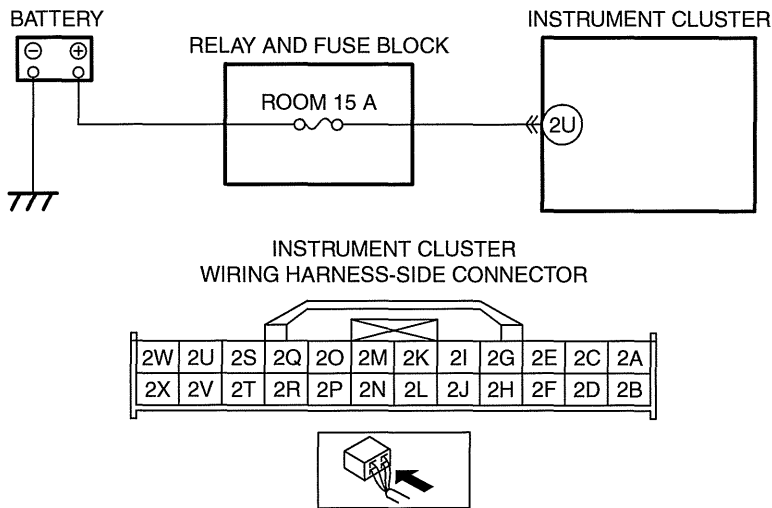
STEP	INSPECTION		ACTION
1	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

DTC U3003:16 [INSTRUMENT CLUSTER]

id0902e8999400

DESCRIPTION	Power supply circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Instrument cluster power supply circuit voltage is lower than 10 V when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Battery malfunction Generator malfunction Instrument cluster connector or terminals malfunction Open circuit or short to ground in instrument cluster power supply circuit <ul style="list-style-type: none"> — Short to ground in the wiring harness between battery positive terminal and instrument cluster terminal 2U — ROOM 15 A fuse malfunction — Open circuit in the wiring harness between battery positive terminal and instrument cluster terminal 2U Instrument cluster malfunction

09-02E



ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

Diagnostic Procedure

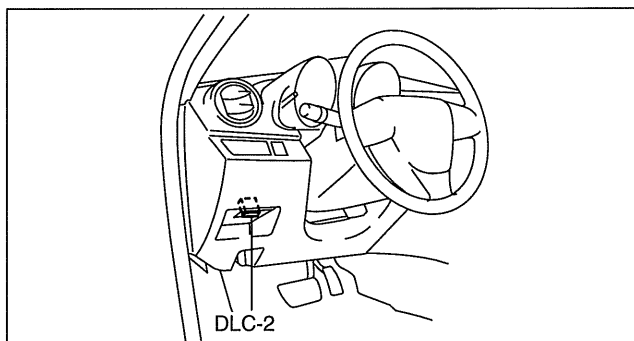
STEP	INSPECTION	ACTION	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT INSTRUMENT CLUSTER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the instrument cluster connector. Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> Instrument cluster connector is disconnected. Reconnect the negative battery cable. Measure the voltage at the following terminal (wiring harness-side): — Instrument cluster terminal 2U Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the ROOM 15 A fuse. If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from the instrument cluster using the M-MDS. (See 09-02E-4 CLEARING DTC [INSTRUMENT CLUSTER].) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the same DTC present? 	Yes	Replace the instrument cluster, then go to the next step. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

PID/DATA MONITOR INSPECTION [INSTRUMENT CLUSTER]

id0902e8960600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



am3uuw0000265

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE [INSTRUMENT CLUSTER]

id0902e8960700

PID Name	Description	Unit/Status	Terminal
ECT_GAUGE	Indicates the engine coolant temperature.	°C	—
FUEL_GAUGE	Indicates the fuel gauge.	L	2R, 2T
FUEL_INPT	Indicates the resistance value of fuel gauge sender unit.	ohm	2R, 2T
NUMKEYS*1	Indicates the number of key ID registered in the instrument cluster.	0—8	—
ODOMETER	Indicates the odometer data.	km	—
SPDMTR	Indicates the vehicle speed.	KPH	—
TACHOMTR	Indicates the tachometer data.	RPM	—
TOTAL_DIST	Indicates the total distance.	km	—
VPWR	Indicate the battery voltage.	V	2U
VSS*2	Indicate the VSS data.	KPH	—
WU1_ID*2	Indicates the registered ID that is transmitted from the wheel unit.	—	—
WU2_ID*2			
WU3_ID*2			
WU4_ID*2			
WU1_P*2	Indicates the tire pressure.	Pa	—
WU2_P*2			
WU3_P*2			
WU4_P*2			
WU1_T*2	Indicates the internal tire air temperature.	°C	—
WU2_T*2			
WU3_T*2			
WU4_T*2			
WU1_VPWR*2	Supply voltage • Signal is normal: Normal • Signal is abnormal: Error	Normal/Error	—
WU2_VPWR*2			
WU3_VPWR*2			
WU4_VPWR*2			

09-02E

ON-BOARD DIAGNOSTIC [INSTRUMENT CLUSTER]

PID Name	Description	Unit/Status	Terminal
WU1_ERR_T*2	Tire temperature <ul style="list-style-type: none"> Signal is normal: Normal Signal is abnormal: Error 	Normal/Error	—
WU2_ERR_T*2			
WU3_ERR_T*2			
WU4_ERR_T*2			
WU1_ERR_P*2	Tire pressure <ul style="list-style-type: none"> Signal is normal: Normal Signal is abnormal: Error 	Normal/Error	—
WU2_ERR_P*2			
WU3_ERR_P*2			
WU4_ERR_P*2			

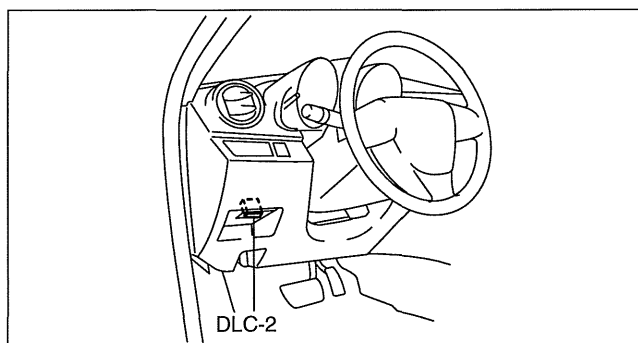
*1 : Vehicles with keyless entry system

*2 : Vehicles with tire pressure monitoring system

ACTIVE COMMAND MODES INSPECTION [INSTRUMENT CLUSTER]

id0902e8960800

- Connect the M-MDS to the DLC-2.
- After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "IC".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "IC".
 - Select "DataLogger".



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- Select the active command modes from the PID table.
- Perform the active command modes, inspect the operations for each parts.

- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER]

id0902e8960900

Command Name	Operation Condition	Output Part Name	Unit/Operation
ALARM	On: Warning alarm sounds.	Warning alarm	On/Off
LCD_SEG	On: LCD segment displayed.	LCD segment	Off/On
SPDMTR	<ul style="list-style-type: none"> 60 Km/h: Speedometer gauge needle moves to approx. 60 km/h. 120 Km/h: Speedometer gauge needle moves to approx. 120 km/h. Off: Speedometer gauge needle moves to 0 km/h. 	Speed meter	Off/60 Km/h/ 120 Km/h
TACHOMTR	<ul style="list-style-type: none"> 3000 RPM: Tachometer gauge needle moves to approx. 3,000 rpm. 6000 RPM: Tachometer gauge needle moves to approx. 6,000 rpm. Off: Tachometer gauge needle moves to 0 rpm. 	Tachometer	Off/3000 RPM/ 6000 RPM
WL+IL	On: Warning/indicator lights illuminate.	Warning light, indicator light	Off/On

09-02F ON-BOARD DIAGNOSTIC [BCM]

ON-BOARD DIAGNOSTIC

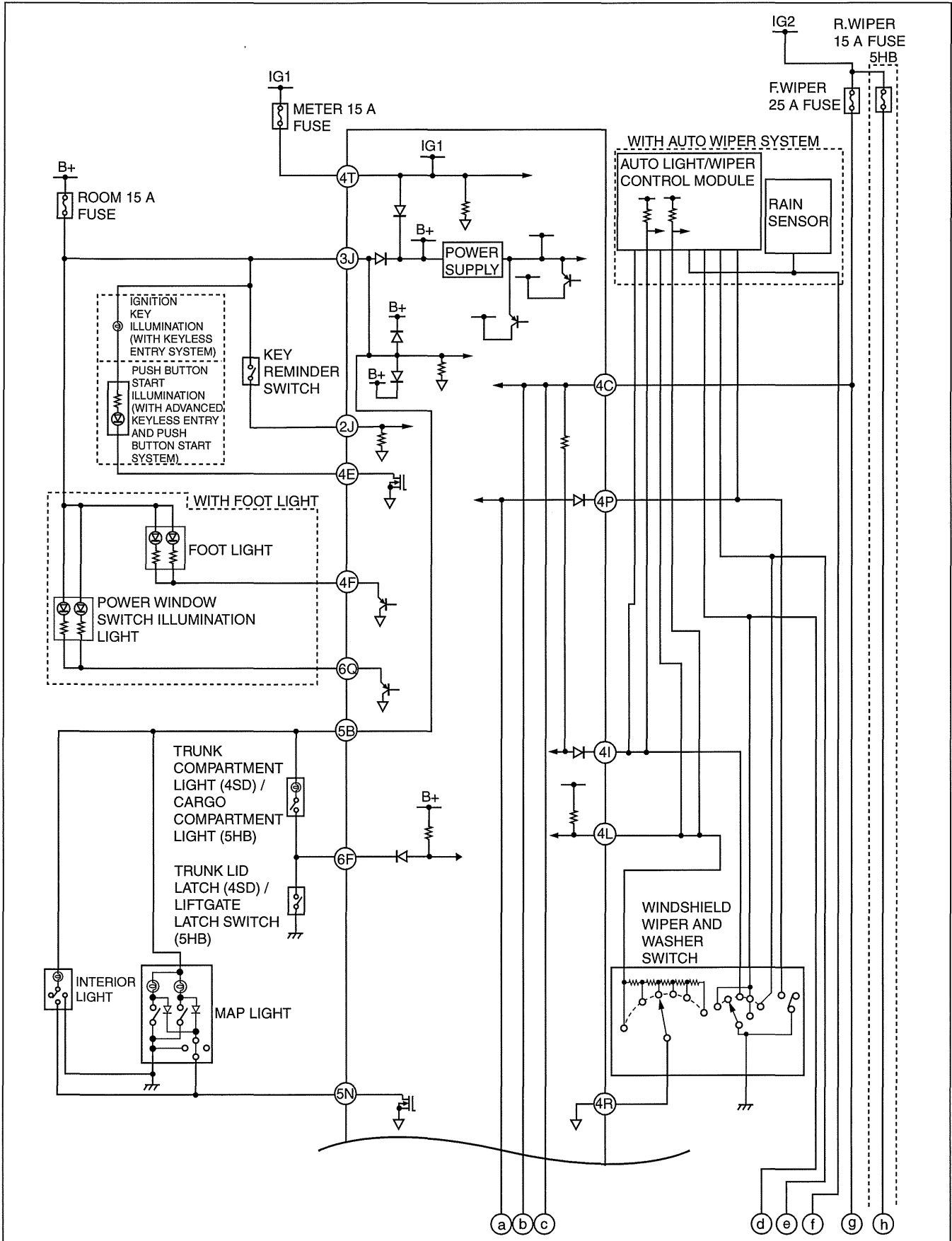
WIRING DIAGRAM [BCM]	09-02F-2	DTC B11DC:11 [BCM]	09-02F-43
DTC INSPECTION [BCM]	09-02F-7	DTC B1172:11 [BCM]	09-02F-44
CLEARING DTC [BCM]	09-02F-7	DTC B1172:13 [BCM]	09-02F-46
DTC TABLE [BCM]	09-02F-8	DTC B1174:11 [BCM]	09-02F-48
DTC B1C45:12 [BCM]	09-02F-10	DTC B1174:13 [BCM]	09-02F-50
DTC B1D35:11 [BCM]	09-02F-11	DTC B1175:13 [BCM]	09-02F-54
DTC B1D36:11 [BCM]	09-02F-13	DTC B1176:13 [BCM]	09-02F-56
DTC B10D0:11 [BCM]	09-02F-14	DTC B1178:11 [BCM]	09-02F-58
DTC B1007:11 [BCM]	09-02F-16	4SD	09-02F-58
DTC B1008:11 [BCM]	09-02F-17	5HB	09-02F-59
Vehicles Without Auto Wiper System	09-02F-17	DTC B126A:11 [BCM]	09-02F-61
Vehicles With Auto Wiper System	09-02F-19	DTC B126A:13 [BCM]	09-02F-62
DTC B1013:11 [BCM]	09-02F-21	DTC C0051:04 [BCM]	09-02F-64
DTC B1046:11 [BCM]	09-02F-23	DTC C0051:2F/C0052:11/ C0052:13/C0053:11/C0053:13/ C0054:11/C0054:13/C0055:11/ C0055:13 [BCM]	09-02F-65
DTC B1048:13 [BCM]	09-02F-24	DTC C1126:13 [BCM]	09-02F-67
DTC B1051:11 [BCM]	09-02F-26	DTC C1137:12 [BCM]	09-02F-69
DTC B1052:11 [BCM]	09-02F-27	ATX	09-02F-69
DTC B1079:13 [BCM]	09-02F-29	MTX	09-02F-71
DTC B108F:16 [BCM]	09-02F-31	DTC P0070:14 [BCM]	09-02F-72
DTC B109E:83 [BCM]	09-02F-32	DTC P1536:13 [BCM]	09-02F-74
DTC B109E:87 [BCM]	09-02F-33	DTC U0300:00 [BCM]	09-02F-76
Vehicles Without Advanced Keyless Entry And Push Button Start System	09-02F-33	DTC U0401:68 [BCM]	09-02F-77
Vehicles With Advanced Keyless Entry And Push Button Start System	09-02F-35	DTC U2100:00 [BCM]	09-02F-78
DTC B11C0:13 [BCM]	09-02F-37	DTC U3000:04 [BCM]	09-02F-79
DTC B11C1:13 [BCM]	09-02F-39	DTC U3003:16 [BCM]	09-02F-80
DTC B11DA:16 [BCM]	09-02F-41	DTC U3003:17 [BCM]	09-02F-82
		PID/DATA MONITOR INSPECTION [BCM]	09-02F-83
		PID/DATA MONITOR TABLE [BCM]	09-02F-83

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ON-BOARD DIAGNOSTIC [BCM]

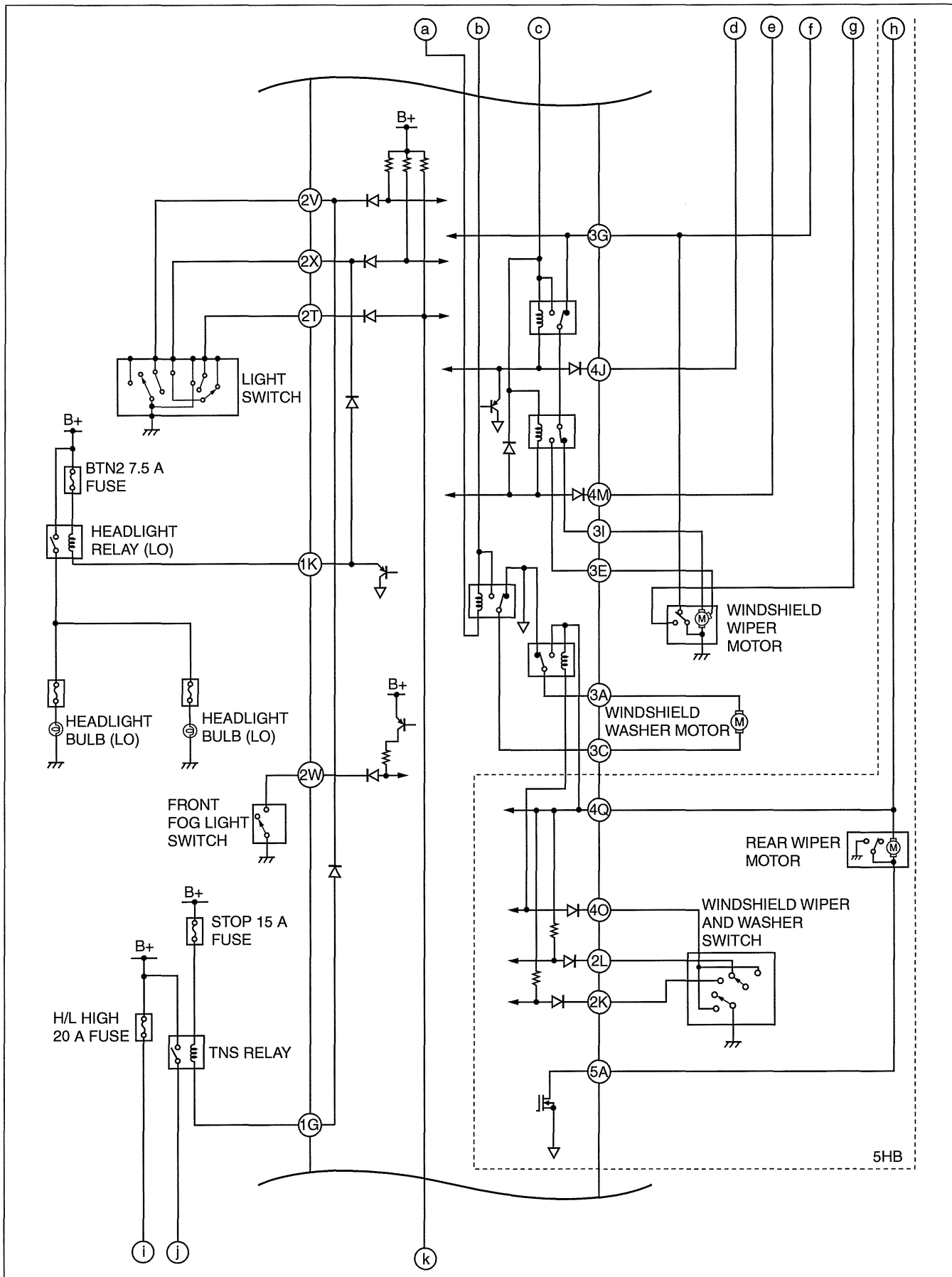
ON-BOARD DIAGNOSTIC WIRING DIAGRAM [BCM]

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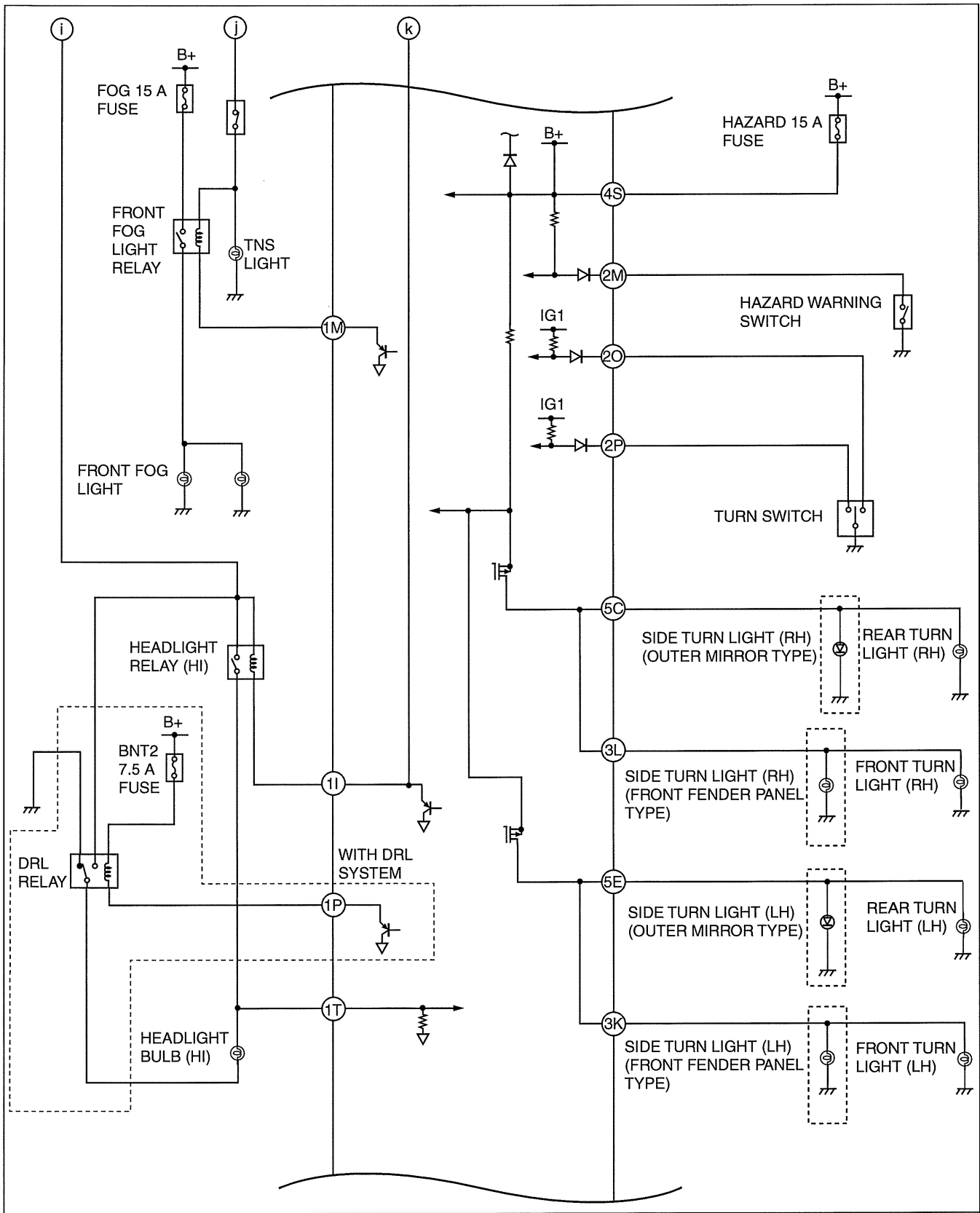
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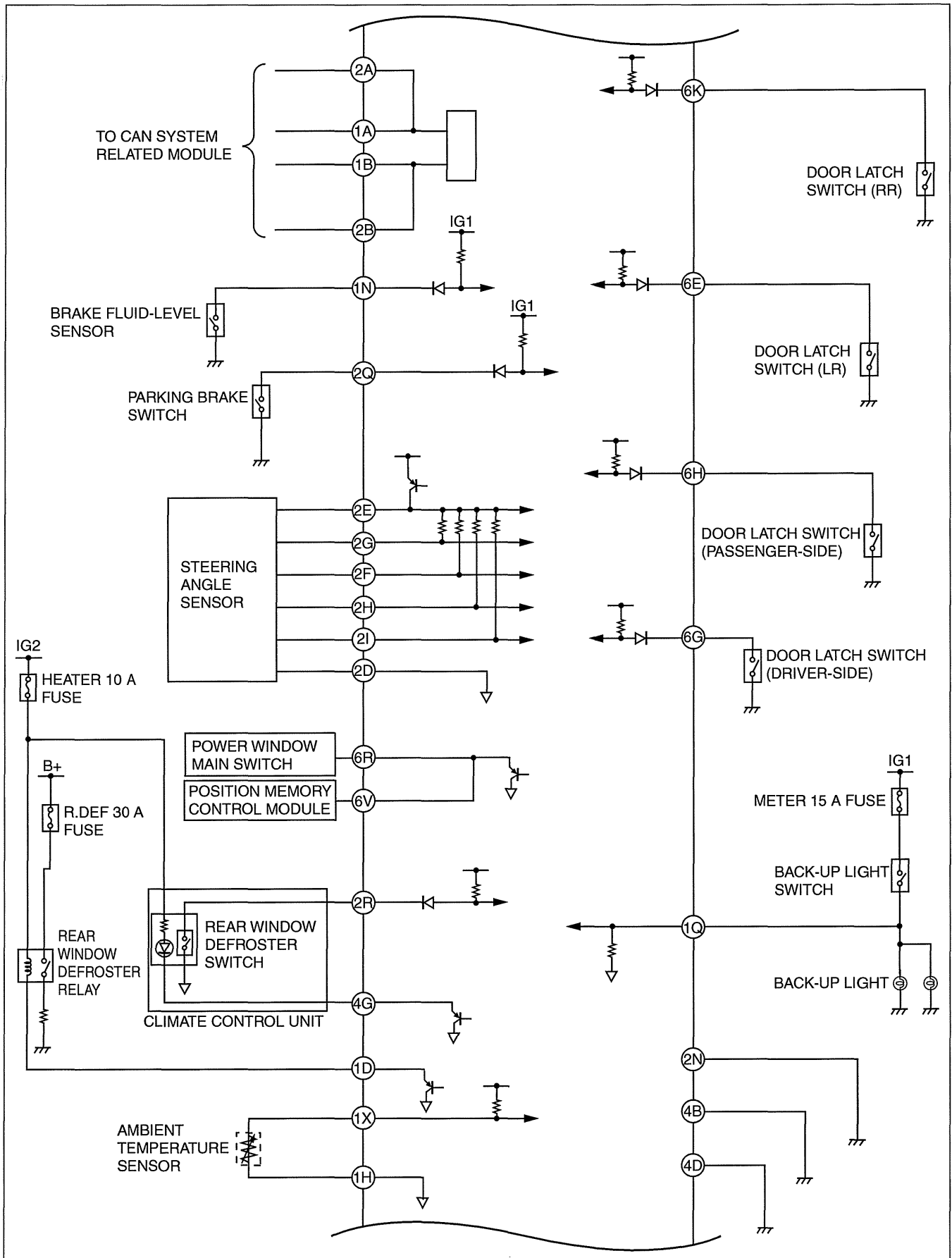
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ON-BOARD DIAGNOSTIC [BCM]



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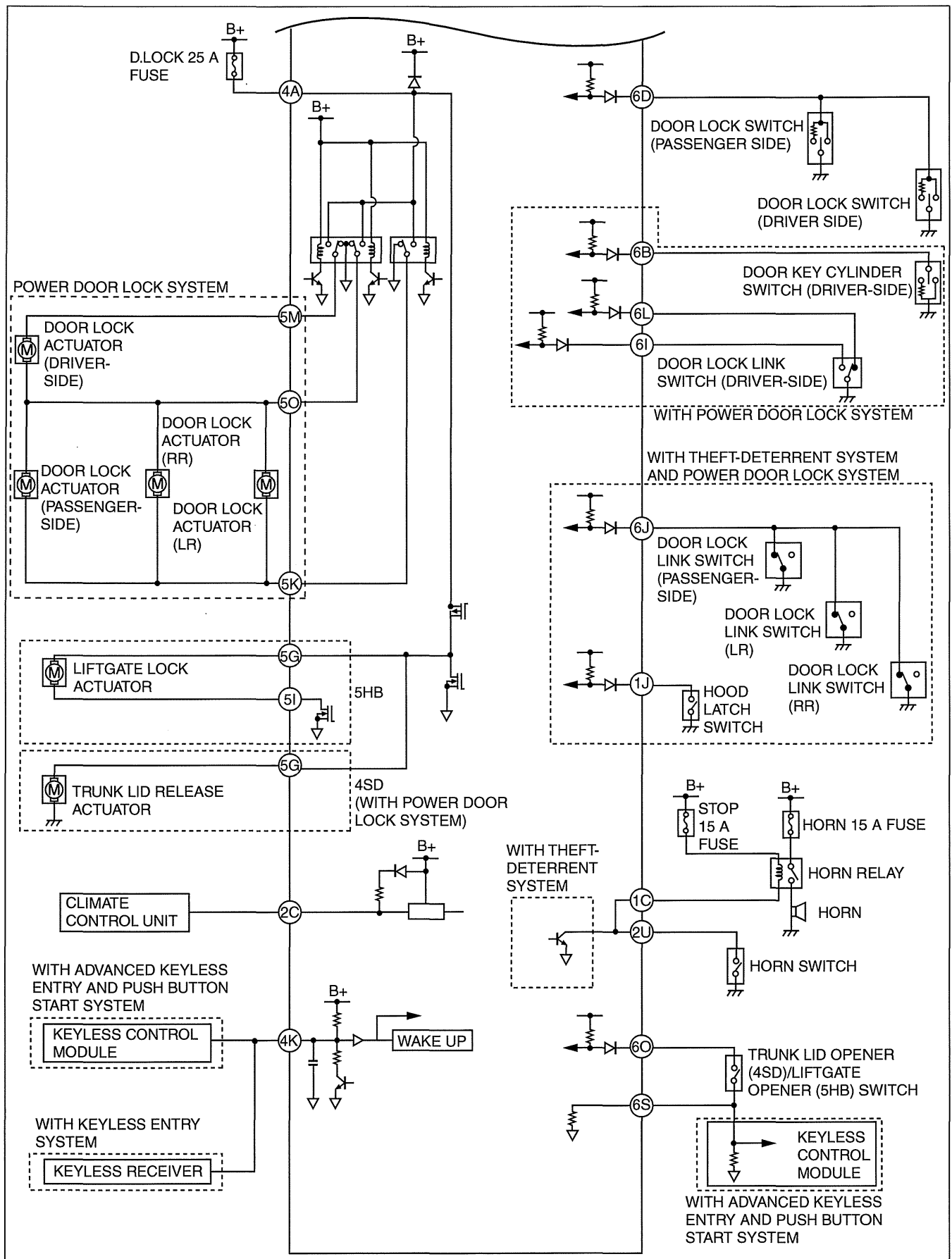
ON-BOARD DIAGNOSTIC [BCM]



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ON-BOARD DIAGNOSTIC [BCM]



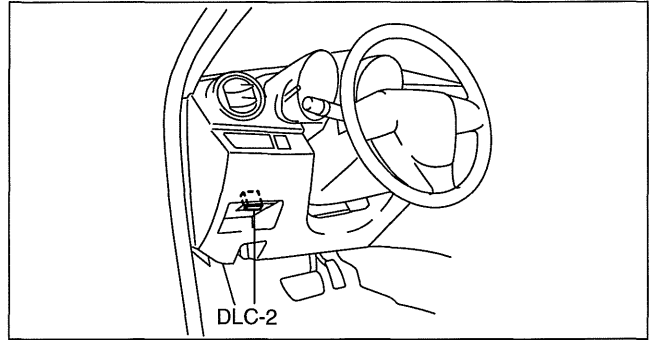
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ON-BOARD DIAGNOSTIC [BCM]

DTC INSPECTION [BCM]

id0902f5960300

1. Connect the M-MDS to the DLC-2.
2. Verify the following vehicle conditions:
 - All the switches are turned off (except the ignition switch).
 - All the doors, hood, and trunk (4SD)/liftgate (5HB) are closed.
 - All the doors, and trunk (4SD)/liftgate (5HB) are unlocked.
 - All the seat belts are unbuckled.
 - Parking brake lever is pulled.
3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "GEM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "GEM".
 3. Select "Self Test".
4. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
5. After completion of repairs, clear all DTCs stored in the BCM. (See 09-02F-7 CLEARING DTC [BCM].)

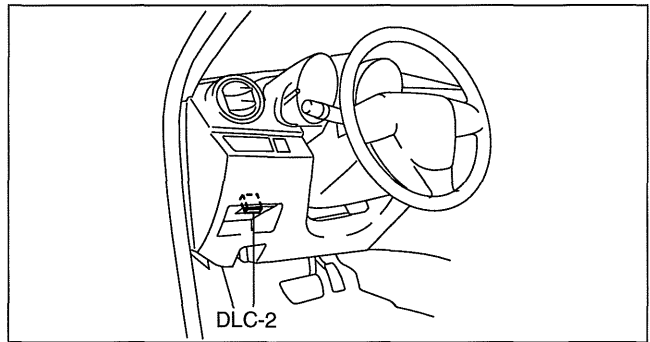


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CLEARING DTC [BCM]

id0902f5960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "GEM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "GEM".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02F-7 DTC INSPECTION [BCM].)
8. Verify that no DTCs are displayed.



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09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC TABLE [BCM]

id0902f5960500

DTC No.	Description	Reference
B1C45:12	Windshield wiper park position switch circuit malfunction	(See 09-02F-10 DTC B1C45:12 [BCM].)
B1D35:11	Hazard warning switch circuit malfunction	(See 09-02F-11 DTC B1D35:11 [BCM].)
B1D36:11	Turn switch circuit malfunction	(See 09-02F-13 DTC B1D36:11 [BCM].)
B10D0:11	Trunk lid opener switch (4SD)/liftgate opener switch (5HB) circuit malfunction	(See 09-02F-14 DTC B10D0:11 [BCM].)
B1007:11	Headlight high circuit malfunction	(See 09-02F-16 DTC B1007:11 [BCM].)
B1008:11	Windshield wiper mode switch circuit malfunction	(See 09-02F-17 DTC B1008:11 [BCM].)
B1013:11 ^{*9}	Rear window defroster switch circuit malfunction	(See 09-02F-21 DTC B1013:11 [BCM].)
B1046:11	Front fog light switch circuit malfunction	(See 09-02F-23 DTC B1046:11 [BCM].)
B1048:13	Brake fluid level sensor circuit malfunction	(See 09-02F-24 DTC B1048:13 [BCM].)
B1051:11	Windshield washer switch circuit malfunction	(See 09-02F-26 DTC B1051:11 [BCM].)
B1052:11 ^{*1}	Rear washer switch circuit malfunction	(See 09-02F-27 DTC B1052:11 [BCM].)
B1079:13 ^{*2}	Hood latch switch circuit malfunction	(See 09-02F-29 DTC B1079:13 [BCM].)
B108F:16 ^{*3}	Door lock switch circuit malfunction	(See 09-02F-31 DTC B108F:16 [BCM].)
B109E:83 ^{*4}	Keyless receiver circuit malfunction	(See 09-02F-32 DTC B109E:83 [BCM].)
B109E:87 ^{*4}	Keyless receiver circuit malfunction	(See 09-02F-33 DTC B109E:87 [BCM].)
B11C0:13	Rear door latch switch (RH) circuit malfunction	(See 09-02F-37 DTC B11C0:13 [BCM].)
B11C1:13	Rear door latch switch (LH) circuit malfunction	(See 09-02F-39 DTC B11C1:13 [BCM].)
B11DA:16 ^{*5}	Front door key cylinder switch (LH) circuit malfunction	(See 09-02F-41 DTC B11DA:16 [BCM].)
B11DC:11 ^{*1}	Rear wiper mode switch circuit malfunction	(See 09-02F-43 DTC B11DC:11 [BCM].)
B1172:11 ^{*5}	Door lock-link switch (LF) circuit malfunction	(See 09-02F-44 DTC B1172:11 [BCM].)
B1172:13 ^{*5}	Door lock-link switch (LF) circuit malfunction	(See 09-02F-46 DTC B1172:13 [BCM].)
B1174:11 ^{*5}	Door lock-link switch (RF/LR/RR) circuit malfunction	(See 09-02F-48 DTC B1174:11 [BCM].)
B1174:13 ^{*5}	Door lock-link switch (RF/LR/RR) circuit malfunction	(See 09-02F-50 DTC B1174:13 [BCM].)
B1175:13	Front door latch switch (LH) circuit malfunction	(See 09-02F-54 DTC B1175:13 [BCM].)
B1176:13	Front door latch switch (RH) circuit malfunction	(See 09-02F-56 DTC B1176:13 [BCM].)
B1178:11	4SD <ul style="list-style-type: none"> • Trunk lid latch switch circuit malfunction 5HB <ul style="list-style-type: none"> • Liftgate latch switch circuit malfunction 	(See 09-02F-58 DTC B1178:11 [BCM].)
B126A:11 ^{*5}	Door lock-link switch (LF) circuit malfunction	(See 09-02F-61 DTC B126A:11 [BCM].)
B126A:13 ^{*5}	Door lock-link switch (LF) circuit malfunction	(See 09-02F-62 DTC B126A:13 [BCM].)

ON-BOARD DIAGNOSTIC [BCM]

DTC No.	Description	Reference
C0051:04* ⁶	Steering angle sensor internal malfunction	(See 09-02F-64 DTC C0051:04 [BCM].)
C0051:2F* ⁶	Erratic signal of steering angle sensor	(See 09-02F-65 DTC C0051:2F/C0052:11/C0052:13/C0053:11/C0053:13/C0054:11/C0054:13/C0055:11/C0055:13 [BCM].)
C0052:11* ⁶	Steering angle sensor A signal input circuit error	
C0052:13* ⁶		
C0053:11* ⁶	Steering angle sensor B signal input circuit error	
C0053:13* ⁶		
C0054:11* ⁶	Steering angle sensor C signal input circuit error	
C0054:13* ⁶		
C0055:11* ⁶	Steering angle sensor Z signal input circuit error	
C0055:13* ⁶		
C1126:13	TNS switch circuit malfunction	(See 09-02F-67 DTC C1126:13 [BCM].)
C1137:12	ATX • TR switch circuit malfunction	(See 09-02F-69 DTC C1137:12 [BCM].)
	MTX • Back-up light switch circuit malfunction	
P0070:14	Ambient temperature sensor circuit malfunction	(See 09-02F-72 DTC P0070:14 [BCM].)
P1536:13	Parking brake switch circuit malfunction	(See 09-02F-74 DTC P1536:13 [BCM].)
U0001:88	Unit communication error (HS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0100:00	Communication error with PCM	
U0101:00* ⁷	Communication error with TCM	
U0151:00	Communication error with SAS control module	
U0214:00* ⁸	Communication error with keyless control module	
U0300:00	Incomplete configuration	(See 09-02F-76 DTC U0300:00 [BCM].)
U0401:68	Receive erratic data from PCM	(See 09-02F-77 DTC U0401:68 [BCM].)
U2100:00	Incomplete configuration	(See 09-02F-78 DTC U2100:00 [BCM].)
U3000:04	BCM internal malfunction	(See 09-02F-79 DTC U3000:04 [BCM].)
U3003:16	Power supply circuit malfunction	(See 09-02F-80 DTC U3003:16 [BCM].)
U3003:17	Power supply circuit malfunction	(See 09-02F-82 DTC U3003:17 [BCM].)

09-02F

*1 : 5HB

*2 : Vehicles with theft-deterrent system

*3 : Vehicles with door lock switch

*4 : Vehicles with keyless entry system or advanced keyless entry and push button start system

*5 : Vehicles with power door lock system

*6 : Vehicles with steering angle sensor

*7 : ATX

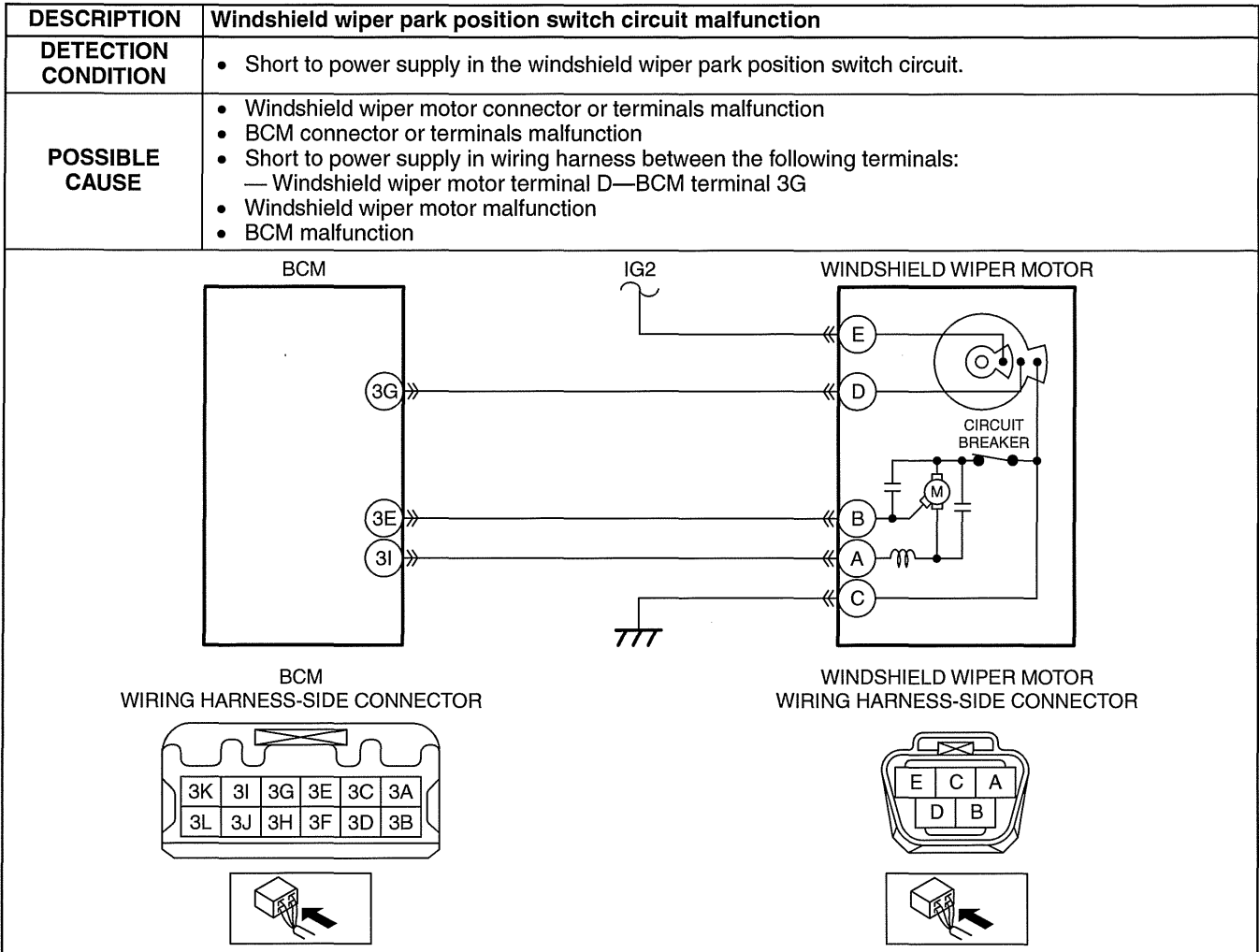
*8 : Vehicles with advanced keyless entry and push button start system

*9 : Manual air conditioner

ON-BOARD DIAGNOSTIC [BCM]

DTC B1C45:12 [BCM]

id0902f5390300



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT WINDSHIELD WIPER MOTOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the windshield wiper motor connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
4	INSPECT WINDSHIELD WIPER PARK POSITION SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Windshield wiper motor and BCM connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Windshield wiper motor terminal D • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT WINDSHIELD WIPER MOTOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the windshield wiper motor. (See 09-19-9 WINDSHIELD WIPER MOTOR INSPECTION.) • Is there any malfunction? 	Yes	Replace the windshield wiper motor, then go to the next step. (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

DTC B1D35:11 [BCM]

id0902f5389700

DESCRIPTION	Hazard warning switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • Short to ground in the hazard warning switch circuit with the hazard warning switch off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Hazard warning switch connector or terminals malfunction • BCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Hazard warning switch terminal B—BCM terminal 2M • Hazard warning switch malfunction • BCM malfunction

ON-BOARD DIAGNOSTIC [BCM]

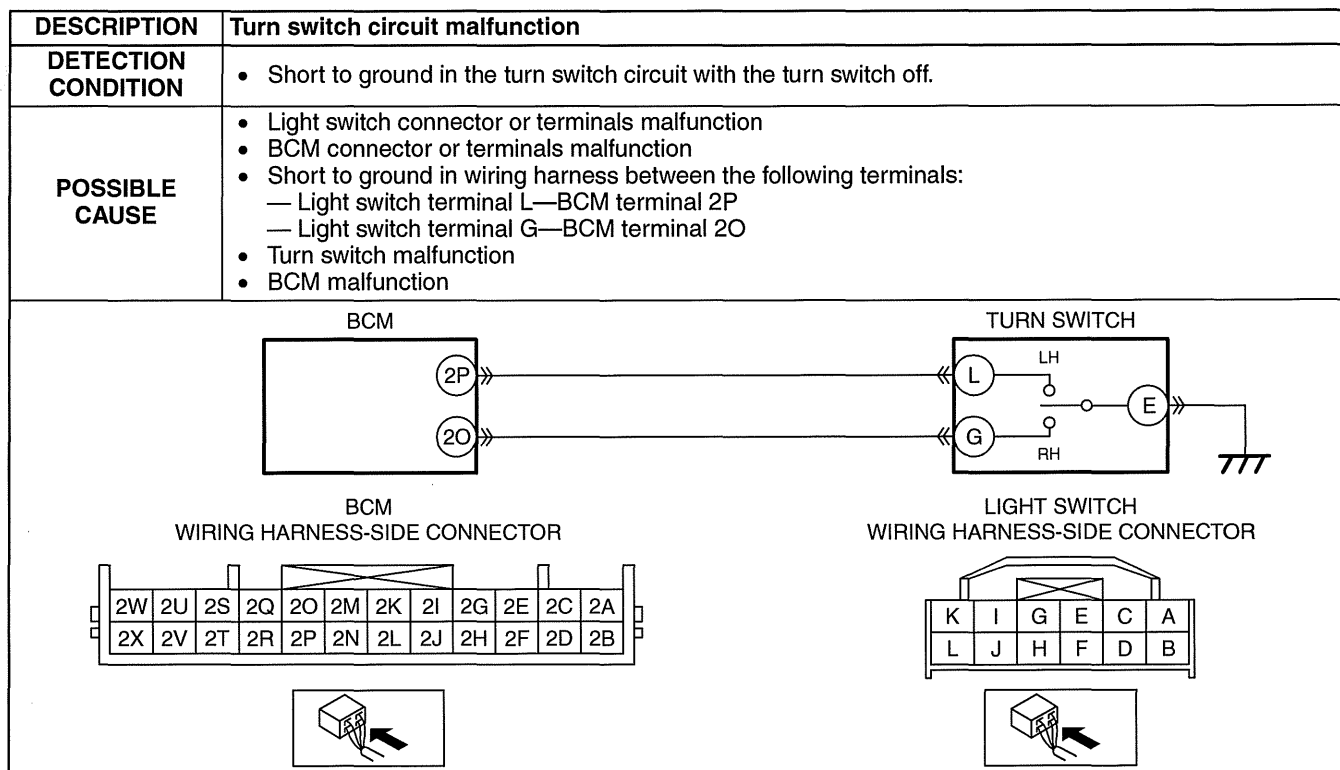
Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the hazard warning switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT HAZARD WARNING SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the hazard warning switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT HAZARD WARNING SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Hazard warning switch and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Hazard warning switch terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT HAZARD WARNING SWITCH <ul style="list-style-type: none"> • Inspect the hazard warning switch. (See 09-18-61 HAZARD WARNING SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the hazard warning switch, then go to the next step. (See 09-18-60 HAZARD WARNING SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the hazard warning switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC B1D36:11 [BCM]

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09-02F

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the turn switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT LIGHT SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the light switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT TURN SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Light switch and BCM connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Light switch terminal L Light switch terminal G Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
5	INSPECT TURN SWITCH <ul style="list-style-type: none"> Inspect the turn switch. (See 09-18-58 LIGHT SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the light switch, then go to the next step. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the turn switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B10D0:11 [BCM]

id0902f5414000

DESCRIPTION	Trunk lid opener switch (4SD)/liftgate opener switch (5HB) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the trunk lid opener switch (4SD)/liftgate opener switch (5HB) circuit when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Trunk lid opener switch (4SD)/liftgate opener switch (5HB) connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Trunk lid opener switch (4SD)/liftgate opener switch (5HB) terminal B—BCM terminal 6O Trunk lid opener switch (4SD)/liftgate opener switch (5HB) malfunction BCM malfunction

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

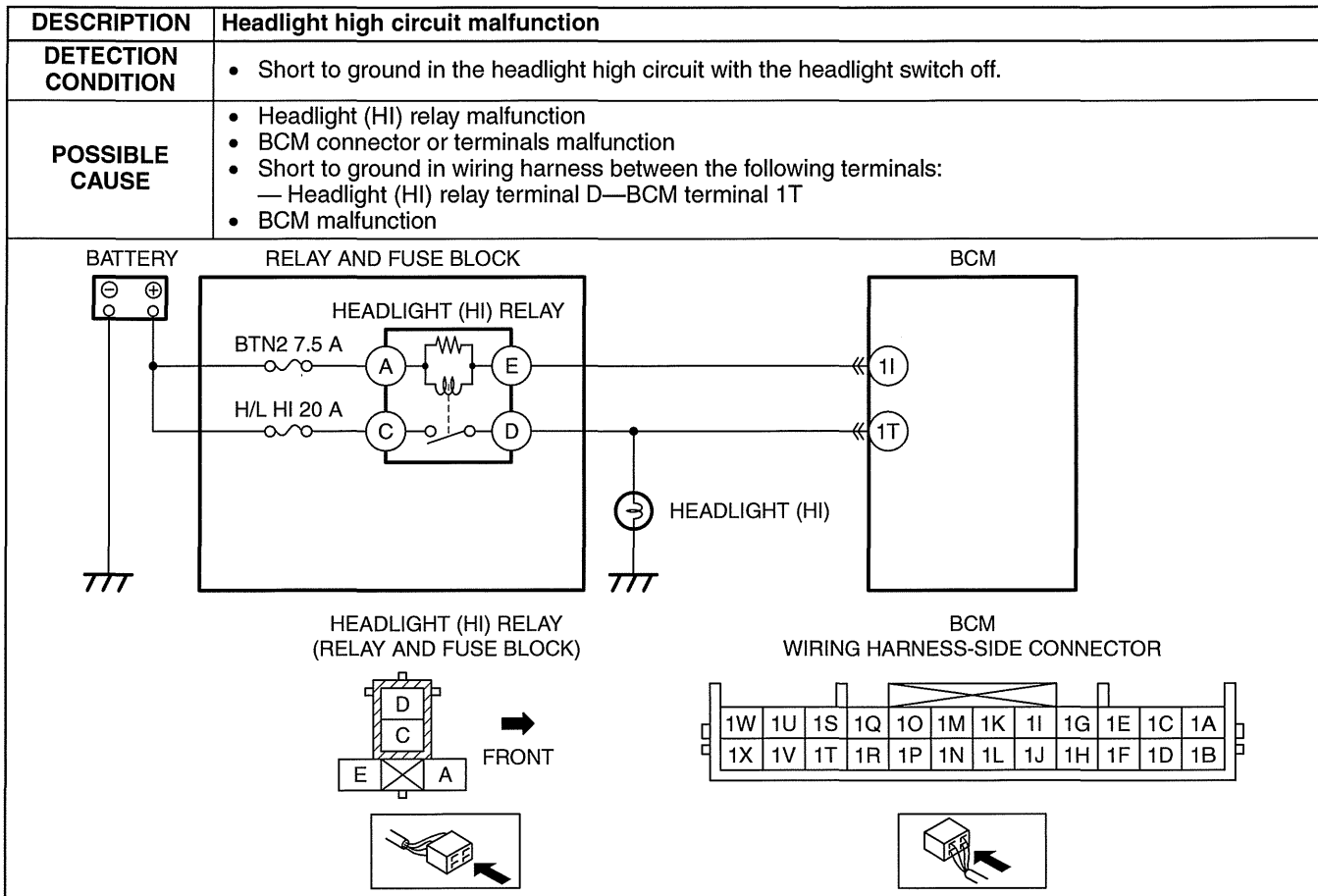
STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS when the ignition is ON. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT TRUNK LID OPENER SWITCH (4SD)/LIFTGATE OPENER SWITCH (5HB) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the trunk lid opener switch (4SD)/liftgate opener switch (5HB) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT TRUNK LID OPENER SWITCH (4SD)/LIFTGATE OPENER SWITCH (5HB) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Trunk lid opener switch (4SD)/liftgate opener switch (5HB) and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Trunk lid opener switch (4SD)/liftgate opener switch (5HB) terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT TRUNK LID OPENER SWITCH (4SD)/LIFTGATE OPENER SWITCH (5HB) <ul style="list-style-type: none"> • Inspect the trunk lid opener switch (4SD)/liftgate opener switch (5HB). (See 09-14-54 TRUNK LID OPENER SWITCH INSPECTION.) (See 09-14-65 LIFTGATE OPENER SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the trunk lid opener switch (4SD)/liftgate opener switch (5HB), then go to the next step. (See 09-14-54 TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION.) (See 09-14-64 LIFTGATE OPENER SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS when the ignition is ON. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC B1007:11 [BCM]

id0902f5940000



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the headlight switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 6.
2	INSPECT HEADLIGHT (HI) RELAY <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Remove the headlight (HI) relay. Inspect the headlight (HI) relay. (See 09-21-17 RELAY INSPECTION.) Is there any malfunction? 	Yes	Replace the relay, then go to Step 5.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 5.
		No	Go to the next step.
4	INSPECT HEADLIGHT HIGH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Headlight (HI) relay is removed and BCM connector is disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — BCM terminal 1T Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the headlight switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

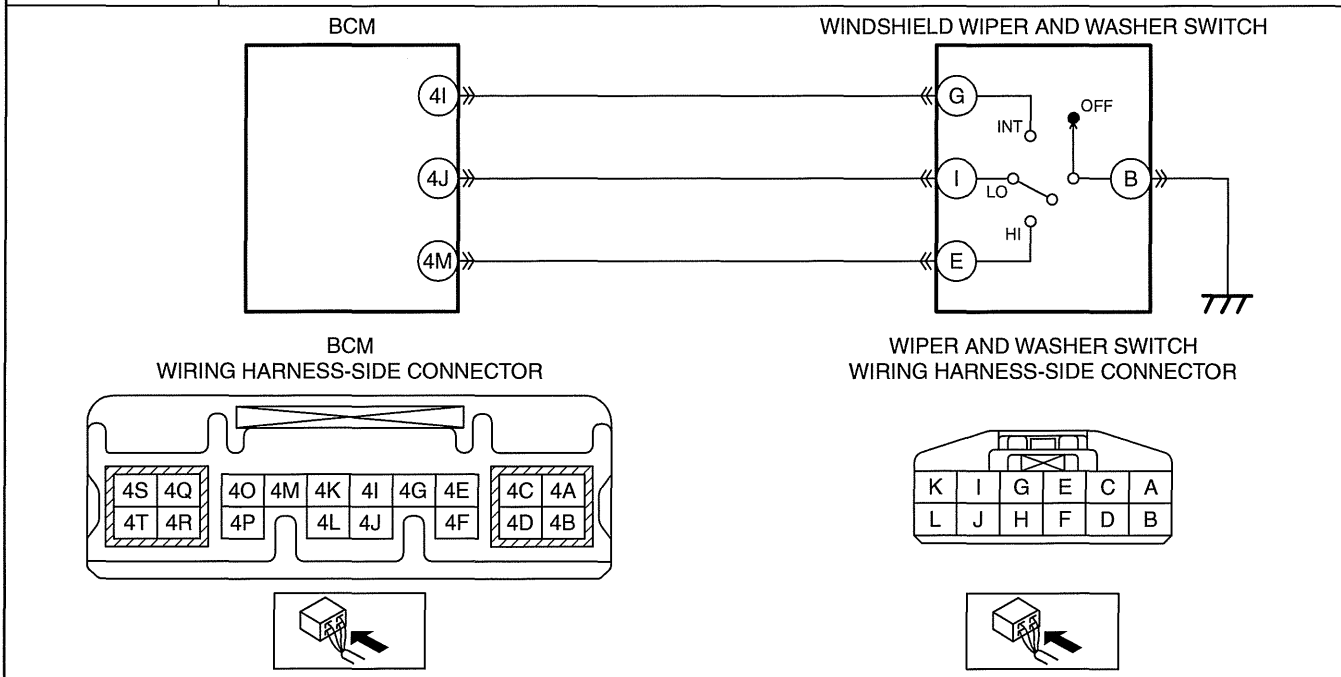
DTC B1008:11 [BCM]

id0902f5340000

Vehicles Without Auto Wiper System

DESCRIPTION	Windshield wiper mode switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the windshield wiper mode switch circuit with the windshield wiper mode switch off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wiper and washer switch connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Wiper and washer switch terminal G—BCM terminal 4I Wiper and washer switch terminal I—BCM terminal 4J Wiper and washer switch terminal E—BCM terminal 4M Windshield wiper and washer switch malfunction BCM malfunction

09-02F



Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the windshield wiper mode switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.

ON-BOARD DIAGNOSTIC [BCM]

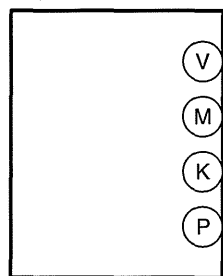
STEP	INSPECTION	ACTION	
2	INSPECT WIPER AND WASHER SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the wiper and washer switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT WINDSHIELD WIPER MODE SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Wiper and washer switch and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Wiper and washer switch terminal G — Wiper and washer switch terminal I — Wiper and washer switch terminal E • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT WINDSHIELD WIPER AND WASHER SWITCH <ul style="list-style-type: none"> • Inspect the windshield wiper and washer switch. (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the wiper and washer switch, then go to the next step. (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the windshield wiper mode switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

Vehicles With Auto Wiper System

DESCRIPTION	Windshield wiper mode switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the windshield wiper mode switch circuit with the windshield wiper mode switch off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wiper and washer switch connector or terminals malfunction Auto light/wiper control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Wiper and washer switch terminal G—Auto light/wiper control module terminal V BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Wiper and washer switch terminal I—BCM terminal 4J or auto light/wiper control module terminal K Wiper and washer switch terminal E—BCM terminal 4M or auto light/wiper control module terminal M Auto light/wiper control module terminal P—BCM terminal 4I Windshield wiper and washer switch malfunction Auto light/wiper control module malfunction BCM malfunction

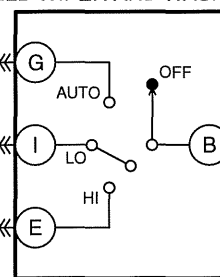
AUTO LIGHT / WIPER CONTROL MODULE



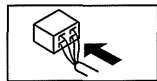
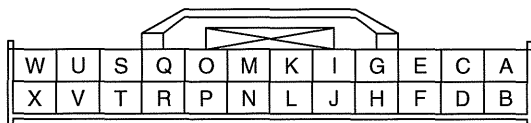
BCM



WINDSHIELD WIPER AND WASHER SWITCH

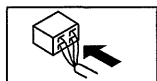
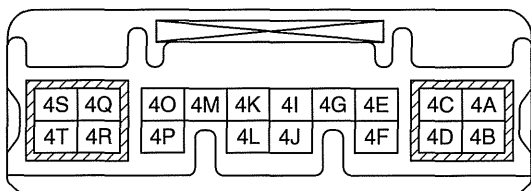


AUTO LIGHT / WIPER CONTROL MODULE
WIRING HARNESS-SIDE CONNECTOR

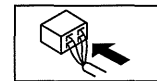
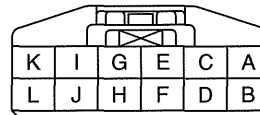


BCM

WIRING HARNESS-SIDE CONNECTOR



WIPER AND WASHER SWITCH
WIRING HARNESS-SIDE CONNECTOR



09-02F

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the windshield wiper mode switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 10.
2	INSPECT WIPER AND WASHER SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the wiper and washer switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
3	INSPECT AUTO LIGHT/WIPER CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the auto light/wiper control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
4	INSPECT WINDSHIELD WIPER AUTO SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Wiper and washer switch and auto light/wiper control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Wiper and washer switch terminal G • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No	Go to the next step.
5	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 9.
		No	Go to the next step.
6	INSPECT WINDSHIELD WIPER MODE SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Wiper and washer switch, auto light/wiper control module and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Wiper and washer switch terminal I — Wiper and washer switch terminal E — Auto light/wiper control module terminal P • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No	Go to the next step.
7	INSPECT WINDSHIELD WIPER AND WASHER SWITCH <ul style="list-style-type: none"> • Inspect the windshield wiper and washer switch. (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the wiper and washer switch, then go to Step 9. (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.


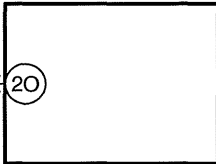
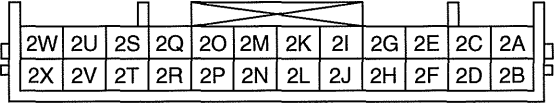
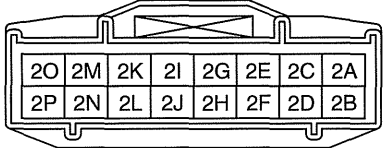
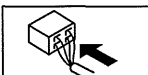
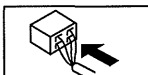
ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION		ACTION
8	INSPECT AUTO LIGHT/WIPER CONTROL MODULE <ul style="list-style-type: none"> Reconnect the wiper and washer switch, auto light/wiper control module and BCM connectors. Reconnect the negative battery cable. Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Auto light/wiper control module terminal V — Auto light/wiper control module terminal M — Auto light/wiper control module terminal K — Auto light/wiper control module terminal P Is the voltage normal? (See 09-18-65 AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.) 	Yes	Go to the next step.
		No	Replace the auto light/wiper control module, then go to the next step. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
9	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the windshield wiper mode switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

DTC B1013:11 [BCM]

id0902f5930900

DESCRIPTION	Rear window defroster switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the rear window defroster switch circuit with the rear window defroster switch off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Climate control unit connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Climate control unit terminal 2O—BCM terminal 2R Climate control unit malfunction BCM malfunction
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>BCM</p>  </div> <div style="text-align: center;"> <p>CLIMATE CONTROL UNIT</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;"> <p>BCM WIRING HARNESS-SIDE CONNECTOR</p>  </div> <div style="text-align: center;"> <p>CLIMATE CONTROL UNIT WIRING HARNESS-SIDE CONNECTOR</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;">   </div>	

ON-BOARD DIAGNOSTIC [BCM]

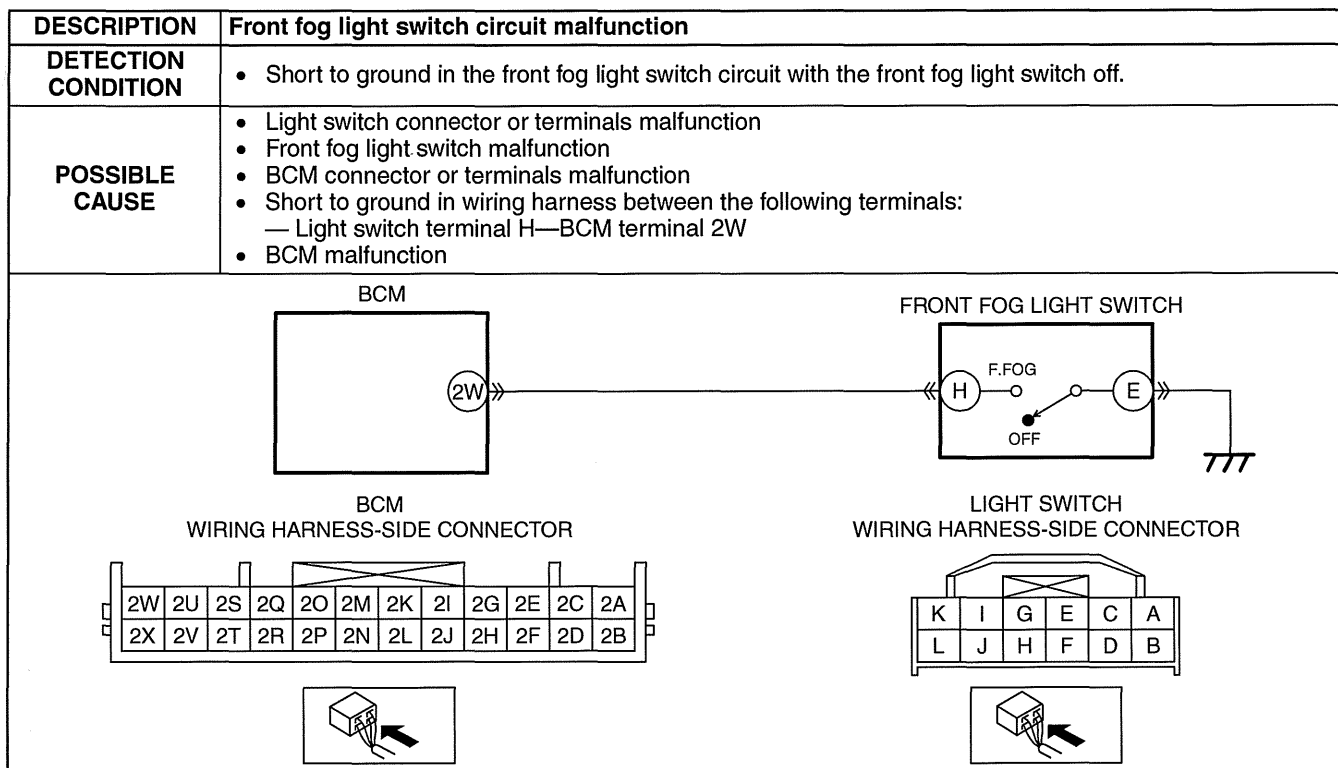
Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the rear window defroster switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT CLIMATE CONTROL UNIT CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the climate control unit connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT REAR WINDOW DEFROSTER SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Climate control unit and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Climate control unit terminal 20 • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none"> • Reconnect the climate control unit and BCM connectors. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Climate control unit terminal 20 • Is the voltage normal? (See 07-40B-20 CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER].) 	Yes	Go to the next step.
		No	Replace the climate control unit, then go to the next step. (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the rear window defroster switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC B1046:11 [BCM]

id0902f5940100



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the front fog light switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT LIGHT SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the light switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT FRONT FOG LIGHT SWITCH <ul style="list-style-type: none"> Inspect the front fog light switch. (See 09-18-60 FRONT FOG LIGHT SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the light switch, then go to Step 6. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT FRONT FOG LIGHT SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Light switch and BCM connectors are disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> Light switch terminal H Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to the next step.
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the front fog light switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No DTC troubleshooting completed.

DTC B1048:13 [BCM]

id0902f5931000

DESCRIPTION	Brake fluid level sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the brake fluid level sensor circuit with the brake fluid amount on the upper side of the minimum.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Brake fluid level sensor connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Brake fluid level sensor terminal A—Body ground Brake fluid level sensor malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Brake fluid level sensor terminal B—BCM terminal 1N BCM malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the brake fluid amount on the upper side of the minimum. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Go to the next step.
		No Go to Step 9.
2	INSPECT BRAKE FLUID LEVEL SENSOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the brake fluid level sensor connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 8.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

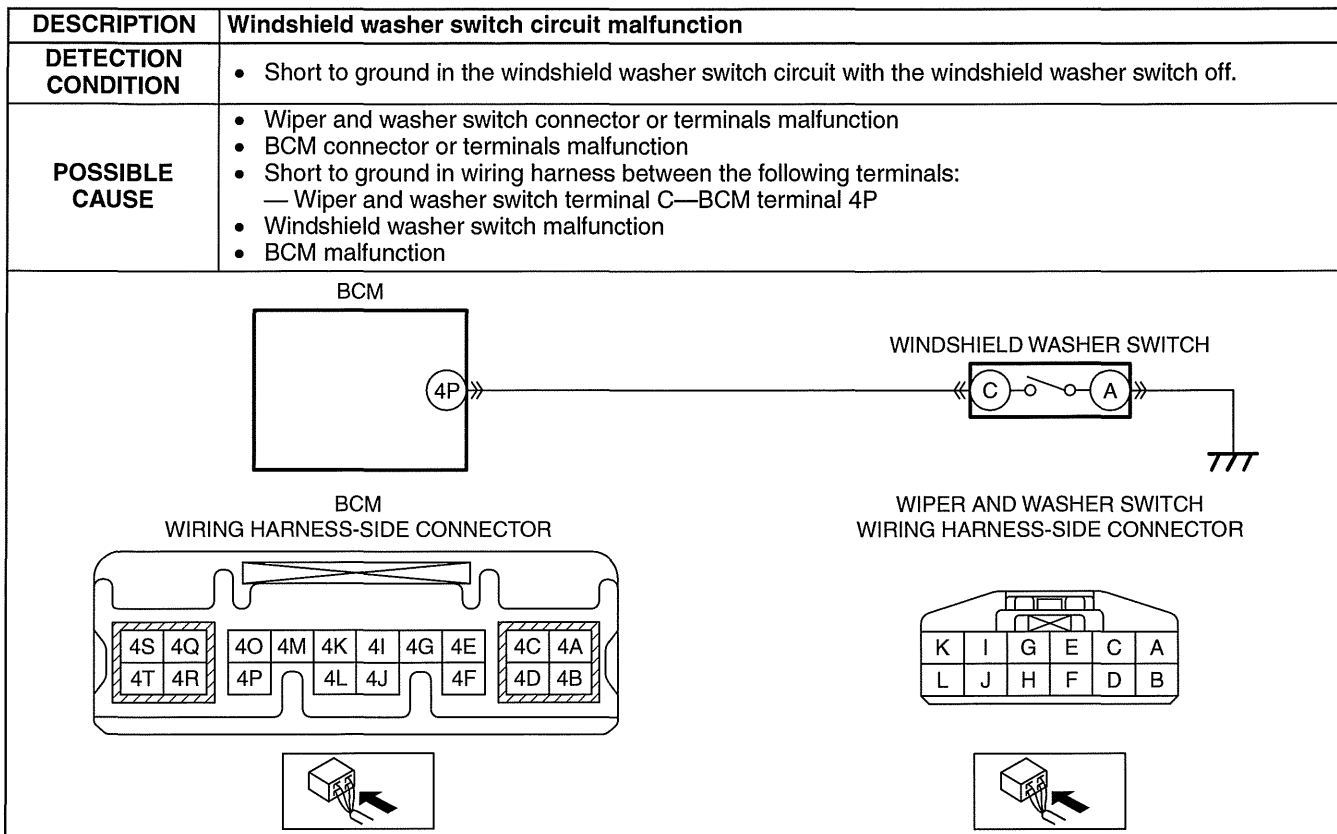
STEP	INSPECTION	ACTION	
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Brake fluid level sensor connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Brake fluid level sensor terminal B • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.
4	INSPECT BRAKE FLUID LEVEL SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake fluid level sensor connector is disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Brake fluid level sensor terminal A • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT BRAKE FLUID LEVEL SENSOR <ul style="list-style-type: none"> • Inspect the brake fluid level sensor. (See 04-11-13 BRAKE FLUID LEVEL SENSOR INSPECTION.) • Is there any malfunction? 	Yes	Replace the reserve tank, then go to Step 8. (See 04-11-12 MASTER CYLINDER REMOVAL/INSTALLATION [L3 WITH TC].) (See 04-11-11 MASTER CYLINDER REMOVAL/INSTALLATION [LF, L5].)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT BRAKE FLUID LEVEL SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Brake fluid level sensor and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 1N • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the brake fluid amount on the upper side of the minimum. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [BCM]

DTC B1051:11 [BCM]

id0902f5414800



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the windshield washer switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT WIPER AND WASHER SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the wiper and washer switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT WINDSHIELD WASHER SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Wiper and washer switch and BCM connectors are disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Wiper and washer switch terminal C Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

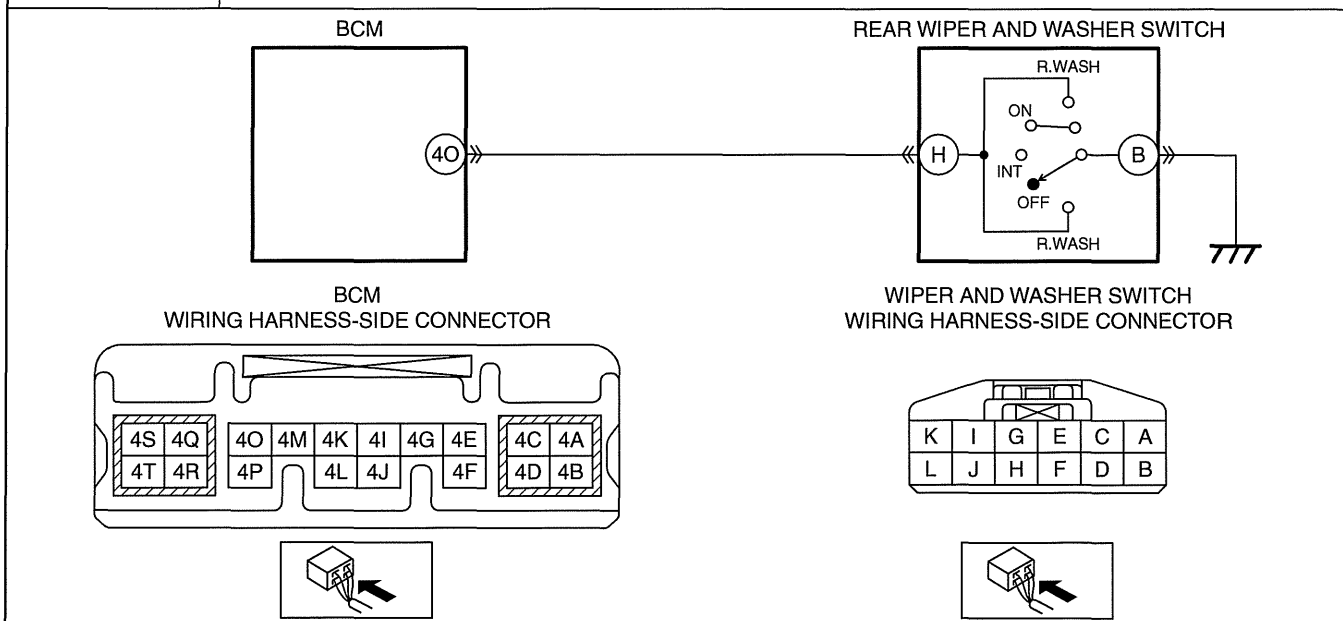
STEP	INSPECTION	ACTION	
5	INSPECT WINDSHIELD WASHER SWITCH <ul style="list-style-type: none"> Inspect the windshield wiper and washer switch. (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the wiper and washer switch, then go to the next step. (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the windshield washer switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B1052:11 [BCM]

id0902f5414900

DESCRIPTION	Rear washer switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the rear washer switch circuit with the rear washer switch off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Wiper and washer switch connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: — Wiper and washer switch terminal H—BCM terminal 4O Rear washer switch malfunction BCM malfunction

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ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the rear washer switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT WIPER AND WASHER SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the wiper and washer switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT REAR WASHER SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Wiper and washer switch and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Wiper and washer switch terminal H • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT REAR WASHER SWITCH <ul style="list-style-type: none"> • Inspect the rear wiper and washer switch. (See 09-19-24 REAR WIPER AND WASHER SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the wiper and washer switch, then go to the next step. (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the rear washer switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC B1079:13 [BCM]

id0902f5415000

DESCRIPTION	Hood latch switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the hood latch switch circuit with the hood closed (hood latch switch on).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Hood latch switch connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Hood latch switch terminal B—Body ground Hood latch switch malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Hood latch switch terminal A—BCM terminal 1J BCM malfunction
<p>The diagram illustrates the electrical connection between the BCM and the Hood Latch Switch. The BCM terminal 1J is connected to terminal A of the Hood Latch Switch. Terminal A of the switch is also connected to ground (represented by three parallel lines). Terminal B of the switch is shown but not connected in this circuit. Below the main diagram are two connector views: the BCM Wiring Harness-Side Connector with terminals 1W through 1B, and the Hood Latch Switch Wiring Harness-Side Connector with terminals B and A. Arrows point to the specific terminals involved in the circuit.</p>	

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Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the hood closed (hood latch switch on). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT HOOD LATCH SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the hood latch switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> Hood latch switch connector is disconnected. Reconnect the negative battery cable. Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Hood latch switch terminal A Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.
4	INSPECT HOOD LATCH SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Hood latch switch connector is disconnected. Disconnect the negative battery cable. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Hood latch switch terminal B Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

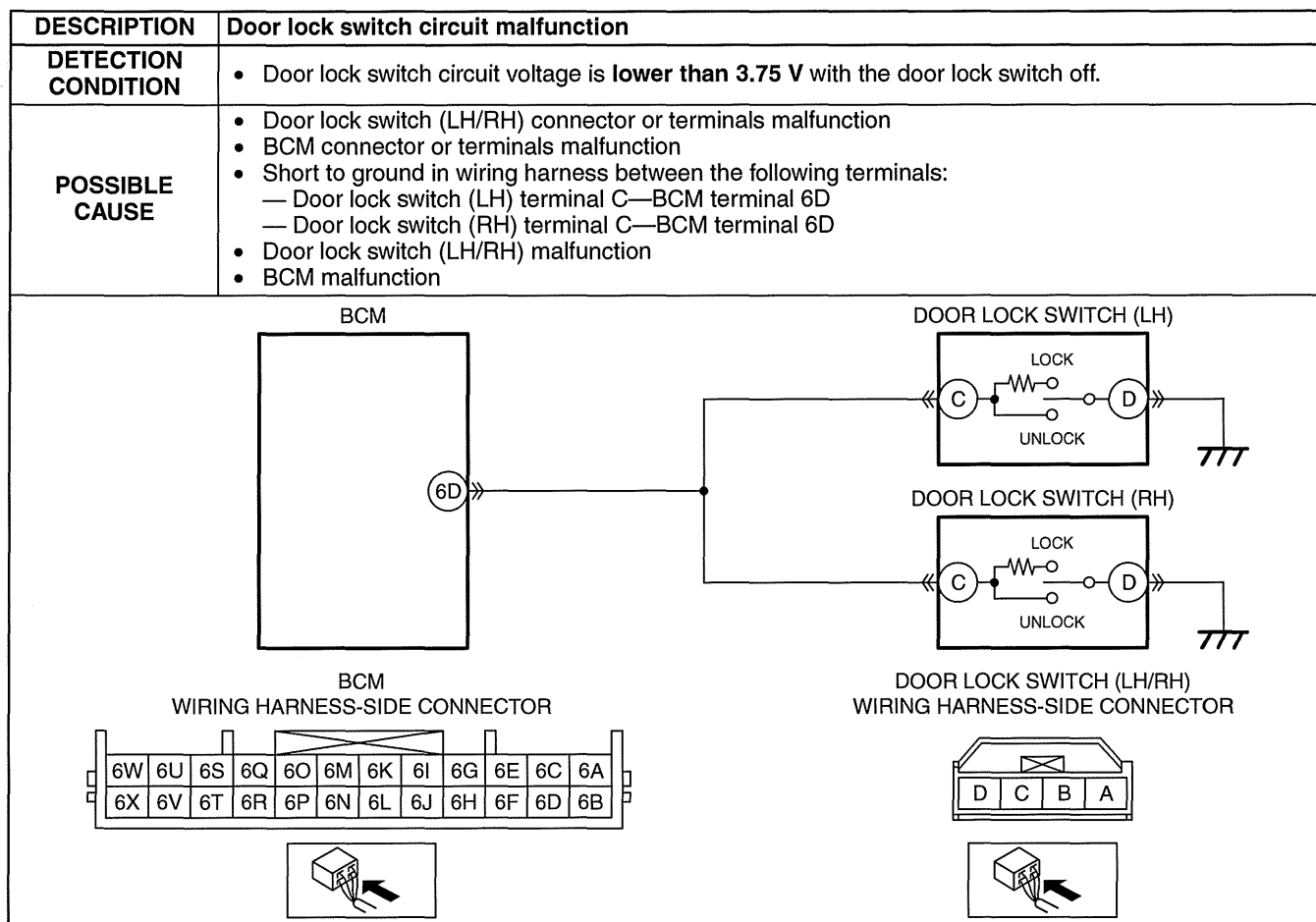
ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
5	INSPECT HOOD LATCH SWITCH <ul style="list-style-type: none"> • Inspect the hood latch switch. (See 09-14-18 HOOD LATCH SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the hood latch switch, then go to Step 8. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT HOOD LATCH SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Hood latch switch and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 1J • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the hood closed (hood latch switch on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC B108F:16 [BCM]

id0902f5510000



09-02F

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the door lock switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT DOOR LOCK SWITCH (LH/RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the door lock switch (LH/RH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
4	INSPECT DOOR LOCK SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Door lock switch (LH/RH) and BCM connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Door lock switch (LH) terminal C Door lock switch (RH) terminal C Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT DOOR LOCK SWITCH (LH/RH) <ul style="list-style-type: none"> Inspect the door lock switch (LH/RH). (See 09-14-15 DOOR LOCK SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the door lock switch (LH/RH), then go to the next step. (See 09-14-14 DOOR LOCK SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the door lock switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B109E:83 [BCM]

id0902f5345800

DESCRIPTION	Keyless receiver circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> BCM receives the erratic signal continuously 12 times.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless receiver malfunction Keyless control module malfunction (vehicles with advanced keyless entry and push button start system) BCM malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 5.
2	INSPECT KEYLESS RECEIVER <ul style="list-style-type: none"> Inspect the keyless receiver. (See 09-14-81 KEYLESS RECEIVER INSPECTION [KEYLESS ENTRY SYSTEM].) (See 09-14-82 KEYLESS RECEIVER INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the keyless receiver, then go to Step 4. (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.)
		No	Vehicles without advanced keyless entry and push button start system: <ul style="list-style-type: none"> Go to Step 4. Vehicles with advanced keyless entry and push button start system: <ul style="list-style-type: none"> Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Inspect the keyless control module. (See 09-14-68 KEYLESS CONTROL MODULE INSPECTION.) Is there any malfunction? 	Yes	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

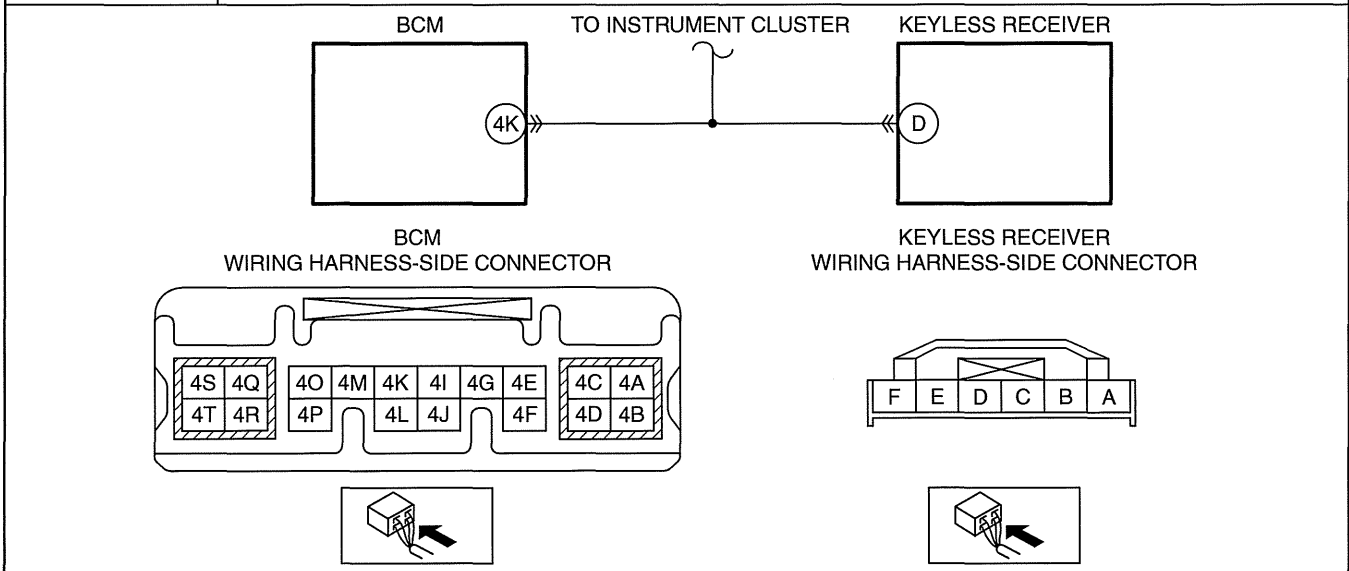
STEP	INSPECTION	ACTION	
4	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B109E:87 [BCM]

id0902f5347600

Vehicles Without Advanced Keyless Entry And Push Button Start System

DESCRIPTION	Keyless receiver circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> BCM cannot receive the data continuously 12 times.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless receiver connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K Keyless receiver malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K BCM malfunction



09-02F

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 8.
2	INSPECT KEYLESS RECEIVER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the keyless receiver connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.

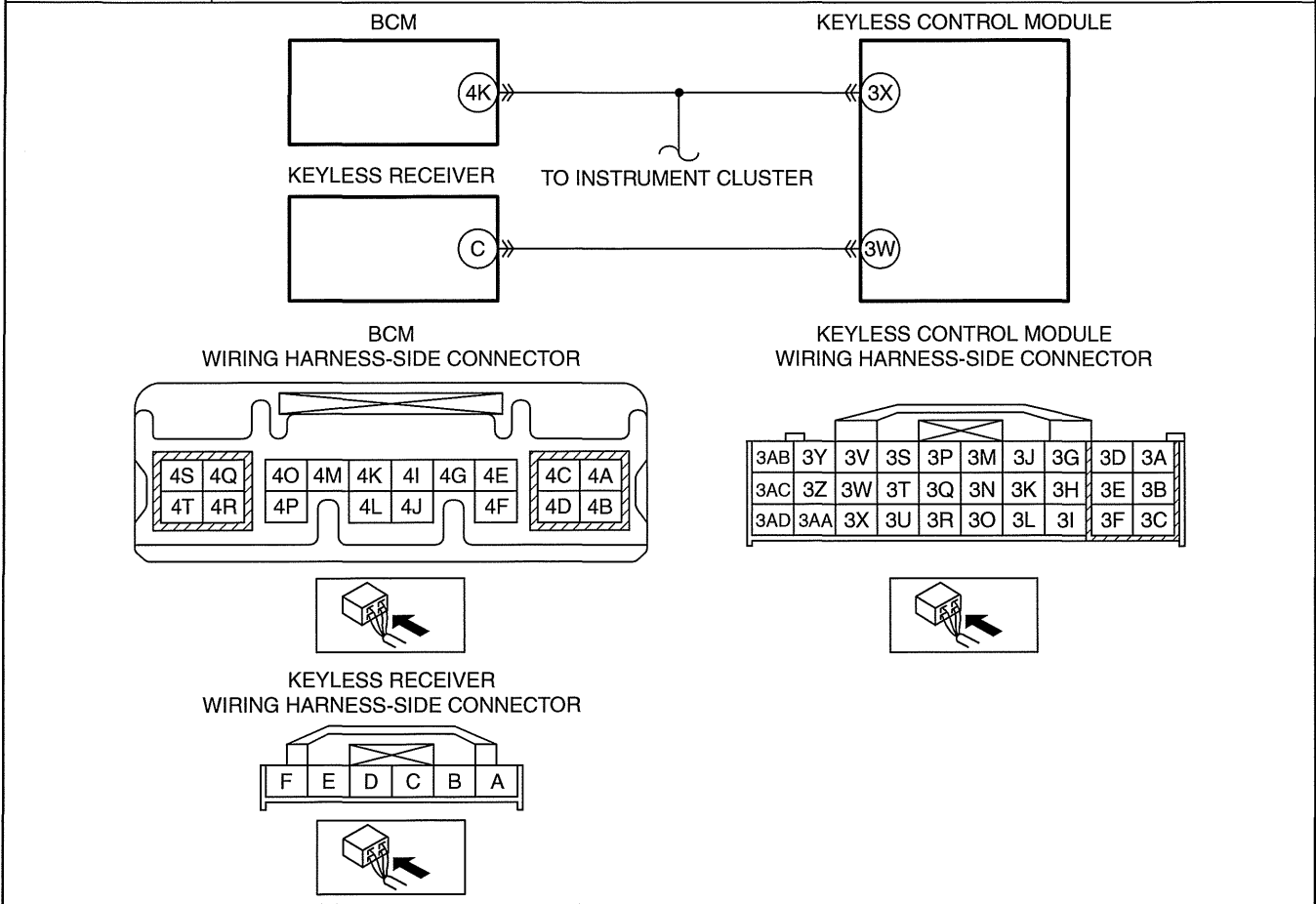
ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT KEYLESS RECEIVER CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless receiver and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless receiver terminal D • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 7.
		No	Go to the next step.
5	INSPECT KEYLESS RECEIVER <ul style="list-style-type: none"> • Inspect the keyless receiver. (See 09-14-81 KEYLESS RECEIVER INSPECTION [KEYLESS ENTRY SYSTEM].) • Is there any malfunction? 	Yes	Replace the keyless receiver, then go to Step 7. (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT KEYLESS RECEIVER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless receiver and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless receiver terminal D—BCM terminal 4K • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

Vehicles With Advanced Keyless Entry And Push Button Start System

DESCRIPTION	Keyless receiver circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • BCM cannot receive the data continuously 12 times.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Keyless receiver connector or terminals malfunction • Keyless control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3W—Keyless receiver terminal C • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3W—Keyless receiver terminal C • BCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3X—BCM terminal 4K • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Keyless control module terminal 3X—BCM terminal 4K • Keyless receiver malfunction • Keyless control module malfunction • BCM malfunction



09-02F

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 12.
2	INSPECT KEYLESS RECEIVER CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the keyless receiver connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 11.
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 11.
		No	Go to the next step.
4	INSPECT KEYLESS CONTROL MODULE CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless receiver and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless control module terminal 3W • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 11.
		No	Go to the next step.
5	INSPECT KEYLESS CONTROL MODULE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless receiver and keyless control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 3W— Keyless receiver terminal C • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 11.
		No	Go to the next step.
7	INSPECT KEYLESS CONTROL MODULE CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Keyless receiver, keyless control module and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Keyless control module terminal 3X • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 11.
		No	Go to the next step.
8	INSPECT KEYLESS CONTROL MODULE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Keyless receiver, keyless control module and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Keyless control module terminal 3X— BCM terminal 4K • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION		ACTION
9	INSPECT KEYLESS RECEIVER <ul style="list-style-type: none"> Inspect the keyless receiver. (See 09-14-82 KEYLESS RECEIVER INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is there any malfunction? 	Yes	Replace the keyless receiver, then go to Step 11. (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Reconnect the keyless receiver, keyless control module and BCM connectors. Reconnect the negative battery cable. Measure the voltage at the following terminal (wiring harness-side). <ul style="list-style-type: none"> — Keyless control module terminal 3W — Keyless control module terminal 3X Is the voltage normal? (See 09-14-68 KEYLESS CONTROL MODULE INSPECTION.) 	Yes	Go to the next step.
		No	Replace the keyless control module, then go to the next step. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
11	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
12	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

DTC B11C0:13 [BCM]

id0902f5414100

DESCRIPTION	Rear door latch switch (RH) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the rear door latch switch (RH) circuit with the rear door (RH) closed (rear door latch switch (RH) on).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Rear door latch and lock actuator (RH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Rear door latch and lock actuator (RH) terminal D—Body ground Rear door latch switch (RH) malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Rear door latch and lock actuator (RH) terminal B—BCM terminal 6K BCM malfunction

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the rear door (RH) closed (rear door latch switch (RH) on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT REAR DOOR LATCH AND LOCK ACTUATOR (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the rear door latch and lock actuator (RH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Rear door latch and lock actuator (RH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — Rear door latch and lock actuator (RH) terminal B • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.
4	INSPECT REAR DOOR LATCH SWITCH (RH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (RH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Rear door latch and lock actuator (RH) terminal D • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT REAR DOOR LATCH SWITCH (RH) <ul style="list-style-type: none"> • Inspect the rear door latch switch (RH). (See 09-14-49 REAR DOOR LATCH SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the rear door latch and lock actuator (RH), then go to Step 8. (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT REAR DOOR LATCH SWITCH (RH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (RH) and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 6K • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

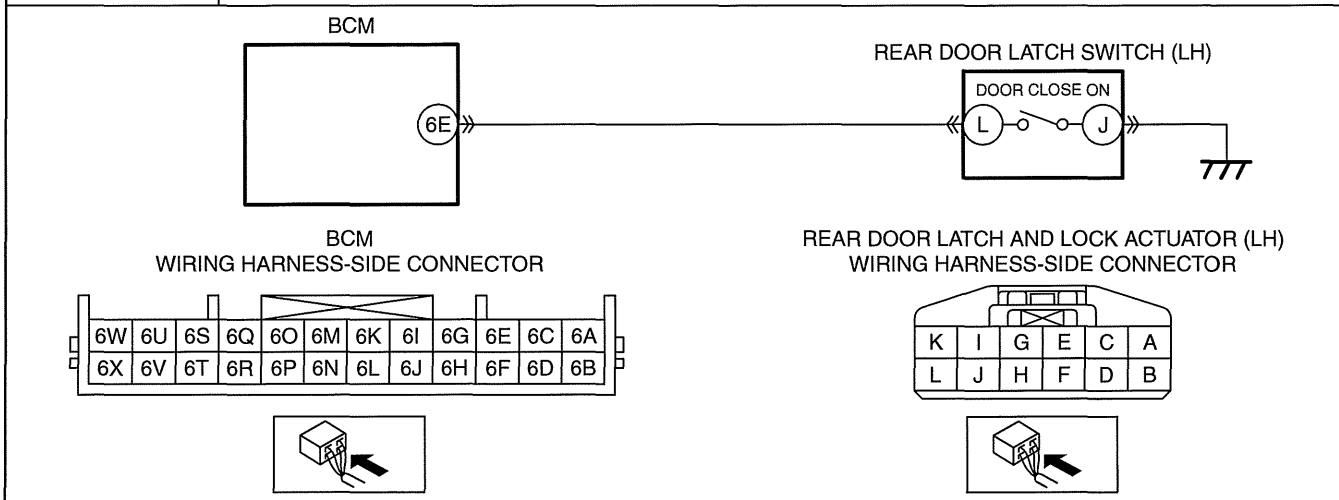
STEP	INSPECTION		ACTION
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the rear door (RH) closed (rear door latch switch (RH) on). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B11C1:13 [BCM]

id0902f5414200

DESCRIPTION	Rear door latch switch (LH) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the rear door latch switch (LH) circuit with the rear door (LH) closed (rear door latch switch (LH) on).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Rear door latch and lock actuator (LH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Rear door latch and lock actuator (LH) terminal J—Body ground Rear door latch switch (LH) malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Rear door latch and lock actuator (LH) terminal L—BCM terminal 6E BCM malfunction

09-02F



ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the rear door (LH) closed (rear door latch switch (LH) on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT REAR DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the rear door latch and lock actuator (LH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Rear door latch and lock actuator (LH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — Rear door latch and lock actuator (LH) terminal L • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.
4	INSPECT REAR DOOR LATCH SWITCH (LH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (LH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Rear door latch and lock actuator (LH) terminal J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT REAR DOOR LATCH SWITCH (LH) <ul style="list-style-type: none"> • Inspect the rear door latch switch (LH). (See 09-14-49 REAR DOOR LATCH SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the rear door latch and lock actuator (LH), then go to Step 8. (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT REAR DOOR LATCH SWITCH (LH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (LH) and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 6E • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the rear door (LH) closed (rear door latch switch (LH) on). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B11DA:16 [BCM]

id0902f5931100

DESCRIPTION	Front door key cylinder switch (LH) circuit malfunction	
DETECTION CONDITION	<ul style="list-style-type: none"> Front door key cylinder switch (LH) circuit voltage is lower than 3.75 V with the front door key cylinder switch off. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front door latch and lock actuator (LH) connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: — Front door latch and lock actuator (LH) terminal H—BCM terminal 6B Front door key cylinder switch (LH) malfunction BCM malfunction 	

09-02F

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the front door key cylinder switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front door latch and lock actuator (LH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

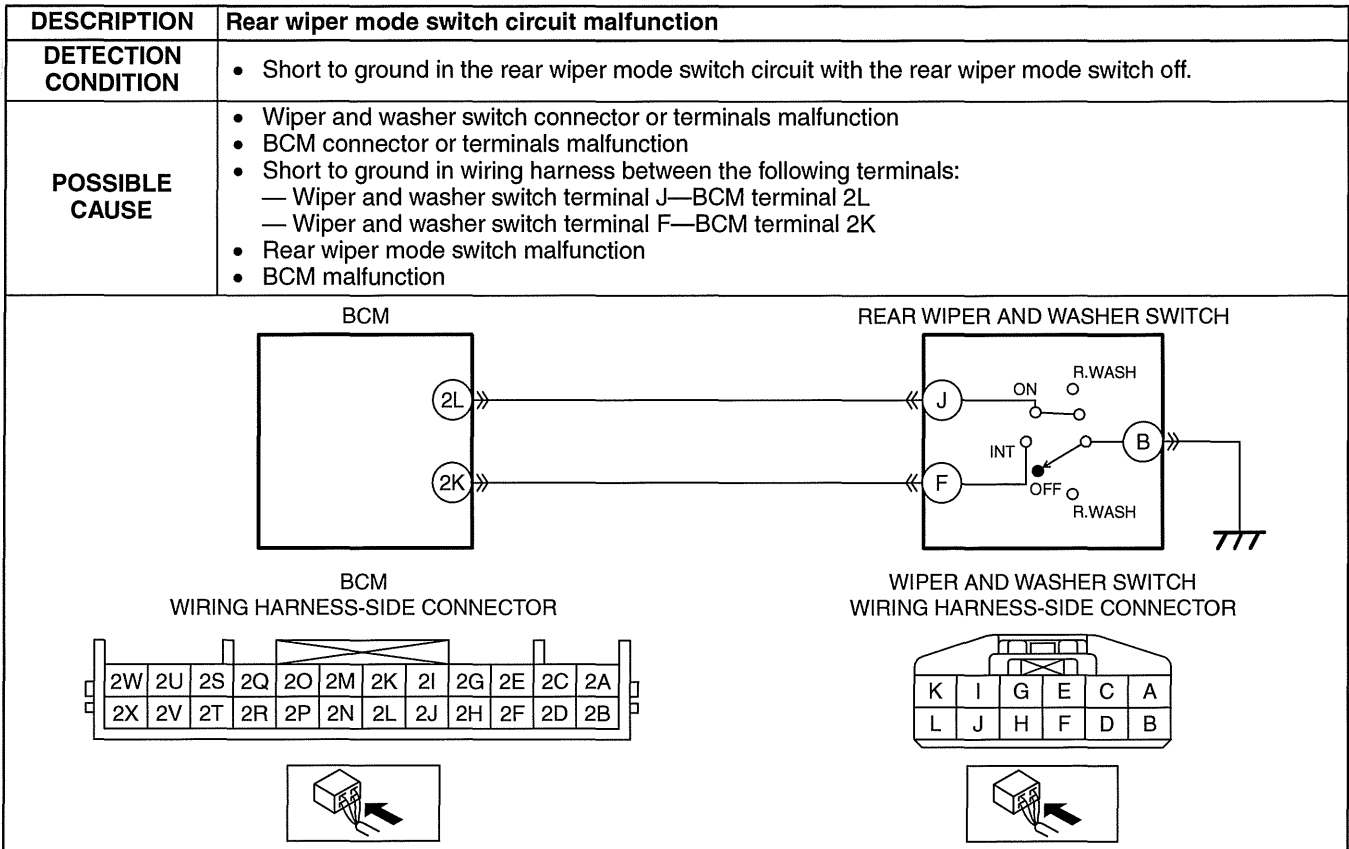
ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT FRONT DOOR KEY CYLINDER SWITCH (LH) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal H • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT FRONT DOOR KEY CYLINDER SWITCH (LH) <ul style="list-style-type: none"> • Inspect the front door key cylinder switch (LH). (See 09-14-32 FRONT DOOR KEY CYLINDER SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (LH), then go to the next step. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the front door key cylinder switch off. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC B11DC:11 [BCM]

id0902f5414400



09-02F

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the rear wiper mode switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT WIPER AND WASHER SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the wiper and washer switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT REAR WIPER MODE SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Wiper and washer switch and BCM connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> Wiper and washer switch terminal J Wiper and washer switch terminal F Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
5	INSPECT REAR WIPER MODE SWITCH <ul style="list-style-type: none"> Inspect the rear wiper and washer switch. (See 09-19-24 REAR WIPER AND WASHER SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the wiper and washer switch, then go to the next step. (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the rear wiper mode switch off. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B1172:11 [BCM]

id0902f5415100

DESCRIPTION	Door lock-link switch (LF) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the door lock-link switch (LF) unlock-side circuit with the door lock-link switch (LF) locked.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front door latch and lock actuator (LH) connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal B—BCM terminal 6L Door lock-link switch (LF) malfunction BCM malfunction
<p style="text-align: center;">BCM</p> <p style="text-align: center;">DOOR LOCK-LINK SWITCH (LF)</p> <p style="text-align: center;">BCM WIRING HARNESS-SIDE CONNECTOR</p> <p style="text-align: center;">FRONT DOOR LATCH AND LOCK ACTUATOR (LH) WIRING HARNESS-SIDE CONNECTOR</p>	

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) locked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the front door latch and lock actuator (LH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT DOOR LOCK-LINK SWITCH (LF) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT DOOR LOCK-LINK SWITCH (LF) <ul style="list-style-type: none"> • Inspect the door lock-link switch (LF). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (LH), then go to the next step. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) locked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
4	INSPECT DOOR LOCK-LINK SWITCH (LF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT DOOR LOCK-LINK SWITCH (LF) <ul style="list-style-type: none"> • Inspect the door lock-link switch (LF). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (LH), then go to Step 8. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT DOOR LOCK-LINK SWITCH (LF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 6L • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

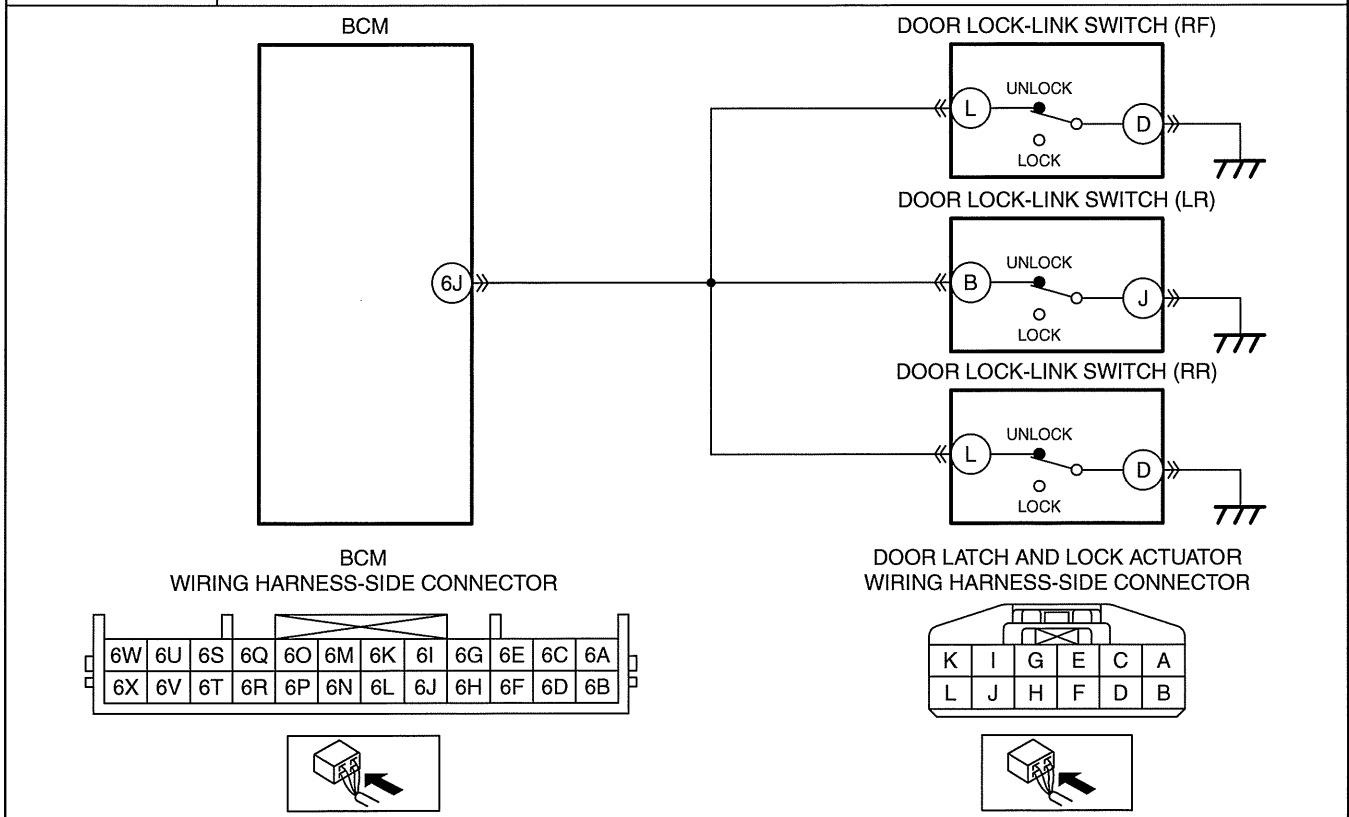
09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC B1174:11 [BCM]

id0902f5931200

DESCRIPTION	Door lock-link switch (RF/LR/RR) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the door lock-link switch (RF/LR/RR) circuit with the door lock-link switch (RF/LR/RR) unlocked.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front door latch and lock actuator (RH) connector or terminals malfunction Door lock-link switch (RF) malfunction Rear door latch and lock actuator (LH) connector or terminals malfunction Door lock-link switch (LR) malfunction Rear door latch and lock actuator (RH) connector or terminals malfunction Door lock-link switch (RR) malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> Front door latch and lock actuator (RH) terminal L/Rear door latch and lock actuator (LH) terminal B/ Rear door latch and lock actuator (RH) terminal L—BCM terminal 6J BCM malfunction



Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (RF/LR/RR) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Go to the next step.
		No Go to Step 11.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front door latch and lock actuator (RH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 10.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION
3	INSPECT DOOR LOCK-LINK SWITCH (RF) <ul style="list-style-type: none"> • Inspect the door lock-link switch (RF). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes Replace the front door latch and lock actuator (RH), then go to Step 10. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No Go to the next step.
4	INSPECT REAR DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the rear door latch and lock actuator (LH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 10.
		No Go to the next step.
5	INSPECT DOOR LOCK-LINK SWITCH (LR) <ul style="list-style-type: none"> • Inspect the door lock-link switch (LR). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes Replace the rear door latch and lock actuator (LH), then go to Step 10. (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No Go to the next step.
6	INSPECT REAR DOOR LATCH AND LOCK ACTUATOR (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the rear door latch and lock actuator (RH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 10.
		No Go to the next step.
7	INSPECT DOOR LOCK-LINK SWITCH (RR) <ul style="list-style-type: none"> • Inspect the door lock-link switch (RR). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes Replace the rear door latch and lock actuator (RH), then go to Step 10. (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No Go to the next step.
8	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 10.
		No Go to the next step.
9	INSPECT DOOR LOCK-LINK SWITCH (RF/LR/RR) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Front door latch and lock actuator (RH), rear door latch and lock actuator (LH), rear door latch and lock actuator (RH) and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (RH) terminal L • Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to ground, then go to the next step.
		No Go to the next step.
10	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (RF/LR/RR) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No Go to the next step.
11	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No DTC troubleshooting completed.

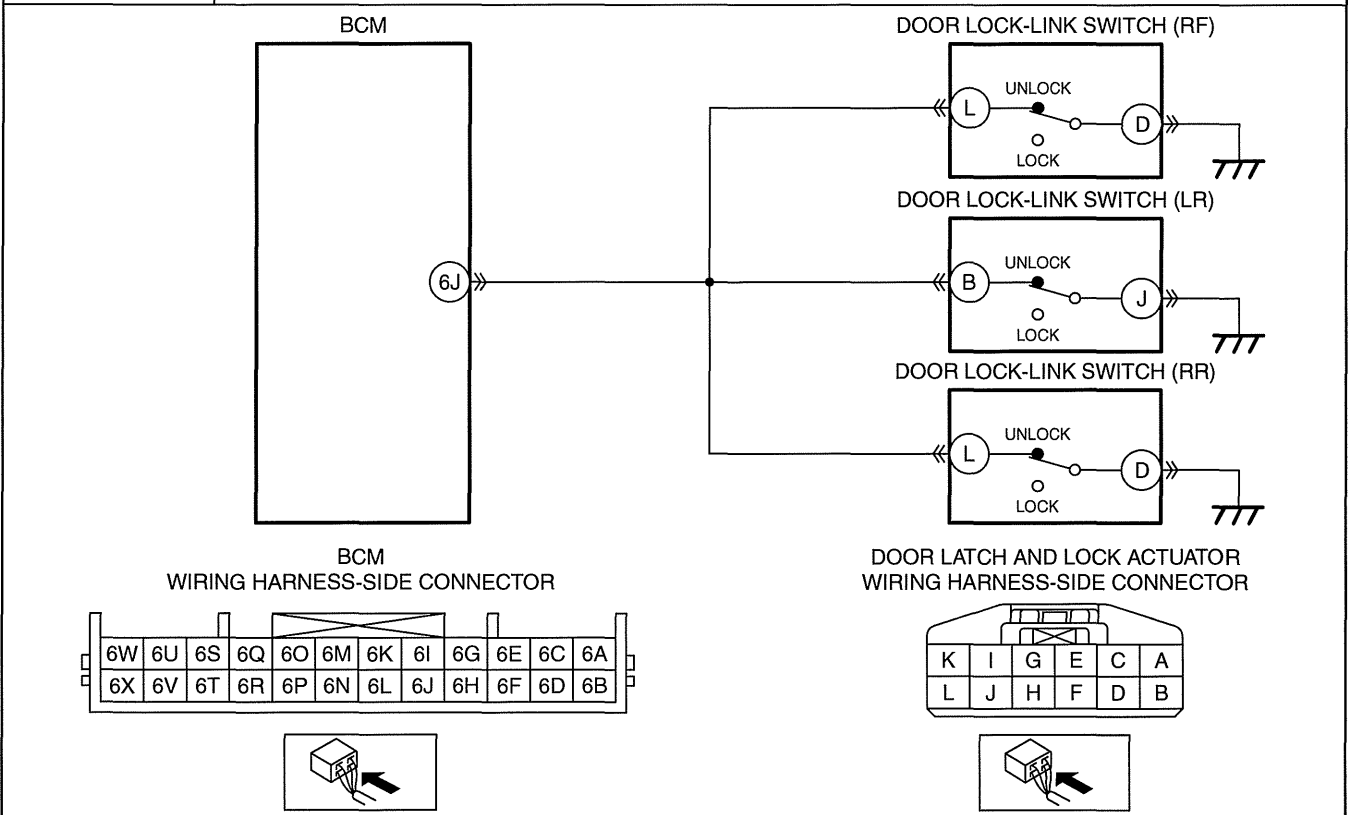
09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC B1174:13 [BCM]

id0902f5415300

DESCRIPTION	Door lock-link switch (RF/LR/RR) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the door lock-link switch (RF/LR/RR) circuit with the door lock-link switch (RF/LR/RR) unlocked.
POSSIBLE CAUSE	<p>All door lock-link switches do not operate:</p> <ul style="list-style-type: none"> BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Front door latch and lock actuator (RH) terminal L/Rear door latch and lock actuator (LH) terminal B/ Rear door latch and lock actuator (RH) terminal L—BCM terminal 6J BCM malfunction <p>Only the door lock-link switch (RF) does not operate:</p> <ul style="list-style-type: none"> Front door latch and lock actuator (RH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Front door latch and lock actuator (RH) terminal D—Body ground Door lock-link switch (RF) malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Front door latch and lock actuator (RH) terminal L—BCM terminal 6J BCM malfunction <p>Only the door lock-link switch (LR) does not operate:</p> <ul style="list-style-type: none"> Rear door latch and lock actuator (LH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Rear door latch and lock actuator (LH) terminal J—Body ground Door lock-link switch (LR) malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Rear door latch and lock actuator (LH) terminal B—BCM terminal 6J BCM malfunction <p>Only the door lock-link switch (RR) does not operate:</p> <ul style="list-style-type: none"> Rear door latch and lock actuator (RH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Rear door latch and lock actuator (RH) terminal D—Body ground Door lock-link switch (RR) malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> Rear door latch and lock actuator (RH) terminal L—BCM terminal 6J BCM malfunction



ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (RF/LR/RR) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 21.
2	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Operate the door lock-link switch lock and unlock. • Is there a door lock-link switch that does not operate? 	Yes	All door lock-link switches do not operate: <ul style="list-style-type: none"> • Go to the next step. Only the door lock-link switch (RF) does not operate: <ul style="list-style-type: none"> • Go to Step 5. Only the door lock-link switch (LR) does not operate: <ul style="list-style-type: none"> • Go to Step 10. Only the door lock-link switch (RR) does not operate: <ul style="list-style-type: none"> • Go to Step 15.
		No	Go to Step 20.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 20.
		No	Go to the next step.
4	INSPECT DOOR LOCK-LINK SWITCH (RF/LR/RR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 6J • Is the voltage normal? (See 09-40-6 BODY CONTROL MODULE (BCM) INSPECTION.) 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to Step 20.
		No	Go to Step 20.
5	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the front door latch and lock actuator (RH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 20.
		No	Go to the next step.
6	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Front door latch and lock actuator (RH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — Front door latch and lock actuator (RH) terminal L • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 9.
7	INSPECT DOOR LOCK-LINK SWITCH (RF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (RH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Front door latch and lock actuator (RH) terminal D • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 20.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
8	INSPECT DOOR LOCK-LINK SWITCH (RF) <ul style="list-style-type: none"> • Inspect the door lock-link switch (RF). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (RH), then go to Step 20. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 20.
9	INSPECT DOOR LOCK-LINK SWITCH (RF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (RH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 6J • Is there any voltage? 	Yes	Repair or replace the wiring harness between front door latch and lock actuator (RH) terminal L and BCM terminal 6J, then go to Step 20.
		No	Go to Step 20.
10	INSPECT REAR DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the rear door latch and lock actuator (LH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 20.
		No	Go to the next step.
11	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Rear door latch and lock actuator (LH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — Rear door latch and lock actuator (LH) terminal B • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 14.
12	INSPECT DOOR LOCK-LINK SWITCH (LR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (LH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Rear door latch and lock actuator (LH) terminal J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 20.
13	INSPECT DOOR LOCK-LINK SWITCH (LR) <ul style="list-style-type: none"> • Inspect the door lock-link switch (LR). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the rear door latch and lock actuator (LH), then go to Step 20. (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 20.
14	INSPECT DOOR LOCK-LINK SWITCH (LR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (LH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 6J • Is there any voltage? 	Yes	Repair or replace the wiring between rear door latch and lock actuator (LH) terminal B and BCM terminal 6J, then go to Step 20.
		No	Go to Step 20.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
15	INSPECT REAR DOOR LATCH AND LOCK ACTUATOR (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the rear door latch and lock actuator (RH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 20.
		No	Go to the next step.
16	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Rear door latch and lock actuator (RH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Rear door latch and lock actuator (RH) terminal L • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 19.
17	INSPECT DOOR LOCK-LINK SWITCH (RR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (RH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Rear door latch and lock actuator (RH) terminal D • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 20.
18	INSPECT DOOR LOCK-LINK SWITCH (RR) <ul style="list-style-type: none"> • Inspect the door lock-link switch (RR). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the rear door latch and lock actuator (RH), then go to Step 20. (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 20.
19	INSPECT DOOR LOCK-LINK SWITCH (RR) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear door latch and lock actuator (RH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 6J • Is there any voltage? 	Yes	Repair or replace the wiring between rear door latch and lock actuator (RH) terminal L and BCM terminal 6J, then go to the next step.
		No	Go to the next step.
20	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (RF/LR/RR) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
21	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

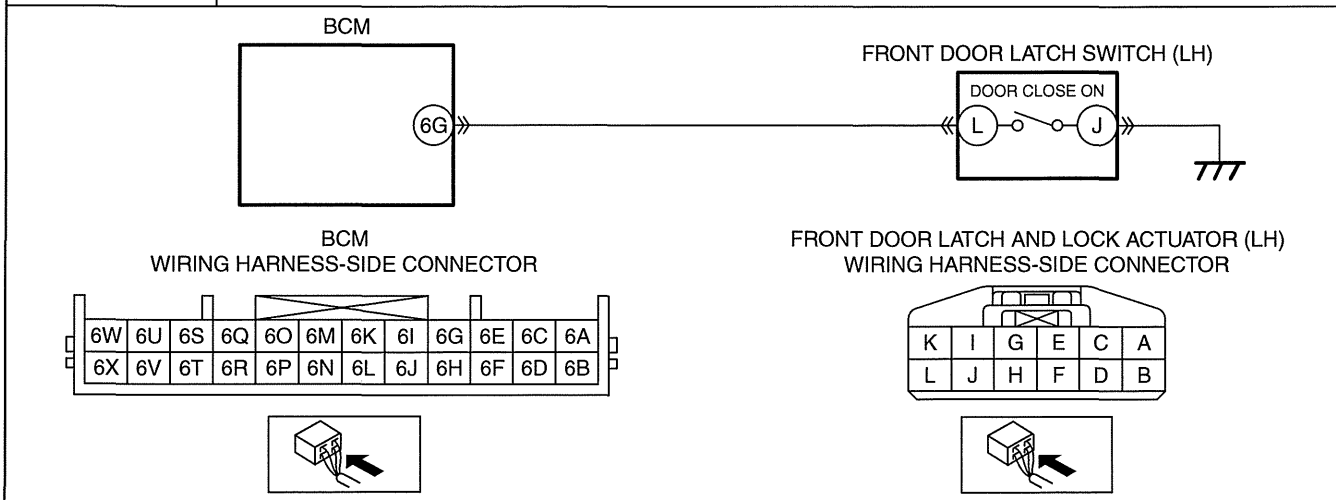
09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC B1175:13 [BCM]

id0902f5340700

DESCRIPTION	Front door latch switch (LH) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the front door latch switch (LH) circuit with the front door (LH) closed (front door latch switch (LH) on).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front door latch and lock actuator (LH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal J—Body ground Front door latch switch (LH) malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal L—BCM terminal 6G BCM malfunction



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the front door (LH) closed (front door latch switch (LH) on). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front door latch and lock actuator (LH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> Front door latch and lock actuator (LH) connector is disconnected. Reconnect the negative battery cable. Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal L Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
4	INSPECT FRONT DOOR LATCH SWITCH (LH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) connector is disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT FRONT DOOR LATCH SWITCH (LH) <ul style="list-style-type: none"> • Inspect the front door latch switch (LH). (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (LH), then go to Step 8. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT FRONT DOOR LATCH SWITCH (LH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage between the following terminal (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 6G • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the front door (LH) closed (front door latch switch (LH) on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

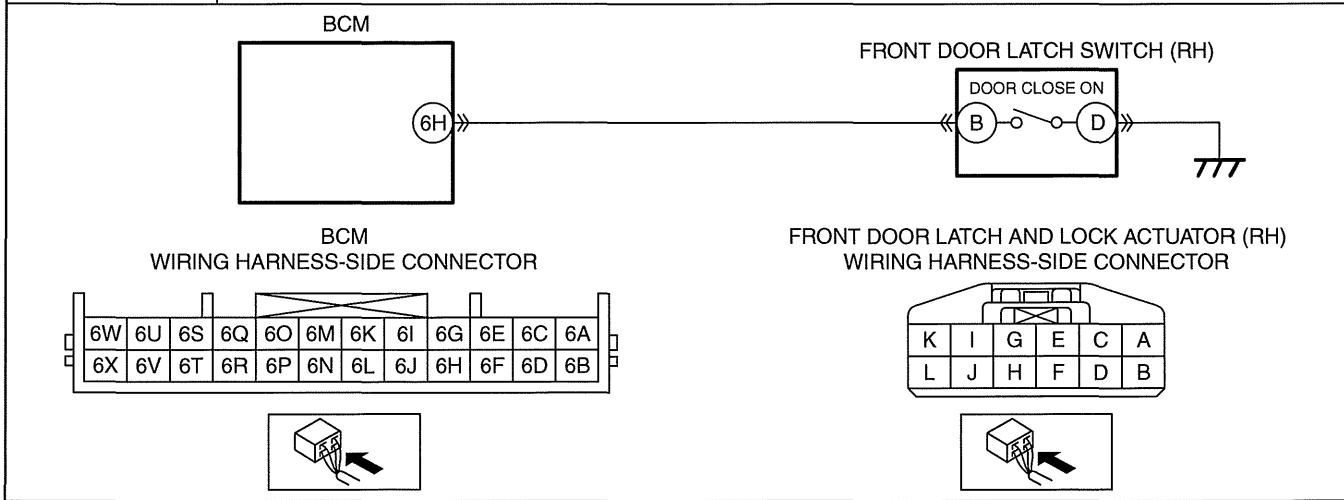
09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC B1176:13 [BCM]

id0902f5340800

DESCRIPTION	Front door latch switch (RH) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the front door latch switch (RH) circuit with the front door (RH) closed (front door latch switch (RH) on).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front door latch and lock actuator (RH) connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (RH) terminal D—Body ground Front door latch switch (RH) malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (RH) terminal B—BCM terminal 6H BCM malfunction



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the front door (RH) closed (front door latch switch (RH) on). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front door latch and lock actuator (RH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> Front door latch and lock actuator (RH) connector is disconnected. Reconnect the negative battery cable. Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Front door latch and lock actuator (RH) terminal B Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION
4	INSPECT FRONT DOOR LATCH SWITCH (RH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (RH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (RH) terminal D • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT FRONT DOOR LATCH SWITCH (RH) <ul style="list-style-type: none"> • Inspect the front door latch switch (RH). (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.) • Is there any malfunction? 	Yes Replace the front door latch and lock actuator (RH), then go to Step 8. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 8.
		No Go to the next step.
7	INSPECT FRONT DOOR LATCH SWITCH (RH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (RH) and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 6H • Is there any voltage? 	Yes Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the front door (RH) closed (front door latch switch (RH) on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No DTC troubleshooting completed.

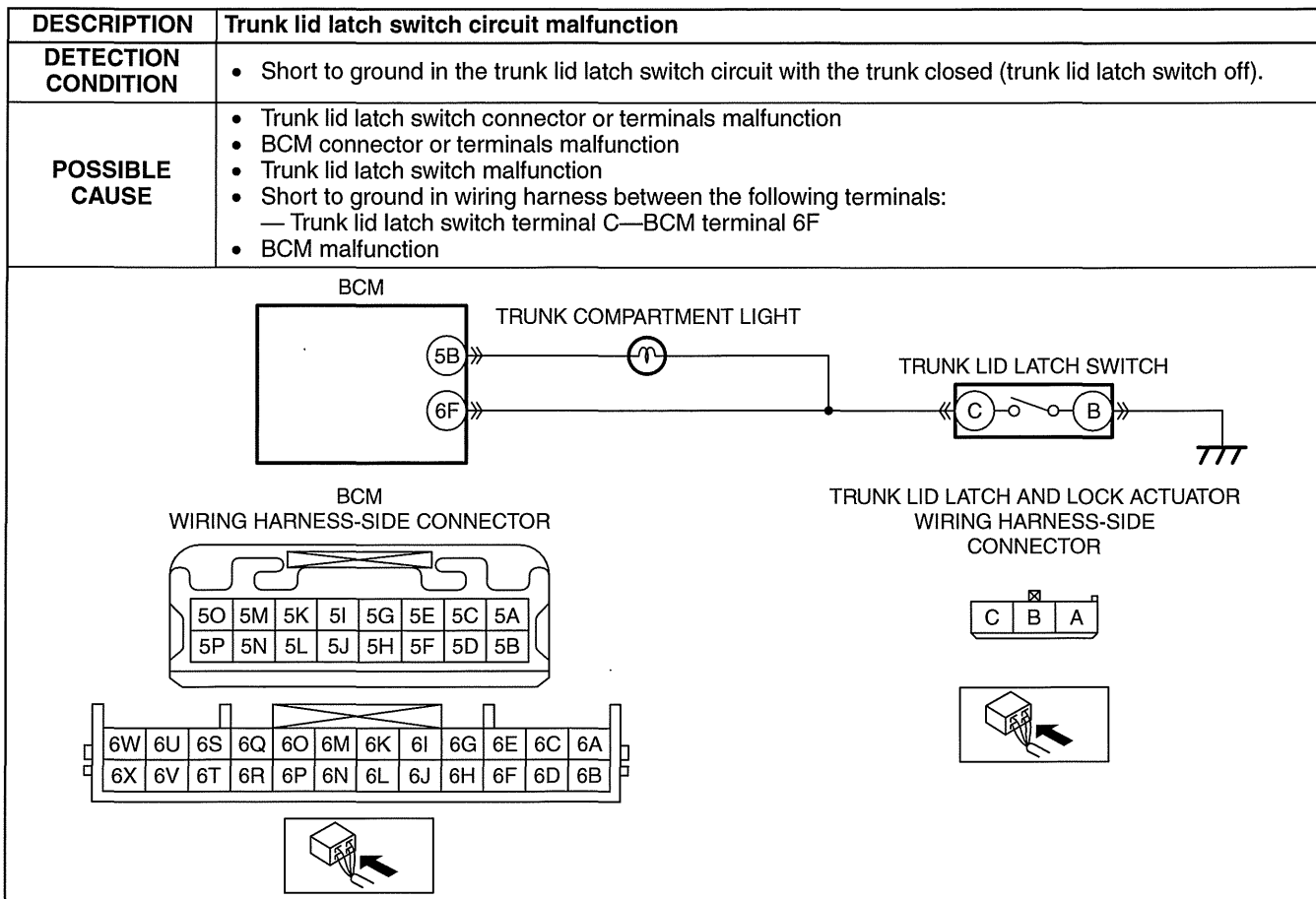
09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC B1178:11 [BCM]

id0902f5340900

4SD



Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the trunk closed (trunk lid latch switch off). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Go to the next step.
		No Go to Step 7.
2	INSPECT TRUNK LID LATCH SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the trunk lid latch switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes Repair or replace the connector or terminals, then go to Step 6.
		No Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION		ACTION
4	INSPECT TRUNK LID LATCH SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Trunk lid latch switch and BCM connectors are disconnected. Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Trunk lid latch switch terminal C Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT TRUNK LID LATCH SWITCH <ul style="list-style-type: none"> Inspect the trunk lid latch switch. (See 09-14-53 TRUNK LID LATCH SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the trunk lid latch switch, then go to the next step. (See 09-14-50 TRUNK LID LATCH AND RELEASE ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the trunk closed (trunk lid latch switch off). (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

5HB

DESCRIPTION	Liftgate latch switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to ground in the liftgate latch switch circuit with the liftgate closed (liftgate latch switch off).
POSSIBLE CAUSE	<ul style="list-style-type: none"> Liftgate latch switch connector or terminals malfunction BCM connector or terminals malfunction Liftgate latch switch malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Liftgate latch switch terminal C—BCM terminal 6F BCM malfunction

ON-BOARD DIAGNOSTIC [BCM]

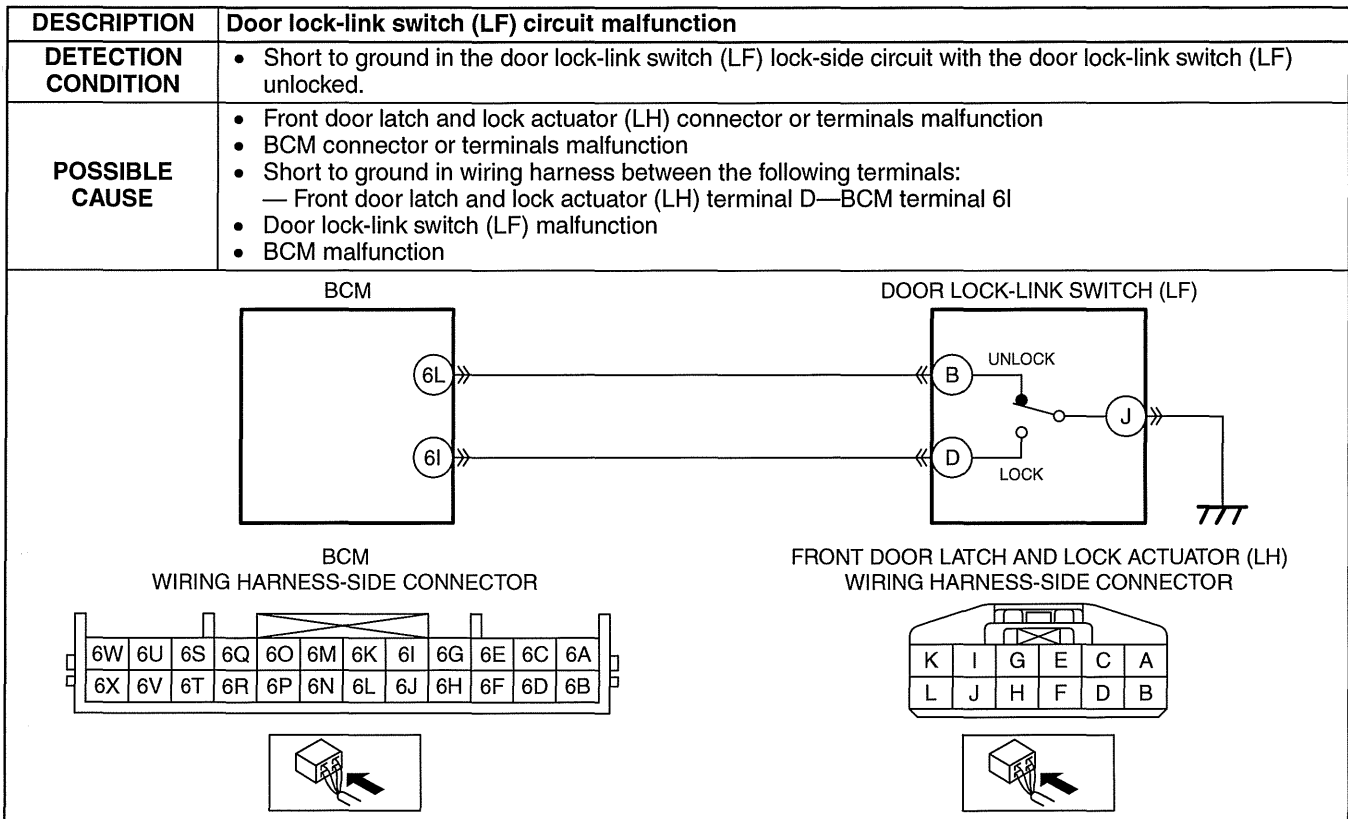
Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the liftgate closed (liftgate latch switch off). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT LIFTGATE LATCH SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the liftgate latch switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT LIFTGATE LATCH SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Liftgate latch switch and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Liftgate latch switch terminal C • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT LIFTGATE LATCH SWITCH <ul style="list-style-type: none"> • Inspect the liftgate latch switch. (See 09-14-63 LIFTGATE LATCH SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the liftgate latch switch, then go to the next step. (See 09-14-60 LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the liftgate closed (liftgate latch switch off). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC B126A:11 [BCM]

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09-02F

Diagnostic Procedure

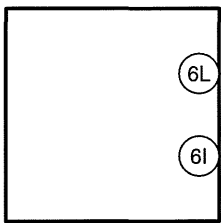
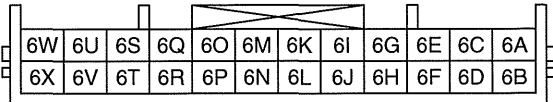
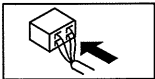
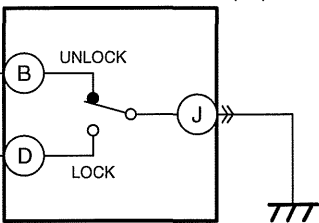

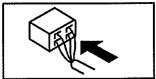
STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front door latch and lock actuator (LH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
4	INSPECT DOOR LOCK-LINK SWITCH (LF) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) and BCM connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal D • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.
5	INSPECT DOOR LOCK-LINK SWITCH (LF) <ul style="list-style-type: none"> • Inspect the door lock-link switch (LF). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (LH), then go to the next step. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) unlocked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC B126A:13 [BCM]

id0902f5931500

DESCRIPTION	Door lock-link switch (LF) circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • Open circuit in the door lock-link switch (LF) lock-side circuit with the door lock-link switch (LF) locked.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Front door latch and lock actuator (LH) connector or terminals malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal J—Body ground • Door lock-link switch (LF) malfunction • BCM connector or terminals malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Front door latch and lock actuator (LH) terminal D—BCM terminal 6I • BCM malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BCM</p>  <p>BCM WIRING HARNESS-SIDE CONNECTOR</p>   </div> <div style="text-align: center;"> <p>DOOR LOCK-LINK SWITCH (LF)</p>  <p>FRONT DOOR LATCH AND LOCK ACTUATOR (LH) WIRING HARNESS-SIDE CONNECTOR</p>   </div> </div>	

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) locked. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT FRONT DOOR LATCH AND LOCK ACTUATOR (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the front door latch and lock actuator (LH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) connector is disconnected. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — Front door latch and lock actuator (LH) terminal D • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.
4	INSPECT DOOR LOCK-LINK SWITCH (LF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) connector is disconnected. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Front door latch and lock actuator (LH) terminal J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT DOOR LOCK-LINK SWITCH (LF) <ul style="list-style-type: none"> • Inspect the door lock-link switch (LF). (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the front door latch and lock actuator (LH), then go to Step 8. (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT DOOR LOCK-LINK SWITCH (LF) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front door latch and lock actuator (LH) and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 6I • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the door lock-link switch (LF) locked. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No DTC troubleshooting completed.

DTC C0051:04 [BCM]

id0902f5344600

DESCRIPTION	Steering angle sensor internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Z phase is abnormal. Steering angle exceeds the specified value.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Steering wheel is off-center Improper installation or positioning of the steering angle sensor Steering angle sensor malfunction BCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Perform the BCM DTC inspection using the M-MDS when the ignition is ON. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Go to the next step.
		No Go to Step 6.
2	INSPECT STEERING WHEEL FOR OFF-CENTER <ul style="list-style-type: none"> Drive the vehicle and inspect the steering wheel position while driving in a straight line. Is the steering wheel off-center? 	Yes Inspect and adjust the front wheel alignment to correct the steering wheel alignment, then go to Step 5. (See 02-11-1 FRONT WHEEL ALIGNMENT.)
		No Go to the next step.
3	INSPECT FOR IMPROPER INSTALLATION OF STEERING ANGLE SENSOR <ul style="list-style-type: none"> Inspect the installation of steering angle sensor. Is there any malfunction? 	Yes Repair installation or replace the steering angle sensor, then go to Step 5. (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
		No Go to the next step.
4	INSPECT STEERING ANGLE SENSOR <ul style="list-style-type: none"> Inspect the steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.) Is there any malfunction? 	Yes Replace the steering angle sensor, then go to the next step. (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
		No Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Perform the BCM DTC inspection using the M-MDS when the ignition is ON. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

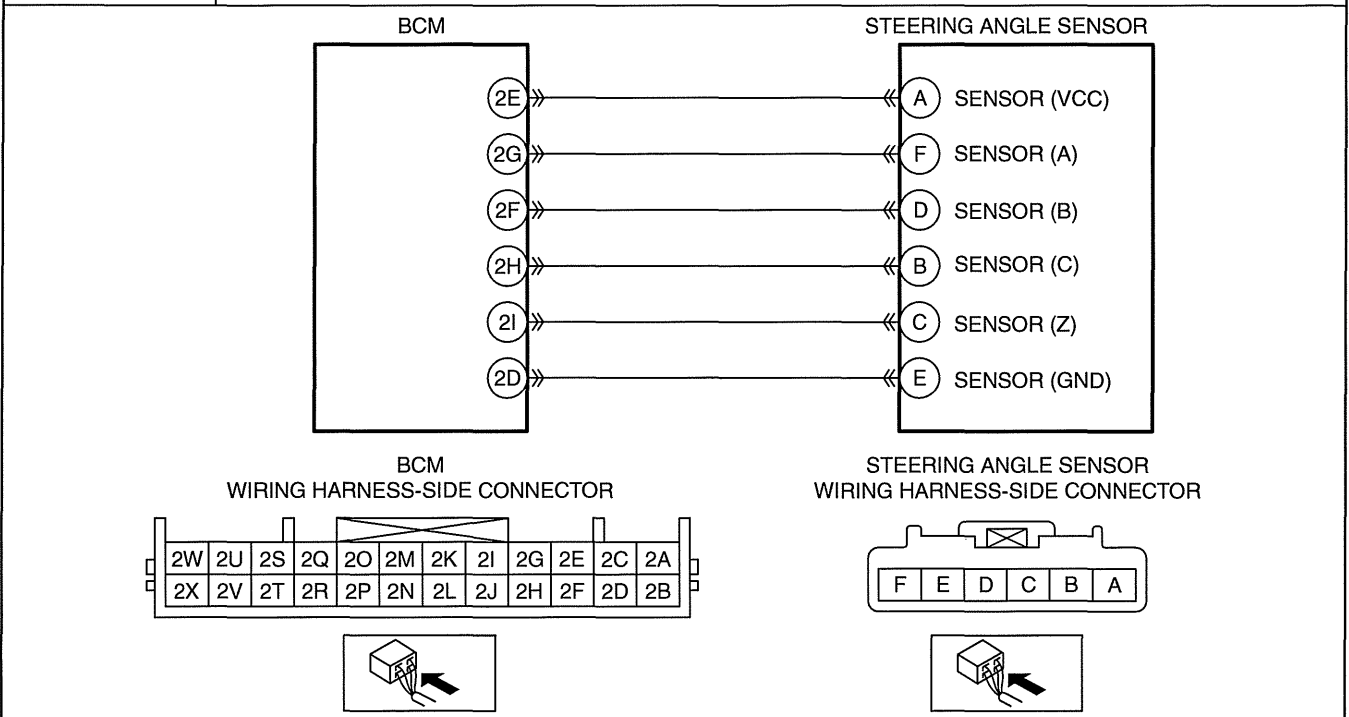
STEP	INSPECTION		ACTION
6	VERIFY THAT NO OTHER DTCs ARE PRESENT • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC C0051:2F/C0052:11/C0052:13/C0053:11/C0053:13/C0054:11/C0054:13/C0055:11/C0055:13 [BCM]

id0902f5415600

DESCRIPTION	C0051:2F	Erratic signal of steering angle sensor
	C0052:11/C0052:13	Steering angle sensor A signal input circuit error
	C0053:11/C0053:13	Steering angle sensor B signal input circuit error
	C0054:11/C0054:13	Steering angle sensor C signal input circuit error
	C0055:11/C0055:13	Steering angle sensor Z signal input circuit error
DETECTION CONDITION	C0051:2F	<ul style="list-style-type: none"> • Detected error in a combination of signals from each sensor (A, B, C, Z).
	C0052:11/C0053:11/ C0054:11/C0055:11	<ul style="list-style-type: none"> • Steering angle sensor A, B, C, Z signal input circuit voltage is lower than the specification for 0.1 s.
	C0052:13/C0053:13/ C0054:13/C0055:13	<ul style="list-style-type: none"> • Steering angle sensor A, B, C, Z signal input circuit voltage is higher than the specification for 0.1 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Steering angle sensor connector or terminals malfunction • BCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering angle sensor terminal F—BCM terminal 2G — Steering angle sensor terminal D—BCM terminal 2F — Steering angle sensor terminal B—BCM terminal 2H — Steering angle sensor terminal C—BCM terminal 2I • Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering angle sensor terminal F—BCM terminal 2G — Steering angle sensor terminal D—BCM terminal 2F — Steering angle sensor terminal B—BCM terminal 2H — Steering angle sensor terminal C—BCM terminal 2I • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Steering angle sensor terminal F—BCM terminal 2G — Steering angle sensor terminal D—BCM terminal 2F — Steering angle sensor terminal B—BCM terminal 2H — Steering angle sensor terminal C—BCM terminal 2I • Steering angle sensor malfunction • BCM malfunction 	

09-02F



ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT STEERING ANGLE SENSOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the steering angle sensor connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	C0051:2F/C0052:11/C0053:11/C0054:11/C0055:11: • Go to the next step. C0052:13/C0053:13/C0054:13/C0055:13: • Go to Step 6.
4	INSPECT STEERING ANGLE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Steering angle sensor and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Steering angle sensor terminal F — Steering angle sensor terminal D — Steering angle sensor terminal B — Steering angle sensor terminal C • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	C0051:2F: • Go to the next step. C0052:11/C0053:11/C0054:11/C0055:11: • Go to Step 7.
5	INSPECT STEERING ANGLE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Steering angle sensor and BCM connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Steering angle sensor terminal F — Steering angle sensor terminal D — Steering angle sensor terminal B — Steering angle sensor terminal C • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT STEERING ANGLE SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Steering angle sensor and BCM connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Steering angle sensor terminal F—BCM terminal 2G — Steering angle sensor terminal D—BCM terminal 2F — Steering angle sensor terminal B—BCM terminal 2H — Steering angle sensor terminal C—BCM terminal 2I • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
7	INSPECT STEERING ANGLE SENSOR <ul style="list-style-type: none"> Reconnect the steering angle sensor and BCM connectors. Reconnect the negative battery cable. Inspect the steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.) Is there any malfunction? 	Yes	Replace the steering angle sensor, then go to the next step. (See 09-18-19 STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC C1126:13 [BCM]

id0902f5940200

09-02F

DESCRIPTION	TNS switch circuit malfunction	
DETECTION CONDITION	<ul style="list-style-type: none"> Open circuit in the TNS switch circuit with the TNS switch on. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Light switch connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Light switch terminal E—Body ground Light switch malfunction BCM connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Light switch terminal A—BCM terminal 2V BCM malfunction 	

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the TNS switch on. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT LIGHT SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the light switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	VERIFY MALFUNCTIONING LOCATION <ul style="list-style-type: none"> • Light switch connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): — Light switch terminal A • Is there any voltage? 	Yes	Go to the next step.
		No	Go to Step 6.
4	INSPECT TNS SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Light switch connector is disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: — Light switch terminal E • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
5	INSPECT LIGHT SWITCH <ul style="list-style-type: none"> • Inspect the light switch. (See 09-18-58 LIGHT SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the light switch, then go to Step 8. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
		No	Go to Step 8.
6	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
7	INSPECT TNS SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Light switch and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — BCM terminal 2V • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the TNS switch on. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC C1137:12 [BCM]

id0902f5415400

ATX

DESCRIPTION	TR switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to power supply in the TR switch circuit with the selector lever in P or N range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TR switch connector or terminals malfunction BCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — TR switch terminal D—BCM terminal 1Q TR switch malfunction BCM malfunction

09-02F

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the selector lever in P or N range. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT TR SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the TR switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT TR SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • TR switch and BCM connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): — TR switch terminal D • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT TR SWITCH <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Reconnect the TR switch connector. • Reconnect the negative battery cable. • Inspect the TR switch. (See 05-17-14 TRANSAXLE RANGE (TR) SWITCH INSPECTION [FS5A-EL].) • Is there any malfunction? 	Yes	Replace the TR switch, then go to the next step. (See 05-17-16 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION [FS5A-EL].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the selector lever in P or N range. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

MTX

DESCRIPTION	Back-up light switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Short to power supply in the back-up light switch circuit with the shift lever in P or N range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Back-up light switch connector or terminals malfunction BCM connector or terminals malfunction Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Back-up light switch terminal B—BCM terminal 1Q Back-up light switch malfunction BCM malfunction
<p>The diagram shows the electrical circuit for the back-up light switch. It starts with IG1 (ignition) connected to terminal A of the back-up light switch. Terminal B of the switch is connected to terminal 1Q of the BCM. Below the main circuit are two detailed views of the connectors: the back-up light switch wiring harness-side connector with terminals A and B, and the BCM wiring harness-side connector with a grid of terminals including 1W, 1U, 1S, 1Q, 1O, 1M, 1K, 1I, 1G, 1E, 1C, 1A, 1X, 1V, 1T, 1R, 1P, 1N, 1L, 1J, 1H, 1F, 1D, and 1B. Arrows point to the physical connectors.</p>	

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the shift lever in P or N range. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT BACK-UP LIGHT SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the back-up light switch connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the BCM connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT BACK-UP LIGHT SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Back-up light switch and BCM connectors are disconnected. Reconnect the negative battery cable. Switch the ignition to ON. Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Back-up light switch terminal B Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.

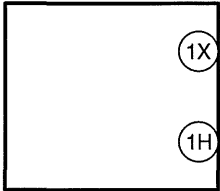
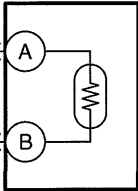
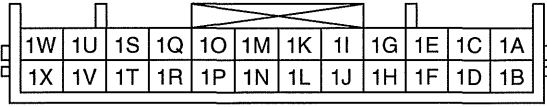
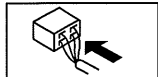
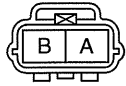
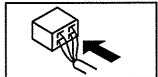
09-02F

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
5	INSPECT BACK-UP LIGHT SWITCH <ul style="list-style-type: none"> Switch the ignition to off. Inspect the back-up light switch. (See 09-18-55 BACK-UP LIGHT SWITCH INSPECTION.) Is there any malfunction? 	Yes	Replace the back-up light switch, then go to the next step. (See 05-15A-2 BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G35M-R].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) Perform the BCM DTC inspection using the M-MDS with the shift lever in P or N range. (See 09-02F-7 DTC INSPECTION [BCM].) Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC P0070:14 [BCM]

id0902f5931300

DESCRIPTION	Ambient temperature sensor circuit malfunction	
DETECTION CONDITION	<ul style="list-style-type: none"> Ambient temperature sensor circuit voltage is out of range for 3 s or more. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Ambient temperature sensor connector or terminals malfunction BCM connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — Ambient temperature sensor terminal A—BCM terminal 1X — Ambient temperature sensor terminal B—BCM terminal 1H Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — Ambient temperature sensor terminal A—BCM terminal 1X — Ambient temperature sensor terminal B—BCM terminal 1H Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Ambient temperature sensor terminal A—BCM terminal 1X — Ambient temperature sensor terminal B—BCM terminal 1H Ambient temperature sensor malfunction BCM malfunction 	
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>BCM</p>  </div> <div style="text-align: center;"> <p>AMBIENT TEMPERATURE SENSOR</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> <p>BCM WIRING HARNESS-SIDE CONNECTOR</p>   </div> <div style="text-align: center;"> <p>AMBIENT TEMPERATURE SENSOR WIRING HARNESS-SIDE CONNECTOR</p>   </div> </div>		

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 3 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 9.
2	INSPECT AMBIENT TEMPERATURE SENSOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the ambient temperature sensor connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Ambient temperature sensor and BCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Ambient temperature sensor terminal A — Ambient temperature sensor terminal B • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 8.
		No	Go to the next step.
5	INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Ambient temperature sensor and BCM connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Ambient temperature sensor terminal A — Ambient temperature sensor terminal B • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Ambient temperature sensor and BCM connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Ambient temperature sensor terminal A— BCM terminal 1X — Ambient temperature sensor terminal B— BCM terminal 1H • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
7	INSPECT AMBIENT TEMPERATURE SENSOR <ul style="list-style-type: none"> • Ambient temperature sensor and BCM connectors are disconnected. • Reconnect the ambient temperature sensor connector. • Reconnect the negative battery cable. • Inspect the ambient temperature sensor. (See 07-40A-22 AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is there any malfunction? 	Yes	Replace the ambient temperature sensor, then go to the next step. (See 07-40A-22 AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 3 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

DTC P1536:13 [BCM]

Id0902f5415500

DESCRIPTION	Parking brake switch circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • Open circuit in the parking brake switch circuit with the parking brake lever applied (parking brake switch on).
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Parking brake switch connector or terminals malfunction • BCM connector or terminals malfunction • Parking brake switch malfunction • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Parking brake switch terminal A—BCM terminal 2Q • BCM malfunction

ON-BOARD DIAGNOSTIC [BCM]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the parking brake lever applied (parking brake switch on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 7.
2	INSPECT PARKING BRAKE SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the parking brake switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT PARKING BRAKE SWITCH <ul style="list-style-type: none"> • Inspect the parking brake switch. (See 04-12-5 PARKING BRAKE SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the parking brake switch, then go to Step 6. (See 04-12-3 PARKING BRAKE LEVER REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT PARKING BRAKE SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Parking brake switch and BCM connectors are disconnected. • Reconnect the BCM connector. • Reconnect the negative battery cable. • Measure the voltage at the following terminal (wiring harness-side): — Parking brake switch terminal A • Is there any voltage? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS with the parking brake lever applied (parking brake switch on). (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC U0300:00 [BCM]

id0902f5413500

DESCRIPTION	Incomplete configuration
DETECTION CONDITION	<p>Warning</p> <ul style="list-style-type: none"> • Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure. • BCM detects the corrupt configuration data after completion of configuration.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • BCM configuration error • BCM malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	<p>CONFIRM BCM DTC</p> <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 4.
2	<p>PERFORM BCM CONFIGURATION</p> <ul style="list-style-type: none"> • Perform the BCM configuration using the M-MDS. (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.) • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Perform the BCM configuration again, then go to the next step. (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.)
		No	Go to Step 4.
3	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	<p>VERIFY THAT NO OTHER DTCs ARE PRESENT</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC U0401:68 [BCM]

id0902f5413600

DESCRIPTION	Receive erratic data from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> • BCM receives the erratic data from PCM for 5 s or more, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • PCM malfunction • BCM malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 5 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 5 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC U2100:00 [BCM]

id0902f5413800

DESCRIPTION	Incomplete configuration
DETECTION CONDITION	<p>Warning</p> <ul style="list-style-type: none"> • Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure. • Configuration is not finished completely.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • BCM configuration error • BCM malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 4.
2	PERFORM BCM CONFIGURATION <ul style="list-style-type: none"> • Perform the BCM configuration using the M-MDS. (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.) • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Perform the BCM configuration again, then go to the next step. (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.)
		No	Go to Step 4.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

DTC U3000:04 [BCM]

id0902f5413900

DESCRIPTION	BCM internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• BCM internal ECU is faulted.
POSSIBLE CAUSE	<ul style="list-style-type: none">• BCM malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none">• Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].)• Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].)• Is the same DTC present?	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

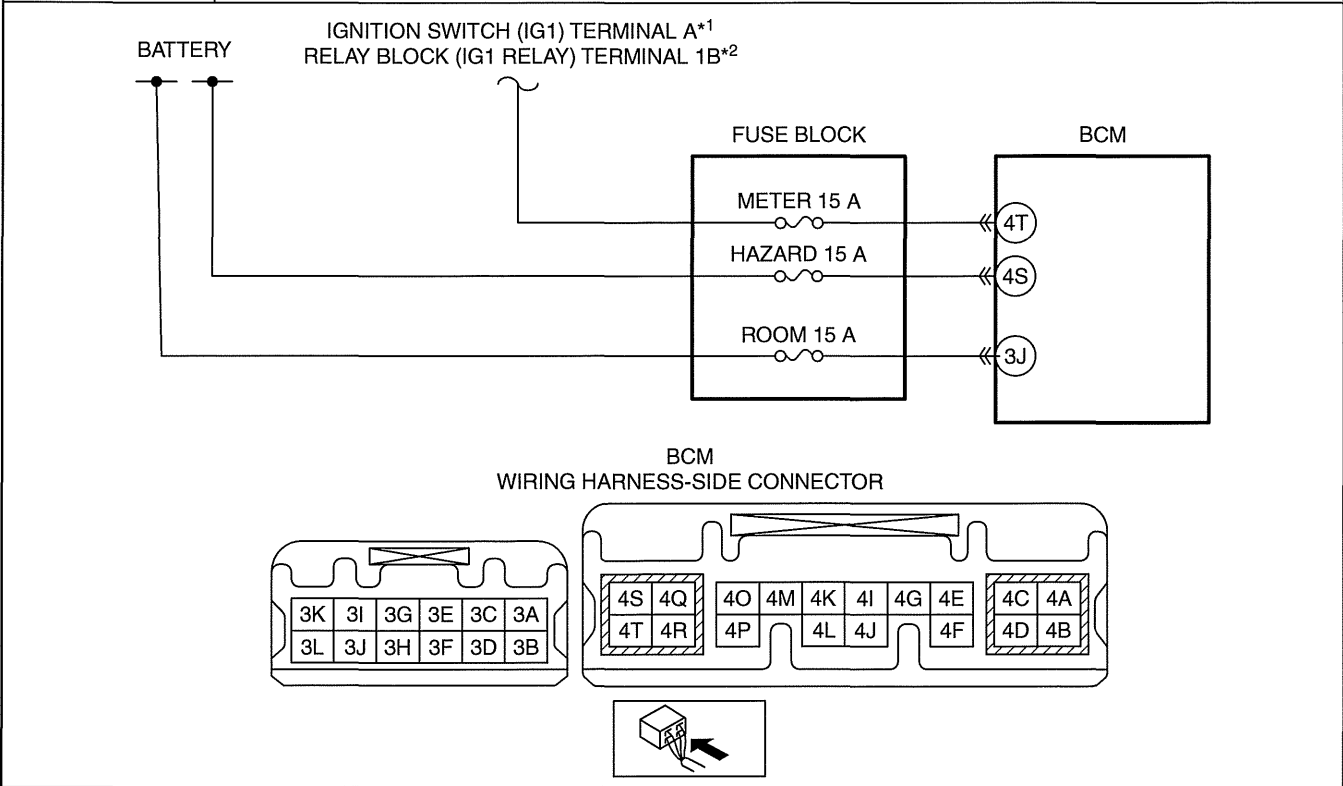
09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC U3003:16 [BCM]

id0902f5933600

DESCRIPTION	Power supply circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • BCM power supply circuit voltage is lower than 9 V for 5 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Battery malfunction • Generator malfunction • BCM connector or terminals malfunction • Open circuit or short to ground in BCM power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminal: <ul style="list-style-type: none"> • BCM terminal 4T—Ignition switch terminal A^{*1}/Relay block terminal 1B^{*2} • BCM terminal 4S—Battery positive terminal • BCM terminal 3J—Battery positive terminal — METER 15 A fuse malfunction — HAZARD 15 A fuse malfunction — ROOM 15 A fuse malfunction — Open circuit in wiring harness between the following terminal: <ul style="list-style-type: none"> • BCM terminal 4T—Ignition switch terminal A^{*1}/Relay block terminal 1B^{*2} • BCM terminal 4S—Battery positive terminal • BCM terminal 3J—Battery positive terminal • BCM malfunction



*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 5 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 8.

ON-BOARD DIAGNOSTIC [BCM]

STEP	INSPECTION	ACTION	
2	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 7. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 7. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	INSPECT BCM CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the BCM connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • BCM connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — BCM terminal 4T — BCM terminal 4S — BCM terminal 3J • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the METER 15 A fuse, HAZARD 15 A fuse or ROOM 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the malfunctioning fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the malfunctioning fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 5 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

09-02F

ON-BOARD DIAGNOSTIC [BCM]

DTC U3003:17 [BCM]

id0902f5310200

DESCRIPTION	Power supply circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • BCM power supply circuit voltage is higher than 16 V for 5 s or more.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Battery malfunction • Generator malfunction • BCM malfunction

Diagnostic Procedure

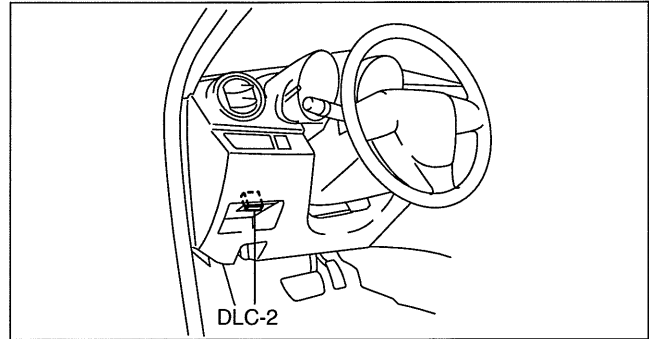
STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 5 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Go to the next step.
		No	Go to Step 6.
2	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the battery, then go to Step 5. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC using the M-MDS. (See 09-02F-7 CLEARING DTC [BCM].) • Switch the ignition to ON and wait for 5 s or more. • Perform the BCM DTC inspection using the M-MDS. (See 09-02F-7 DTC INSPECTION [BCM].) • Is the same DTC present? 	Yes	Replace the BCM, then go to the next step. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [BCM]

PID/DATA MONITOR INSPECTION [BCM]

id0902f5960600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "GEM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "GEM".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



am3uuw0000265

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE [BCM]

id0902f5960700

PID Name	Unit/Status	Description	Inspection Item	Terminal
BRK_FLUID	Normal/Low	<ul style="list-style-type: none"> • Brake fluid level above MIN: Normal • Brake fluid level less than MIN: Low 	Brake fluid level sensor	1N
DRSW_D	Close/Open	<ul style="list-style-type: none"> • Driver-side door opened: Open • Driver-side door closed: Close 	Front door latch switch (LH)	6G
DRSW_LR	Close/Open	<ul style="list-style-type: none"> • Rear door (LH) opened: Open • Rear door (LH) closed: Close 	Rear door latch switch (LH)	6E
DRSW_P	Close/Open	<ul style="list-style-type: none"> • Passenger-side door opened: Open • Passenger-side door closed: Close 	Front door latch switch (RH)	6H
DRSW_RR	Close/Open	<ul style="list-style-type: none"> • Rear door (RH) opened: Open • Rear door (RH) closed: Close 	Rear door latch switch (RH)	6K
FOG_F_SW	Off/On	<ul style="list-style-type: none"> • Front fog light switch in on position: On • Front fog light switch in off position: Off 	Front fog light switch (light switch)	2W
HAZARD	Off/On	<ul style="list-style-type: none"> • Hazard warning switch in on position: On • Hazard warning switch in off position: Off 	Hazard warning switch	2M
HOOD_SW [*] ₁	Close/Open	<ul style="list-style-type: none"> • Hood opened: Open • Hood closed: Close 	Hood latch switch	1J
H/L_HI_SW	Off/On	<ul style="list-style-type: none"> • Light switch at HI position: On • Light switch at off position: Off 	Light switch	2T
KEY_LOCK_SW	Off/Lock	<ul style="list-style-type: none"> • Front door key cylinder switch at LOCK: Lock • Front door key cylinder switch not at LOCK: Off 	Front door key cylinder switch	6B
KEY_UNLK_SW	Off/Unlock	<ul style="list-style-type: none"> • Front door key cylinder switch at UNLOCK: Off • Front door key cylinder switch not at UNLOCK: Unlock 	Front door key cylinder switch	6B
PRK_BRK	Off/On	<ul style="list-style-type: none"> • Parking brake depressed (Parking brake switch in the on position): On • Parking brake not depressed (Parking brake switch in the off position): Off 	Parking brake switch	2Q
R_DEF_SW	Off/On	<ul style="list-style-type: none"> • Rear window defroster switch in on position: On • Rear window defroster switch in off position: Off 	Rear window defroster relay	1D
R_GEAR_SW	Not_R/R	<ul style="list-style-type: none"> • Shift the selector lever to R position: R • Other than these conditions: Not_R 	TR switch (ATX)/ Back-up light switch (MTX)	1Q
TNS_SW	Off/On	<ul style="list-style-type: none"> • Light switch at TNS position: On • Light switch at off position: Off 	Light switch	2V
TURN_SW_L	Off/On	<ul style="list-style-type: none"> • Turn switch at left position: On • Turn switch in off position: Off 	Turn switch (light switch)	2P

09-02F

ON-BOARD DIAGNOSTIC [BCM]

PID Name	Unit/Status	Description	Inspection Item	Terminal
TURN_SW_R	Off/On	<ul style="list-style-type: none"> Turn switch at right position: On Turn switch in off position: Off 	Turn switch (light switch)	2O
TR/LG_SW	Close/Open	<ul style="list-style-type: none"> Trunk (4SD)/Liftgate (5HB) lid opened: Open Trunk (4SD)/Liftgate (5HB) lid closed: Close 	Trunk lid latch switch (4SD)/Liftgate latch switch (5HB)	5G
VPWR	V	<ul style="list-style-type: none"> Indicate the battery voltage 	Battery	3J, 4S
WASHER_F	Off/On	<ul style="list-style-type: none"> Windshield washer switch in on position: On Windshield washer switch in off position: Off 	Wiper and washer switch	4P
WASHER_R*2	Off/On	<ul style="list-style-type: none"> Rear washer switch in on position: On Rear washer switch in off position: Off 	Wiper and washer switch	4O
WIP_F_HI	Off/On	<ul style="list-style-type: none"> Windshield wiper switch at HI position: On Windshield wiper switch at off position: Off 	Wiper and washer switch	4M
WIP_F_INT	Off/On	<ul style="list-style-type: none"> Windshield wiper switch at INT position: On Windshield wiper switch at off position: Off 	Wiper and washer switch	4I
WIP_F_LO	Off/On	<ul style="list-style-type: none"> Windshield wiper switch at LO position: On Windshield wiper switch at off position: Off 	Wiper and washer switch	4J
WIP_F_PP OS	Off/On	<ul style="list-style-type: none"> Windshield wiper auto stop switch in on position: On Windshield wiper auto stop switch in off position: Off 	Windshield wiper motor	3G
WIP_R_INT*2	Off/On	<ul style="list-style-type: none"> Rear wiper switch at INT position: On Rear wiper switch at off position: Off 	Wiper and washer switch	2K
WIP_R_ON*2	Off/On	<ul style="list-style-type: none"> Rear wiper switch at on position: On Rear wiper switch at off position: Off 	Wiper and washer switch	2L

*1 : Vehicles with theft-deterrent system

*2 : Vehicles with rear wiper and washer switch

09-02G ON-BOARD DIAGNOSTIC [AUDIO]

FOREWORD [AUDIO]	09-02G-1	DTC: B1D19:96, 10:Er10, 22:Er10 [AUDIO]	09-02G-9
DTC INSPECTION [AUDIO]	09-02G-2	DTC: U3000:04, 09:Er22 [AUDIO]	09-02G-9
Using the M-MDS	09-02G-2	DTC: U3000:09, 09:Er21 [AUDIO]	09-02G-10
Without Using M-MDS (On-board Diagnostic Test Mode)	09-02G-2	DTC: U3003:16, 09:Er20 [AUDIO]	09-02G-10
SUPPLIER IDENTIFICATION		DIAGNOSTIC ASSIST FUNCTION [AUDIO]	09-02G-12
PROCEDURE [AUDIO]	09-02G-3	Switch Inspection	09-02G-12
Identification Using the Label or Inscribed Lettering	09-02G-3	Speaker Inspection	09-02G-12
Verify Using the Diagnostic Assist Function	09-02G-3	Radio Reception Condition Inspection	09-02G-13
CLEARING DTC [AUDIO]	09-02G-4	Antenna Control Condition Inspection	09-02G-15
Using the M-MDS	09-02G-4	Audio Amplifier Control Condition Inspection	09-02G-15
Without Using M-MDS (On-board Diagnostic Test Mode)	09-02G-4	Dial Inspection	09-02G-16
DTC TABLE [AUDIO]	09-02G-5	Audio Amplifier Specification Inspection	09-02G-16
DTC: B1188:64, 10:Er07, 22:Er07 [AUDIO]	09-02G-6	Audio Amplifier (With Bose®) Identify Inspection	09-02G-17
DTC: B1A89:13 [AUDIO]	09-02G-6		
DTC: B1D19:71, 10:Er02, 22:Er02 [AUDIO]	09-02G-8		
DTC: B1D19:79, 10:Er01, 22:Er01 [AUDIO]	09-02G-8		

FOREWORD [AUDIO]

id0902f6441800

09-02G

- The audio system has an on-board diagnostic function and diagnostic assist function to facilitate audio system diagnosis.

On-board diagnostic function

- The on-board diagnostic function consists of the following functions: A malfunction detection function, which detects overall malfunctions in the audio system-related parts; a memory function, which stores detected DTCs; and a display function, which indicates system malfunctions via a DTC display.
- If the audio unit detects a malfunction in the audio system, a maximum of 3 DTCs are recorded in the audio unit. If three DTCs have already been stored and an additional malfunction is detected, the oldest DTC of the 3 already stored is cleared and it is replaced with the DTC for the most current malfunction.
- DTCs stored in the audio unit are cleared if the negative battery cable is disconnected (if backup power is interrupted).
- There are two methods for reading and clearing DTCs. They include activation of the on-board diagnostic test mode of the on-board diagnostic function, which is operated using the audio unit, and the M-MDS. The displayed DTCs differ depending on whether the on-board diagnostic test mode or the M-MDS method is used. Additionally, because some DTCs are not displayed in the on-board diagnostic test mode, use the M-MDS before performing the procedure.

On-board diagnostic test mode

- To display DTCs on the information display that have been recorded in the memory function, activate the on-board diagnostic function by operating the audio unit.

Using the M-MDS

- When a DTC inspection is performed using the M-MDS, the malfunction diagnostics for the audio system, Bluetooth system (hands-free telephone (HF/TEL system), and the SIRIUS satellite radio system is initiated. A maximum of 5 DTCs detected by the malfunction diagnostics are displayed.

Diagnostic assist function

- The diagnostic assist function is a function for forcibly operating audio system related parts to verify their connection condition and operation status. In addition, the specifications for the audio system related parts are displayed in the information display to enable their verification.

ON-BOARD DIAGNOSTIC [AUDIO]

DTC INSPECTION [AUDIO]

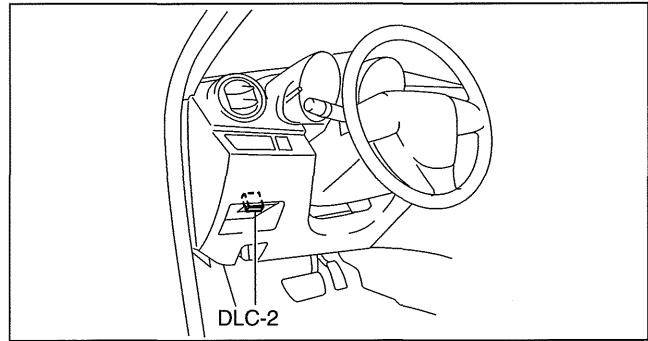
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Note

- All DTCs displayed in the DTC inspection should be entered in the Audio Repair Order Form.

Using the M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ACU".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ACU".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the audio unit. (See 09-02G-4 CLEARING DTC [AUDIO].)

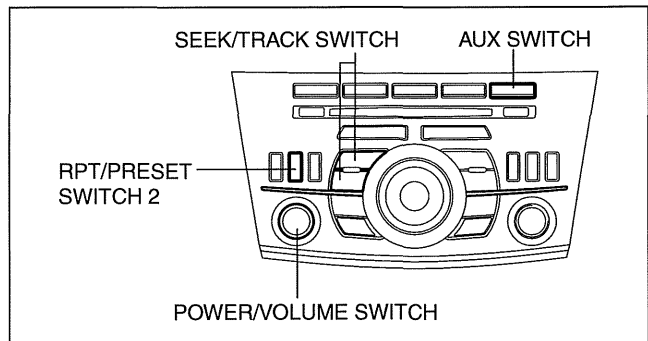


Without Using M-MDS (On-board Diagnostic Test Mode)

1. Switch the ignition to ACC or ON.
2. While pressing the POWER/VOLUME switch, simultaneously press the AUX switch and the RPT/PRESET switch 2 for **2 s or more**.

Note

- If several DTCs are in the memory, they can be displayed using the SEEK/TRACK switch (up or down).
3. To stop the on-board diagnostic test mode, ignition is switched to off.



ON-BOARD DIAGNOSTIC [AUDIO]

SUPPLIER IDENTIFICATION PROCEDURE [AUDIO]

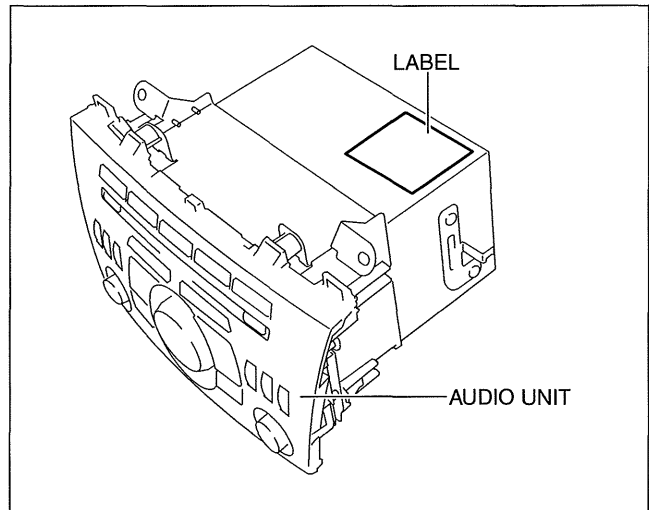
id0902f6803800

Note

- The supplier can vary with the unit. When asking the supplier (service center) for repair or replacement, identify the supplier and fill in the Audio Repair Order Form with the following procedures.

Identification Using the Label or Inscribed Lettering

- Disconnect the negative battery cable.
- Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
- Remove the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
- Verify the supplier by referring to the label attached to each unit.

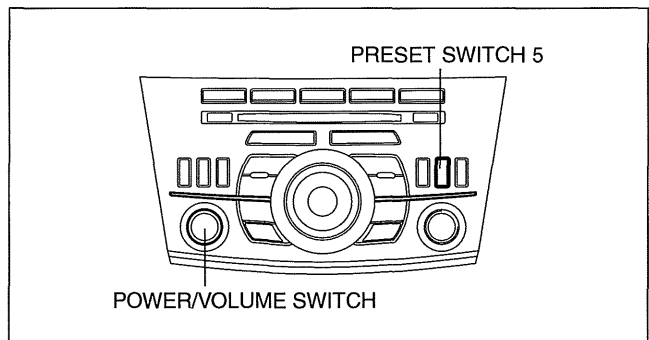


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Verify Using the Diagnostic Assist Function

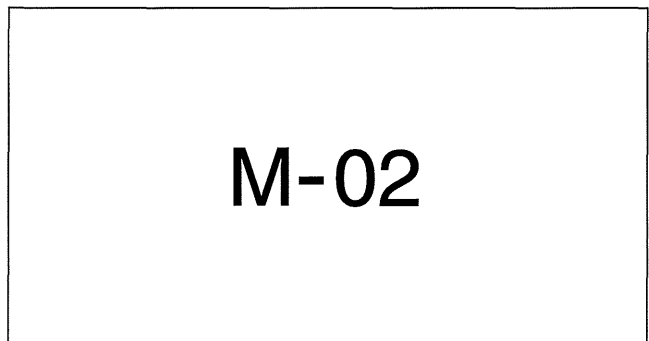
- Switch the ignition to ACC or ON.
- While pressing the POWER/VOLUME switch, simultaneously press the PRESET switch 5 for **0.2 s or more**.



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- Identify the supplier code by referring to the information display.

Supplier code	Supplier name
01	SANYO Automeida
02	Panasonic
03	Clarion
04	Pioneer
05	VISTEON

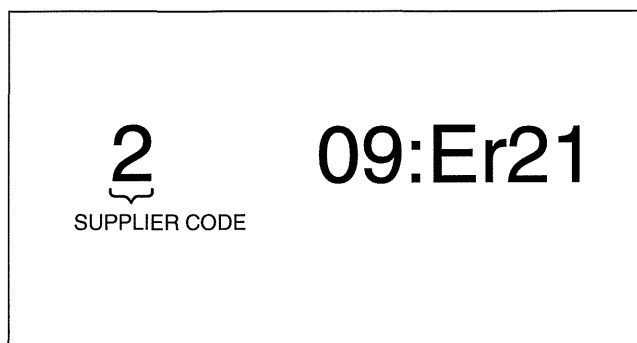


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ON-BOARD DIAGNOSTIC [AUDIO]

Note

- The supplier code can also be identified from the DTC displays screen.
4. To stop the diagnostic assist function, ignition is switched to off.



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CLEARING DTC [AUDIO]

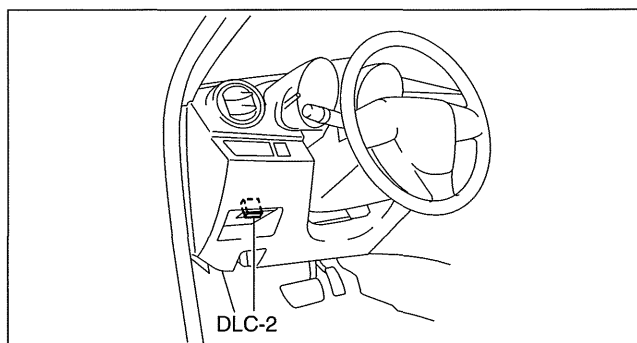
id0902f6855600

Caution

- Before clearing the DTCs, be sure to enter all of the DTCs displayed in the DTC inspection in the Audio Repair Order Form.

Using the M-MDS

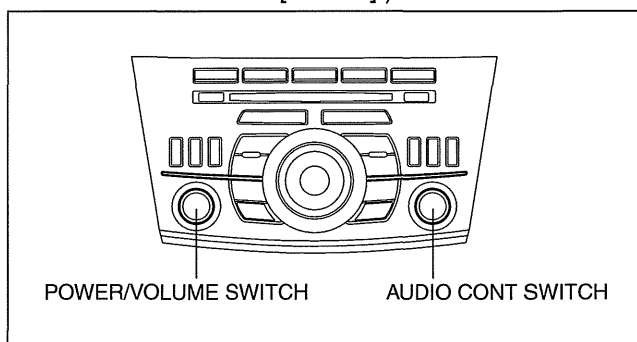
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ACU".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ACU".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].)
8. Verify that no DTCs are displayed.



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Without Using M-MDS (On-board Diagnostic Test Mode)

1. Launch the on-board diagnostic test mode. (See 09-02G-2 DTC INSPECTION [AUDIO].)
2. While pressing the POWER/VOLUME switch, simultaneously press the AUDIO CONT switch for **2 s or more**.
3. To stop the on-board diagnostic test mode, ignition is switched to off.



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ON-BOARD DIAGNOSTIC [AUDIO]

DTC TABLE [AUDIO]

id0902f6855700

DTC		Detection	Reference
M-MDS display	Information display (On-board diagnostic test mode)		
B1134:23	26:Er85	Steering switch circuit malfunction	(See 09-02H-4 DTC: B1134:23, 26:Er85 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:12	26:Er82	Microphone circuit malfunction	(See 09-02H-6 DTC: B116A:12, 26:Er82 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:13	26:Er84	Microphone circuit malfunction	(See 09-02H-7 DTC: B116A:13, 26:Er84 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:16	26:Er83	Microphone circuit malfunction	(See 09-02H-9 DTC: B116A:16, 26:Er83 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:44	26:Er86	Bluetooth unit internal malfunction	(See 09-02H-10 DTC: B116A:44, 26:Er86 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B1188:64	10:Er07, 22:Er07	Audio unit internal malfunction	(See 09-02G-6 DTC: B1188:64, 10:Er07, 22:Er07 [AUDIO].)
B1A89:13	—	SIRIUS satellite radio system communication circuit malfunction	(See 09-02G-6 DTC: B1A89:13 [AUDIO].)
B1D19:71	10:ER02, 22:Er02	Audio unit internal malfunction	(See 09-02G-8 DTC: B1D19:71, 10:ER02, 22:Er02 [AUDIO].)
B1D19:79	10:Er01, 22:Er01	Audio unit internal malfunction	(See 09-02G-8 DTC: B1D19:79, 10:Er01, 22:Er01 [AUDIO].)
B1D19:96	10:Er10, 22:Er10	Audio unit internal malfunction	(See 09-02G-9 DTC: B1D19:96, 10:Er10, 22:Er10 [AUDIO].)
U0010:88	16:Er12	CAN system communication error	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0155:00	16:Er11, 17:Er12	Communication error to instrument cluster	
U0156:00	—	Communication error to multi information display	
U0193:00	—	Communication error to SIRIUS satellite radio unit	
U0197:00	—	Communication error to Bluetooth unit	
U0423:68	—	Invalid date received from Instrument cluster	
U0498:68	26:Er81	CAN system communication error	
U3000:04	09:Er22	Audio unit internal malfunction	(See 09-02G-9 DTC: U3000:04, 09:Er22 [AUDIO].)
U3000:09	09:Er21	Audio unit internal malfunction	(See 09-02G-10 DTC: U3000:09, 09:Er21 [AUDIO].)
U3003:16	09:Er20	Audio unit power supply voltage is low	(See 09-02G-10 DTC: U3003:16, 09:Er20 [AUDIO].)
—	No Err	DTC is not recorded.	—

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ON-BOARD DIAGNOSTIC [AUDIO]

DTC: B1188:64, 10:Er07, 22:Er07 [AUDIO]

id0902f6440600

DESCRIPTION	Audio unit internal malfunction
DETECTION CONDITION	Audio unit detects CD reading error
POSSIBLE CAUSE	<ul style="list-style-type: none"> CD is inserted upside down CDs with scratches or deformity Incompatible CDs Audio unit malfunction

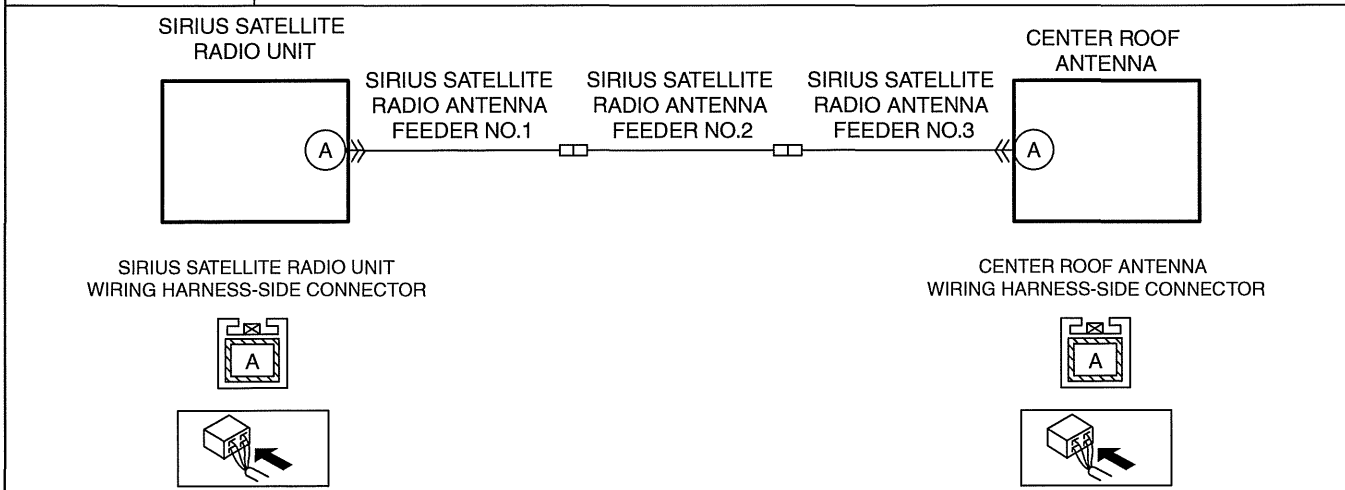
Diagnostic Procedure

Step	Inspection		Action
1	INSPECT THE CD <ul style="list-style-type: none"> Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) Insert a playable CD with the title surface facing upward. <p>Note</p> <ul style="list-style-type: none"> Refer to the following for a playable CD. (See 09-03F-12 REFERENCE [CD PLAYER/CHANGER].) <ul style="list-style-type: none"> Play the CD for 12 s or more. Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) Is the same DTC present? 	Yes	Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

DTC: B1A89:13 [AUDIO]

id0902f6440700

DESCRIPTION	SIRIUS satellite radio system communication circuit malfunction
DETECTION CONDITION	Open circuit between SIRIUS satellite radio unit and center roof antenna (SIRIUS satellite radio antenna) is detected continuously for 5 s.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Connector or terminal malfunction SIRIUS satellite radio antenna feeder malfunction <p>Note</p> <ul style="list-style-type: none"> SIRIUS satellite radio antenna feeder No.1 is integrated with the dashboard wiring harness. SIRIUS satellite radio antenna feeder No.2 is integrated with the antenna feeder No.2. SIRIUS satellite radio antenna feeder No.3 is integrated with the antenna feeder No.3. <ul style="list-style-type: none"> Center roof antenna (SIRIUS satellite radio antenna) malfunction SIRIUS satellite radio unit malfunction



ON-BOARD DIAGNOSTIC [AUDIO]

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT CENTER ROOF ANTENNA CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the center roof antenna connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 6.
		No	Go to the next step.
2	INSPECT SIRIUS SATELLITE RADIO ANTENNA FEEDER CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the SIRIUS satellite radio antenna feeder connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 6.
		No	Go to the next step.
3	INSPECT SIRIUS SATELLITE RADIO UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the SIRIUS satellite radio unit connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 6.
		No	Go to the next step.
4	INSPECT SIRIUS SATELLITE RADIO ANTENNA FEEDER <ul style="list-style-type: none"> • Inspect the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.) • Is there any malfunction? 	Yes	Replace the SIRIUS satellite radio antenna feeder, then go to Step 6. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT CENTER ROOF ANTENNA (SIRIUS SATELLITE RADIO ANTENNA) <ul style="list-style-type: none"> • Inspect the center roof antenna (SIRIUS satellite radio antenna). (See 09-20-23 CENTER ROOF ANTENNA INSPECTION.) • Is there any malfunction? 	Yes	Replace the center roof antenna (SIRIUS satellite radio antenna), then go to the next step. (See 09-20-19 CENTER ROOF ANTENNA REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the audio unit memory using the M-MDS. (See 09-02G-4 CLEARING DTC [AUDIO].) • Perform the audio unit DTC inspection using the M-MDS. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes	Replace the SIRIUS satellite radio unit, then go to the next step. (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [AUDIO]

DTC: B1D19:71, 10:ER02, 22:Er02 [AUDIO]

id0902f6440800

DESCRIPTION	Audio unit internal malfunction
DETECTION CONDITION	CD drive servo malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CD is inserted upside down • CDs with scratches or deformity • Incompatible CDs • Audio unit malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT THE CD <ul style="list-style-type: none"> • Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) • Insert a playable CD with the title surface facing upward. <p>Note</p> <ul style="list-style-type: none"> • Refer to the following for a playable CD. (See 09-03F-12 REFERENCE [CD PLAYER/CHANGER].) <ul style="list-style-type: none"> • Play the CD for 12 s or more. • Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes	Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

DTC: B1D19:79, 10:Er01, 22:Er01 [AUDIO]

id0902f6440900

DESCRIPTION	Audio unit internal malfunction
DETECTION CONDITION	CD drive mechanical malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CD is inserted upside down • CDs with scratches or deformity • Incompatible CDs • Audio unit malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT THE CD <ul style="list-style-type: none"> • Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) • Insert a playable CD with the title surface facing upward. <p>Note</p> <ul style="list-style-type: none"> • Refer to the following for a playable CD. (See 09-03F-12 REFERENCE [CD PLAYER/CHANGER].) <ul style="list-style-type: none"> • Play the CD for 12 s or more. • Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes	Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AUDIO]

DTC: B1D19:96, 10:Er10, 22:Er10 [AUDIO]

id0902f6441000

DESCRIPTION	Audio unit internal malfunction
DETECTION CONDITION	Communication error between the audio control circuit and CD drive
POSSIBLE CAUSE	<ul style="list-style-type: none"> • CD is inserted upside down • CDs with scratches or deformity • Incompatible CDs • Audio unit malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT THE CD <ul style="list-style-type: none"> • Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) • Insert a playable CD with the title surface facing upward. <p>Note</p> <ul style="list-style-type: none"> • Refer to the following for a playable CD. (See 09-03F-12 REFERENCE [CD PLAYER/CHANGER].) <ul style="list-style-type: none"> • Play the CD for 12 s or more. • Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes	Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

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DTC: U3000:04, 09:Er22 [AUDIO]

id0902f6441500

DESCRIPTION	Audio unit internal malfunction
DETECTION CONDITION	Audio unit internal ECU (Tuner peripheral circuit) is faulted.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Audio unit malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	CONFIRM AUDIO UNIT DTC <ul style="list-style-type: none"> • Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) • Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes	Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AUDIO]

DTC: U3000:09, 09:Er21 [AUDIO]

id0902f6441600

DESCRIPTION	Audio unit internal malfunction
DETECTION CONDITION	Audio unit internal ECU (Power amplifier peripheral circuit) is faulted.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Audio unit malfunction

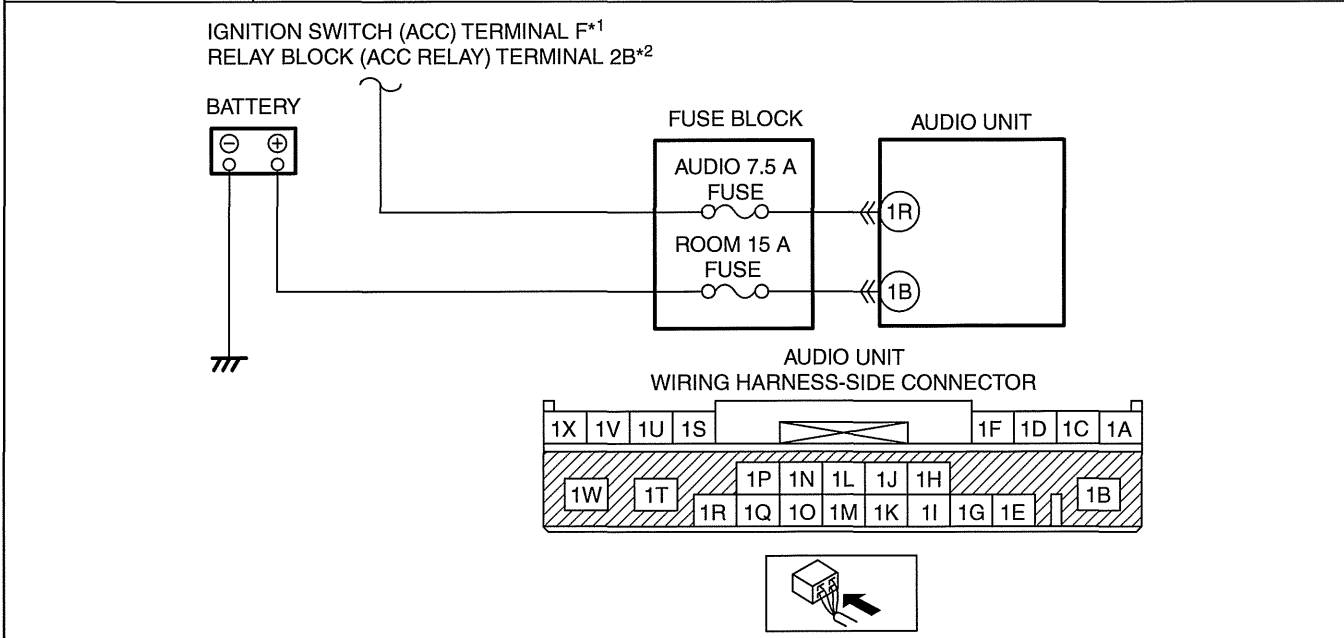
Diagnostic Procedure

Step	Inspection	Action
1	CONFIRM AUDIO UNIT DTC <ul style="list-style-type: none"> • Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) • Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No DTC troubleshooting completed.

DTC: U3003:16, 09:Er20 [AUDIO]

id0902f6441700

DESCRIPTION	Audio unit power supply voltage is low
DETECTION CONDITION	Audio unit power supply voltage of less than 10 V is detected continuously for 10 s .
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Battery malfunction • Generator malfunction • Audio unit connector or terminals malfunction • Open circuit or short to ground in audio unit power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between the following terminal: <ul style="list-style-type: none"> • Audio unit terminal 1R—Ignition switch terminal F^{*1}/Relay block terminal 2B^{*2} • Audio unit terminal 1B—Battery positive terminal — AUDIO 7.5 A fuse malfunction — ROOM 15 A fuse malfunction — Open circuit in wiring harness between the following terminal: <ul style="list-style-type: none"> • Audio unit terminal 1R—Ignition switch terminal F^{*1}/Relay block terminal 2B^{*2} • Audio unit terminal 1B—Battery positive terminal • Audio unit malfunction



*1 : Vehicles without advanced keyless entry and push button start system
 *2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [AUDIO]

Diagnostic Procedure

Step	Inspection	Action	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT AUDIO UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the audio unit connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Audio unit connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): — Audio unit terminal 1B — Audio unit terminal 1R • Is the voltage B+? 	Yes	Go to the next step.
		No	If the audio unit terminal 1B or 1R voltage is not B+: <ul style="list-style-type: none"> • Inspect the ROOM 15 A fuse or AUDIO 7.5 A fuse. — If the fuse is melt: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. • Replace the malfunctioning fuse. — If the fuse is deterioration: <ul style="list-style-type: none"> • Replace the malfunctioning fuse. — If the fuse is normal: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Switch the ignition to off. • Make sure reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the audio unit memory. (See 09-02G-4 CLEARING DTC [AUDIO].) • Perform the audio unit DTC inspection. (See 09-02G-2 DTC INSPECTION [AUDIO].) • Is the same DTC present? 	Yes	Replace the audio unit, then go to the next step. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02G-5 DTC TABLE [AUDIO].)
		No	DTC troubleshooting completed.

09-02G

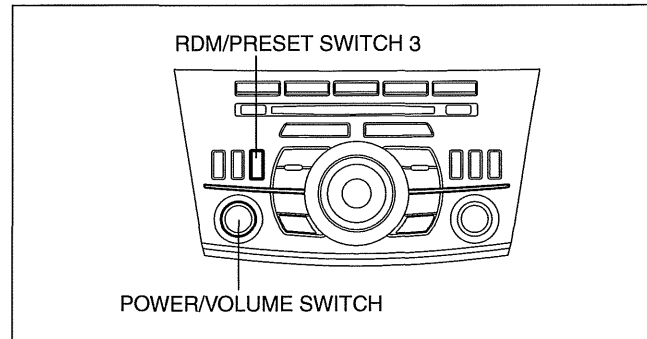
ON-BOARD DIAGNOSTIC [AUDIO]

DIAGNOSTIC ASSIST FUNCTION [AUDIO]

id0902f6804500

Switch Inspection

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. While pressing the POWER/VOLUME switch, simultaneously press the RDM/PRESET switch 3 for **0.2 s or more**.
4. Inspect according to the following table:



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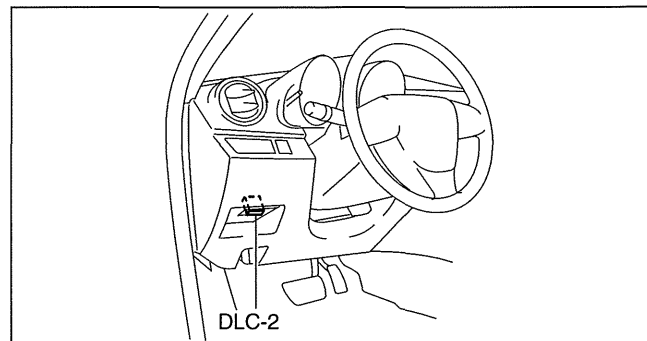
INSPECTION	DISPLAY	ACTION	
<ul style="list-style-type: none"> • Launch the switch inspection mode. • Operate all of the switches (press). • Does the buzzer sound? 	—	Yes	The switch is normal.
		No	Verify the switch. (See 09-03D-3 CONFIRMATION STEP 1: AUDIO PANEL SWITCH CONFIRMATION [ENTIRE AUDIO SYSTEM].)

5. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

Speaker Inspection

Using the M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Electrical".
 2. Select "Audio".
 3. Select "Audio Speaker Walkaround Test".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
 2. Select "Audio Speaker Walkaround Test".
3. Perform the procedure according to the directions on the screen.

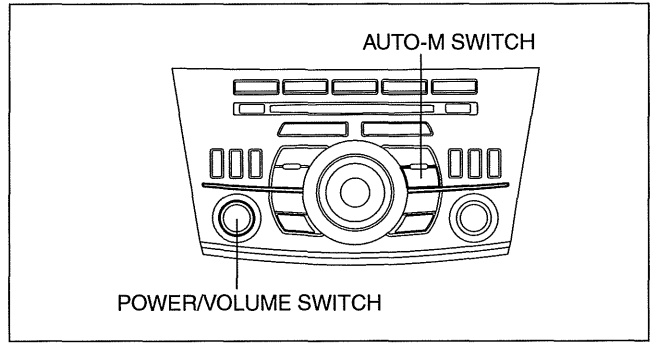


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ON-BOARD DIAGNOSTIC [AUDIO]

Without Using M-MDS

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. While pressing the POWER/VOLUME switch, simultaneously press the AUTO-M switch for **0.2 s or more**.
4. Inspect according to the following table:



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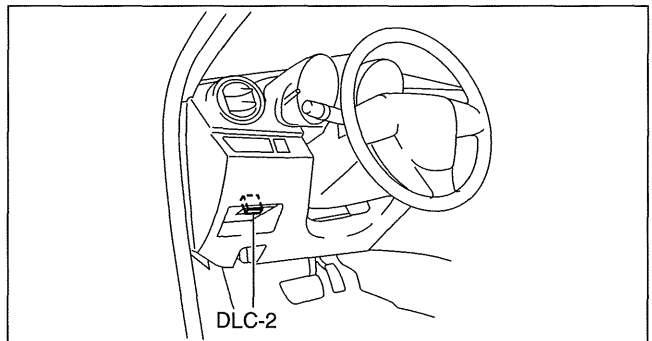
INSPECTION	DISPLAY	ACTION	
<ul style="list-style-type: none"> • Launch the speaker inspection mode. • Does each speaker output sound in the following order?: <p>Without Bose®</p> <ol style="list-style-type: none"> 1. Front door speaker (LH) and tweeter (LH) 2. Front door speaker (RH) and tweeter (RH) 3. Rear door speaker (RH) 4. Rear door speaker (LH) <p>With Bose®</p> <ol style="list-style-type: none"> 1. Front door speaker (LH) and tweeter (LH) and front center speaker 2. Front door speaker (RH) and tweeter (RH) and front center speaker 3. Rear door speaker (RH) and rear speaker (RH) and rear center speaker (4DS)/Bass-box (5HB) 4. Rear door speaker (LH) and rear speaker (LH) and rear center speaker (4DS)/Bass-box (5HB) 	—	Yes	The speakers and the wiring harness between the audio unit and speakers are normal.
		No	<ul style="list-style-type: none"> • If no sound is produced from all of the speakers. (See 09-03D-7 NO.3 NO SOUND FROM ALL SPEAKERS [ENTIRE AUDIO SYSTEM].) • If no sound is produced from some of the speakers. (See 09-03D-8 NO.4 NO SOUND FROM SOME SPEAKERS [ENTIRE AUDIO SYSTEM].)

09-02G

5. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

Radio Reception Condition Inspection Using the M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Electrical".
 2. Select "Audio".
 3. Select "AM Antenna Reception Sensitivity Test".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
 2. Select "AM Antenna Reception Sensitivity Test".
3. Perform the procedure according to the directions on the screen.



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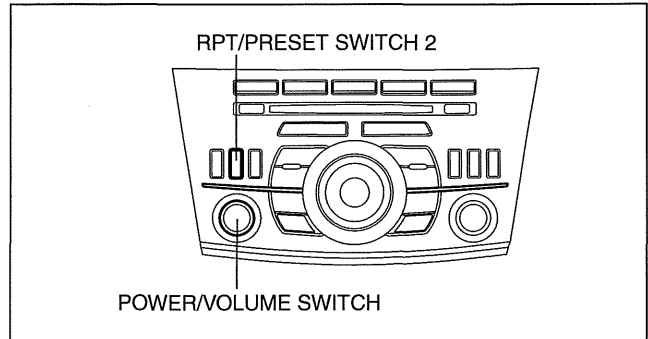
ON-BOARD DIAGNOSTIC [AUDIO]

Without Using M-MDS

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. Tune in the radio.
4. While pressing the POWER/VOLUME switch, simultaneously press the RPT/PRESET switch 2 for **0.2 s or more**.
5. Inspect according to the following table:

Caution

- Even if the system is normal, radio reception may be difficult depending on where the system is inspected (indoors/outdoors, or conditions at the location). Before inspecting the system, verify that radio reception is adequate.
- When performing the inspection, select the best area for receiving radio frequencies.



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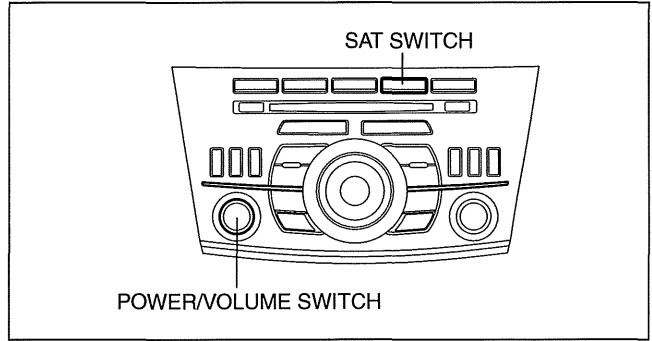
INSPECTION	DISPLAY	ACTION
Launch the radio reception condition inspection mode.	LEV 10 — LEV 5	Glass antenna, antenna amplifier, antenna feeder and audio unit are normal.
	LEV 4 — LEV 3	Change frequencies and re-perform the inspection.
	LEV 2 — LEV 0	<p>Inspect the glass antenna and antenna amplifier and antenna feeder. (See 09-20-26 GLASS ANTENNA INSPECTION.) (See 09-20-28 ANTENNA AMPLIFIER INSPECTION.) (See 09-20-34 ANTENNA FEEDER NO.1 INSPECTION.) (See 09-20-36 ANTENNA FEEDER NO.2 INSPECTION.) (See 09-20-39 ANTENNA FEEDER NO.3 INSPECTION.)</p> <ul style="list-style-type: none"> • If either the glass antenna or the antenna amplifier or the antenna feeder is not normal, replace the malfunctioning part. (See 09-12-39 FILAMENT REPAIR.) (See 09-20-27 ANTENNA AMPLIFIER REMOVAL/INSTALLATION.) (See 09-20-32 ANTENNA FEEDER NO.1 REMOVAL/INSTALLATION.) (See 09-20-35 ANTENNA FEEDER NO.2 REMOVAL/INSTALLATION.) (See 09-20-38 ANTENNA FEEDER NO.3 REMOVAL/INSTALLATION.) • If the glass antenna and antenna feeder are normal, replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)

6. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

ON-BOARD DIAGNOSTIC [AUDIO]

Antenna Control Condition Inspection

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. Tune in the radio.
4. While pressing the POWER/VOLUME switch, simultaneously press the SAT switch for **0.2 s or more**.
5. Inspect according to the following table:



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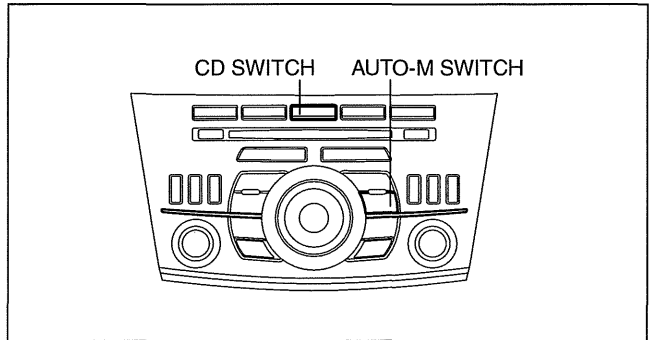
INSPECTION	DISPLAY	ACTION	
Launch the antenna control condition inspection mode.	ANT—ON	Sound quality good.	System is okay.
		Sound quality poor.	Inspect the glass antenna and antenna amplifier and antenna feeder. (See 09-20-26 GLASS ANTENNA INSPECTION.) (See 09-20-28 ANTENNA AMPLIFIER INSPECTION.) (See 09-20-34 ANTENNA FEEDER NO.1 INSPECTION.) (See 09-20-36 ANTENNA FEEDER NO.2 INSPECTION.) (See 09-20-39 ANTENNA FEEDER NO.3 INSPECTION.)
	ANT—OFF	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)	

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6. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

Audio Amplifier Control Condition Inspection

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. While pressing the AUTO-M switch, simultaneously press the CD switch for **0.2 s or more**.
4. Inspect according to the following table:



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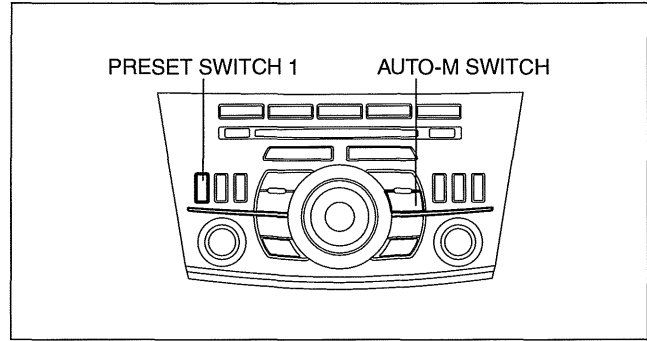
INSPECTION	DISPLAY	ACTION
Launch the audio amplifier control condition inspection mode.	AMP—ON	System is okay.
	AMP—OFF	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)

5. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

ON-BOARD DIAGNOSTIC [AUDIO]

Dial Inspection

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. While pressing the AUTO-M switch, simultaneously press the PRESET switch 1 for **0.2 s or more**.
4. Inspect according to the following table:



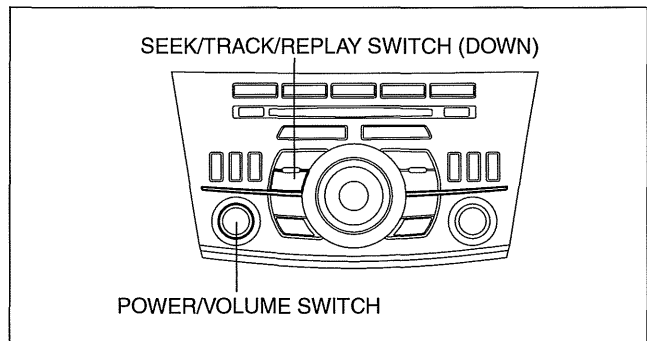
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INSPECTION	DISPLAY	ACTION	
<ul style="list-style-type: none"> • Launch the dial inspection mode. • Operate all of the dial. • Does the dial rotation direction correspond with the direction displayed in information display? 	→ ←	Yes	Dial is okay.
		No	Verify the switch. (See 09-03D-3 CONFIRMATION STEP 1: AUDIO PANEL SWITCH CONFIRMATION [ENTIRE AUDIO SYSTEM].)

5. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

Audio Amplifier Specification Inspection

1. Switch the ignition to ACC or ON.
2. While pressing the POWER/VOLUME switch, simultaneously press the SEEK/TRACK/REPLAY switch (down) for **0.2 s or more**.
3. Inspect according to the following table:



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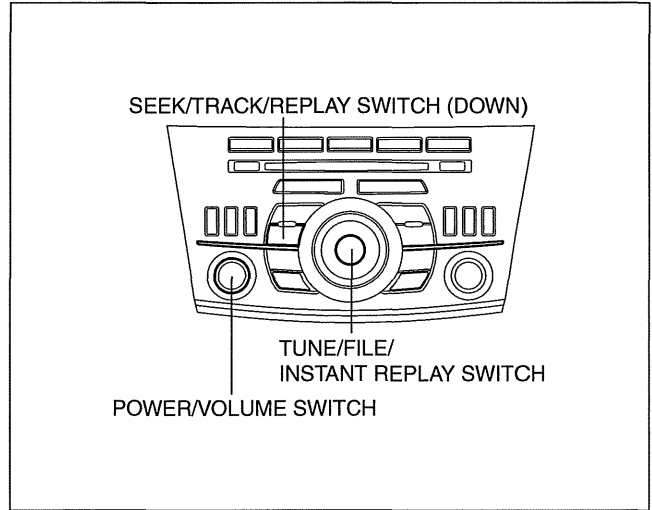
INSPECTION	DISPLAY	ACTION	
<ul style="list-style-type: none"> • Launch the audio amplifier specification inspection mode. • Verify the audio amplifier specification. • Does the audio amplifier specification correspond. 	Without Bose® •N (Normal) With Bose® •L (Line out)	Yes	System is okay.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/ INSTALLATION.)

4. To stop the diagnostic assist function, ignition is switched to off.

ON-BOARD DIAGNOSTIC [AUDIO]

Audio Amplifier (With Bose®) Identify Inspection

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. While pressing the POWER/VOLUME switch, simultaneously press the TUNE/FILE/INSTANT REPLAY switch and SEEK/TRACK/REPLAY switch (down) for **3 s or more**.
4. Inspect according to the following table:



INSPECTION	—	ACTION	
<ul style="list-style-type: none"> Launch the audio amplifier (With Bose®) identify inspection mode. Dose the audio amplifier specification correspond. 	<p style="text-align: center;">With normal seat The rear door speaker sounds.</p> <p style="text-align: center;">With leather seat The front door speaker sounds.</p>	Yes	Audio amplifier is okay.
		No	Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.)

5. Cancel the diagnostic assist function by either turning off the audio unit power or by switch the ignition to off.

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09-02H ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

FOREWORD [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)] 09-02H-1

DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].... 09-02H-2

 Using the M-MDS..... 09-02H-2

 Without Using M-MDS (On-board Diagnostic Test Mode) 09-02H-2

CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].... 09-02H-3

 Using the M-MDS..... 09-02H-3

 Without Using M-MDS (On-board Diagnostic Test Mode) 09-02H-3

DTC TABLE [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)] 09-02H-4

DTC: B1134:23, 26:Er85 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)] 09-02H-4

DTC: B116A:12, 26:Er82 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)] 09-02H-6

DTC: B116A:13, 26:Er84 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]..... 09-02H-7

DTC: B116A:16, 26:Er83 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]..... 09-02H-9

DTC: B116A:44, 26:Er86 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]..... 09-02H-10

DIAGNOSTIC ASSIST FUNCTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]..... 09-02H-11

 Software Version Verification..... 09-02H-11

 Connection Condition Verification..... 09-02H-11

 Password Reset 09-02H-12

09-02H

FOREWORD [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g8441800

- The Bluetooth system (hands-free telephone (HF/TEL) system) has an on-board diagnostic function and diagnostic assist function to facilitate Bluetooth system (hands-free telephone (HF/TEL) system) diagnosis.
- On-board diagnostic function**
- The on-board diagnostic function consists of the following functions: A malfunction detection function, which detects overall malfunctions in the audio system-related parts; a memory function, which stores detected DTCs; and a display function, which indicates system malfunctions via a DTC display.
 - The memory function converts a malfunction detected by the malfunction detection function to a DTC and stores it. The error currently occurring is stored as a present malfunction. Up to five DTCs can be stored as a present malfunction.
 - There are two methods for reading and clearing DTCs. They include activation of the on-board diagnostic test mode of the on-board diagnostic function, which is operated using the audio unit, and the M-MDS. The displayed DTCs differ depending on whether the on-board diagnostic test mode or the M-MDS method is used. Additionally, because some DTCs are not displayed in the on-board diagnostic test mode, use the M-MDS before performing the procedure.
- On-board diagnostic test mode**
- To display DTCs on the information display that have been recorded in the memory function, activate the on-board diagnostic function by operating the audio unit.
- Using the M-MDS**
- When a DTC inspection is performed using the M-MDS, the malfunction diagnostics for the audio system, Bluetooth system (hands-free telephone (HF/TEL) system), and the SIRIUS satellite radio system is initiated. A maximum of 5 DTCs detected by the malfunction diagnostics are displayed.
- Diagnostic assist function**
- The diagnostic assist function enables verification of the connection condition of the Bluetooth system (hands-free telephone (HF/TEL) system) related parts and their specification. The password for the Bluetooth system (hands-free telephone (HF/TEL) system), which is set by the user, can also be reset.

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

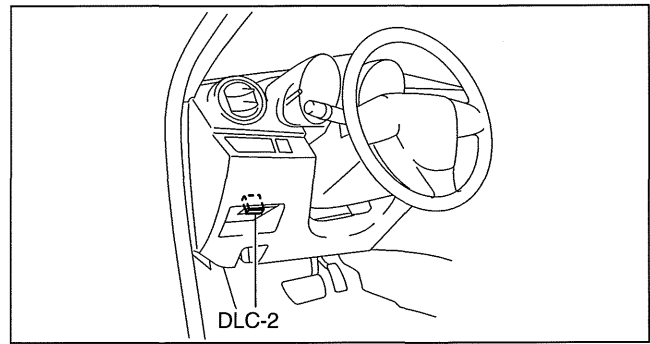
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Note

- All DTCs displayed in the DTC inspection should be entered in the Audio Repair Order Form.

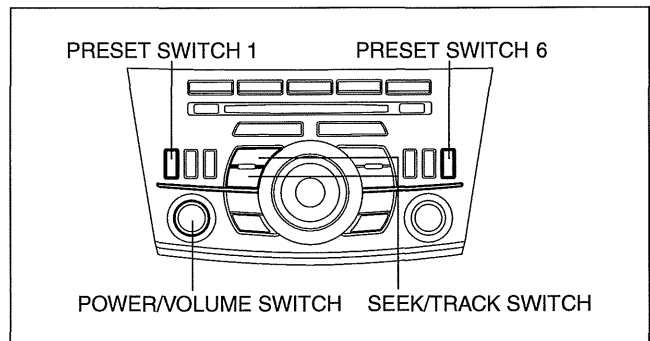
Using the M-MDS

- Connect the M-MDS to the DLC-2.
- After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "ACU".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "ACU".
 - Select "Self Test".
- Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
- After completion of repairs, clear all DTCs stored in the Bluetooth unit. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)



Without Using M-MDS (On-board Diagnostic Test Mode)

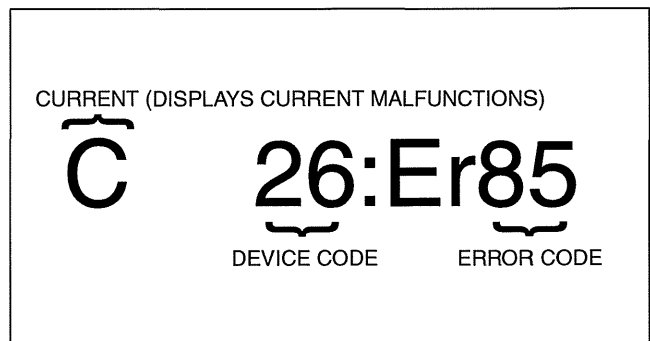
- Switch the ignition to ACC or ON.
- While pressing the POWER/VOLUME switch, simultaneously press the PRESET switch 1 and the PRESET switch 6 for **2 s or more**.



Note

- If several DTCs are in the memory, they can be displayed using the SEEK/TRACK switch (up or down).

- To stop the on-board diagnostic test mode, ignition is switched to off.



ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

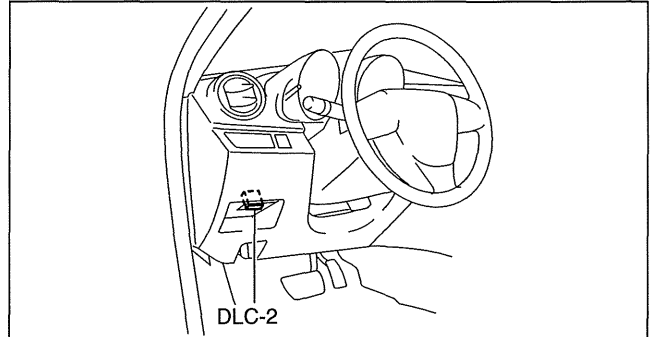
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Caution

- Before clearing the DTCs, be sure to enter all of the DTCs displayed in the DTC inspection in the Audio Repair Order Form.

Using the M-MDS

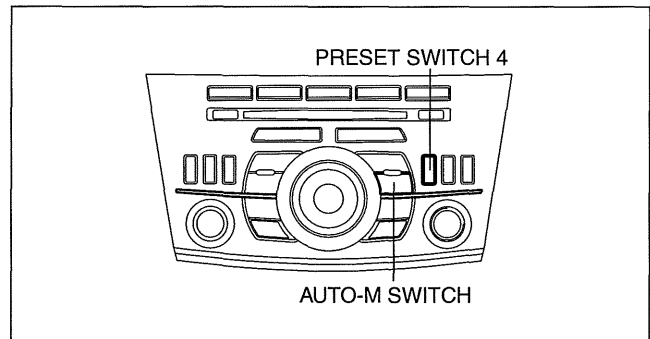
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ACU".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ACU".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
8. Verify that no DTCs are displayed.



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Without Using M-MDS (On-board Diagnostic Test Mode)

1. Launch the on-board diagnostic test mode. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
2. While pressing the AUTO-M switch, simultaneously press the PRESET switch 4 for **2 s or more**.
3. To stop the on-board diagnostic test mode, ignition is switched to off.



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09-02H

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

DTC TABLE [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g885700

DTC		Description	Reference
M-MDS display	Information display (On-board diagnostic test mode)		
B1134:23	26:Er85	Steering switch circuit malfunction	(See 09-02H-4 DTC: B1134:23, 26:Er85 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:12	26:Er82	Microphone circuit malfunction	(See 09-02H-6 DTC: B116A:12, 26:Er82 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:13	26:Er84	Microphone circuit malfunction	(See 09-02H-7 DTC: B116A:13, 26:Er84 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:16	26:Er83	Microphone circuit malfunction	(See 09-02H-9 DTC: B116A:16, 26:Er83 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
B116A:44	26:Er86	Bluetooth unit internal malfunction	(See 09-02H-10 DTC: B116A:44, 26:Er86 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
U0498:68	26:Er81	CAN system communication error	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
—	No Err	DTC is not recorded.	—

DTC: B1134:23, 26:Er85 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g8440000

DESCRIPTION	Steering switch circuit malfunction
DETECTION CONDITION	Steering switch input signal is detected continuously for 2 min or more
POSSIBLE CAUSE	<ul style="list-style-type: none"> Connector or terminal malfunction Steering switch malfunction Clock spring malfunction Short to ground in wiring harness between the following terminals: — Steering switch terminal N and Bluetooth unit terminal F Bluetooth unit malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>STEERING SWITCH WIRING HARNESS-SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>Bluetooth UNIT WIRING HARNESS-SIDE CONNECTOR</p> </div> </div>	

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

Diagnostic Procedure

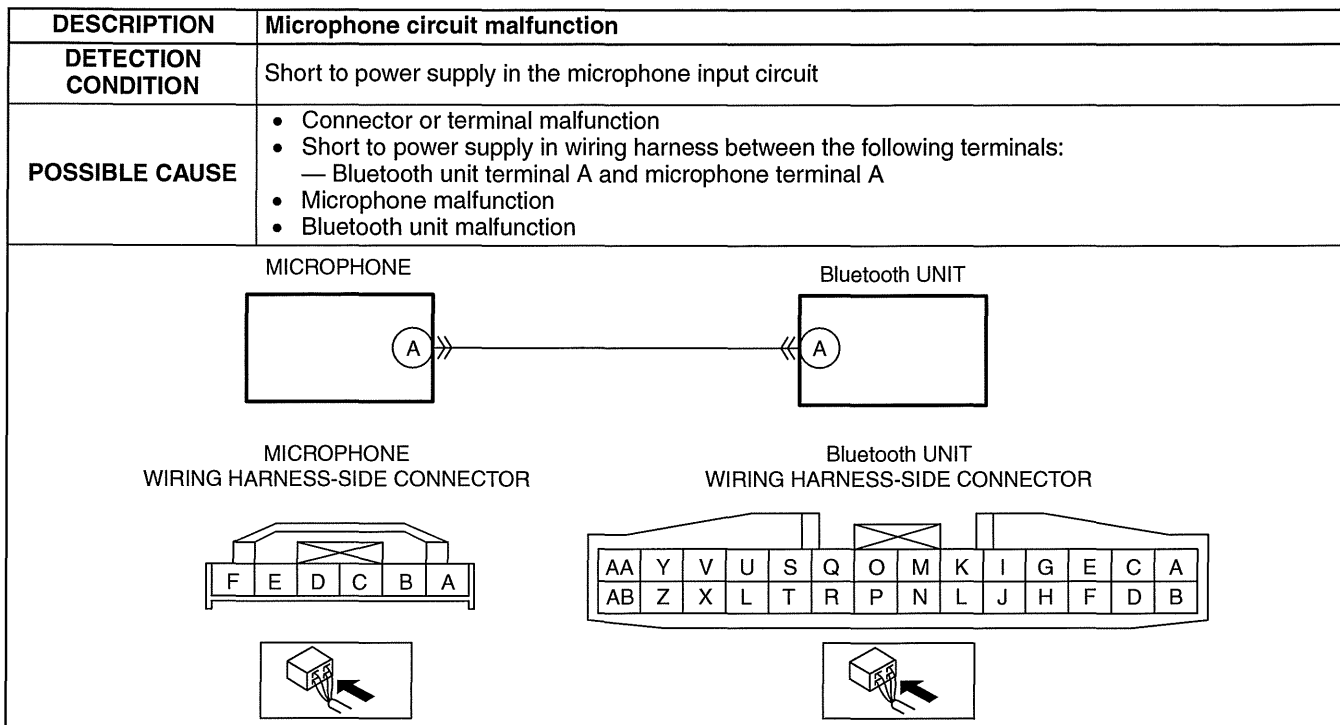
Step	Inspection	Action	
1	INSPECT STEERING SWITCH CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the steering switch connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 7.
		No	Go to the next step.
2	INSPECT CLOCK SPRING CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the clock spring connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 7.
		No	Go to the next step.
3	INSPECT Bluetooth UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the Bluetooth unit connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 7.
		No	Go to the next step.
4	INSPECT STEERING SWITCH <ul style="list-style-type: none"> • Inspect the steering switch. (See 09-20-46 STEERING SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the steering switch, then go to Step 7. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT CLOCK SPRING <ul style="list-style-type: none"> • Inspect the clock spring. (See 08-10-23 CLOCK SPRING INSPECTION.) • Is there any malfunction? 	Yes	Replace the clock spring, then go to Step 7. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT STEERING SWITCH INPUT CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Make sure reconnect the disconnected connectors. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Bluetooth unit terminal F • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Switch the ignition to off. • Reconnect the negative battery cable. • Clear the DTC from the Bluetooth unit memory. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Perform the Bluetooth unit DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Is the same DTC present? 	Yes	Replace the Bluetooth unit, then go to the next step. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02H-4 DTC TABLE [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
		No	DTC troubleshooting completed.

09-02H

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

DTC: B116A:12, 26:Er82 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g8440100



Diagnostic Procedure

Step	Inspection		Action
1	INSPECT MICROPHONE CONNECTOR CONDITION <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the microphone connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 4.
		No	Go to the next step.
2	INSPECT Bluetooth UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the Bluetooth unit connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 4.
		No	Go to the next step.
3	INSPECT MICROPHONE INPUT CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Make sure reconnect the disconnected connectors. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Bluetooth unit terminal A • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the Bluetooth unit memory. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Perform the Bluetooth unit DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Is the same DTC present? 	Yes	Replace the microphone, then go to the next step. (See 09-20-50 MICROPHONE REMOVAL/INSTALLATION.)
		No	Go to the step 6.

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

Step	Inspection	Action	
2	INSPECT Bluetooth UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> • Disconnect the Bluetooth unit connector. • Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 5.
		No	Go to the next step.
3	INSPECT MICROPHONE CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Bluetooth unit terminal E and microphone terminal E • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 5.
4	INSPECT MICROPHONE INPUT CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Bluetooth unit terminal A and body ground • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to the next step.
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the Bluetooth unit memory. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Perform the Bluetooth unit DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Is the same DTC present? 	Yes	Replace the microphone then go to the next step. (See 09-20-50 MICROPHONE REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the Bluetooth unit memory. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Perform the Bluetooth unit DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) • Is the same DTC present? 	Yes	Replace the Bluetooth unit, then go to the next step. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02H-4 DTC TABLE [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

DTC: B116A:16, 26:Er83 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g8440300

DESCRIPTION	Microphone circuit malfunction
DETECTION CONDITION	Short to ground in microphone power supply circuit
POSSIBLE CAUSE	<ul style="list-style-type: none"> Connector or terminal malfunction Short to ground in wiring harness between the following terminals: — Bluetooth unit terminal C and microphone terminal C Microphone malfunction Bluetooth unit malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT MICROPHONE CONNECTOR CONDITION <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the microphone connector. Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 5.
		No	Go to the next step.
2	INSPECT Bluetooth UNIT CONNECTOR CONDITION <ul style="list-style-type: none"> Disconnect the Bluetooth unit connector. Inspect the connector for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector or terminal, then go to Step 5.
		No	Go to the next step.
3	INSPECT MICROPHONE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Microphone terminal C Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 5.
		No	Go to the next step.
4	INSPECT Bluetooth UNIT POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> Make sure reconnect the disconnected connectors. Reconnect the negative battery cable. Switch the ignition to ON. Measure the voltage at the following terminal (wiring harness-side): — Bluetooth unit terminal C Is there any voltage? 	Yes	Replace the microphone, then go to the next step. (See 09-20-50 MICROPHONE REMOVAL/INSTALLATION.)
		No	Go to the next step.

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ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

Step	Inspection	Action	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the Bluetooth unit memory. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) Perform the Bluetooth unit DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) Is the same DTC present? 	Yes	Replace the Bluetooth unit, then go to the next step. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02H-4 DTC TABLE [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
		No	DTC troubleshooting completed.

DTC: B116A:44, 26:Er86 [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g8440400

DESCRIPTION	Bluetooth unit internal malfunction
DETECTION CONDITION	Bluetooth unit detects the internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Bluetooth unit malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	CONFIRM Bluetooth UNIT DTC <ul style="list-style-type: none"> Clear the DTC from the Bluetooth unit memory. (See 09-02H-3 CLEARING DTC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) Perform the Bluetooth unit DTC inspection. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].) Is the same DTC present? 	Yes	Replace the Bluetooth unit, then go to the next step. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02H-4 DTC TABLE [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

DIAGNOSTIC ASSIST FUNCTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0902g8804500

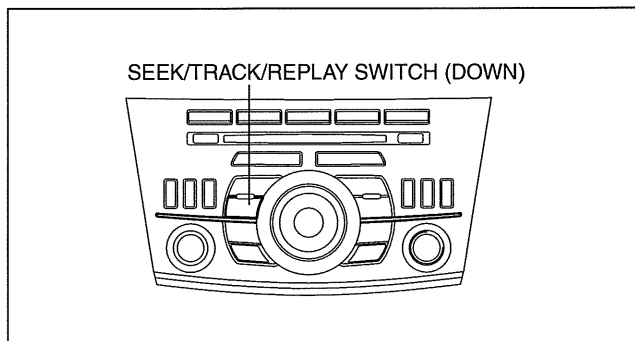
Software Version Verification

1. Launch the on-board diagnostic test mode. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
2. Press the SEEK/TRACK switch to display the oldest error code of the error codes that have been recorded.

Note

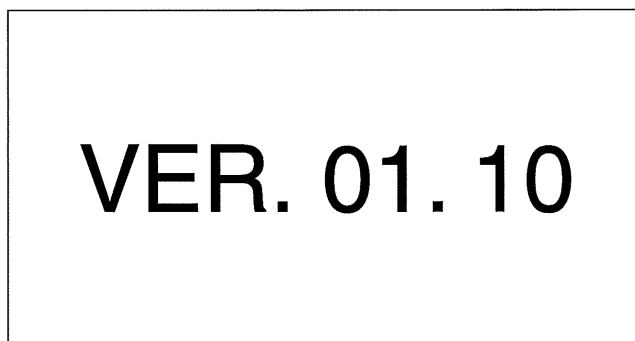
- If an error code has not been recorded, No Err is displayed.

3. Press the SEEK/TRACK/REPLAY switch (down).



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4. Verify the software version.
5. To stop the on-board diagnostic test mode, ignition is switched to off.

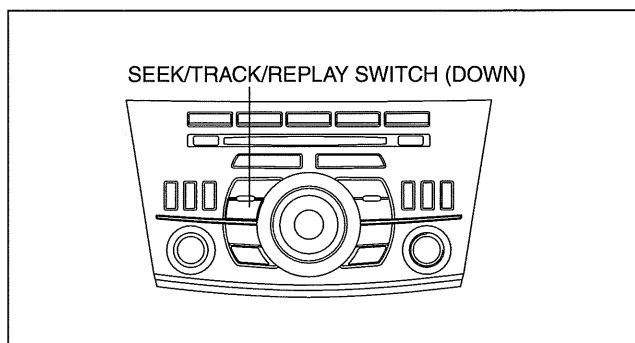


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09-02H

Connection Condition Verification

1. Launch the on-board diagnostic test mode. (See 09-02H-2 DTC INSPECTION [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)].)
2. Press SEEK/TRACK/REPLAY switch (down) to display the software version.
3. Press the SEEK/TRACK/REPLAY switch (down).



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ON-BOARD DIAGNOSTIC [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

4. Verify the connected unit.
5. To stop the on-board diagnostic test mode, ignition is switched to off.

WITHOUT Bose®

AUDIO only

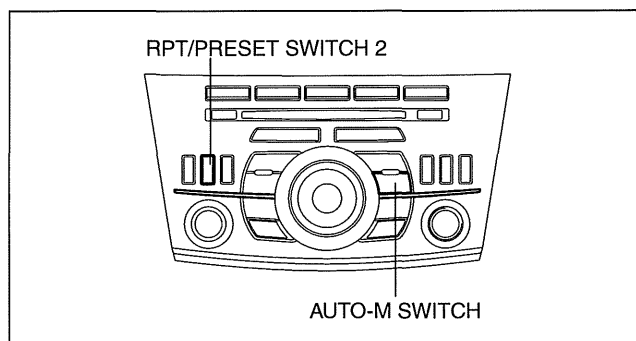
WITH Bose®

AUDIO & AMP

am3uuw0000311

Password Reset

1. Switch the ignition to ACC or ON.
2. Press the RPT/PRESET switch 2 while pressing the AUTO-M switch until the password reset verification beep sound is heard.



am3uuw0000311

3. Verify that "PASSWD CLEAR" (with CD player) or "Cleared" (with CD changer) is displayed in the information display.
4. To stop the diagnostic assist function, ignition is switched to off.

WITH CD PLAYER

PASSWD CLEAR

WITH CD CHANGER

Cleared

am3uuw0000564

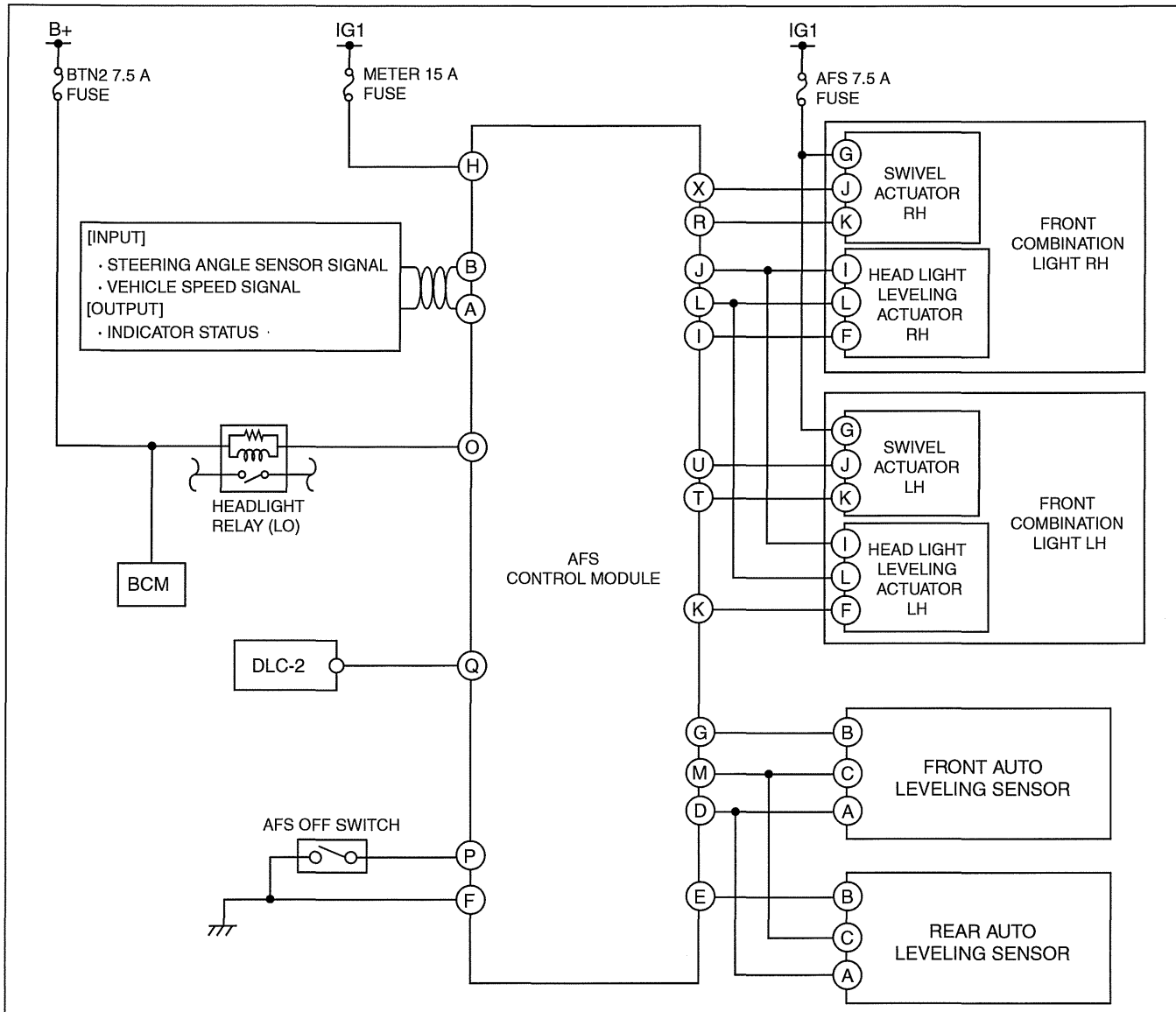
09-02I ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-2	DTC B10A4:87 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-13
DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-2	DTC C1B00:54 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-15
CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-3	DTC U0401:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-16
DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-3	DTC U0422:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-16
DTC B1041:54 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-4	DTC U3000:49 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-17
DTC B1043:01 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-5	DTC U3003:16 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-17
DTC B1044:01 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-7	DTC U3003:17 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-19
DTC B10A3:86 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-9	PID/DATA MONITOR INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].	09-02I-20
DTC B10A3:87 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-10	PID/DATA MONITOR TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].	09-02I-20
DTC B10A4:86 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	09-02I-12		

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9960000

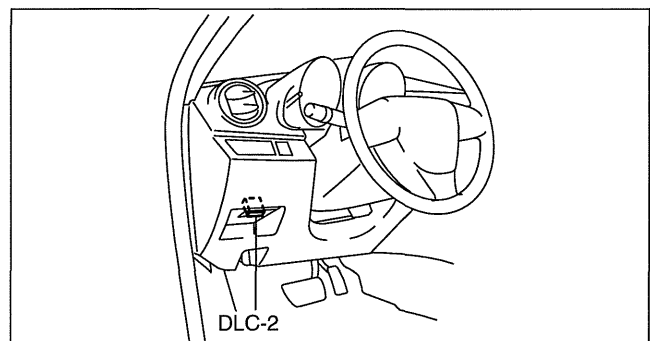


am3uun0000120

DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9960300

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "AFS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "AFS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the AFS control module. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)



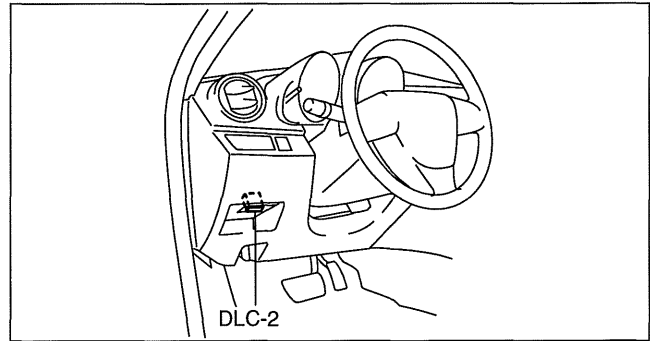
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ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "AFS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "AFS".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform the DTC inspection. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
8. Verify that no DTCs are displayed.



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DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9960500

DTC No.	Description	Reference
B1041:54	Auto leveling system initialization error	(See 09-02I-4 DTC B1041:54 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
B1043:01	Front auto leveling sensor circuit malfunction	(See 09-02I-5 DTC B1043:01 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
B1044:01	Rear auto leveling sensor circuit malfunction	(See 09-02I-7 DTC B1044:01 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
B10A3:86	Swivel actuator (LH) signal malfunction	(See 09-02I-9 DTC B10A3:86 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
B10A3:87	Communication error with swivel actuator (LH)	(See 09-02I-10 DTC B10A3:87 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
B10A4:86	Swivel actuator (RH) signal malfunction	(See 09-02I-12 DTC B10A4:86 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
B10A4:87	Communication error with swivel actuator (RH)	(See 09-02I-13 DTC B10A4:87 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
C1B00:54	Communication error with steering angle sensor	(See 09-02I-15 DTC C1B00:54 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
U0001:88	AFS control module communication error (HS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0100:00	Communication error with PCM	
U0140:00	Communication error with BCM	
U0401:00	Communication error with PCM	(See 09-02I-16 DTC U0401:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
U0422:00	Communication error with BCM	(See 09-02I-16 DTC U0422:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
U3000:49	AFS control module internal malfunction	(See 09-02I-17 DTC U3000:49 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)

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ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC No.	Description	Reference
U3003:16	Low power supply circuit voltage	(See 09-02I-17 DTC U3003:16 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
U3003:17	High power supply circuit voltage	(See 09-02I-19 DTC U3003:17 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)

DTC B1041:54 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934000

DESCRIPTION	Auto leveling system initialization error
DETECTION CONDITION	<ul style="list-style-type: none"> • Auto leveling system initialization has not been completed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Auto leveling system initialization error • AFS control module malfunction

Diagnostic Procedure

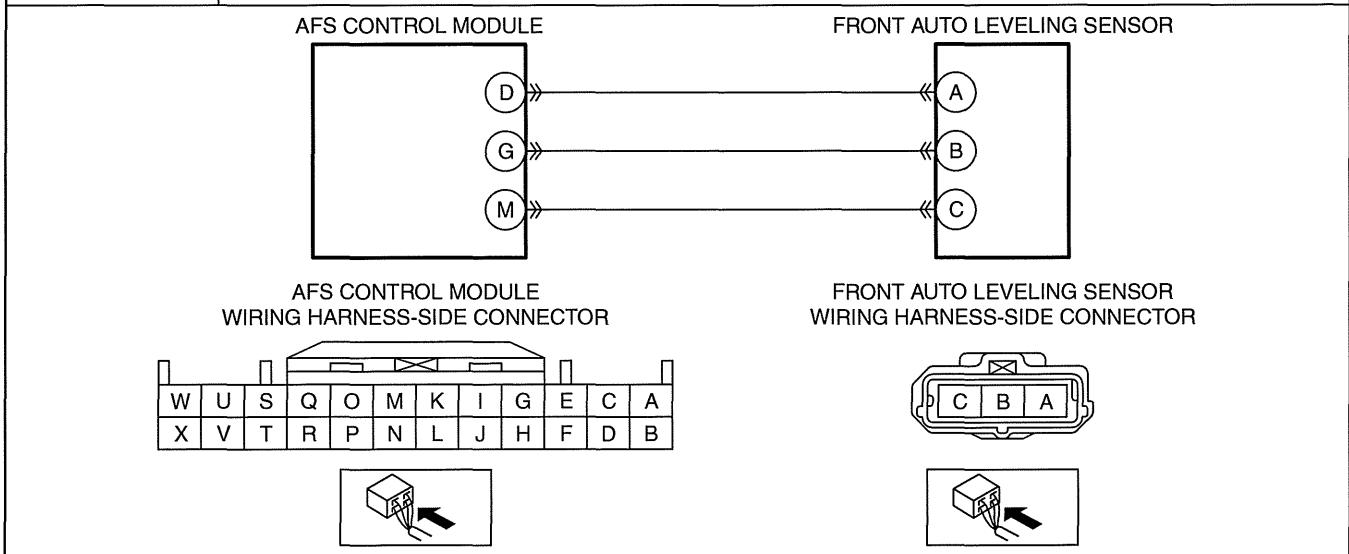
STEP	INSPECTION	ACTION				
1	PERFORM AUTO LEVELING SYSTEM INITIALIZATION <ul style="list-style-type: none"> • Perform the "AUTO LEVELING SYSTEM INITIALIZATION". (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.) • Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Perform the "AUTO LEVELING SYSTEM INITIALIZATION" again, then go to the next step. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to Step 3.</td> </tr> </table>	Yes	Perform the "AUTO LEVELING SYSTEM INITIALIZATION" again, then go to the next step. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)	No	Go to Step 3.
Yes	Perform the "AUTO LEVELING SYSTEM INITIALIZATION" again, then go to the next step. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)					
No	Go to Step 3.					
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)	No	Go to the next step.
Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)					
No	Go to the next step.					
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td>Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)</td> </tr> <tr> <td style="text-align: center;">No</td> <td>DTC troubleshooting completed.</td> </tr> </table>	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)	No	DTC troubleshooting completed.
Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)					
No	DTC troubleshooting completed.					

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC B1043:01 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934100

DESCRIPTION	Front auto leveling sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Front auto leveling sensor circuit voltage is out of range for 10 s or more, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front auto leveling sensor connector or terminals malfunction AFS control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal D—Front auto leveling sensor terminal A — AFS control module terminal G—Front auto leveling sensor terminal B — AFS control module terminal M—Front auto leveling sensor terminal C Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal D—Front auto leveling sensor terminal A — AFS control module terminal G—Front auto leveling sensor terminal B — AFS control module terminal M—Front auto leveling sensor terminal C Front auto leveling sensor malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal D—Front auto leveling sensor terminal A — AFS control module terminal G—Front auto leveling sensor terminal B — AFS control module terminal M—Front auto leveling sensor terminal C AFS control module malfunction



09-02I

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT FRONT AUTO LEVELING SENSOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front auto leveling sensor connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
2	INSPECT AFS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the AFS control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

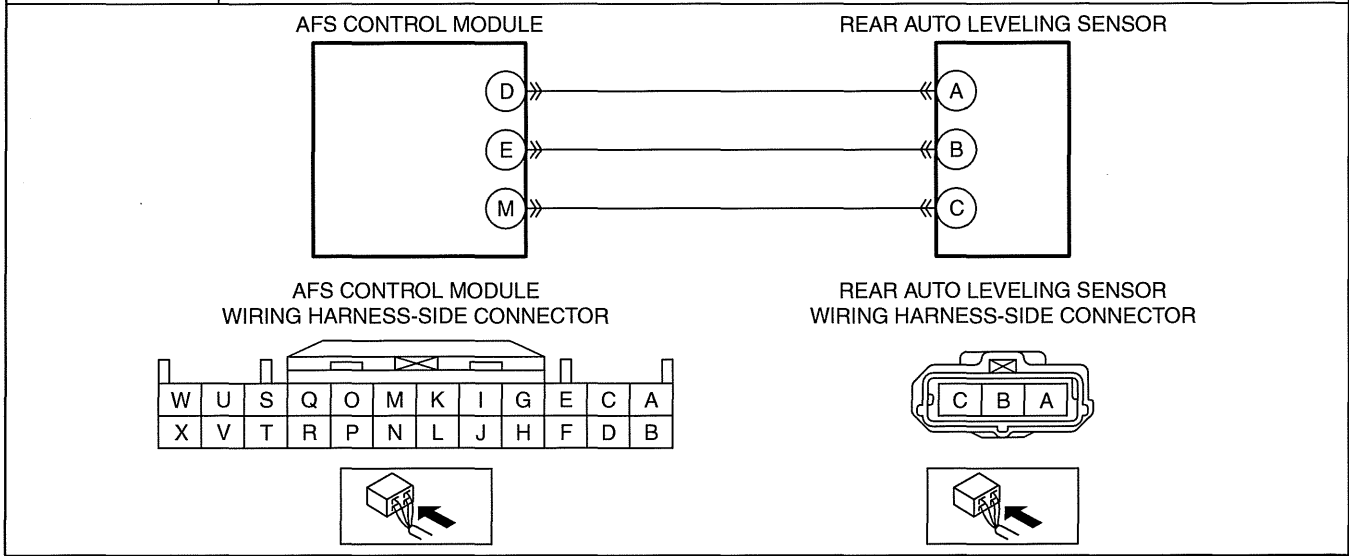
STEP	INSPECTION	ACTION	
3	INSPECT FRONT AUTO LEVELING SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Front auto leveling sensor and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front auto leveling sensor terminal A — Front auto leveling sensor terminal B — Front auto leveling sensor terminal C • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 7.
		No	Go to the next step.
4	INSPECT FRONT AUTO LEVELING SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Front auto leveling sensor and AFS control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Front auto leveling sensor terminal A — Front auto leveling sensor terminal B — Front auto leveling sensor terminal C • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
5	INSPECT FRONT AUTO LEVELING SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the front auto leveling sensor. (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.) • Is there any malfunction? 	Yes	Replace the front auto leveling sensor, then go to Step 7. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT FRONT AUTO LEVELING SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front auto leveling sensor and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — AFS control module terminal D—Front auto leveling sensor terminal A — AFS control module terminal G—Front auto leveling sensor terminal B — AFS control module terminal M—Front auto leveling sensor terminal C • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-021-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC B1044:01 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934200

DESCRIPTION	Rear auto leveling sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Rear auto leveling sensor circuit voltage is out of range for 10 s or more, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Rear auto leveling sensor connector or terminals malfunction AFS control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal D—Rear auto leveling sensor terminal A — AFS control module terminal E—Rear auto leveling sensor terminal B — AFS control module terminal M—Rear auto leveling sensor terminal C Short to power supply in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal D—Rear auto leveling sensor terminal A — AFS control module terminal E—Rear auto leveling sensor terminal B — AFS control module terminal M—Rear auto leveling sensor terminal C Rear auto leveling sensor malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal D—Rear auto leveling sensor terminal A — AFS control module terminal E—Rear auto leveling sensor terminal B — AFS control module terminal M—Rear auto leveling sensor terminal C AFS control module malfunction



09-02I

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT REAR AUTO LEVELING SENSOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the rear auto leveling sensor connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
2	INSPECT AFS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the AFS control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

STEP	INSPECTION	ACTION	
3	INSPECT REAR AUTO LEVELING SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Rear auto leveling sensor and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Rear auto leveling sensor terminal A — Rear auto leveling sensor terminal B — Rear auto leveling sensor terminal C • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 7.
		No	Go to the next step.
4	INSPECT REAR AUTO LEVELING SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Rear auto leveling sensor and AFS control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Rear auto leveling sensor terminal A — Rear auto leveling sensor terminal B — Rear auto leveling sensor terminal C • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
5	INSPECT REAR AUTO LEVELING SENSOR <ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the rear auto leveling sensor. (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.) • Is there any malfunction? 	Yes	Replace the rear auto leveling sensor, then go to Step 7. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/ INSTALLATION.)
		No	Go to the next step.
6	INSPECT REAR AUTO LEVELING SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rear auto leveling sensor and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — AFS control module terminal D—Rear auto leveling sensor terminal A — AFS control module terminal E—Rear auto leveling sensor terminal B — AFS control module terminal M—Rear auto leveling sensor terminal C • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-021-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC B10A3:86 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934400

DESCRIPTION	Swivel actuator (LH) signal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • AFS control module detects the swivel actuator (LH) signal malfunction when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Swivel actuator (LH) malfunction • AFS control module malfunction

Diagnostic Procedure

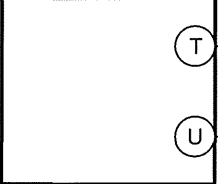
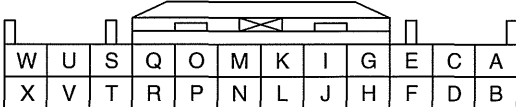
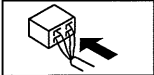
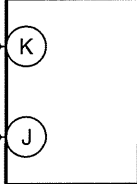

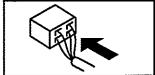
STEP	INSPECTION	ACTION
1	VERIFY SWIVEL ACTUATOR (LH) MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes Replace the front combination light (LH), then go to the next step. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
		No Go to Step 3.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-021-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC B10A3:87 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934500

DESCRIPTION	Communication error with swivel actuator (LH)
DETECTION CONDITION	<ul style="list-style-type: none"> Communication between AFS control module and swivel actuator (LH) is lost when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front combination light (LH) connector or terminals malfunction AFS control module connector or terminals malfunction Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal T—Front combination light (LH) terminal K — AFS control module terminal U—Front combination light (LH) terminal J Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal T—Front combination light (LH) terminal K — AFS control module terminal U—Front combination light (LH) terminal J Swivel actuator (LH) malfunction AFS control module malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>AFS CONTROL MODULE</p>  <p>AFS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>   </div> <div style="text-align: center;"> <p>SWIVEL ACTUATOR (LH)</p>  <p>FRONT COMBINATION LIGHT (LH) WIRING HARNESS-SIDE CONNECTOR</p>   </div> </div>	

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT FRONT COMBINATION LIGHT (LH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the front combination light (LH) connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT AFS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the AFS control module connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT SWIVEL ACTUATOR (LH) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Front combination light (LH) and AFS control module connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front combination light (LH) terminal K — Front combination light (LH) terminal J Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

STEP	INSPECTION	ACTION
4	INSPECT SWIVEL ACTUATOR (LH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front combination light (LH) and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — AFS control module terminal T—Front combination light (LH) terminal K — AFS control module terminal U—Front combination light (LH) terminal J • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	VERIFY SWIVEL ACTUATOR (LH) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes Replace the front combination light (LH), then go to the next step. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
		No Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-021-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No DTC troubleshooting completed.

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ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC B10A4:86 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934600

DESCRIPTION	Swivel actuator (RH) signal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • AFS control module detects the swivel actuator (RH) signal malfunction when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Swivel actuator (RH) malfunction • AFS control module malfunction

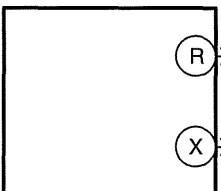
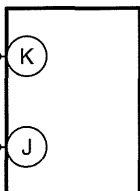
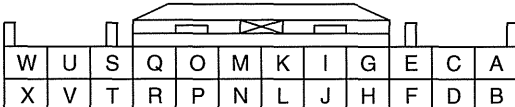
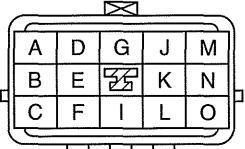
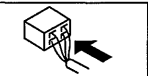
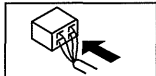
Diagnostic Procedure

STEP	INSPECTION		ACTION
1	VERIFY SWIVEL ACTUATOR (RH) MALFUNCTION <ul style="list-style-type: none"> • Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the front combination light (RH), then go to the next step. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
		No	Go to Step 3.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC B10A4:87 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934700

DESCRIPTION	Communication error with swivel actuator (RH)
DETECTION CONDITION	<ul style="list-style-type: none"> • Communication between AFS control module and swivel actuator (RH) is lost when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Front combination light (RH) connector or terminals malfunction • AFS control module connector or terminals malfunction • Short to ground in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal R—Front combination light (RH) terminal K — AFS control module terminal X—Front combination light (RH) terminal J • Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — AFS control module terminal R—Front combination light (RH) terminal K — AFS control module terminal X—Front combination light (RH) terminal J • Swivel actuator (RH) malfunction • AFS control module malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>AFS CONTROL MODULE</p>  </div> <div style="text-align: center;"> <p>SWIVEL ACTUATOR (RH)</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>AFS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR</p>  </div> <div style="text-align: center;"> <p>FRONT COMBINATION LIGHT (RH) WIRING HARNESS-SIDE CONNECTOR</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div>	

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Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT FRONT COMBINATION LIGHT (RH) CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the front combination light (RH) connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT AFS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the AFS control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
3	INSPECT SWIVEL ACTUATOR (RH) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Front combination light (RH) and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Front combination light (RH) terminal K — Front combination light (RH) terminal J • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 6.
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

STEP	INSPECTION	ACTION	
4	INSPECT SWIVEL ACTUATOR (RH) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Front combination light (RH) and AFS control module connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — AFS control module terminal R—Front combination light (RH) terminal K — AFS control module terminal X—Front combination light (RH) terminal J • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
5	VERIFY SWIVEL ACTUATOR (RH) MALFUNCTION <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the front combination light (RH), then go to the next step. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-021-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC C1B00:54 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934800

DESCRIPTION	Communication error with steering angle sensor
DETECTION CONDITION	<ul style="list-style-type: none"> AFS control module receives the invalid signal of steering angle sensor from BCM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BCM DTC is stored Steering angle sensor malfunction AFS control module malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Perform the "DTC INSPECTION" to confirm the BCM DTC. (See 09-02F-7 DTC INSPECTION [BCM].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.
2	INSPECT STEERING ANGLE SENSOR <ul style="list-style-type: none"> Inspect the steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.) Is there any malfunction? 	Yes	Replace the steering angle sensor, then go to the next step. (See 09-18-56 COMBINATION SWITCH REMOVAL/ INSTALLATION.)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the AFS DTC. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

09-02I

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC U0401:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9934900

DESCRIPTION	Communication error with PCM
DETECTION CONDITION	<ul style="list-style-type: none"> AFS control module receives the invalid data from PCM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored AFS control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the AFS DTC. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

DTC U0422:00 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9935000

DESCRIPTION	Communication error with BCM
DETECTION CONDITION	<ul style="list-style-type: none"> AFS control module receives the invalid data from BCM when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BCM DTC is stored AFS control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM BCM DTC <ul style="list-style-type: none"> Perform the "DTC INSPECTION" to confirm the BCM DTC. (See 09-02F-7 DTC INSPECTION [BCM].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)
		No	Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the AFS DTC. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC U3000:49 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9935100

DESCRIPTION	AFS control module internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> AFS control module detects the internal failure when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> AFS control module internal malfunction

Diagnostic Procedure

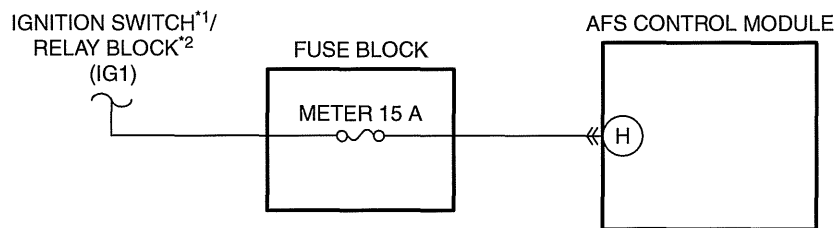
STEP	INSPECTION		ACTION
1	CONFIRM AFS DTC <ul style="list-style-type: none"> Clear the DTC from AFS control module using the M-MDS. (See 09-021-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-021-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-021-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

DTC U3003:16 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

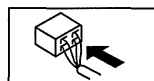
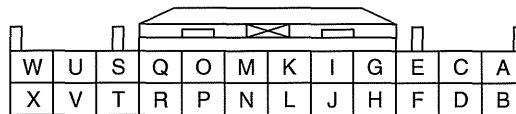
id0902g9935200

09-021

DESCRIPTION	Low power supply circuit voltage
DETECTION CONDITION	<ul style="list-style-type: none"> AFS control module power supply circuit voltage is lower than 9 V for 10 s or more, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Battery malfunction Generator malfunction AFS control module connector or terminals malfunction Open circuit or short to ground in AFS control module power supply circuit: <ul style="list-style-type: none"> Short to ground in wiring harness between ignition switch^{*1}/relay block^{*2} and AFS control module terminal H METER 15 A fuse malfunction Open circuit in wiring harness between ignition switch^{*1}/relay block^{*2} and AFS control module terminal H AFS control module malfunction



AFS CONTROL MODULE
WIRING HARNESS-SIDE CONNECTOR



*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	INSPECT AFS CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the AFS control module connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • AFS control module connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): — AFS control module terminal H • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the METER 15 A fuse. If the fuse is melt: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. • Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> • Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

DTC U3003:17 [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9935300

DESCRIPTION	High power supply circuit voltage
DETECTION CONDITION	<ul style="list-style-type: none"> AFS control module power supply circuit voltage is higher than 16 V for 10 s or more, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Battery malfunction Generator malfunction AFS control module malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the battery, then go to Step 4. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from AFS control module using the M-MDS. (See 09-02I-3 CLEARING DTC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]).) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the AFS DTC. (See 09-02I-2 DTC INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]).) Is the same DTC present? 	Yes	Replace the AFS control module, then go to the next step. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02I-3 DTC TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].)
		No	DTC troubleshooting completed.

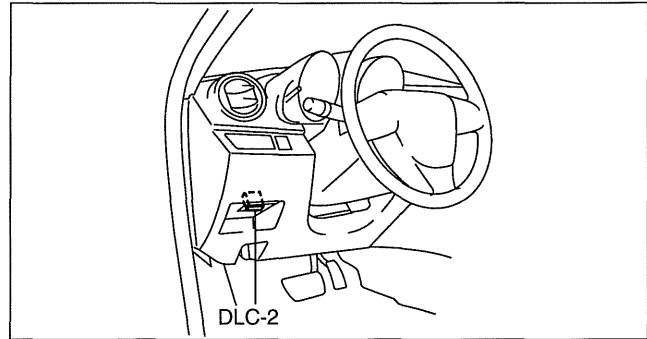
09-02I

ON-BOARD DIAGNOSTIC [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

PID/DATA MONITOR INSPECTION [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9960600

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "AFS".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "AFS".
 3. Select "DataLogger".
3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.



am3uuw0000425

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0902g9960700

PID Name	Unit/Status	Description	Inspection Item	Terminal
AFS_SW	Off/On	<ul style="list-style-type: none"> • AFS OFF switch in off position: On • AFS OFF switch in on position: Off 	AFS OFF switch	P
F_CAL	V	<ul style="list-style-type: none"> • Indicate the front auto leveling sensor calibration voltage. 	Front auto leveling sensor	—
F_LEVEL	V	<ul style="list-style-type: none"> • Indicate the front auto leveling sensor voltage. 	Front auto leveling sensor	G
LBEAMSW	Off/On	<ul style="list-style-type: none"> • Light switch at LO position: On • Light switch not at LO position: Off 	Light switch	O
R_CAL	V	<ul style="list-style-type: none"> • Indicate the rear auto leveling sensor calibration voltage. 	Rear auto leveling sensor	—
R_GEAR_SW	Not_R/R	<ul style="list-style-type: none"> • Shift the selector lever to R position: R • Other than these conditions: Not_R 	TR switch (ATX)/ Back-up light switch (MTX)	A, B
R_LEVEL	V	<ul style="list-style-type: none"> • Indicate the rear auto leveling sensor voltage. 	Rear auto leveling sensor	E
RPM	RPM	<ul style="list-style-type: none"> • Indicate the engine speed. 	AFS control module	A, B
STEER_ANGL	°	<ul style="list-style-type: none"> • Indicate the steering wheel angle. 	AFS control module	A, B
VPWR	V	<ul style="list-style-type: none"> • Indicate the AFS control module power supply voltage. 	Battery	H
VSPD	KPH, MPH	<ul style="list-style-type: none"> • Indicate the vehicle speed. 	AFS control module	A, B

09-02J ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

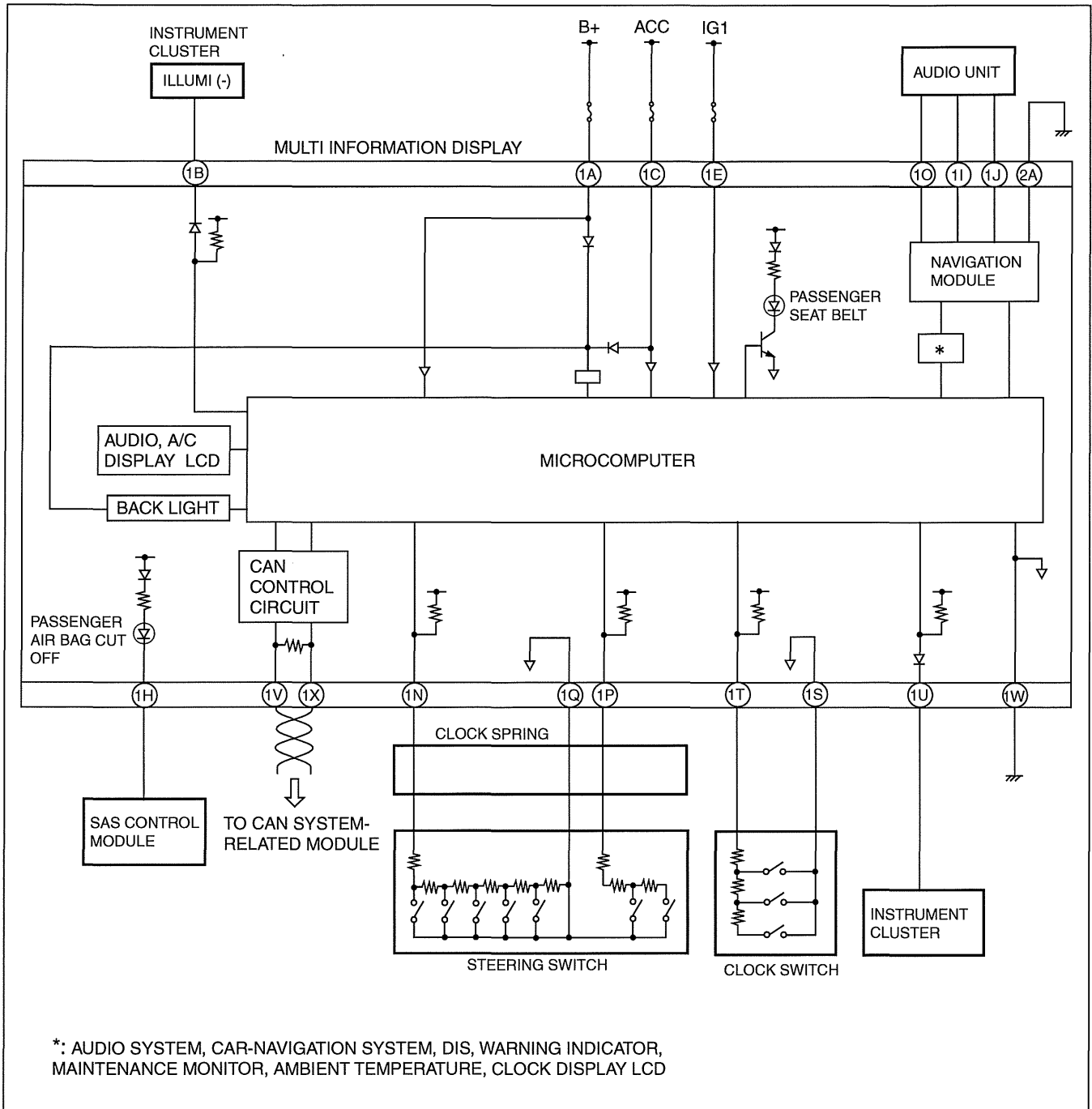
ON-BOARD DIAGNOSTIC WIRING
DIAGRAM
[MULTI INFORMATION DISPLAY] 09-02J-2
DTC INSPECTION
[MULTI INFORMATION DISPLAY] 09-02J-3
CLEARING DTC
[MULTI INFORMATION DISPLAY] 09-02J-3
DTC TABLE
[MULTI INFORMATION DISPLAY] 09-02J-4
PID/DATA MONITOR INSPECTION
[MULTI INFORMATION DISPLAY] 09-02J-4
PID/DATA MONITOR TABLE
[MULTI INFORMATION DISPLAY] 09-02J-4
DTC B1317
[MULTI INFORMATION DISPLAY] 09-02J-5

DTC B1318
[MULTI INFORMATION DISPLAY] 09-02J-6
DTC B1342
[MULTI INFORMATION DISPLAY] 09-02J-7
DTC B1893
[MULTI INFORMATION DISPLAY] 09-02J-8
DTC B2477
[MULTI INFORMATION DISPLAY] 09-02J-9
DTC C1976
[MULTI INFORMATION DISPLAY] 09-02J-10
DTC U0423
[MULTI INFORMATION DISPLAY] 09-02J-12

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [MULTI INFORMATION DISPLAY]

id0902i4960000



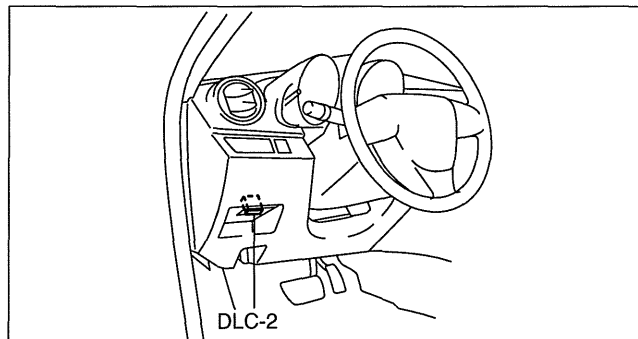
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ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

DTC INSPECTION [MULTI INFORMATION DISPLAY]

id0902i4960300

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "MID".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "MID".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the multi information display. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].)

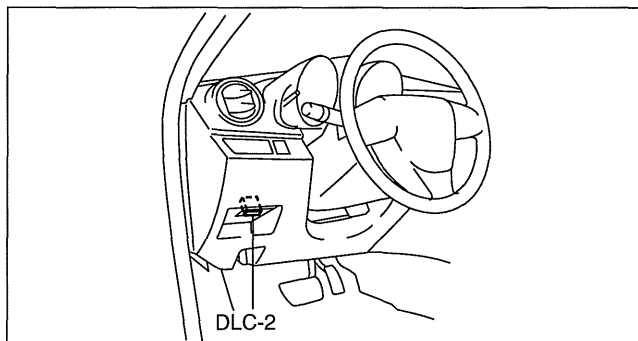


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CLEARING DTC [MULTI INFORMATION DISPLAY]

id0902i4960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "MID".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "MID".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform the DTC inspection. (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].)
8. Verify that no DTCs are displayed.



am3uuw0000265

09-02J

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

DTC TABLE [MULTI INFORMATION DISPLAY]

id0902i4960500

DTC No.	Description	Reference
B1317	High power supply circuit voltage	(See 09-02J-5 DTC B1317 [MULTI INFORMATION DISPLAY].)
B1318	Low power supply circuit voltage	(See 09-02J-6 DTC B1318 [MULTI INFORMATION DISPLAY].)
B1342	Multi information display internal malfunction	(See 09-02J-7 DTC B1342 [MULTI INFORMATION DISPLAY].)
B1893*1	Open circuit in GPS antenna circuit	(See 09-02J-8 DTC B1893 [MULTI INFORMATION DISPLAY].)
B2477	Multi information display configuration error	(See 09-02J-9 DTC B2477 [MULTI INFORMATION DISPLAY].)
C1976	Open circuit in steering switch circuit	(See 09-02J-10 DTC C1976 [MULTI INFORMATION DISPLAY].)
U0155	Communication error with instrument cluster	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0164*2	Communication error with climate control unit	
U0184	Communication error with audio unit	
U0423	Communication error with instrument cluster	(See 09-02J-12 DTC U0423 [MULTI INFORMATION DISPLAY].)
U2516	Communication error (MS-CAN)	(See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

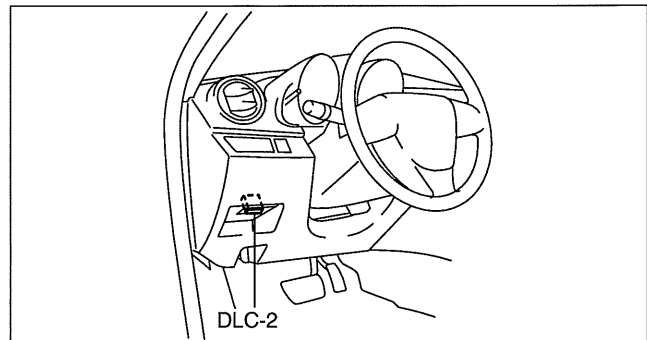
*1 : Vehicles with car-navigation system

*2 : Full-auto air conditioner

PID/DATA MONITOR INSPECTION [MULTI INFORMATION DISPLAY]

id0902i4960600

- Connect the M-MDS to the DLC-2.
- After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "MID".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "MID".
 - Select "DataLogger".
- Select the applicable PID from the PID table.
- Verify the PID data according to the directions on the screen.



am3uuw0000427

Note

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

PID/DATA MONITOR TABLE [MULTI INFORMATION DISPLAY]

id0902i4960700

PID Name	Unit/Status	Description	Inspection Item	Terminal
DTC_CNT	—	<ul style="list-style-type: none"> Indicate the number of stored DTC in multi information display. 	Multi information display	—
VPWR	V	<ul style="list-style-type: none"> Indicate the multi information display power supply voltage. 	Multi information display	1A

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

DTC B1317 [MULTI INFORMATION DISPLAY]

id0902i4935400

DESCRIPTION	High power supply circuit voltage
DETECTION CONDITION	<ul style="list-style-type: none"> Multi information display power supply circuit voltage is higher than 16 V when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Battery malfunction Generator malfunction Multi information display malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the battery, then go to Step 4. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the multi information display DTC. (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

09-02J

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

DTC B1318 [MULTI INFORMATION DISPLAY]

id0902i4935500

DESCRIPTION	Low power supply circuit voltage																								
DETECTION CONDITION	<ul style="list-style-type: none"> • Multi information display power supply circuit voltage is lower than 10 V when the ignition is ON. 																								
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM DTC is stored • Battery malfunction • Generator malfunction • Multi information display connector or terminals malfunction • Open circuit or short to ground in wiring harness between ignition switch^{*1}/relay block^{*2} and multi information display terminal 1E <ul style="list-style-type: none"> — Short to ground in wiring harness between ignition switch^{*1}/relay block^{*2} and multi information display terminal 1E — METER 15 A fuse malfunction — Open circuit in wiring harness between ignition switch^{*1}/relay block^{*2} and multi information display terminal 1E • Multi information display malfunction 																								
<p style="text-align: center;">MULTI INFORMATION DISPLAY WIRING HARNESS-SIDE CONNECTOR</p> <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td>1W</td><td>1U</td><td>1S</td><td>1Q</td><td>1O</td><td>1M</td><td>1K</td><td>1I</td><td>1G</td><td>1E</td><td>1C</td><td>1A</td> </tr> <tr> <td>1X</td><td>1V</td><td>1T</td><td>1R</td><td>1P</td><td>1N</td><td>1L</td><td>1J</td><td>1H</td><td>1F</td><td>1D</td><td>1B</td> </tr> </table>		1W	1U	1S	1Q	1O	1M	1K	1I	1G	1E	1C	1A	1X	1V	1T	1R	1P	1N	1L	1J	1H	1F	1D	1B
1W	1U	1S	1Q	1O	1M	1K	1I	1G	1E	1C	1A														
1X	1V	1T	1R	1P	1N	1L	1J	1H	1F	1D	1B														

*1 : Vehicles without advanced keyless entry and push button start system

*2 : Vehicles with advanced keyless entry and push button start system

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> • Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Recharge or replace the battery, then go to Step 6. (See 01-17A-5 BATTERY RECHARGING [LF, L5].) (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 BATTERY RECHARGING [L3 WITH TC].) (See 01-17B-2 BATTERY REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.
3	INSPECT GENERATOR <ul style="list-style-type: none"> • Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) • Is there any malfunction? 	Yes	Replace the generator, then go to Step 6. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

STEP	INSPECTION	ACTION	
4	INSPECT MULTI INFORMATION DISPLAY CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the multi information display connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> Multi information display connector is disconnected. Reconnect the negative battery cable. Switch the ignition to ON. Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> Multi information display terminal 1E Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the METER 15 A fuse. If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to the next step.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

09-02J

DTC B1342 [MULTI INFORMATION DISPLAY]

id0902i4935600

DESCRIPTION	Multi information display internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Multi information display internal ECU is failed when the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Multi information display internal malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM MULTI INFORMATION DISPLAY DTC <ul style="list-style-type: none"> Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ON. Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

09-02J-7

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

DTC B1893 [MULTI INFORMATION DISPLAY]

id0902i4935700

DESCRIPTION	Open circuit in GPS antenna circuit
DETECTION CONDITION	<ul style="list-style-type: none"> Multi information display detects open circuit in GPS antenna circuit for 5 s or more, while the ignition is ACC.
POSSIBLE CAUSE	<ul style="list-style-type: none"> GPS antenna connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Multi information display terminal 3B—Body ground Multi information display connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Multi information display terminal 3A—GPS antenna terminal A GPS antenna malfunction Multi information display malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT GPS ANTENNA CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable. Disconnect the GPS antenna connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
2	INSPECT GPS ANTENNA GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> GPS antenna connector is disconnected. Inspect for continuity between the following terminals (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Multi information display terminal 3B Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
3	INSPECT MULTI INFORMATION DISPLAY CONNECTOR AND TERMINALS <ul style="list-style-type: none"> Disconnect the multi information display connector. Inspect the connector and terminals (corrosion, damage, pin disconnection). Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT GPS ANTENNA SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> GPS antenna and multi information display connectors are disconnected. Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Multi information display terminal 3A—GPS antenna terminal A Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

STEP	INSPECTION	ACTION	
5	VERIFY GPS ANTENNA MALFUNCTION <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ACC. Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the GPS antenna, then go to the next step. (See 09-20-42 GPS ANTENNA REMOVAL/INSTALLATION.)
		No	Go to Step 7.
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect the disconnected connectors. Reconnect the negative battery cable. Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ACC. Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

09-02J

DTC B2477 [MULTI INFORMATION DISPLAY]

id090214935800

DESCRIPTION	Multi information display configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> Multi information display configuration has not been performed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Multi information display configuration error Multi information display malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	PERFORM MULTI INFORMATION DISPLAY CONFIGURATION <ul style="list-style-type: none"> Perform the "MULTI INFORMATION DISPLAY CONFIGURATION" using the M-MDS. (See 09-22-19 MULTI INFORMATION DISPLAY CONFIGURATION.) Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ACC. Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Perform the "MULTI INFORMATION DISPLAY CONFIGURATION" again, then go to the next step. (See 09-22-19 MULTI INFORMATION DISPLAY CONFIGURATION.)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

STEP	INSPECTION	ACTION	
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ACC. Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

DTC C1976 [MULTI INFORMATION DISPLAY]

id0902i4935900

DESCRIPTION	Open circuit in steering switch circuit
DETECTION CONDITION	<ul style="list-style-type: none"> Multi information display detects open circuit in steering switch circuit for 30 s or more, while the ignition is ACC or ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clock spring connector or terminals malfunction Steering switch connector or terminals malfunction Clock spring malfunction Steering switch malfunction Multi information display connector or terminals malfunction Open circuit in wiring harness between the following terminals: <ul style="list-style-type: none"> — Multi information display terminal 1N—Steering switch terminal D — Multi information display terminal 1P—Steering switch terminal F — Multi information display terminal 1Q—Steering switch terminal B Multi information display malfunction
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>MULTI INFORMATION DISPLAY WIRING HARNESS-SIDE CONNECTOR</p> </div> <div style="text-align: center;"> <p>STEERING SWITCH WIRING HARNESS-SIDE CONNECTOR</p> </div> </div>	
<div style="display: flex; justify-content: space-around;"> </div>	

* : Vehicles with car-navigation system

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT CLOCK SPRING CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the clock spring connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
2	INSPECT STEERING SWITCH CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the steering switch connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
3	INSPECT CLOCK SPRING <ul style="list-style-type: none"> • Inspect the clock spring. (See 08-10-23 CLOCK SPRING INSPECTION.) • Is there any malfunction? 	Yes	Replace the clock spring, then go to Step 7. (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	INSPECT STEERING SWITCH <ul style="list-style-type: none"> • Inspect the steering switch. (See 09-20-46 STEERING SWITCH INSPECTION.) • Is there any malfunction? 	Yes	Replace the steering switch, then go to Step 7. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	INSPECT MULTI INFORMATION DISPLAY CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the multi information display connector. • Inspect the connector and terminals (corrosion, damage, pin disconnection). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT STEERING SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Clock spring, steering switch and multi information display connectors are disconnected. • Reconnect the clock spring connector. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Multi information display terminal 1N— Steering switch terminal D — Multi information display terminal 1Q— Steering switch terminal F — Multi information display terminal 1P— Steering switch terminal B • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) • Switch the ignition to ON. • Perform the "DTC INSPECTION". (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) • Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

09-02J

ON-BOARD DIAGNOSTIC [MULTI INFORMATION DISPLAY]

DTC U0423 [MULTI INFORMATION DISPLAY]

id0902i4936000

DESCRIPTION	Communication error with instrument cluster
DETECTION CONDITION	<ul style="list-style-type: none"> Multi information display receives invalid signal of vehicle speed data from the instrument cluster for 5 s or more, while the ignition is ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Instrument cluster DTC is stored Multi information display malfunction

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the DTC Reading Procedure to confirm the PCM DTC. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	CONFIRM INSTRUMENT CLUSTER DTC <ul style="list-style-type: none"> Perform the "DTC INSPECTION" to confirm the instrument cluster DTC. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from multi information display using the M-MDS. (See 09-02J-3 CLEARING DTC [MULTI INFORMATION DISPLAY].) Switch the ignition to ON. Perform the "DTC INSPECTION" to confirm the multi information display DTC. (See 09-02J-3 DTC INSPECTION [MULTI INFORMATION DISPLAY].) Is the same DTC present? 	Yes	Replace the multi information display, then go to the next step. (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)
		No	DTC troubleshooting completed.

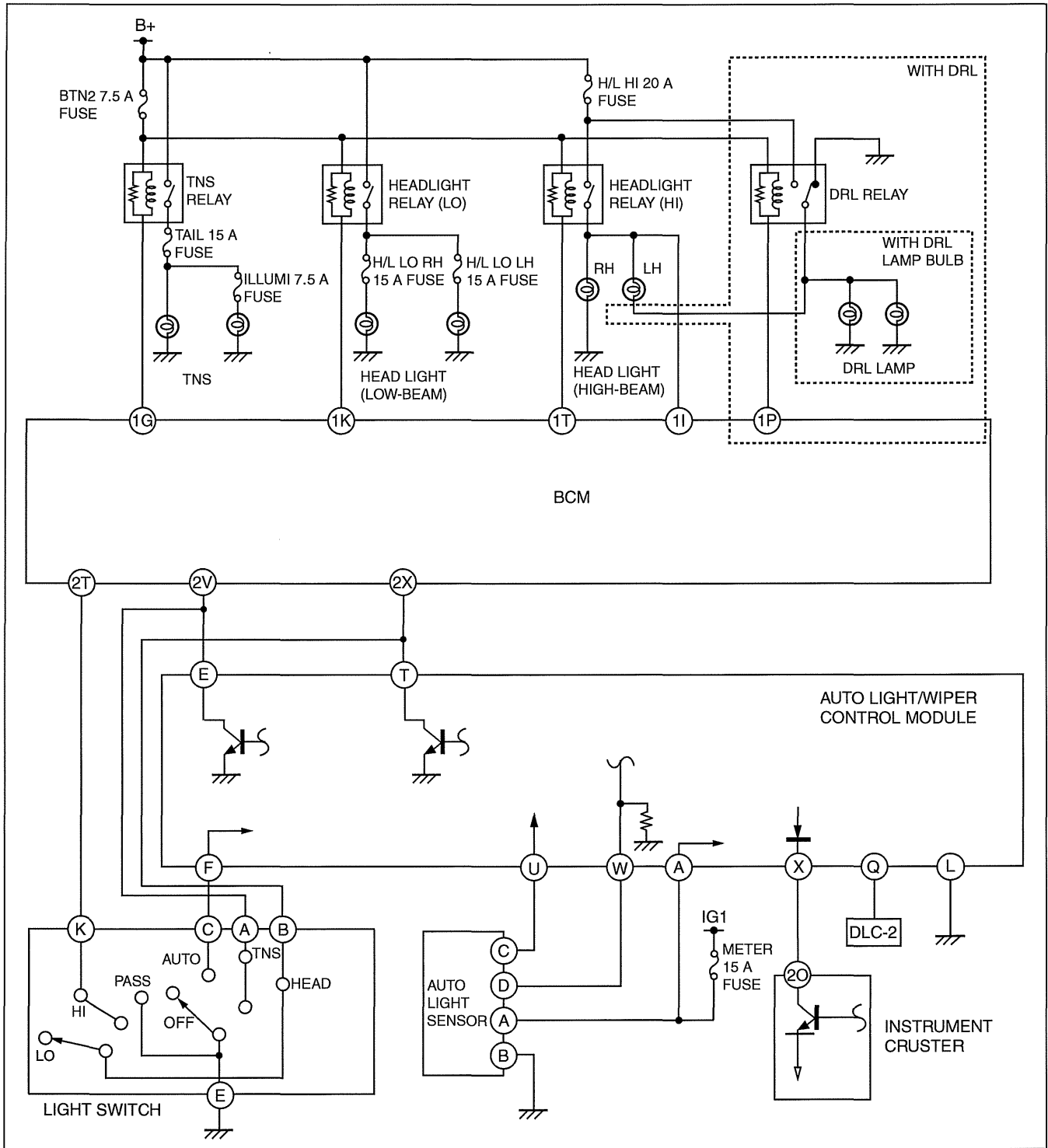
09-02K ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

ON-BOARD DIAGNOSTIC		DTC B1317	
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[AUTO LIGHT/WIPER		CONTROL MODULE].....	09-02K-5
CONTROL MODULE]	09-02K-3	DTC B1342	
CLEARING DTC		[AUTO LIGHT/WIPER	
[AUTO LIGHT/WIPER		CONTROL MODULE].....	09-02K-7
CONTROL MODULE]	09-02K-3	DTC U2030	
DTC TABLE		[AUTO LIGHT/WIPER	
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DTC B1014			
[AUTO LIGHT/WIPER			
CONTROL MODULE]	09-02K-4		

ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1960000



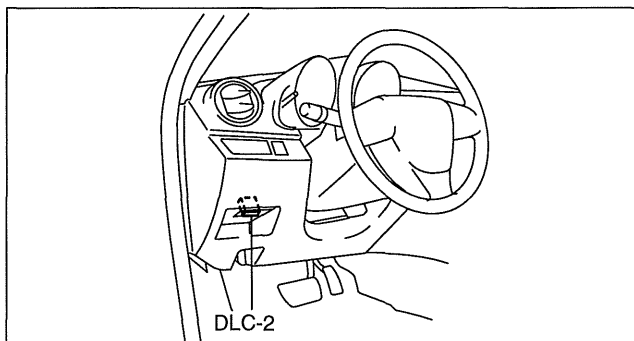
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ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1960300

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "LCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "LCM".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the auto light/wiper control module. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].)

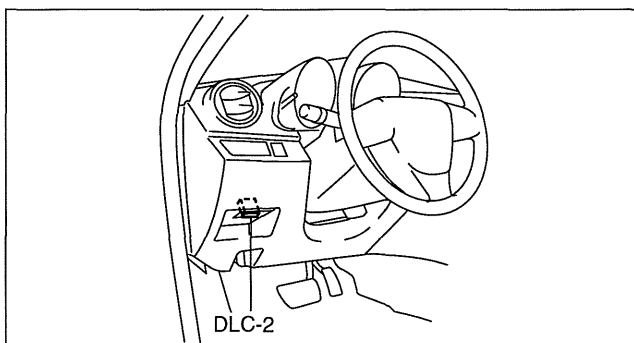


am3uuw0000265

CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1960400

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "LCM".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "LCM".
 3. Select "Self Test".
3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for **5 s or more**.
7. Perform DTC inspection. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].)
8. Verify that no DTCs are displayed.



am3uuw0000265

09-02K

DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1960500

DTC	Description	Reference
M-MDS display		
B1014	Rain sensor/auto light sensor malfunction	(See 09-02K-4 DTC B1014 [AUTO LIGHT/WIPER CONTROL MODULE].)
B1317	High voltage of battery power supply	(See 09-02K-4 DTC B1317 [AUTO LIGHT/WIPER CONTROL MODULE].)
B1318	Low voltage of battery power supply	(See 09-02K-5 DTC B1318 [AUTO LIGHT/WIPER CONTROL MODULE].)
B1342	Auto light/wiper control module malfunction	(See 09-02K-7 DTC B1342 [AUTO LIGHT/WIPER CONTROL MODULE].)
U2030	Rain sensor/auto light sensor communication fault	(See 09-02K-7 DTC U2030 [AUTO LIGHT/WIPER CONTROL MODULE].)

ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

DTC B1014 [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1830700

DESCRIPTION	Rain sensor/auto light sensor malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Auto light/wiper control module detects rain sensor/auto light sensor internal malfunction.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Rain sensor/auto light sensor malfunction Auto light/wiper control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CONFIRM AUTO LIGHT/WIPER CONTROL MODULE DTC <ul style="list-style-type: none"> Clear the DTC from the auto light/wiper control module using the M-MDS. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) Perform the auto light/wiper control module DTC inspection using the M-MDS. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) Is the same DTC present? 	Yes	Replace the rain sensor/auto light sensor, then go to the next step. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
		No	Go to Step 3.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the auto light/wiper control module using the M-MDS. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) Perform the auto light/wiper control module DTC inspection using the M-MDS. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) Is the same DTC present? 	Yes	Replace the auto light/wiper control module, then go to the next step. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02K-3 DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No	DTC troubleshooting completed.

DTC B1317 [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1830900

DESCRIPTION	High voltage of battery power supply
DETECTION CONDITION	<ul style="list-style-type: none"> Auto light/wiper control module power supply circuit voltage is excessively high.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored Battery malfunction Generator malfunction Auto light/wiper control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].)
		No	Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. (See 01-17A-4 BATTERY INSPECTION [LF, L5].) (See 01-17B-4 BATTERY INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes	Replace the battery, then go to Step 4. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
		No	Go to the next step.

ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

STEP	INSPECTION	ACTION
3	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See 01-17A-8 GENERATOR INSPECTION [LF, L5].) (See 01-17B-8 GENERATOR INSPECTION [L3 WITH TC].) Is there any malfunction? 	Yes Replace the generator, then go to the next step. (See 01-17A-6 GENERATOR REMOVAL/INSTALLATION [LF, L5].) (See 01-17B-6 GENERATOR REMOVAL/INSTALLATION [L3 WITH TC].)
		No Go to the next step.
4	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the auto light/wiper control module using the M-MDS. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) Perform the auto light/wiper control module DTC inspection using the M-MDS. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) Is the same DTC present? 	Yes Replace the auto light/wiper control module, then go to the next step. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
5	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 09-02K-3 DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No DTC troubleshooting completed.

DTC B1318 [AUTO LIGHT/WIPER CONTROL MODULE]

id0902j1831000

DESCRIPTION	Low voltage of battery power supply																								
DETECTION CONDITION	<ul style="list-style-type: none"> Auto light/wiper control module power supply circuit voltage is excessively low. 																								
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM DTC is stored <ul style="list-style-type: none"> — Charging system malfunction Auto light/wiper control module connector or terminals malfunction Open circuit or short to ground in auto light/wiper control module power supply circuit <ul style="list-style-type: none"> — Short to ground in wiring harness between auto light/wiper control module terminal A—Ignition switch terminal A^{*1}/Relay block terminal 1B^{*2} — METER 15 A fuse malfunction — Open circuit in wiring harness between auto light/wiper control module terminal A—Ignition switch terminal A^{*1}/Relay block terminal 1B^{*2} Auto light/wiper control module malfunction 																								
<p style="text-align: center;"> IGNITION SWITCH (IG1) TERMINAL A^{*1} RELAY BLOCK TERMINAL 1B^{*2} </p> <p style="text-align: center;"> FUSE BLOCK METER 15 A </p> <p style="text-align: center;"> AUTO LIGHT/WIPER CONTROL MODULE A </p> <p style="text-align: center;"> AUTO LIGHT/WIPER CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR </p> <table border="1" style="margin: auto;"> <tr> <td>W</td><td>U</td><td>S</td><td>Q</td><td>O</td><td>M</td><td>K</td><td>I</td><td>G</td><td>E</td><td>C</td><td>A</td> </tr> <tr> <td>X</td><td>V</td><td>T</td><td>R</td><td>P</td><td>N</td><td>L</td><td>J</td><td>H</td><td>F</td><td>D</td><td>B</td> </tr> </table>		W	U	S	Q	O	M	K	I	G	E	C	A	X	V	T	R	P	N	L	J	H	F	D	B
W	U	S	Q	O	M	K	I	G	E	C	A														
X	V	T	R	P	N	L	J	H	F	D	B														

09-02K

*1 : Vehicles without advanced keyless entry and push button start system
 *2 : Vehicles with advanced keyless entry and push button start system

ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	CONFIRM PCM DTC <ul style="list-style-type: none"> • Perform the PCM DTC inspection using the M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
2	INSPECT AUTO LIGHT/WIPER CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the auto light/wiper control module connector. • Inspect for poor connection (damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 4.
		No	Go to the next step.
3	INSPECT AUTO LIGHT/WIPER CONTROL MODULE POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Auto light/wiper control module connector is disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): — Auto light/wiper control module terminal A • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the METER 15 A fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> — Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> — Repair or replace the wiring harness for a possible open circuit. Go to the next step.
4	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the auto light/wiper control module using the M-MDS. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) • Perform the auto light/wiper control module DTC inspection using the M-MDS. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) • Is the same DTC present? 	Yes	Replace the auto light/wiper control module, then go to the next step. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02K-3 DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No	DTC troubleshooting completed.

ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT RAIN SENSOR/AUTO LIGHT SENSOR CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable. • Disconnect the rain sensor/auto light sensor connector. • Inspect the rain sensor/auto light sensor connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
2	INSPECT AUTO LIGHT/WIPER CONTROL MODULE CONNECTOR AND TERMINALS <ul style="list-style-type: none"> • Disconnect the auto light/wiper control module connector. • Inspect the auto light/wiper control module connector for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector or terminals, then go to Step 7.
		No	Go to the next step.
3	INSPECT RAIN SENSOR/AUTO LIGHT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Rain sensor/auto light sensor and auto light/wiper control module connectors are disconnected. • Inspect for continuity between the following terminal (wiring harness-side) and body ground: <ul style="list-style-type: none"> — Rain sensor/auto light sensor terminal C • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 7.
		No	Go to the next step.
4	INSPECT RAIN SENSOR/AUTO LIGHT SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Rain sensor/auto light sensor and auto light/wiper control module connectors are disconnected. • Reconnect the negative battery cable. • Switch the ignition to ON. • Measure the voltage at the following terminal (wiring harness-side): <ul style="list-style-type: none"> — Rain sensor/auto light sensor terminal C • Is there any voltage? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
5	INSPECT RAIN SENSOR/AUTO LIGHT SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Rain sensor/auto light sensor and auto light/wiper control module connectors are disconnected. • Switch the ignition to off. • Disconnect the negative battery cable. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> — Rain sensor/auto light sensor terminal C— Auto light/wiper control module terminal U • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 7.

ON-BOARD DIAGNOSTIC [AUTO LIGHT/WIPER CONTROL MODULE]

STEP	INSPECTION	ACTION	
6	CONFIRM AUTO LIGHT/WIPER CONTROL MODULE DTC <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the auto light/wiper control module using the M-MDS. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) • Perform the auto light/wiper control module DTC inspection using the M-MDS. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) • Is the same DTC present? 	Yes	Replace the rain sensor/auto light sensor, then go to the next step. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
		No	Go to Step 8.
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect the disconnected connectors. • Reconnect the negative battery cable. • Clear the DTC from the auto light/wiper control module using the M-MDS. (See 09-02K-3 CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) • Perform the auto light/wiper control module DTC inspection using the M-MDS. (See 09-02K-3 DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) • Is the same DTC present? 	Yes	Replace the auto light/wiper control module, then go to the next step. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCs ARE RECORDED <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 09-02K-3 DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No	DTC troubleshooting completed.

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09-03A SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

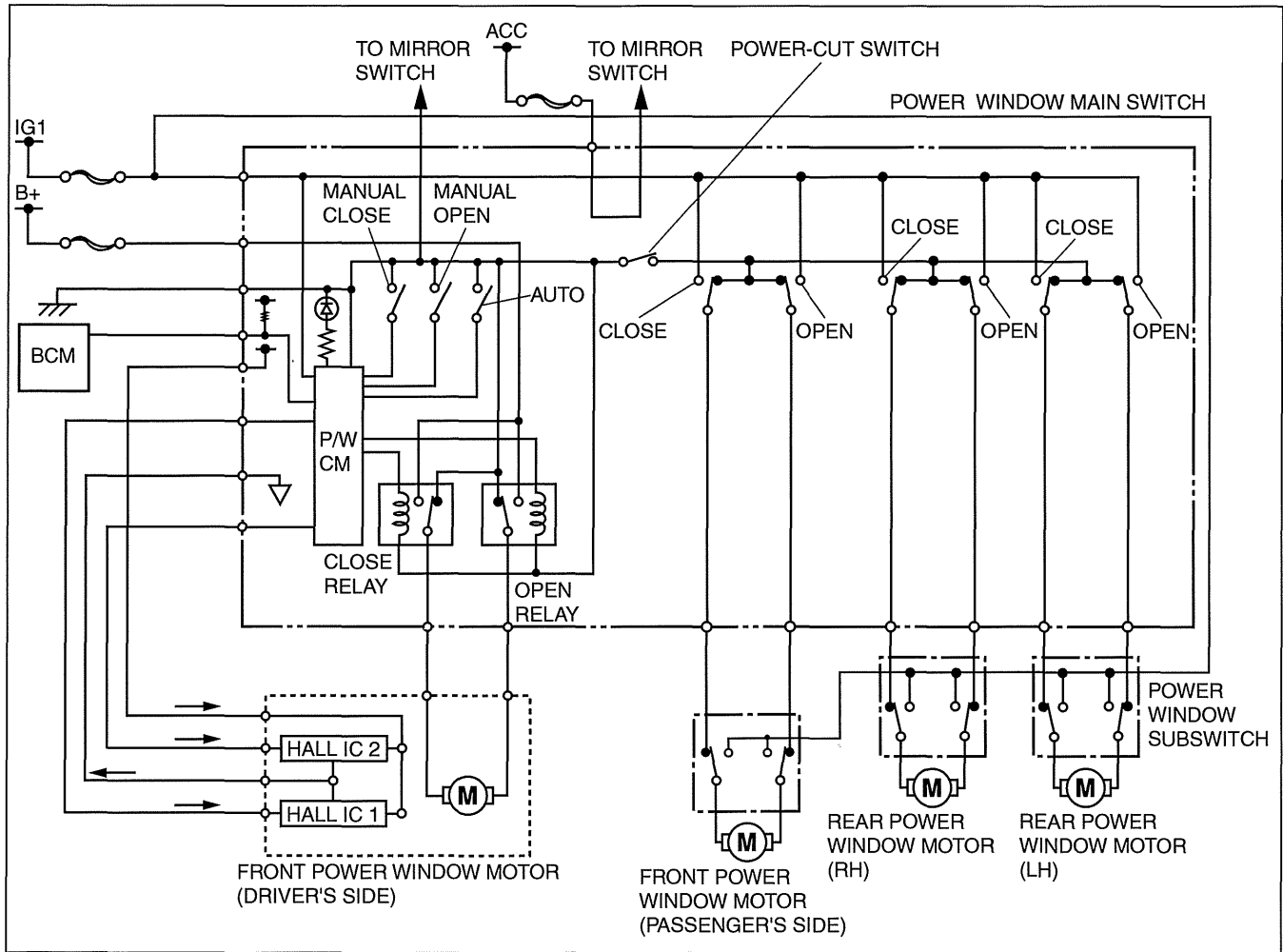
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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

POWER WINDOW SYSTEM WIRING DIAGRAM [POWER WINDOW SYSTEM]

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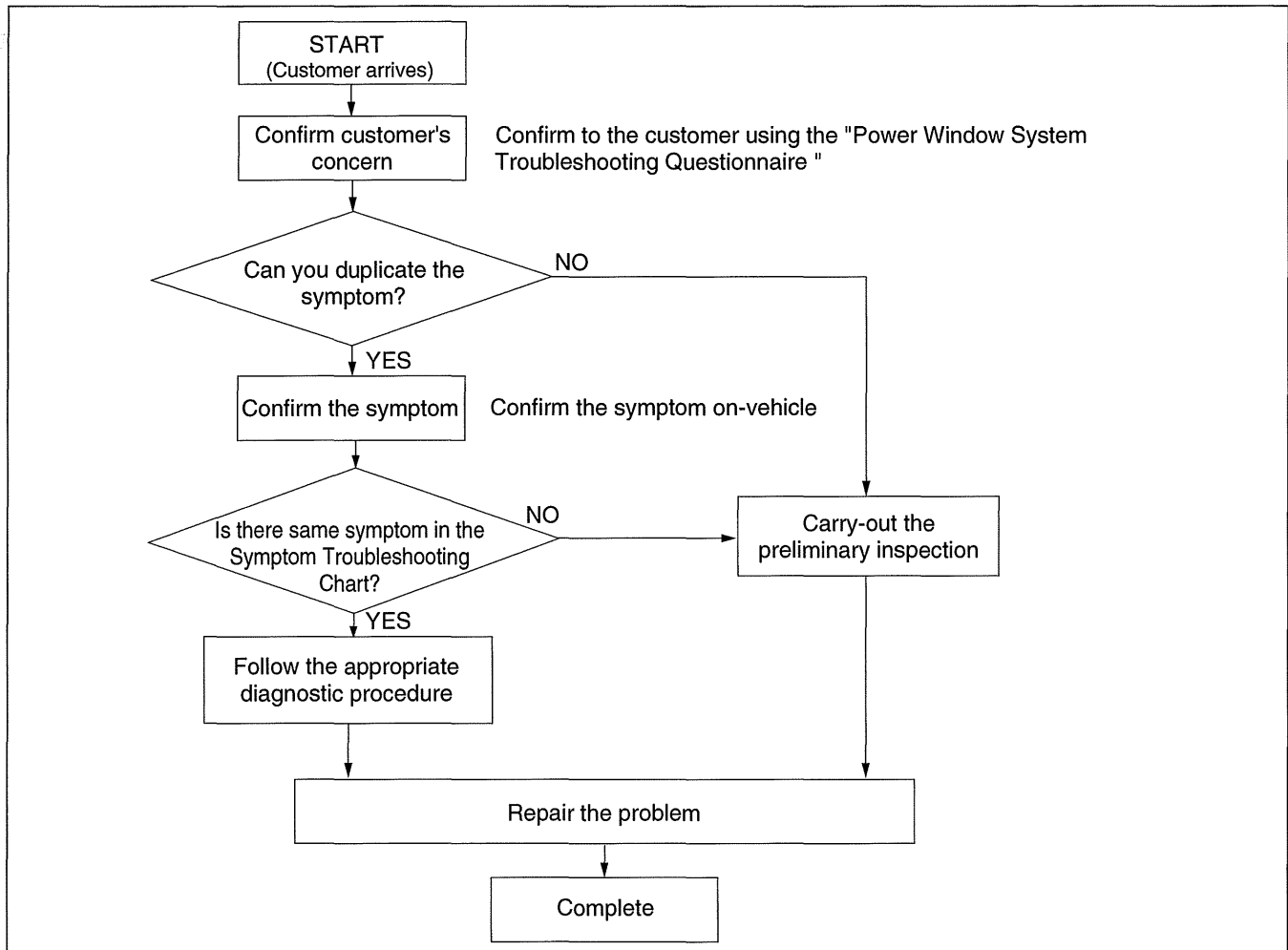
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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

FOREWORD [POWER WINDOW SYSTEM]

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Troubleshooting Procedure



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- Slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions.

Caution

- If any of the following conditions continues indefinitely, the power window motor will heat up causing the protection circuit (integrated in power window motor) to operate. If this occurs, the operation of the power window motor protection circuit temporarily disables the power windows.
 - Continuous up and down operation of the power window.
 - Continuously pulling up the power window switch while the window glass is fully closed.
 - Continuously pressing the power window switch while the window glass fully opened.
- A malfunction in the power window system will be determined and the system will shift to malfunction mode if the power windows are operated up or down using the power window switch while the power window protection circuit is operating.
- While the power window system is in malfunction mode, but they do not operate using the auto open/close function.
- The power window system reverts to normal operation after performing the Power Window Initialization Procedure.

Note

- If the following operations have been performed, initial setting is reset, and auto up/down operation are disabled. Therefore, performing initial setting is necessary.
 - Negative battery cable disconnected
 - Power window main switch connector disconnected
 - Power window system power supply fuse removed

SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

Power Window System Initial Setting

1. Switch the ignition to ON.
2. Press the driver side power window main switch and fully open the driver side front door glass.
3. Pull up the driver side power window main switch to the manual-up position to fully close the driver side front door glass, and keep holding the switch up at the position for **approx.2 s**.

SYMPTOM TROUBLESHOOTING CHART [POWER WINDOW SYSTEM]

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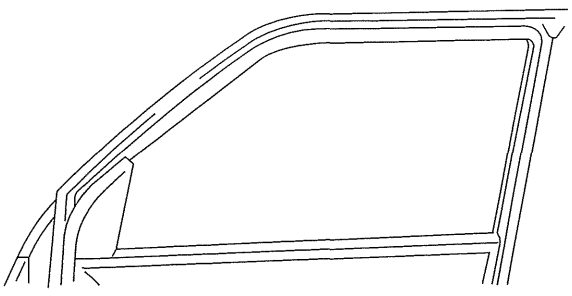
No.	Malfunction symptom
1	09-03A-8 No.1 THE AUTO OPEN/CLOSE FUNCTION ON THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]
2	09-03A-9 No.2 THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]
3	09-03A-10 No.3 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW SUBSWITCH [POWER WINDOW SYSTEM]
4	09-03A-10 No.4 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW MAIN SWITCH [POWER WINDOW SYSTEM]
5	09-03A-11 No.5 ALL POWER WINDOWS ARE INOPERATIVE [POWER WINDOW SYSTEM]
6	09-03A-13 No.6 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM]
7	09-03A-15 No.7 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING [POWER WINDOW SYSTEM]

SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

POWER WINDOW SYSTEM TROUBLESHOOTING QUESTIONNAIRE [POWER WINDOW SYSTEM]

id0903a0835500

Date :

When did the malfunction first occur ?			
Wheather conditions	<input type="checkbox"/> Fair weather <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> Other ()	Outside temperature	Approx. °F
Driving conditons	<input type="checkbox"/> Driving <input type="checkbox"/> Stopped (Engine is : <input type="checkbox"/> Running <input type="checkbox"/> Stopped)		
Duplicate symtom?	<input type="checkbox"/> YES <input type="checkbox"/> NO	Frequency	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes (times/month)
Road conditions	<input type="checkbox"/> City <input type="checkbox"/> Outer city <input type="checkbox"/> Freeway <input type="checkbox"/> Other () / <input type="checkbox"/> Paved <input type="checkbox"/> Dirt road		
*Follow the appropriate diagnostic procedures shown below or perform the basic troubleshooting flow.			
<input type="checkbox"/> (No.1) The auto open/close function on the driver's side power window inoperative.			
<input type="checkbox"/> (No.2) The driver's side power window is inoperative.			
<input type="checkbox"/> (No.3) All power windows other than driver's side do not operate using the power window subswitch.			
<input type="checkbox"/> (No.4) All power windows other than driver's side do not operate using the power window main switch.			
<input type="checkbox"/> (No.5) All power windows are inoperative.			
<input type="checkbox"/> (No.6) Door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.			
Please clarify the position where the driver side front door glass opens automatically. <input type="checkbox"/> Completely closed position <input type="checkbox"/> Approx. ()mm lower than completely closed position <input type="checkbox"/> Approx. ()mm upper than the completely open position.			
<input type="checkbox"/> (No.7) Abnormal noise while the door glass is opening or closing.			
<input type="checkbox"/> Other (Describe the symptom below if the symptom does not appear in the above list.)			
			
Please describe the conditions when the malfunction occurs. (Example) : When the outer mirrors are operated			
Please describe the conditions under which the system returns to normal operation after malfunctioning. (Example) : The ignition switch is turned to the ON position after inserting the ignition key into the key cylinder			

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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

POWER WINDOW SYSTEM PRELIMINARY INSPECTION [POWER WINDOW SYSTEM]

id0903a0831700

Manual Open/close Function Inspection

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Operate the power window using the manual open/close function on the power window main switch. • Does the power window operate properly? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the power window main switch and the wiring harness. • Repair or replace malfunctioning parts.
2	<ul style="list-style-type: none"> • Set the power cut switch to the UNLOCK position. • Operate the power window using the power window subswitch. • Does the power window operate properly? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the power window subswitch and the wiring harness. • Repair or replace malfunctioning parts.
3	<ul style="list-style-type: none"> • Set the power cut switch to the LOCK position. • Operate all power windows other than the driver side. • Does the power window operate properly? 	Yes	<ul style="list-style-type: none"> • Inspect the power cut switch and the wiring harness. • Replace the power window main switch.
		No	<ul style="list-style-type: none"> • Manual open/close function is normal. • Perform the auto open/close function inspection.

Auto Open/close Function (Driver's Side) Inspection

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Operate the power window using the auto open / close function on the power window main switch. • Does the power window operate properly? 	Yes	Go to the next step.
		No	<p>If the power window automatically opens during the closing operation:</p> <ul style="list-style-type: none"> • Go to 09-03A-13 No.6 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM]. <p>Others:</p> <ul style="list-style-type: none"> • Go to 09-03A-8 No.1 THE AUTO OPEN/CLOSE FUNCTION ON THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM].
2	<ul style="list-style-type: none"> • Operate the power window main switch to the close position while the power window is opening. • Does the power window operation stop? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Replace the power window main switch (power window control unit is malfunctioning.)
3	<ul style="list-style-type: none"> • Operate the power window main switch to the open position while the power window is closing. • Does the power window operation stop? 	Yes	<ul style="list-style-type: none"> • Auto open/close function is normal. • Perform the IG-OFF timer function inspection.
		No	<ul style="list-style-type: none"> • Replace the power window main switch (power window control unit is malfunctioning.)

IG-OFF Timer Function Inspection

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Close all doors. • Switch the ignition from the ON to the off. • Operate the power window main switch within 43 seconds after turning the ignition switch to the LOCK position. • Does the power window operate? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the door switches and related wiring harness. • If above parts are okay, replace the power window main switch, then go to the next step. • If above parts are incorrect repair or replace malfunction part(s), then go to the next step.
2	<ul style="list-style-type: none"> • Open any door. • Switch the ignition from the ON to the off. • Operate the power window main switch within 43 seconds after turning the ignition switch to the LOCK position. • Does the power window operate? 	Yes	<ul style="list-style-type: none"> • Inspect the door switches and related wiring harness. • If above parts are okay, replace the power window main switch, then go to the next step. • If above parts are incorrect repair or replace malfunction part(s), then go to the next step.
		No	<ul style="list-style-type: none"> • Go to the next step.

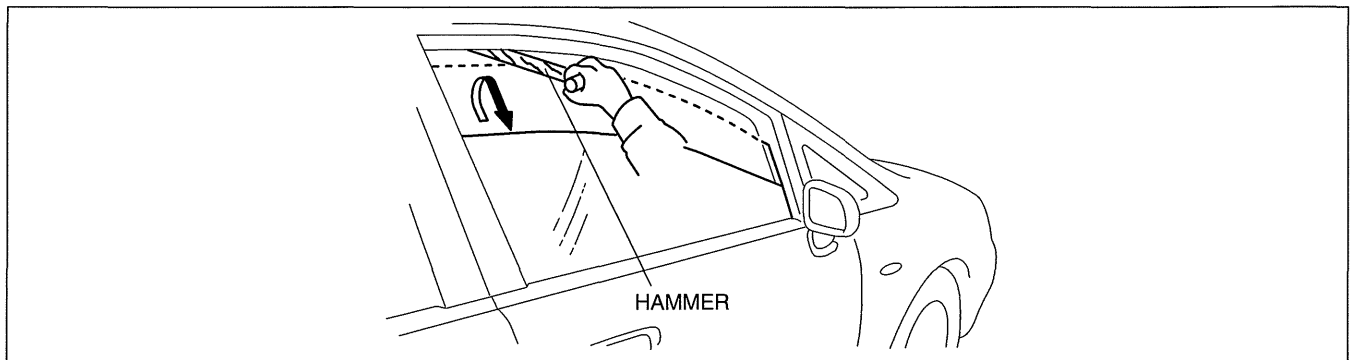
SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION	ACTION	
3	<ul style="list-style-type: none"> • Close all doors. • Switch the ignition from the ON to the off. • Operate the power window main switch within 60 seconds after turning the ignition switch to the LOCK position. • Does the power window operate? 	Yes	<ul style="list-style-type: none"> • Replace the power window main switch (power window control unit is malfunctioning.)
		No	<ul style="list-style-type: none"> • IG-OFF timer function operation is normal. • Perform the auto reverse pinch protection function inspection.

Auto Reverse Pinch Protection Function Inspection

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Fully open the driver's side power window. • Set the hammer (thickness: 10 mm {0.39 in} or more) as shown below. Then, close the power window. • Verify that the power window opens 200 mm {7.87 in} after contacting the hammer and the operation stops. • Does auto reverse pinch protection function operate properly? 	Yes	<ul style="list-style-type: none"> • Auto reverse pinch protection function is normal.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Does power window open before contacting the hammer? 	Yes	<ul style="list-style-type: none"> • Go to 09-03A-13 No.6 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM].
		No	<ul style="list-style-type: none"> • Initialize the power window main switch. <p>Note</p> <ul style="list-style-type: none"> • Before initializing the power window main switch, cut off the power supply to the power window main switch for 60 seconds. Then, reconnect it again after 60 seconds: <ul style="list-style-type: none"> — Disconnect the negative battery cable. — Disconnect the power window main switch connector. — Remove the fuse for the power window system.

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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

No.1 THE AUTO OPEN/CLOSE FUNCTION ON THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]

id0903a0831000

1	The auto open/close function on the driver's side power window is inoperative.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power window system in fail-safe function (Power window motor heat protection circuit is operating) • No power supply to power window main switch • Power window main switch malfunction (power window control unit malfunction, auto switch malfunction) • Power window motor malfunction (Sensor inside motor malfunction) • Malfunction in wiring harness between power window motor (sensor) and power window main switch

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Switch the ignition to off for 3 min. • Switch the ignition to ON. • Initialize the power window system. • Operate the auto open/close function. • Dose the power window operate properly? 	Yes	System is normal. The power window system auto open/close function dose not operate temporarily for any of the following reasons: <ul style="list-style-type: none"> • The power window switch is operated while the power window motor protection circuit (integrated in power window motor) is operating. • The power window main switch power supply is cut off by disconnection of the negative battery cable or removing the fuse.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Does the sensor built into the power window motor send pulse signals while the power window motor is operating? • Inspect the voltage at the following power window motor terminals: <ul style="list-style-type: none"> — B (sensor 1 signal) — A (sensor 2 signal) • Is the voltage approx.12 V? 	Yes	Go to the next step.
		No	Replace the power window motor. (See 09-12-12 POWER WINDOW MOTOR INSPECTION.)
3	<ul style="list-style-type: none"> • Does the sensor built into the power window motor send pulse signals while the power window motor is operating? • Inspect the voltage at the following power window main switch terminals: <ul style="list-style-type: none"> — 1D (sensor 1 signal) — 1H (sensor 2 signal) • Is the voltage approx.12 V? 	Yes	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION.)
		No	Inspect for an open or short circuit in wiring between the power window motor (sensor) and the power window main switch. Inspect the connection of the power window motor and power window main switch connectors. (damaged/pulled-out pins, corrosion) Repair of replace necessary.

SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

No.2 THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]

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2	The driver's side power window is inoperative.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power supply circuit or ground circuit malfunction <ul style="list-style-type: none"> — Burnt fuse (B+) — Open or short circuit in wiring harness between fuse (B+) and power window main switch — Open or short circuit in wiring harness between power window main switch and power window motor — Open or short circuit in wiring harness between power window main switch and ground • Power window main switch malfunction • Power window motor malfunction • Power window regulator malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Does the LED on the power window main switch illuminate? 	Yes	Go to Step 6.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Operate all power windows other than the driver's side window using the power window main switch. • Does the power window operate properly? 	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the following wiring harnesses. Inspect the connector connections (damage/pulled-out pins, corrosion): <ul style="list-style-type: none"> • P.WIND 30 A fuse—Power window main switch terminal 1M • Power window main switch terminal 1B—ground. Repair or replace if necessary.
3	<ul style="list-style-type: none"> • Is the P.WIND 30 A fuse normal? 	Yes	Go to Step 5.
		No	Inspect the following: <ul style="list-style-type: none"> • Short circuit in B+ power supply wiring harness • Short circuit in power window motor Repair or replace if necessary. Replace with the appropriate standard fuse. Then, go to the next step.
4	<ul style="list-style-type: none"> • Initialize the power window system. • Operate the power window system. • Do the power windows operate properly? 	Yes	Troubleshooting is completed.
		No	Re-confirm the symptom and go to Step 1.
5	<ul style="list-style-type: none"> • Measure the voltage at the power window main switch terminal 1M. • Is the voltage B+? 	Yes	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/ INSTALLATION.)
		No	Inspect for an open or short circuit in the power window main switch wiring harness (battery power supply). Inspect the power window main switch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
6	<ul style="list-style-type: none"> • Measure the voltage at the power window main switch. (power window motor output terminal) while operating the power window using the power window main switch. • Is the voltage B+? (Open: terminal 1L/ close: terminal 1J) 	Yes	Go to the next step.
		No	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/ INSTALLATION.)
7	<ul style="list-style-type: none"> • Measure the voltage at the power window motor. (battery power supply terminal) while operating the power window using the power window motor. • Is the voltage B+? (Open: terminal F/ close: terminal E) 	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the wiring harness between the power window main switch and the power window motor. Inspect the power window main switch and power window motor connector connections. (damage/pulled-out pins, corrosion) Repair or replace if necessary.

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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION	ACTION	
8	<ul style="list-style-type: none"> • Operate the driver's side power window using the power window main switch. • Does the power window motor operate (rotate)? <p>Caution</p> <ul style="list-style-type: none"> • If the power window motor temperature is high, the motor may not rotate due to the motor internal bimetal function. Leave it untouched for about 3 min to cool it down, then reinspect. 	Yes	Go to the next step.
		No	Replace the power window motor. (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
9	<ul style="list-style-type: none"> • Remove the door glass from the carrier plate. • Make sure that the door glass moves smoothly using your hand. • Does the door glass move smoothly? 	Yes	Replace the power window regulator. (See 09-12-8 FRONT POWER WINDOW REGULATOR REMOVAL/INSTALLATION.) (See 09-12-9 REAR POWER WINDOW REGULATOR REMOVAL/INSTALLATION.)
		No	Inspect for a bent regulator guide or other possible malfunction. If normal, replace the door glass run-channel.

No.3 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW SUBSWITCH [POWER WINDOW SYSTEM]

id0903a0831200

3	All power windows other than driver's side do not operate using the power window subswitch.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in power window subswitch wiring harness (battery power supply circuit) • Power window subswitch malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Set the power cut-switch to the UNLOCK position. • Measure the voltage at the power window subswitch terminal B. • Is the voltage B+? 	Yes	Replace the power window subswitch. (See 09-12-16 POWER WINDOW SUBSWITCH REMOVAL/INSTALLATION.)
		No	Inspect for an open or short circuit in the wiring harness between the power window main switch and the power window subswitch. Inspect the power window subswitch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.

No.4 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW MAIN SWITCH [POWER WINDOW SYSTEM]

id0903a0831300

4	All power windows other than driver's side do not operate using the power window main switch.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in wiring harness between ignition switch (IG1) and power window main switch (IG1) • Power window main switch malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Set the power cut-switch to the UNLOCK position. • Operate all power windows other than the driver's side using the power window main switch. • Do any power windows operate? 	Yes	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION.)
		No	Inspect for an open or short circuit in the power window main switch wiring harness (battery power supply). Inspect the power window main switch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.

SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

No.5 ALL POWER WINDOWS ARE INOPERATIVE [POWER WINDOW SYSTEM]

id0903a0831400

5	All power windows are inoperative.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power supply circuit or ground circuit malfunction <ul style="list-style-type: none"> — Burnt fuse (B+) — Open or short circuit in wiring harness between ignition switch (IG1) and power window main switch — Open or short circuit in wiring harness between power window main switch and power window subswitch — Open or short circuit in wiring harness between power window main switch and power window motor — Open or short circuit in wiring harness between power window main switch and ground • Power window main switch malfunction (power cut-off switch malfunction, switch malfunction) • Power window subswitch malfunction • Power window motor malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Switch the ignition to ON. • Set the power cut-off switch to the UNLOCK position. • Inspect the power window system operation again. • Does the system operate properly? 	Yes	System is now normal. (power cut-off switch is not set properly.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Operate all power windows other than driver's side window using the power window main switch. • Does any power window operate? 	Yes	Go to Step 6.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Operate the driver's side power window using the power window main switch. • Does the power window operate? 	Yes	Go to the next step.
		No	Inspect for an open circuit in the wiring harness between the power window main switch and the body ground. Inspect the power window main switch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary
4	<ul style="list-style-type: none"> • Is the P.WIND 30 A fuse normal? 	Yes	Replace with the appropriate standard fuse. If the fuse is melted, inspect the wiring harness for a short to ground. Repair or replace the wiring harness, then replace the fuse.
		No	Go to the next step.
5	<ul style="list-style-type: none"> • Measure the voltage at the power window main switch terminal 1M. • Is the voltage B+? 	Yes	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION.)
		No	Inspect for an open or short circuit in the power window main switch wiring harness (battery power supply). Inspect the power window main switch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
6	<ul style="list-style-type: none"> • Identify the inoperative power window. • Measure the voltage at the suspect power window motor (battery power supply) while operating the power window motor using the suspect power window subswitch • Is the voltage B+? (Open: terminal F/ close: terminal E) 	Yes	Go to the next step.
		No	Go to Step 9.
7	<ul style="list-style-type: none"> • Operate the power window using the power window subswitch • Does the power window motor operate (rotate)? Caution <ul style="list-style-type: none"> • If the power window motor temperature is high, the motor may not rotate due to the motor internal bimetal function. Leave it untouched for about 3 min to cool it down, then reinspect. 	Yes	Go to the next step.
		No	Replace the power window motor. (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
8	<ul style="list-style-type: none"> • Remove the door glass from the carrier plate. • Make sure that the door glass moves smoothly using your hand. • Does the door glass move smoothly? 	Yes	Replace the power window regulator guide.
		No	Inspect for a bent regulator guide or other possible malfunction. If normal, replace the glass run channel.

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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION	ACTION	
9	<ul style="list-style-type: none"> • Measure the voltage at the power window subswitch (power window motor output) while operating the power window subswitch. • Is the voltage B+? (Open: terminal C/ close: terminal E) 	Yes	Inspect for an open or short circuit in the wiring harness between the power window subswitch and power window motor. Inspect the power window subswitch and power window motor connector connections. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
		No	Go to the next step.
10	<p>Note</p> <ul style="list-style-type: none"> • Do not operate the power window subswitch during the following inspection. • Inspect the continuity between power window subswitch terminal A (vehicle harness-side) and ground. • Is there continuity? 	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the power window subswitch wiring harness. Inspect the power window subswitch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary. Then go to Step 12.
11	<p>Note</p> <ul style="list-style-type: none"> • Do not operate the power window subswitch during the following inspection. • Inspect the continuity between power window subswitch terminal D and ground. • Is there continuity? 	Yes	Replace the power window subswitch. (See 09-12-16 POWER WINDOW SUBSWITCH REMOVAL/ INSTALLATION.)
		No	Inspect for an open or short circuit in the power window subswitch wiring harness. Inspect the power window subswitch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary. Then go to Step 13.
12	<p>Note</p> <ul style="list-style-type: none"> • Do not operate the power window main switch during the following inspection. • Inspect the continuity between power window main switch terminal (up-side 2L, 1I, 1C) and ground. • Is there continuity? 	Yes	Go to the next step.
		No	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/ INSTALLATION.)
13	<p>Note</p> <ul style="list-style-type: none"> • Do not operate the power window main switch during the following inspection. • Inspect the continuity between power window main switch terminal (down-side 2K, 1G, 1E) and ground. • Is there continuity? 	Yes	Inspect for an open or short circuit in the wiring harness between the power window main switch and power window subswitch. Inspect the power window main switch and subswitch connector connections. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
		No	Replace the power window main switch. (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/ INSTALLATION.)

SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

No.6 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM]

id0903a0831500

Note

- Perform the following inspection for the power window system component parts of windows where the door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.

6	Door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Extreme change in the sliding resistance of the glass while the door glass is closing. <ul style="list-style-type: none"> — Improper installation of the acrylic door visor. — Power window motor malfunction. — Object caught between the glass run channel and the door glass. — Insufficient tightening of the door glass to the carrier plate. — Glass run channel malfunction. — Glass guide related malfunction. <p>Note</p> <ul style="list-style-type: none"> • The auto-reverse pinch protection function is a mechanism that automatically reverses (opens) the door glass while it is closing when the power window main switch detects the signal from the power window motor indicating that an object is obstructing the door glass movement. • The auto-reverse pinch protection function may operate if the sliding resistance of the door glass increases causing the closing speed to decrease. • If the door glass closing speed has changed, concentrate the inspection on the following locations: (Slip occurrence) <ul style="list-style-type: none"> — If the door glass is slipping forward, inspect the front side of the glass guide or glass run channel. — If the door glass is slipping rearward, inspect the rear side of the glass guide or glass run channel.

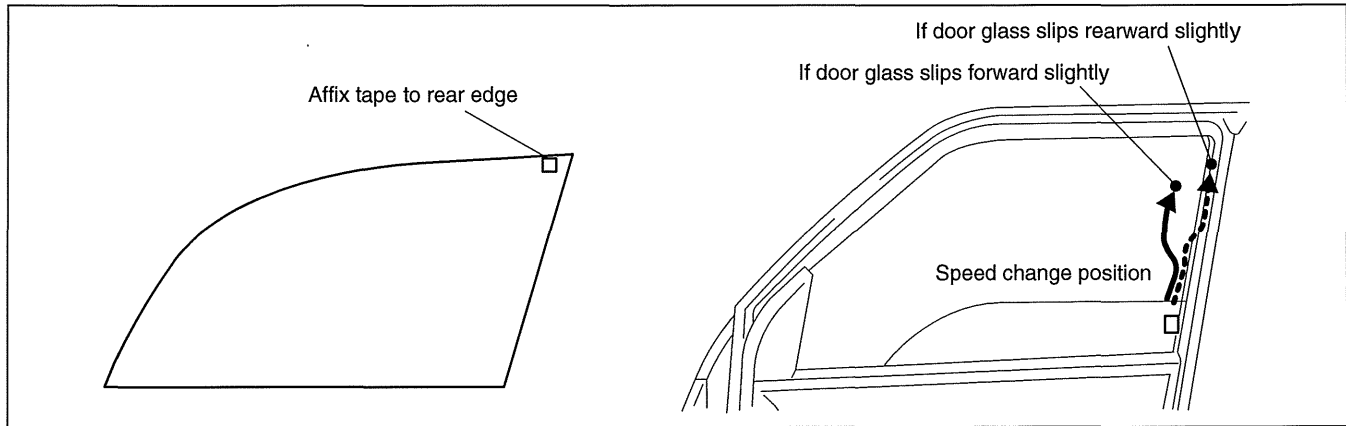
Diagnostic procedure

09-03A

STEP	INSPECTION		ACTION
1	INSPECT MALFUNCTION SYMPTOM <ul style="list-style-type: none"> • Does the malfunction symptom occur only under the following special conditions?: <ul style="list-style-type: none"> — Driving over railroad tracks — Driving on bumpy roads — Opening/closing the door 	Yes	The system is normal. (Explain to the customer that this does not indicate a malfunction because the system is designed to reverse the door glass while it is closing if it receives vibration when the vehicle is crossing railroad tracks, driving on a bumpy road, or when the door is opened/closed.)
		No	Go to the next step.
2	INSPECT ACRYLIC DOOR VISOR INSTALLATION CONDITION <ul style="list-style-type: none"> • Is the acrylic door visor normal? 	Yes	Go to the next step.
		No	Install the side visor properly, then go to the next step.
3	INSPECT DOOR GLASS CLOSING SPEED <ul style="list-style-type: none"> • Affix tape to the rear edge of the door glass as shown in the figure for placing marks. (to facilitate seeing the door glass movement) • Start the engine and idle it (to ensure a stabilized operational voltage). • Does the door glass hesitate only once while its closing? 	Yes	Mark the point where the door glass closing speed changed, then go to Step 5.
		No	Go to the next step.
4	REINSPECT DOOR GLASS CLOSING SPEED <ul style="list-style-type: none"> • Does the door glass hesitate periodically (5-6 times) while it is closing? 	Yes	Replace the power window motor, then go to Step 8 (See 09-12-11 POWER WINDOW MOTOR REMOVAL/ INSTALLATION.)
		No	Go to Step 8.
5	INSPECT GLASS RUN CHANNEL AND DOOR GLASS SLIDING SURFACE <ul style="list-style-type: none"> • Is there an object caught between the glass run channel and the door glass, or is there roughness on the sliding surface (rubber surface)? 	Yes	<p>Object is caught between glass run channel and door glass:</p> <ul style="list-style-type: none"> • Remove the object. <p>Roughness on the sliding surface (rubber surface):</p> <ul style="list-style-type: none"> • Replace the glass run channel. <p>After performing one of the above actions, reinspect. If the malfunction is not corrected, go to Step 3.</p>
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION	ACTION	
6	INSPECT TIGHTENING OF DOOR GLASS TO CARRIER PLATE • Is it normal?	Yes	Go to the next step.
		No	After tightening correctly, reinspect. If the malfunction is not corrected, go to Step 3.
7	INSPECT CONDITION OF GLASS RUN CHANNEL AND DOOR GLASS • Is it normal?	Yes	Go to the next step.
		No	Assemble the glass run channel and door glass securely, and reinspect. If the malfunction is not corrected, go to Step 3.
8	INSPECT DOOR GLASS CLOSING SPEED • Does the door glass hesitate at any location?	Yes	Repeat the inspection from Step 3.
		No	Troubleshooting completed.



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SYMPTOM TROUBLESHOOTING [POWER WINDOW SYSTEM]

No.7 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING [POWER WINDOW SYSTEM]

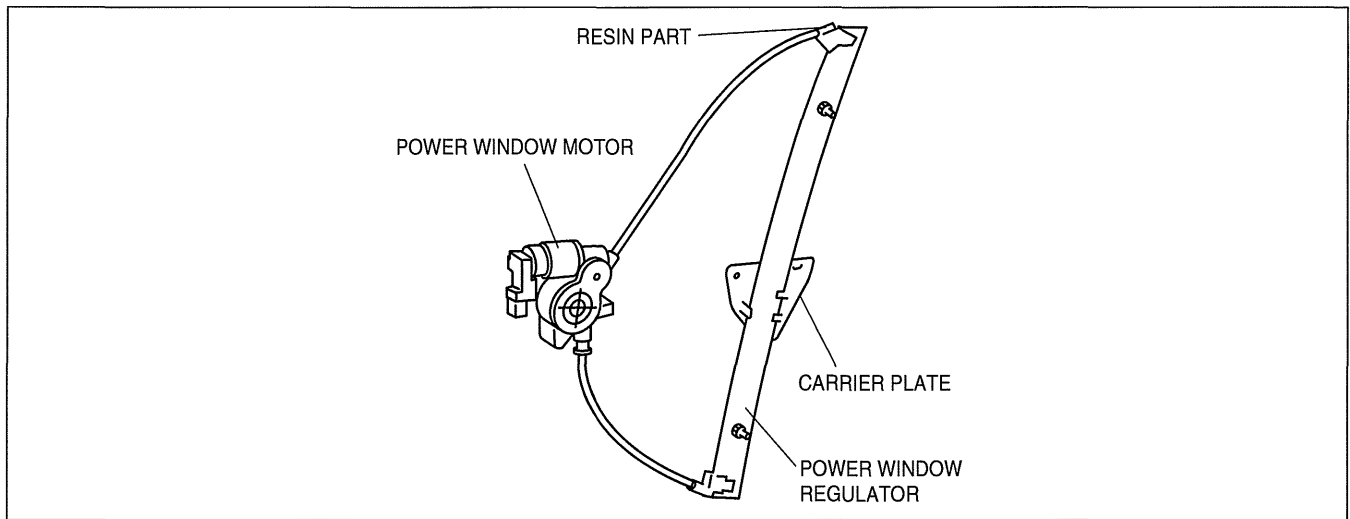
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7	Abnormal noise while the door glass is opening or closing.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Installation screw is loose between the door glass and carrier plate. • Deformity in the power window regulator plastic part due to use. <ul style="list-style-type: none"> — Scratching, wear marks to the power window regulator resin part due to twisting of the cable. — Gear deformity in the power window motor. <p>Note</p> <ul style="list-style-type: none"> • Identify the location of the noise using a stethoscope or similar device.

Diagnostic procedure

Noise type	Time of occurrence	Possible cause	Location of noise	Action
Clanking noise	Door glass begins to move	Insufficiently tightened installation screw between the door glass and carrier plate.	Between door glass lower edge and carrier plate.	Securely tighten the installation screw.
Groaning noise (Sound increases due to use)	While door glass is operating	Vibration caused by wear on the resin part from cable twisting due to use of the power window regulator. Note <ul style="list-style-type: none"> • Noise does not occur if a roller is equipped to power window regulator resin part. 	Power window regulator	Replace the power window regulator (See 09-12-8 FRONT POWER WINDOW REGULATOR REMOVAL/INSTALLATION.) (See 09-12-8 FRONT POWER WINDOW REGULATOR REMOVAL/INSTALLATION.)
Whining noise Clicking noise (Periodic noise)		Gear inside power window motor is deformed due to use.	Gear in power window motor	Replace the power window motor (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)

09-03A



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09-03B SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

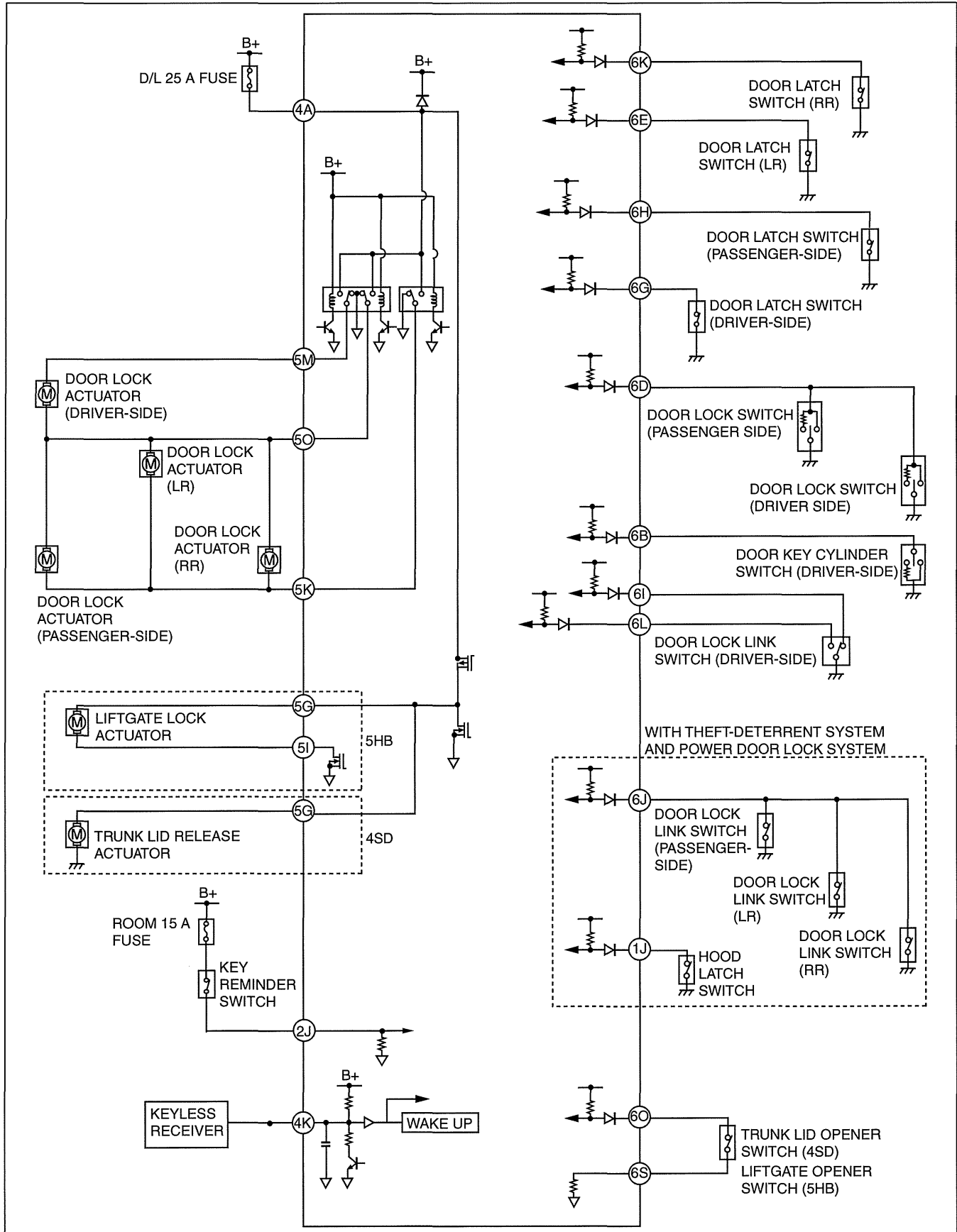
KEYLESS ENTRY SYSTEM
WIRING DIAGRAM
[KEYLESS ENTRY SYSTEM]..... 09-03B-2
SYMPTOM TROUBLESHOOTING
CHART
[KEYLESS ENTRY SYSTEM]..... 09-03B-3
TROUBLESHOOTING INDEX
[KEYLESS ENTRY SYSTEM]..... 09-03B-3
KEYLESS ENTRY SYSTEM
PRELIMINARY INSPECTION
[KEYLESS ENTRY SYSTEM]..... 09-03B-4
KEYLESS ENTRY SYSTEM
OPERATION INSPECTION
[KEYLESS ENTRY SYSTEM]..... 09-03B-4

KEYLESS ENTRY SYSTEM
CHECK SHEET
[KEYLESS ENTRY SYSTEM]09-03B-5
NO.1 KEYLESS ENTRY SYSTEM
DOES NOT OPERATE NORMALLY
[KEYLESS ENTRY SYSTEM]09-03B-6
NO.2 ALL KEYLESS ENTRY
SYSTEM FUNCTIONS
INOPERATIVE
[KEYLESS ENTRY SYSTEM]09-03B-9
NO.3 TRANSMITTER ID CODE
CANNOT BE REPROGRAMMED
[KEYLESS ENTRY SYSTEM]09-03B-12

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

KEYLESS ENTRY SYSTEM WIRING DIAGRAM [KEYLESS ENTRY SYSTEM]

id0903d2800900



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SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

SYMPTOM TROUBLESHOOTING CHART [KEYLESS ENTRY SYSTEM]

id0903d2814300

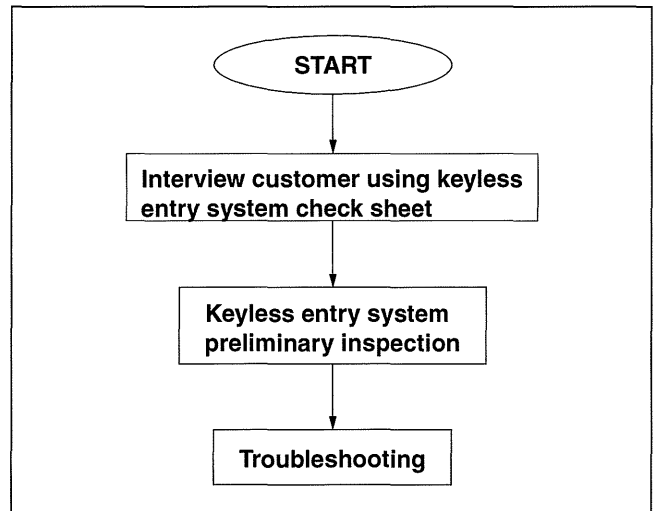
No.	Troubleshooting item	Description	Page
1	Keyless entry system does not operate normally	<ul style="list-style-type: none"> Malfunction in door lock linkage system, or BCM 	(See 09-03B-6 NO.1 KEYLESS ENTRY SYSTEM DOES NOT OPERATE NORMALLY [KEYLESS ENTRY SYSTEM].)
2	All keyless entry system functions inoperative	<ul style="list-style-type: none"> Malfunction in BCM power supply circuit, door latch switch circuit, BCM ground circuit, or keyless receiver. 	(See 09-03B-9 NO.2 ALL KEYLESS ENTRY SYSTEM FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM].)
3	Transmitter ID code cannot be reprogrammed	<ul style="list-style-type: none"> Malfunction in transmitter battery, transmitter, keyless receive bracket, keyless receive bracket ground screw, or BCM circuit. keyless receive circuit. 	(See 09-03B-12 NO.3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED [KEYLESS ENTRY SYSTEM].)

TROUBLESHOOTING INDEX [KEYLESS ENTRY SYSTEM]

id0903d2801000

- The keyless entry system is controlled by the BCM.
- Go to troubleshooting after identifying the specific malfunction by doing a keyless entry system preliminary inspection.

Flowchart



09-03B

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SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

KEYLESS ENTRY SYSTEM PRELIMINARY INSPECTION [KEYLESS ENTRY SYSTEM]

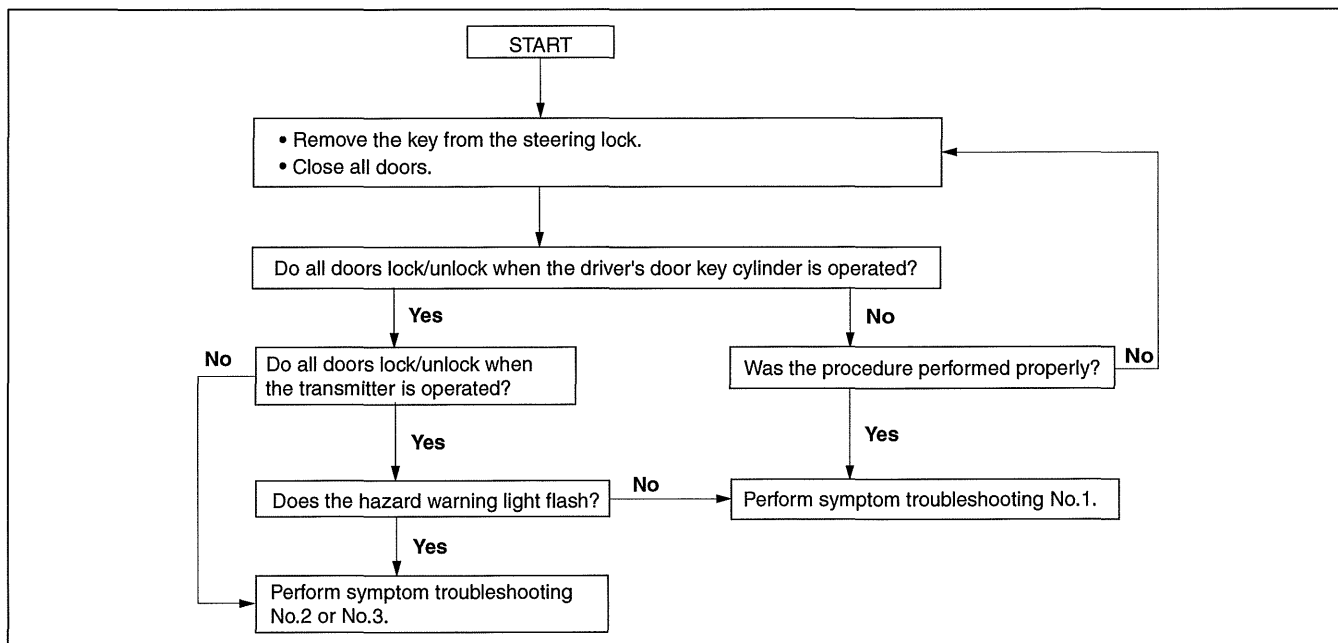
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- Perform the following preliminary inspection before troubleshooting.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Is system an after-market one? 	Yes	Perform troubleshooting according to after-market keyless entry system manual.
		No	Go to next step.
2	<ul style="list-style-type: none"> • Did customer activate keyless entry system when the ignition is switched to off? 	Yes	Go to next step.
		No	<ul style="list-style-type: none"> • Explain to customer that system does not work when ignition is key in key cylinder. • Switch the ignition to off, then go to next step.
3	<ul style="list-style-type: none"> • Did customer use keyless entry system in particular area, such as being near TV towers, power plants, power lines, or factories? 	Yes	Attempt to lock/unlock doors with transmitter in non-interference area. If system operates: <ul style="list-style-type: none"> • Area of operation is bad. Explain effect of outside interference on transmitter to customer. If system does not operate: <ul style="list-style-type: none"> • Go to next step.
		No	Go to next step.
4	<ul style="list-style-type: none"> • Are any of the following after-market electrical parts on the vehicle? <ul style="list-style-type: none"> — Cellular phone — Radio-wave equipment — Remote engine starter — TV, etc. 	Yes	Disconnect after-market electrical part connectors and attempt to lock/unlock doors with transmitter. If system operates: <ul style="list-style-type: none"> • After-market electrical parts are interfering with keyless entry system. If system does not operate: <ul style="list-style-type: none"> • Go to next step.
		No	Go to next step.
5	<ul style="list-style-type: none"> • Reform the keyless entry system operation inspection. (See 09-03B-4 KEYLESS ENTRY SYSTEM OPERATION INSPECTION [KEYLESS ENTRY SYSTEM].) • Does the keyless entry system function work? 	Yes	Go to next step.
		No	<ul style="list-style-type: none"> • Go to Step 1 of NO. 1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE.
6	<ul style="list-style-type: none"> • Attempt to reprogram transmitter ID code. • Can transmitter ID code be reprogrammed? 	Yes	System is normal now.
		No	Go to Step 1 of troubleshooting NO. 3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED.

KEYLESS ENTRY SYSTEM OPERATION INSPECTION [KEYLESS ENTRY SYSTEM]

id0903d2895600



am6xuw0000238

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

KEYLESS ENTRY SYSTEM CHECK SHEET [KEYLESS ENTRY SYSTEM]

id0903d2871400

- Use the sheet below as a customer interview sheet when accepting a vehicle for service.
- If the symptom is "Power door lock system does not operate with transmitter at all," find out how the customer uses the keyless entry system by following the check sheet below.

Perform the following inspection with customer.

Q1. What's the customer's complaint?

- Power door lock system does not operate with transmitter (door does not lock/unlock).
 Other _____

Q2. Is system factory-installed or after-market?

- Factory-installed system
→ Go to Q3.

- After-market system
→ Perform troubleshooting according to after-market keyless entry system manual.

Q3. Operate transmitter with customer from 2.5 m {8.2 ft} away from center of vehicle. (Make sure the ignition key is either in the LOCK position or removed.)
Does keyless entry system work?

- Yes
→ Explain the following to the customer.
- Keyless entry system does not work when ignition key in key cylinder.
 - Keyless entry system does not work form excessive distances (more than 2.5 m {8.2 ft} away from center of vehicle).
- No
→ Go to Q4.

Q4. Check location where customer uses keyless entry system.

Does a particular area, such as being near TV towers, power plants, power lines, or factories, have an effect on malfunction?

- Yes Place _____
→ Area of operation is bad. Explain effect of outside interference on transmitter to customer.
- No
→ Go to Q5.

Q5. Make sure there are no after-market electrical parts installed on vehicle.

Are there any of the following present?

- Cellular phone
- Radio-wave equipment
- Remote engine starter
- TV, etc.

- Yes Parts _____
 No

Perform the keyless entry system preliminary inspection.

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09-03B

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

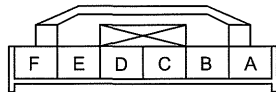
NO.1 KEYLESS ENTRY SYSTEM DOES NOT OPERATE NORMALLY [KEYLESS ENTRY SYSTEM]

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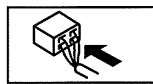
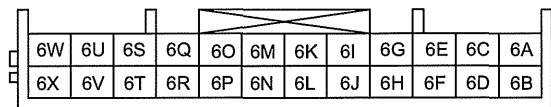
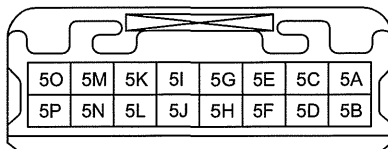
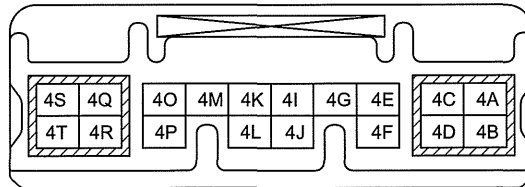
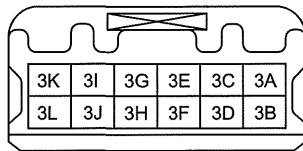
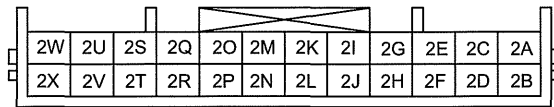
- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harnesses are connected correctly and undamaged.

1	Keyless entry system does not operate normally
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in door lock linkage system, or BCM
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in BCM power supply <ul style="list-style-type: none"> Open circuit in IG1 and/or B+ power supply circuit Open or short circuit in ground circuit BCM malfunction Malfunction in key reminder switch related circuit <ul style="list-style-type: none"> key reminder switch malfunction Malfunction in door latch switch signal circuit <ul style="list-style-type: none"> Open or short circuit in wiring between BCM and door latch switch Door latch switch malfunction Malfunction in door lock/unlock signal circuit <ul style="list-style-type: none"> Door lock actuator malfunction Open or short circuit in wiring between BCM and door lock actuator Malfunction in turn light signal circuit <ul style="list-style-type: none"> BCM malfunction Open or short circuit wiring between BCM and each turn signal light

KEYLESS RECEIVER



BODY CONTROL MODULE (BCM) WIRING HARNESS SIDE CONNECTOR



SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT FOR MALFUNCTION IN BCM POWER SUPPLY CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Did any of the following items operate during the keyless entry system operation inspection? <ul style="list-style-type: none"> — All doors lock/unlock — Hazard warning light flashes 	Yes	Go to the next step.
		No	Inspect the connection of the BCM connectors, and go to Step 4.
2	INSPECT FOR MALFUNCTION IN KEY REMINDER SWITCH OR ELSEWHERE <ul style="list-style-type: none"> • Did the following item operate during the keyless entry system operation inspection? <ul style="list-style-type: none"> — All doors lock/unlock 	Yes	Go to the next step.
		No	Go to Step 9.
3	INSPECT FOR MALFUNCTION IN DOOR LOCK ACTUATOR OR ELSEWHERE <ul style="list-style-type: none"> • Did the following item operate during the keyless entry system operation inspection? <ul style="list-style-type: none"> — Hazard warning light flashes 	Yes	Go to the next step.
		No	Go to Step 11.
*4	INSPECT BCM POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> • Are the BCM power supply and voltage normal? <ul style="list-style-type: none"> — IG1 signal (terminal 4T) — B+ signal (terminal 3J, 5B, 4S) 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect for burnt fuse. • Inspect the power supply system wiring harness for an open or short circuit. • Then go to Step 14.
*5	INSPECT BCM GROUND CIRCUIT <ul style="list-style-type: none"> • Is the BCM ground voltage normal? <ul style="list-style-type: none"> — 1.0 V or less (terminal 2N, 4B) 	Yes	Go to the next step.
		No	Inspect the ground system wiring harness for open circuit. Then go to Step 14.
*6	INSPECT DOOR LATCH SWITCH SIGNAL <ul style="list-style-type: none"> • Monitor following BCM (door latch switch) PID using the M-MDS. <ul style="list-style-type: none"> — TR/LG_SW (Trunk lid/liftgate latch switch) — DRSW_P (Passenger's door latch switch) — DRSW_D (Driver's door latch switch) • Are monitored PID values normal? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect for open or short circuit in wiring harness between BCM and suspected door latch/trunk lid/liftgate latch switch. <ul style="list-style-type: none"> — If wiring harness is normal, inspect suspect door latch/trunk lid/liftgate latch switch. <ul style="list-style-type: none"> (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.) (See 09-14-49 REAR DOOR LATCH SWITCH INSPECTION.) (See 09-14-53 TRUNK LID LATCH SWITCH INSPECTION.) (See 09-14-63 LIFTGATE LATCH SWITCH INSPECTION.) — If wiring harness malfunction, repair or replace wiring harness, then go to Step 14.
*7	INSPECT DOOR LATCH SWITCH SIGNAL VOLTAGE <ul style="list-style-type: none"> • Are the wiring harness between the BCM and each door latch switch normal? <ul style="list-style-type: none"> — Inspect each terminal (6G, 6H, 6K, 6E) under the following conditions. <ul style="list-style-type: none"> • Door closed: 1.0 V or less • Door open: B+ 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the door latch switch. • Inspect the door latch switch system wiring harness for a short circuit. • Then go to Step 14.
8	INSPECT KEY REMINDER SWITCH <ul style="list-style-type: none"> • Measure the voltage at the following BCM terminals: <ul style="list-style-type: none"> — Key reminder switch signal (terminal 2J) <ul style="list-style-type: none"> ON (Key inserted ignition key cylinder):B+ OFF (Key removed ignition key cylinder): 1.0 V or less • Is the key reminder switch normal? 	Yes	Replace the BCM.
		No	Replace the key reminder switch, then go to Step 14.

09-03B

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

STEP	INSPECTION	ACTION	
*9	INSPECT IF MALFUNCTION IS IN DOOR LOCK ACTUATOR, BCM GROUND CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the BCM terminals 5O, 5M while operating the transmitter. <ul style="list-style-type: none"> — Driver-side door locked: 1.0 V or less → B+ → 1.0 V or less (5O terminal) — Driver-side door unlocked: 1.0 V or less → B+ → 1.0 V or less (5M terminal) • Is the voltage as above? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the wiring harness between BCM and the door lock actuator for an open or short circuit. • Inspect the door lock actuator. • Then go to Step 14.
10	INSPECT DOOR LOCK LINKAGE <ul style="list-style-type: none"> • Operate the key cylinder and verify the door locks and unlock manually. • Does every door lock system work? 	Yes	Go to step 12.
		No	Inspect the door lock linkage then go to Step 14.
*11	INSPECT FOR MALFUNCTION IN THEFT-DETERRENT SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> • Is the theft-deterrent system equipped? 	Yes	Go to the next step.
		No	Go to step 13.
12	INSPECT HOOD LATCH SWITCH AND TRUNK/LIFTGATE SIGNAL <ul style="list-style-type: none"> • Monitor following BCM PID using the M-MDS. <ul style="list-style-type: none"> — TR/LG_SW (trunk lid/liftgate latch switch) — HOOD_SW (hood latch switch) • Are monitored PID values ON (open)? 	Yes	Normal operation (Hazard warning light flashing on vehicles with theft-deterrent system operates in conjunction with theft-deterrent system).
		No	Go to the next step.
*13	INSPECT TURN LIGHT SIGNAL CIRCUIT <ul style="list-style-type: none"> • Measure voltage at the BCM terminals 5C, 3L (right side turn signal), 5E, 3K (left side turn signal) while operating hazard and/or turn signal on. • Are the terminal voltages alternated between 1.0V or less and B+? 	Yes	Verify the malfunction symptom again.
		No	<ul style="list-style-type: none"> • Inspect the wiring harnesses between the BCM and each turn light for a short circuit. • Inspect each turn light. • If these items are normal, replace the BCM.
*14	REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR <ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

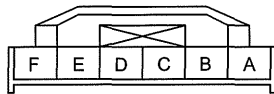
NO.2 ALL KEYLESS ENTRY SYSTEM FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM]

id0903d2898600

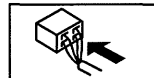
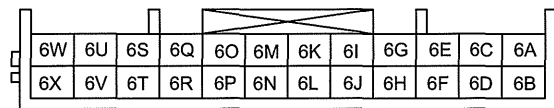
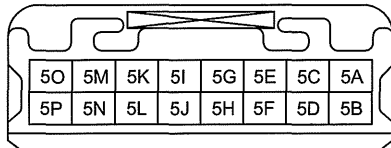
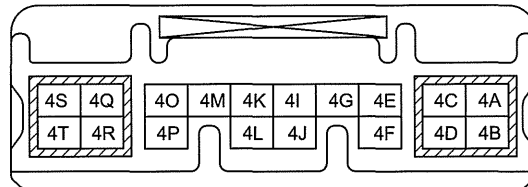
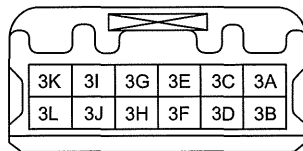
- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harnesses are connected correctly and undamaged.

2	All keyless entry system functions inoperative
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in BCM power supply circuit, door latch switch circuit, BCM ground circuit, or keyless receiver.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in IG1 or power supply signal circuit of BCM <ul style="list-style-type: none"> BCM power supply fuse malfunction Malfunction in wiring harness between BCM power supply fuses and BCM Malfunction in door open/closed signal circuit of BCM <ul style="list-style-type: none"> Door latch switch system malfunction BCM malfunction Malfunction in wiring harness between BCM and door latch switch Malfunction in BCM GND signal circuit <ul style="list-style-type: none"> Malfunction in wiring harness between BCM and ground Malfunction in keyless receiver <ul style="list-style-type: none"> Keyless receiver malfunction Malfunction in wiring harness between keyless receiver and BCM

KEYLESS RECEIVER



BODY CONTROL MODULE (BCM) WIRING HARNESS SIDE CONNECTOR



09-03B

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT BCM POWER SUPPLY FUSES <ul style="list-style-type: none"> • Are the BCM power supply fuses normal? 	Yes	Go to the next step.
		No	Install an appropriate amperage fuse.
2	INSPECT DOOR LATCH SWITCH INSTALLATION <ul style="list-style-type: none"> • Are the door latch switches installed securely? 	Yes	Go to the next step.
		No	Install the door latch switches securely, then go back to Step 5 of keyless entry system preliminary inspection.
*3	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND BCM) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure the voltage at the following BCM terminals: <ul style="list-style-type: none"> — IG1 signal (terminal 4T) — Power supply signal (terminal 3J, 5B, 4S) • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and BCM, then go to Step 13.
*4	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (SHORT TO POWER SUPPLY BETWEEN FUSE BLOCK AND BCM, OR BETWEEN BCM AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the BCM connector. • Measure the voltage at the following BCM terminal (wiring harness-side): <ul style="list-style-type: none"> — IG1 signal (terminal 4T) • Is the voltage B+? 	Yes	Repair the malfunctioning wiring harness, then go to Step 13.
		No	Go to the next step.
*5	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN BCM AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Is there continuity between BCM terminal 2N, 4B and ground? 	Yes	Go to the next step.
		No	Repair the wiring harness between the BCM and ground, then go to Step 13.
6	INSPECT DOOR SWITCH SIGNAL <ul style="list-style-type: none"> • Monitor following BCM (door switch) PID using the M-MDS. <ul style="list-style-type: none"> — TR/LG_SW (Trunk lid/liftgate latch switch) — DRSW_P (Passenger's door latch switch) — DRSW_D (Driver's door latch switch) • Are monitored PID values normal? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect for open or short circuit in wiring harness between BCM and suspected door latch/trunk lid/liftgate latch switch. <ul style="list-style-type: none"> — If wiring harness is normal, inspect suspect door latch/trunk lid/liftgate latch switch. <ul style="list-style-type: none"> (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.) (See 09-14-49 REAR DOOR LATCH SWITCH INSPECTION.) (See 09-14-53 TRUNK LID LATCH SWITCH INSPECTION.) (See 09-14-63 LIFTGATE LATCH SWITCH INSPECTION.) — If wiring harness malfunction, repair or replace wiring harness, then go to Step 13.
7	INSPECT BCM OR WIRING HARNESS (BETWEEN BCM AND DOOR LATCH SWITCHES FOR CONTINUITY) <ul style="list-style-type: none"> • Open and close all doors. • Verify continuity between BCM terminals 6G, 6H, 6K, 6E and ground. • Are there continuities followings? <ul style="list-style-type: none"> — Open: Not continuity — Close: Continuity 	Yes	Replace the BCM and reprogram the transmitter ID code, then go to the next step.
		No	Repair the wiring harness between the BCM and door latch switches, then go to the next step.
8	INSPECT POWER SUPPLY FUSE <ul style="list-style-type: none"> • Is the keyless receiver power supply fuse normal? 	Yes	Go to the next step.
		No	Inspect and repair short to GND in wiring harness at keyless receiver power supply circuit install an appropriate amperage fuse, then go to step 13.

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

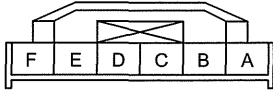
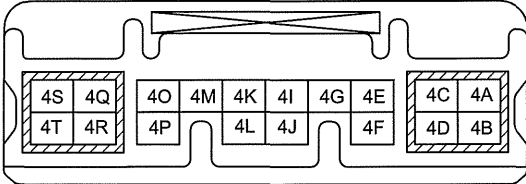
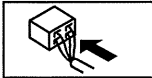
STEP	INSPECTION	ACTION	
9	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS RECEIVER) OR ELSEWHERE <ul style="list-style-type: none"> • Measure the voltage at the following keyless receiver terminal: — B+ signal (terminal D) • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and keyless receiver, then go to Step 13.
10	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS RECEIVER AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Is there continuity between keyless receiver terminal E and ground? 	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless receiver and ground, then go to Step 13.
11	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS RECEIVER AND BCM) OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the keyless receiver connector and BCM connector. • Is there continuity between the following terminals? — 4K (BCM connector)—D (keyless receiver connector) 	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless receiver and BCM, then go to Step 13.
12	INSPECT MALFUNCTION IS IN KEYLESS RECEIVER OR BCM <ul style="list-style-type: none"> • Replace the keyless receiver. • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. (Keyless receiver malfunction)
		No	Replace the BCM, then go to the next step.
13	REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR <ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

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SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

NO.3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED [KEYLESS ENTRY SYSTEM]

id0903d2800800

3	Transmitter ID code cannot be reprogrammed
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in transmitter battery, transmitter, keyless receive bracket, keyless receive bracket ground screw, or BCM circuit. keyless receive circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in transmitter battery, transmitter, BCM, or keyless receiver.
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>KEYLESS RECEIVER</p>  </div> <div style="text-align: center;"> <p>BODY CONTROL MODULE (BCM) WIRING HARNESS-SIDE CONNECTOR</p>  </div> </div> <div style="text-align: center; margin-top: 20px;">  </div>	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT TRANSMITTER BATTERY INSTALLATION AND TYPE <ul style="list-style-type: none"> Visually inspect the transmitter battery. Are the below items correct? <ul style="list-style-type: none"> Transmitter battery installation (correct polarity) Battery type: CR1620 	Yes	Go to the next step.
		No	Properly install the battery or replace the battery with the specified battery (CR1620), and then go to Step 11.
2	INSPECT TRANSMITTER BATTERY TERMINALS FOR RUST AND POOR CONNECTION <ul style="list-style-type: none"> Visually inspect the transmitter. <ul style="list-style-type: none"> Is there rust on the transmitter battery terminals (positive or negative)? Is there poor connection between the terminals and battery? 	Yes	Replace the transmitter battery or repair the transmitter battery terminal, then go to Step 11.
		No	Go to the next step.
3	INSPECT TRANSMITTER BATTERY <ul style="list-style-type: none"> Inspect the transmitter battery. Is the battery voltage normal? 	Yes	Go to the next step.
		No	Replace the transmitter battery, then go to Step 11.
4	INSPECT IF MALFUNCTION IS IN TRANSMITTER BATTERY OR ELSEWHERE <ul style="list-style-type: none"> Replace with a transmitter battery known to be good. Does the keyless entry system operate properly? 	Yes	Replace the transmitter battery, then go to Step 11.
		No	Go to the next step.
5	INSPECT IF MALFUNCTION IS IN TRANSMITTER OR BCM <ul style="list-style-type: none"> Reprogram the transmitter ID code using another known good transmitter. Does the keyless entry system operate properly? 	Yes	Replace the transmitter and reprogram the transmitter ID code, then go to Step 11.
		No	Go to the next step.
6	INSPECT POWER SUPPLY FUSE <ul style="list-style-type: none"> Is the keyless receiver power supply fuse normal? 	Yes	Go to the next step.
		No	Install an appropriate amperage fuse, then go to Step 11.
7	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS RECEIVER) OR ELSEWHERE <ul style="list-style-type: none"> Measure the voltage at the following keyless receiver terminal: <ul style="list-style-type: none"> Power supply signal (terminal A) Is the voltage B+? 	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and keyless receiver, then go to Step 11.

SYMPTOM TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

STEP	INSPECTION	ACTION	
8	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS RECEIVER AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Is there continuity between keyless receiver terminal E and ground? 	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless receiver and ground, then go to Step 11.
9	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS RECEIVER AND BCM) OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect the keyless receiver connector and BCM connector. • Is there continuity between the following terminals? <ul style="list-style-type: none"> — 4K (BCM connector)—D (keyless receiver connector) 	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless receiver and BCM, then go to Step 11.
10	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS RECEIVER AND BCM) OR BCM <ul style="list-style-type: none"> • Measure the voltage at keyless receiver terminal D. <ul style="list-style-type: none"> — When transmitter operated: <ul style="list-style-type: none"> • Any transmitter button is operated: 0.5 V • Any transmitter button is operated: 3.5 V • Is the voltage normal? 	Yes	Replace the BCM, then go to the next step.
		No	Replace the keyless receiver, then go to the next step.
11	REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR <ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

09-03B

SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

09-03C SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

SYMPTOM TROUBLESHOOTING
 [INSTRUMENT CLUSTER] 09-03C-1
 QUICK DIAGNOSTIC CHART
 [INSTRUMENT CLUSTER] 09-03C-2
 NO. 1 FUEL GAUGE INDICATOR
 LIGHT INDICATION IS INCORRECT
 [INSTRUMENT CLUSTER] 09-03C-3
 NO. 2 ALL METERS AND GAUGES
 DO NOT OPERATE
 [INSTRUMENT CLUSTER] 09-03C-4
 NO. 3 ABS WARNING LIGHT
 ILLUMINATES
 [INSTRUMENT CLUSTER] 09-03C-5
 NO. 4 MIL ILLUMINATES
 [INSTRUMENT CLUSTER] 09-03C-6
 NO. 5 BRAKE SYSTEM WARNING
 LIGHT ILLUMINATES
 [INSTRUMENT CLUSTER] 09-03C-7

NO. 6 INSTRUMENT CLUSTER
 ILLUMINATION DOES NOT
 ILLUMINATE
 [INSTRUMENT CLUSTER] 09-03C-8
 NO. 7 SPEEDOMETER INDICATION
 IS DEFECTIVE
 [INSTRUMENT CLUSTER] 09-03C-9
 NO. 8 TACHOMETER INDICATION
 IS DEFECTIVE
 [INSTRUMENT CLUSTER] 09-03C-10
 NO. 9 HIGH ENGINE COOLANT
 TEMPERATURE WARNING LIGHT
 ILLUMINATES OR FLASHES
 CONTINUOUSLY
 [INSTRUMENT CLUSTER] 09-03C-11

SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

id0903d5807200

No.	TROUBLESHOOTING ITEM	PAGE
1	Fuel gauge indicator light illumination is incorrect	(See 09-03C-3 NO. 1 FUEL GAUGE INDICATOR LIGHT INDICATION IS INCORRECT [INSTRUMENT CLUSTER].)
2	All meters and gauges do not operate	(See 09-03C-4 NO. 2 ALL METERS AND GAUGES DO NOT OPERATE [INSTRUMENT CLUSTER].)
3	ABS warning light illuminates	(See 09-03C-5 NO. 3 ABS WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER].)
4	MIL illuminates	(See 09-03C-6 NO. 4 MIL ILLUMINATES [INSTRUMENT CLUSTER].)
5	Brake system warning light illuminates	(See 09-03C-7 NO. 5 BRAKE SYSTEM WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER].)
6	Instrument cluster illumination does not illuminate	(See 09-03C-8 NO. 6 INSTRUMENT CLUSTER ILLUMINATION DOES NOT ILLUMINATE [INSTRUMENT CLUSTER].)
7	Speedometer indication is defective	(See 09-03C-9 NO. 7 SPEEDOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER].)
8	Tachometer indication is defective	(See 09-03C-10 NO. 8 TACHOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER].)
9	High engine coolant temperature warning light illuminates or flashes continuously	(See 09-03C-11 NO. 9 HIGH ENGINE COOLANT TEMPERATURE WARNING LIGHT ILLUMINATES OR FLASHES CONTINUOUSLY [INSTRUMENT CLUSTER].)

09-03C

SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

QUICK DIAGNOSTIC CHART [INSTRUMENT CLUSTER]

i4090345807300

No.	Troubleshooting Item	Possible factor
1	Fuel gauge indication incorrect	X Poor connection of fuel gauge sender unit connector, terminal damage
2	All meters and gauges do not operate	X Poor connection of instrument cluster connector, terminal damage X Fuel gauge sender unit
3	ABS warning light illuminates	X Instrument cluster X Fuel gauge sender unit is improperly installed
4	MIL illuminates	X Open or short circuit in wiring harness between instrument cluster and ground X Open or short circuit in wiring harness between instrument cluster and fuel gauge sender unit
5	Brake system warning light illuminates	X Fuse malfunction (METER) X Open or short circuit in power supply (IG1) wiring harness X Open or short circuit in ground wiring harness ABS HU/CM, DSC CM
6	Instrument cluster illumination does not illuminate	X Poor connection of ABS HU/CM connector, terminal damage X ABS HU/CM, DSC HU/CM
7	Speedometer indication is defective	X Short circuit in wiring harness between CAN-L, CAN-H and ground X Open circuit in CAN wiring harness (CAN-L, CAN-H) X CAN wiring harness (CAN-L, CAN-H) short each other
8	Tachometer indication is defective	X Poor connection of PCM connector, terminal damage X PCM
9	High engine coolant temperature warning light illuminates or flashes continuously	X Poor connection of brake fluid level sensor connector, terminal damage X Brake fluid level sensor X Poor connection of Parking brake switch connector, terminal damage X Parking brake switch X Fuse malfunction (ROOM, ILLUMI)

X: Applicable

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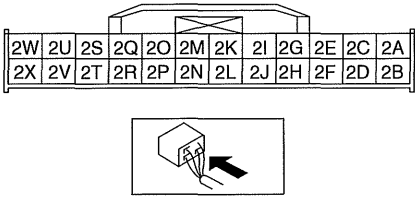
SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

NO. 1 FUEL GAUGE INDICATOR LIGHT INDICATION IS INCORRECT [INSTRUMENT CLUSTER]

id0903d5869100

1	Fuel gauge indicator light indication is incorrect
POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel gauge sender unit malfunction Instrument cluster malfunction Connector or pin malfunction Fuel gauge sender unit is improperly installed Open or short circuit in wiring harness between instrument cluster and fuel gauge sender unit

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Switch the ignition to ON. Verify that the fuel gauge needle does not move after engine switch is turned off, or the display does not indicate F even though fuel tank is full. Is the fuel gauge normal? 	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Retrieve the DTC of instrument cluster using M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the DTC detected? 	Yes	Go to applicable DTC troubleshooting procedure. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
3	<ul style="list-style-type: none"> Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) Is the display normal? 	Yes	Go to Step 7.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.
5	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect for continuity following the wiring harness between instrument cluster and fuel gauge sender unit. — 2T terminal—E terminal — 2R terminal—A terminal Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace for open circuit in the wiring harness between the instrument cluster and the fuel gauge sender unit.
6	<ul style="list-style-type: none"> Switch the ignition to Off. Remove the instrument cluster. Disconnect the instrument cluster connector. Inspect for continuity between the following wiring harness. — 2R terminal—ground Is there continuity? <div style="text-align: center; margin-top: 10px;">  </div>	Yes	Repair or replace the wiring harness for short to ground.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
7	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the fuel gauge sender unit connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.
8	<ul style="list-style-type: none"> Switch the ignition to Off. Is the fuel gauge sender unit installed properly? 	Yes	Inspect the fuel gauge sender unit.
		No	Reinstall the fuel gauge sender unit.

09-03C

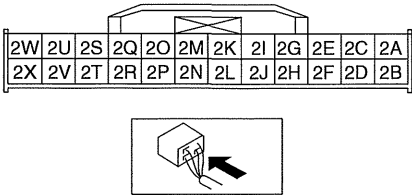
SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

NO. 2 ALL METERS AND GAUGES DO NOT OPERATE [INSTRUMENT CLUSTER]

id0903d5807500

2	All meters and gauges do not operate
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Connector or pin malfunction Fuse malfunction Open or short circuit in power supply (IG1) wiring harness Open or short circuit in ground wiring harness

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Switch the ignition to ON. Inspect the following: <p>Note</p> <ul style="list-style-type: none"> If the engine control system diagnosis is not completed, 17 seconds after turning ignition to ON, the MIL flashes for 7 seconds. <p>— Does the odometer/tripmeter illuminate? — Does the fuel gauge operate? — Does the MIL turn ON?</p>	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Inspect the METER fuse. Is the fuse normal? 	Yes	Go to the next step.
		No	Replace the fuse. <ul style="list-style-type: none"> If the fuse is melted, inspect the wiring harness for a short to ground. Repair or replace the wiring harness, then replace the fuse.
3	<ul style="list-style-type: none"> Inspect the DTC for the instrument cluster ON-BOARD DIAGNOSTIC SYSTEM. Have any DTC's been recorded in memory? 	Yes	Perform the recorded DTC's troubleshooting. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
4	<ul style="list-style-type: none"> Switch the ignition to Off. Remove the instrument cluster. Disconnect the instrument cluster connector. Inspect the voltage between instrument cluster wiring harness-side connector terminal 2S. Switch the ignition to ON. Is the voltage B+? <div style="text-align: center; margin-top: 10px;">  </div>	Yes	Go to the next step.
		No	Repair or replace for open circuit instrument cluster power supply circuit.
5	<ul style="list-style-type: none"> Instrument cluster connector disconnected. Verify continuity between instrument cluster wiring harness-side connector terminal 2A and ground. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace for following: <ul style="list-style-type: none"> Open circuit in wiring harness between instrument cluster terminal 2A and ground. Poor contact or loose installation at ground point
6	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion) Are the terminals normal? 	Yes	Replace the instrument cluster.
		No	Repair or replace for following: <ul style="list-style-type: none"> Open circuit in wiring harness between instrument cluster terminal 2A and ground. Poor contact or loose installation at ground point

SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

NO. 3 ABS WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER]

id0903d5807600

3	ABS warning light illuminates
POSSIBLE CAUSE	<ul style="list-style-type: none"> ABS CM malfunction ABS CM stores DTC DSC CM malfunction DSC CM stores DTC Instrument cluster malfunction Connector or pin malfunction Short circuit in wiring harness between CAN-L, CAN-H and ground Open circuit in CAN wiring harness (CAN-L, CAN-H) CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Start the engine. Does the ABS warning light turn off? 	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Reactive the DTC of instrument cluster using M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the DTC detected? 	Yes	If the DTC U0415:68 or U0415:92 is not detected: <ul style="list-style-type: none"> Go to the applicable DTC troubleshooting procedure. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) If the DTC U0415:68 or U0415:92 is detected: <ul style="list-style-type: none"> Inspect the DTC for the ABS HU/CM or DSC HU/CM. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
3	<ul style="list-style-type: none"> Turn off the ABS warning light using M-MDS instrument cluster active command modes WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].) Does the ABS warning light turn off according to active command modes? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
4	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the DLC-2 terminals F and E. Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none"> Inspect the DLC-2 terminals F and E for short to power supply or ground. Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
6	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.
7	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the instrument cluster connector terminals 2B and 2D. Is the resistance 114—126 ohms? <div style="text-align: center; margin-top: 10px;"> </div> <div style="text-align: center; margin-top: 10px;"> </div>	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.

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SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

NO. 5 BRAKE SYSTEM WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER]

id0903d5807800

5	Brake system warning light illuminates
POSSIBLE CAUSE	<ul style="list-style-type: none"> ABS HU/CM malfunction DSC HU/CM malfunction Brake fluid level sensor malfunction Parking brake switch malfunction Instrument cluster malfunction Connector or pin malfunction Short circuit in wiring harness between CAN-L, CAN-H and ground Open circuit in CAN wiring harness (CAN-L, CAN-H) CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Start the engine. Release the parking brake. Does the brake system warning light turn off? 	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Does the brake fluid need replenishment? 	Yes	Add brake fluid.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Reactive the DTC of instrument cluster using M-MDS. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) Is the DTC detected? 	Yes	If the DTC U0415:68 or U0415:92 is not detected: <ul style="list-style-type: none"> Go to the applicable DTC troubleshooting procedure. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) If the DTC U0415:68 or U0415:92 is detected: <ul style="list-style-type: none"> Inspect the DTC for the ABS HU/CM or DSC HU/CM. (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS]) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)])
		No	Go to the next step.
4	<ul style="list-style-type: none"> Inspect followings: <ul style="list-style-type: none"> — Brake fluid level sensor — Parking brake switch — Wiring harness between brake fluid level sensor and BCM — Wiring harness between parking brake switch and BCM Is there any malfunction? 	Yes	Repair or replace malfunctioning part.
		No	Go to the next step.
5	<ul style="list-style-type: none"> Turn off the brake system warning light using M-MDS instrument cluster according to active command modes WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].) Does the brake system warning light turn off active command modes? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
6	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the DLC-2 terminals F and E. Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 8.
7	<ul style="list-style-type: none"> Disconnect the negative battery cable. Inspect the DLC-2 terminals F and E for short to power supply or ground. Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
8	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.

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SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

STEP	INSPECTION	ACTION	
9	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the instrument cluster connector terminals 2B and 2D. Is the resistance 114—126 ohms? <div style="text-align: center;"> </div>	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)

NO. 6 INSTRUMENT CLUSTER ILLUMINATION DOES NOT ILLUMINATE [INSTRUMENT CLUSTER]

id0903d5807900

6	Instrument cluster illumination does not illuminate
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Connector or pin malfunction Fuse malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Switch the ignition to ON. Turn the light switch to the TNS position. Does the instrument cluster illumination turn on? 	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Does the non-illumination include the entire instrument cluster? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
3	<ul style="list-style-type: none"> Inspect the ROOM and ILLUMI fuse. Are the fuses normal? 	Yes	Go to the next step.
		No	Replace the fuse. <ul style="list-style-type: none"> If the fuse is melted, inspect the wiring harness for short to ground. Repair or replace the wiring harness, then replace the fuse.
4	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No	If the instrument cluster connector is poor connection: <ul style="list-style-type: none"> Connect the instrument cluster connector securely. If malfunction is in the instrument cluster side connector: (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.) If malfunction is in vehicle side connector: <ul style="list-style-type: none"> Repair or replace malfunctioning part.

SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

NO. 7 SPEEDOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]

id0903d5808000

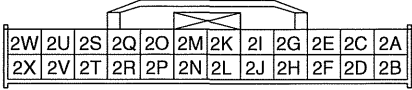
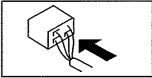
7	Speedometer indication is defective
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ABS HU/CM malfunction • DSC HU/CM malfunction • PCM malfunction • Instrument cluster malfunction • Connector or pin malfunction • Short circuit in wiring harness between CAN-L, CAN-H and ground • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Start the engine, and drive the vehicle. <ul style="list-style-type: none"> — Does the speedometer needle move smoothly? — Does the speedometer needle indicate correct speed? 	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Reactive the DTC of instrument cluster, PCM, ABS HU/CM and/or DSC HU/CM using M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Is the DTC detected? 	Yes	Go to applicable DTC troubleshooting procedure. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].) (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].) (See 04-02A-2 ON-BOARD DIAGNOSIS [ABS].) (See 04-02B-2 ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Verify that the speedometer needle moves using the M-MDS instrument cluster simulation function SPDSTR. • Does the speedometer needle move according to simulation function? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
4	<ul style="list-style-type: none"> • Monitor the following PIDs for the ABS HU/CM or the DSC HU/CM using the M-MDS: WSPD_LF, WSPD_LR, WSPD_RF, WSPD_RR Caution <ul style="list-style-type: none"> • To prevent an accident, work with two people when the vehicle is being driven. (One drives the vehicle and the other operates the M-MDS.) • Drive the vehicle and compare the M-MDS monitored value with the speedometer indication. • Does the M-MDS monitored value correspond to the speedometer indication? 	Yes	Go to the next step.
		No	Inspect for ABS wheel speed sensors, related wiring harnesses, and installation. (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.)
5	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Measure the resistance between the DLC-2 terminals F and E. • Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Inspect the DLC-2 terminals F and E for short to power supply or ground. • Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
7	<ul style="list-style-type: none"> • Switch the ignition to Off. • Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). • Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.

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SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

STEP	INSPECTION		ACTION
8	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the instrument cluster connector terminals 2B and 2D. Is the resistance 114—126 ohms? <div style="text-align: center; margin-top: 10px;">  </div> <div style="text-align: center; margin-top: 10px;">  </div>	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

NO. 8 TACHOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]

id0903d5808100

8	Tachometer indication is defective
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction Instrument cluster malfunction Connector or pin malfunction Short circuit in wiring harness between CAN-L, CAN-H and ground Open circuit in CAN wiring harness (CAN-L, CAN-H) CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Start the engine. <ul style="list-style-type: none"> — Does the tachometer needle move smoothly? — Does the tachometer needle indicate correct engine speed? 	Yes	Troubleshooting completed. (The system is normal.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Reactive the DTC of PCM using M-MDS. (See 01-02A-7 ON-BOARD DIAGNOSTIC TEST [LF, L5].) (See 01-02B-8 ON-BOARD DIAGNOSTIC TEST [L3 WITH TC].) Is the DTC detected? 	Yes	Go to applicable DTC troubleshooting procedure. (See 01-02A-17 DTC TABLE [LF, L5].) (See 01-02B-18 DTC TABLE [L3 WITH TC].)
		No	Go to the next step.
3	<ul style="list-style-type: none"> Verify that the speedometer needle moves using M-MDS instrument cluster simulation function TACHOMTR. Does the tachometer needle move according to simulation function? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
4	<ul style="list-style-type: none"> Monitor the PCM PID RPM using the M-MDS. Start the engine and compare the M-MDS monitored value with the tachometer indication. Does the M-MDS monitored value correspond to the tachometer indication? 	Yes	Go to the next step.
		No	Inspect for CKP sensor, related wiring harness, installation, and pulse wheel condition. (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [LF, L5].) (See 01-40B-33 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [L3 WITH TC].)
5	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the DLC-2 terminals F and E. Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none"> Disconnect the negative battery cable. Inspect the DLC-2 terminals F and E for short to power supply or ground. Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
7	<ul style="list-style-type: none"> Switch the ignition to Off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.

SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

STEP	INSPECTION		ACTION
8	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the instrument cluster connector terminals 2B and 2D. Is the resistance 114—126 ohms? <div style="text-align: center; margin: 10px 0;"> </div> <div style="text-align: center; margin: 10px 0;"> </div>	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

NO. 9 HIGH ENGINE COOLANT TEMPERATURE WARNING LIGHT ILLUMINATES OR FLASHES CONTINUOUSLY [INSTRUMENT CLUSTER]

id0903d5165600

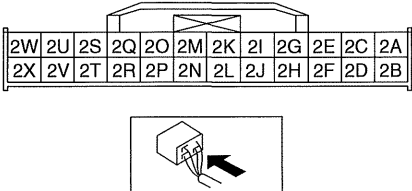
9	High engine coolant temperature warning light illuminates or flashes continuously.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction Instrument cluster malfunction Connector or pin malfunction Short circuit in wiring harness between CAN-L, CAN-H and ground Open circuit in CAN wiring harness (CAN-L, CAN-H) CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Retrieve the DTC of instrument cluster using M-MDS. (See 09-02E-4 DTC INSPECTION [INSTRUMENT CLUSTER].) Is the DTC detected? 	Yes	Go to applicable DTC troubleshooting procedure. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Cool down the engine. Switch the ignition to ON. Verify that the high engine coolant temperature warning light condition. Does the high engine coolant temperature warning light illuminate or flash while 3—30 s after the engine switch is turned to ON position? 	Yes	Go to the next step.
		No	Go to Step 4.
3	<ul style="list-style-type: none"> Monitor the PCM PID ECT using the M-MDS. Is the PID ECT monitoring value for following value? — Above 120 °C {248 °F} when high engine coolant temperature warning light flashes. — Above 125 °C {257 °F} when high engine coolant temperature warning light illuminates. 	Yes	Troubleshooting is completed. (The system is normal.)
		No	Go to the next step.
4	<ul style="list-style-type: none"> Do the speedometer and tachometer indicate correct? 	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none"> Turn on and off high engine coolant temperature warning light using M-MDS instrument cluster active command modes WL+IL. (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].) Does the high engine coolant temperature warning light turn on and off according to active command modes? 	Yes	Inspect the ECT sensor. (See 01-40A-24 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [LF, L5].) (See 01-40B-25 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [L3 WITH TC].)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
6	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the DLC-2 terminals F and E. Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 8.

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SYMPTOM TROUBLESHOOTING [INSTRUMENT CLUSTER]

STEP	INSPECTION	ACTION	
7	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Inspect the DLC-2 terminals F and E for short to power supply or ground. • Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
8	<ul style="list-style-type: none"> • Switch the ignition to Off. • Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). • Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.
9	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Measure the resistance between the instrument cluster connector terminals 2B and 2D. • Is the resistance 114—126 ohms? <div style="text-align: center; margin-top: 10px;">  </div>	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.

09-03D SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

FOREWORD

[ENTIRE AUDIO SYSTEM] 09-03D-1
 Troubleshooting Index 09-03D-1
 Quick Diagnostic Chart
 (Entire Audio System) 09-03D-2

**CONFIRMATION STEP 1: AUDIO
 PANEL SWITCH CONFIRMATION**
 [ENTIRE AUDIO SYSTEM] 09-03D-3
 How to activate audio panel switch
 inspection mode 09-03D-3

**CONFIRMATION STEP 2:
 STEERING SWITCH
 CONFIRMATION**
 [ENTIRE AUDIO SYSTEM] 09-03D-3

**NO.1 AF NOISE OR POP NOISE AT
 ALL SOURCES (RADIO, CD)**
 [ENTIRE AUDIO SYSTEM] 09-03D-4

**NO.2 NO POWER TO THE ENTIRE
 AUDIO SYSTEM**
 [ENTIRE AUDIO SYSTEM] 09-03D-6

**NO.3 NO SOUND FROM ALL
 SPEAKERS**
 [ENTIRE AUDIO SYSTEM] 09-03D-7
 Without Bose® 09-03D-7

With Bose® 09-03D-7

**NO.4 NO SOUND FROM SOME
 SPEAKERS**
 [ENTIRE AUDIO SYSTEM] 09-03D-8
 Without Bose® 09-03D-8
 With Bose® 09-03D-10

**NO.5 SOUND BREAK-UP OR
 POOR SOUND QUALITY**
 [ENTIRE AUDIO SYSTEM] 09-03D-13

**NO.6 VOLUME
 INCREASES/DECREASES
 WHILE DRIVING THE VEHICLE**
 [ENTIRE AUDIO SYSTEM] 09-03D-15

**NO.7 ALC FUNCTION IS
 INOPERATIVE**
 [ENTIRE AUDIO SYSTEM] 09-03D-15

**NO.8 AudioPilot@2 FUNCTION IS
 INOPERATIVE**
 [ENTIRE AUDIO SYSTEM] 09-03D-16

**NO.9 NO AUDIO SYSTEM
 ILLUMINATION**
 [ENTIRE AUDIO SYSTEM] 09-03D-17

**NO.10 LCD DOES NOT DISPLAY AT
 ALL [ENTIRE AUDIO SYSTEM] 09-03D-18**

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FOREWORD [ENTIRE AUDIO SYSTEM]

id0903e2802700

Note

- Record all radio programs set by customer prior to the repairs. Set all radio programs and adjust the time after repairs.

Troubleshooting Index

No.	Symptom	Possible DTC	
		Using the M-MDS	Without using M-MDS (On-board diagnostic test mode)
1	09-03D-4 NO.1 AF NOISE OR POP NOISE AT ALL SOURCES (RADIO, CD) [ENTIRE AUDIO SYSTEM]	U3000:09	09:Er21
2	09-03D-6 NO.2 NO POWER TO THE ENTIRE AUDIO SYSTEM [ENTIRE AUDIO SYSTEM]	U3003:16	09:Er20
3	09-03D-7 NO.3 NO SOUND FROM ALL SPEAKERS [ENTIRE AUDIO SYSTEM]	U3003:16, U3000:09	09:Er20, 09:Er21
4	09-03D-8 NO.4 NO SOUND FROM SOME SPEAKERS [ENTIRE AUDIO SYSTEM]	—	—
5	09-03D-13 NO.5 SOUND BREAK-UP OR POOR SOUND QUALITY [ENTIRE AUDIO SYSTEM]	U3000:09	09:Er21
6	09-03D-15 NO.6 VOLUME INCREASES/DECREASES WHILE DRIVING THE VEHICLE [ENTIRE AUDIO SYSTEM]	—	—
7	09-03D-15 NO.7 ALC FUNCTION IS INOPERATIVE [ENTIRE AUDIO SYSTEM]	U0155:00, U0010:88	16:Er11, 17:Er12, 16:Er12
8	09-03D-16 NO.8 AudioPilot@2 FUNCTION IS INOPERATIVE [ENTIRE AUDIO SYSTEM]	U0155:00, U0010:88	16:Er11, 17:Er12, 16:Er12
9	09-03D-17 NO.9 NO AUDIO SYSTEM ILLUMINATION [ENTIRE AUDIO SYSTEM]	U3003:16	09:Er20
10	09-03D-18 NO.10 LCD DOES NOT DISPLAY AT ALL [ENTIRE AUDIO SYSTEM]	U3003:16, U0010:88	09:Er20, 16:Er12

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

Quick Diagnostic Chart (Entire Audio System)

X: Applicable

Possible factor	Troubleshooting item									
	1 AF noise or POP noise at all sources (Radio, CD)	2 No power to the entire audio system	3 No sound from all speakers	4 No sound from some speakers	5 Sound break-up or poor sound quality	6 Volume increases/decreases while driving the vehicle	7 ALC function is inoperative	8 AudioPilot [®] 2 function is inoperative	9 No audio system illumination	10 LCD does not display at all
Low vehicle battery voltage	X									
Jammed radio signals from after market equipment	X									
Speaker malfunction (e. g., any foreign material, broken)	X		X	X	X					
Improper speaker installation	X			X	X					
Poor connection of audio unit connector, terminal damage	X	X		X				X		
Antenna malfunction (e.g., poor ground)	X									
Audio unit malfunction		X	X	X	X	X	X	X	X	X
Audio amplifier malfunction (with Bose [®])	X		X	X	X	X		X		
Burnt fuse (B+)		X								
Burnt fuse (ACC)		X								
Open or short circuit in power supply (B+) wiring harness		X								
Open or short circuit in power supply (ACC) wiring harness		X								
Short circuit in wiring harness between audio unit and speaker (without Bose [®])			X	X						
Open circuit in wiring harness between audio unit and speaker (without Bose [®])				X						
Open or short circuit in wiring harness between audio amplifier and ground (with Bose [®])	X									
Open or short circuit in wiring harness between audio amplifier and speaker (with Bose [®])			X	X						
Open or short circuit in wiring harness between audio amplifier and audio unit (with Bose [®])			X	X						
Poor connection of audio amplifier connector, terminal damage (with Bose [®])	X		X	X				X		
Short circuit inside speaker			X	X						
Vibration of door trim and/or package trim					X					
CAN signal wiring harness malfunction							X			
Open or short circuit in vehicle speed signal wiring harness (e.g., instrument cluster)						X	X	X		
Burnt fuse (TNS signal)									X	
Open or short circuit in TNS signal wiring harness									X	
Audio panel malfunction									X	
Information display malfunction										X
Open or short circuit in AudioPilot [®] 2 microphone signal wiring harness (with Bose [®])								X		
Open or short circuit in AudioPilot [®] 2 signal wiring harness (with Bose [®])								X		

am3uuw00005007

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

CONFIRMATION STEP 1: AUDIO PANEL SWITCH CONFIRMATION [ENTIRE AUDIO SYSTEM]

id0903e2802800

- Verify the customer complaint and identify either the audio panel malfunction or audio unit malfunction.

How to activate audio panel switch inspection mode

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. While pressing the POWER/VOLUME switch, simultaneously press the RDM/PRESET switch 3 for **0.2 s or more**.
4. The audio panel switch inspection mode is now activated.

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Press each switch on the audio panel. • Does buzzer sound when pressing each switch? 	Yes	Verify the customer complaint and then go to the appropriate symptom troubleshooting procedure.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Disassemble and reassemble the audio panel and audio unit. • Activate the audio panel switch confirmation mode. • Does buzzer sound when pressing each switch? 	Yes	Go to the next step.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
3	Does the audio system operate properly?	Yes	The system is normal.
		No	Verify the customer complaint and then go to the appropriate symptom troubleshooting procedure.

CONFIRMATION STEP 2: STEERING SWITCH CONFIRMATION [ENTIRE AUDIO SYSTEM]

id0903e2833000

- Verify the customer complaint and identify either the steering switch malfunction or audio unit malfunction.

STEP	INSPECTION		ACTION
1	Is the symptom related to either the steering switch or audio panel operation?	Yes	Verify the customer complaint and then go to the appropriate symptom troubleshooting procedure.
		No	The symptom is related to the audio panel operation: <ul style="list-style-type: none"> • Follow the "Confirmation Step 1". The symptom is related to the steering switch operation: <ul style="list-style-type: none"> • Go to the next step.
2	<ul style="list-style-type: none"> • Disconnect the audio unit connector (24-pin). • Inspect both the audio unit and wiring harness-side connectors for poor connection (such as damaged/pulled-out pins, corrosion). <ul style="list-style-type: none"> — Terminal 1N (ST SW1) — Terminal 1P (ST SW2) • Are all the pins normal? 	Yes	Go to the next step.
		No	If the audio unit side connector is wrong: <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) If the wiring harness-side connector is wrong: <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
3	<ul style="list-style-type: none"> • Inspect the continuity between the audio unit wiring harness-side connector terminal 1N and 1P while operating the steering switch. • Does the resistance change? 	Yes	Verify the customer complaint and then go to the appropriate symptom troubleshooting procedure.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Switch the ignition to off. • Remove the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.) • Inspect the continuity between the audio unit wiring harness-side connector (24-pin) terminal and the steering switch wiring harness-side connector (16-pin) terminal. <ul style="list-style-type: none"> — Terminal 1N (24-pin) — Terminal G (16-pin) — Terminal 1P (24-pin) — Terminal I (16-pin) • Is there the continuity? 	Yes	Replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
		No	Repair or replace the suspect wiring harness.

09-03D

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.1 AF NOISE OR POP NOISE AT ALL SOURCES (RADIO, CD) [ENTIRE AUDIO SYSTEM]

id0903e2817600

1	AF noise or POP noise on all sources (Radio, CD)	
Possible DTC	Using the M-MDS	U3000:09
	Without using M-MDS (On-board diagnostic test mode)	09:Er21
Possible cause	<ul style="list-style-type: none"> • Low vehicle battery voltage. • Jammed radio signals from after market equipment. • Speaker malfunction (e.g., any foreign material, broken) • Improper speaker installation • Poor connection of audio unit connector, terminal damage • Antenna malfunction (e.g., poor ground) • Audio unit malfunction • Poor connection of audio amplifier connector, terminal damage (with Bose®) • Audio amplifier malfunction (with Bose®) <p>Note</p> <ul style="list-style-type: none"> • AF noise is a snapping noise that generally occurs during ON/OFF switching operations of electrical equipment other than the audio unit, or a continual rasping noise that occurs when electrical equipment is operated. This is caused by noise interference in the power supply wiring, signal wiring, speaker cable or head of cassette deck. Therefore noise can be heard regardless of radio wave conditions or the audio volume position. The noise will start after one click from the minimum position of the volume button but normally does not change even when volume is turned to a higher position. • POP noise is snapping or popping noise that occurs during ON/OFF switching operation of the audio unit, or when switching from radio to CD. Even a normal audio unit sometimes emits a little noise depending on the conditions. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Inspect the vehicle battery voltage. • Is the vehicle battery voltage normal? <p>Specification: Switch the ignition to ON.: 11.5 V or more Idle: 12.5 V or more</p>	Yes	Go to the next step.
		No	Charge the battery, then go to the next step.
2	<ul style="list-style-type: none"> • Turn the audio system to ON. • Is there any noise? 	Yes	Go to the next step.
		No	The system is normal. Explain to the customer that the vehicle battery voltage was low.
3	<ul style="list-style-type: none"> • Is any of the following after-market equipment installed? (Inspect especially near the antenna.) <ul style="list-style-type: none"> — Radar — Remote engine starter — Anti-theft device — Other 	Yes	Go to the next step.
		No	Go to Step 5.
4	<ul style="list-style-type: none"> • Remove the after-market equipment. • Turn the audio system to ON. • Is there any noise? 	Yes	Go to the next step.
		No	The system is normal. The after-market electrical devices might make a noise.
5	<ul style="list-style-type: none"> • Is there the noise from all speakers? 	Yes	Go to Step 7.
		No	Go to the next step.
6	<ul style="list-style-type: none"> • Inspect the suspect speaker. • Is the speaker normal? 	Yes	Go to the next step.
		No	<p>If there is any foreign material on the speaker:</p> <ul style="list-style-type: none"> • Remove the foreign material from the speaker. <p>If the speaker is malfunctioning:</p> <ul style="list-style-type: none"> • Replace the speaker. <p>If the speaker is not installed properly:</p> <ul style="list-style-type: none"> • Install the speaker properly.
7	<ul style="list-style-type: none"> • Attempt to duplicate the symptom on the other vehicle. • Is the noise better than the customer's vehicle? 	Yes	Go to the next step.
		No	<p>The system is normal. Explain the noise generation mechanism to the customer.</p> <p>Note</p> <ul style="list-style-type: none"> • The noise may be heard depends on the operating speed of audio power and/or mode switch.

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

STEP	INSPECTION	ACTION	
8	<ul style="list-style-type: none"> • Switch the ignition to off. • Remove the audio unit. • Inspect the connection of the audio unit connector (24-pin) (for sound signal line). • Is the connector connected securely? 	Yes	Go to the next step.
		No	<p>If poor connection of audio unit connector:</p> <ul style="list-style-type: none"> • Securely connect the audio unit connector. <p>If the audio unit side connector is wrong:</p> <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector. <p>After treating either the above-mentioned, then go to the next step.</p>
9	<ul style="list-style-type: none"> • Is there any noise? 	Yes	Go to the next step.
		No	The system is normal.
10	<ul style="list-style-type: none"> • Inspect the ground condition of the antenna. • Is the ground condition normal? 	Yes	Go to the next step.
		No	Repair or replace the ground. Go to the next step.
11	<ul style="list-style-type: none"> • Is there any noise? 	Yes	<p>Without Bose®:</p> <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> • If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> — Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) • If noise occurs from the speaker of two or more channels or the volume is minimized and the noise dose not occurs <ul style="list-style-type: none"> — Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	The system is normal.

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SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.2 NO POWER TO THE ENTIRE AUDIO SYSTEM [ENTIRE AUDIO SYSTEM]

id0903e2817800

2	No power to the entire audio system	
Possible DTC	Using the M-MDS	U3003:16
	Without using M-MDS (On-board diagnostic test mode)	09:Er20
Possible cause	<ul style="list-style-type: none"> Burnt fuse (B+) Burnt fuse (ACC) Open or short circuit in power supply (B+) wiring harness Open or short circuit in power supply (ACC) wiring harness Poor connection of audio unit connector, terminal damage Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Switch the ignition to off. Inspect the following fuses: <ul style="list-style-type: none"> — ROOM 15 A — AUDIO 7.5 A Are the fuse normal? 	Yes	Go to the next step.
		No	Replace with the appropriate standard fuse. <ul style="list-style-type: none"> If the fuse is melted, inspect the wiring harness for short to ground. Repair or replace the wiring harness, then replace the fuse.
2	<ul style="list-style-type: none"> Remove the audio unit (with audio system). Inspect the connection of the audio unit connector (24-pin). Disconnect the audio unit connector and inspect both the audio unit and wiring harness-side connectors for poor connection (such as damaged/pulled-out pins, corrosion). <ul style="list-style-type: none"> — Terminal 1B (B+) — Terminal 1R (ACC) — Terminal 1W (GND) Are all the pins normal? 	Yes	Go to the next step.
		No	If poor connection of audio unit connector: <ul style="list-style-type: none"> Securely connect the audio unit connector. If the audio unit side connector is wrong: <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) If the wiring harness-side connector is wrong: <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
3	<ul style="list-style-type: none"> Connect the audio unit connector. Inspect the voltage for the power supply line (B+, ACC). Specification: Switch the ignition to ON: 11.5 V or more Idle: 12.5 V or more <ul style="list-style-type: none"> Is the voltage normal? 	Yes	Go to the next step.
		No	Inspect and repair or replace the suspect wiring harness. Charge the battery, if necessary.
4	<ul style="list-style-type: none"> Switch the ignition to off. Remove the audio unit connector (24-pin). Inspect the continuity between the audio unit wiring harness-side connector terminal 1W (GND) and the ground. Is there the continuity? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Repair or replace the wiring harness.

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.3 NO SOUND FROM ALL SPEAKERS [ENTIRE AUDIO SYSTEM]

id0903e2803200

Without Bose®

3	No sound from all speakers	
Possible DTC	Using the M-MDS	U3003:16, U3000:09
	Without using M-MDS (On-board diagnostic test mode)	09:Er20, 09:Er21
Possible cause	<ul style="list-style-type: none"> • Poor connection at audio unit connector, terminal damage • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Play the CD or Radio. • Adjust the volume between "10" to "15". • Is there sound? 	Yes	The system is normal.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the connection of audio unit connector (24-pin) for poor connection (such as damaged/pulled-out pins corrosion). • Is there continuity? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Repair or replace wiring harness.

With Bose®

3	No sound from all speakers	
Possible DTC	Using the M-MDS	U3003:16, U3000:09
	Without using M-MDS (On-board diagnostic test mode)	09:Er20, 09:Er21
Possible cause	<ul style="list-style-type: none"> • Poor connection of audio unit or audio amplifier connector, terminal damage • Open or short circuit in wiring harness between audio amplifier and audio unit • Audio amplifier malfunction 	

09-03D

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Play CD or radio. • Adjust the volume between "10" and "15". • Is there sound? 	Yes	The system is normal.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Measure the voltage at the audio amplifier terminal 3A (8-pin, vehicle harness-side) • Is the voltage B+? 	Yes	Go to Step 4.
		No	Repair or replace wiring harness between the audio amplifier and fuse. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) Go to the next step.
3	<ul style="list-style-type: none"> • Is there any sound? 	Yes	The system is normal.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Inspect the connection of audio unit connector (24-pin) and audio amplifier connectors for poor connection (such as damaged/pulled-out pins, corrosion). • Are all pins normal? 	Yes	Go to the next step.
		No	<p>If poor connection of audio unit or audio amplifier connector:</p> <ul style="list-style-type: none"> • Securely connect the suspect connector. <p>If the audio unit or audio amplifier side connector is wrong:</p> <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) • Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

STEP	INSPECTION		ACTION
5	<ul style="list-style-type: none"> Switch the ignition to off. Disconnect the audio amplifier connector and audio unit connector (24-pin). Inspect the continuity between the audio amplifier terminal 1A (16-pin, vehicle harness-side) and audio unit terminal 1J (24-pin, vehicle harness- side). Is there continuity? 	Yes	Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/ INSTALLATION.)
		No	Repair or replace the wiring harness between the audio amplifier and audio unit. Then go to the next step.
6	<ul style="list-style-type: none"> Is there any sound? 	Yes	The system is normal.
		No	Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/ INSTALLATION.)

NO.4 NO SOUND FROM SOME SPEAKERS [ENTIRE AUDIO SYSTEM]

id0903e2818100

Without Bose®

4	No sound from some speakers
Possible DTC	—
Possible cause	<ul style="list-style-type: none"> Open or short circuit in wiring harness between audio unit and speaker Speaker malfunction (e.g., any foreign material, broken) Short circuit inside speaker Audio unit malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Switch the ignition to ACC or ON. Turn the audio unit power to ON. While pressing the POWER/VOLUME switch, simultaneously press the AUTO-M switch for 0.2 s or more. Is there any speaker with no sound? 	Yes	If no sound from some speaker: <ul style="list-style-type: none"> Go to the next step. If no sound at all: <ul style="list-style-type: none"> Go to the troubleshooting of “No.3 No sound from all speakers”.
		No	The troubleshooting is completed.
2	<ul style="list-style-type: none"> Switch the ignition to off. Inspect the connection of the audio unit connector (24-pin). (for sound signal line) Is the connector connected securely? 	Yes	Go to the next step.
		No	Connect the audio unit connector (24-pin) securely.

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

STEP	INSPECTION	ACTION	
3	<ul style="list-style-type: none"> • Switch the ignition to off. • Remove the audio unit. • Disconnect the audio unit connector (24-pin). • Inspect the continuity between the audio unit wiring harness-side connector terminal and ground: <ul style="list-style-type: none"> For front door speaker — Terminal 1A (LH+)—GND — Terminal 1C (LH-)—GND — Terminal 1D (RH+)—GND — Terminal 1F (RH-)—GND For rear door speaker — Terminal 1S (LH+)—GND — Terminal 1U (LH-)—GND — Terminal 1V (RH+)—GND — Terminal 1X (RH-)—GND • Disconnect the front door speaker connector (4-pin) • Inspect the continuity between the front door speaker wiring harness-side connector terminal and ground: <ul style="list-style-type: none"> For tweeter — Front door speaker (LH) terminal A (LH+)—GND — Front door speaker (LH) terminal D (LH-)—GND — Front door speaker (RH) terminal A (RH+)—GND — Front door speaker (RH) terminal D (RH-)—GND • Is there continuity? 	Yes	Repair or replace the suspect wiring harness or speaker unit.
		No	Go to the next step. Note <ul style="list-style-type: none"> • If there is a short circuit between the speaker harness or speaker lead wire and ground, the protector circuit inside the audio unit operates to cut the sound.
4	<ul style="list-style-type: none"> • Disconnect the speaker connector (4-pin), tweeter connector (2-pin) and inspect the resistance of speaker. • Inspect the continuity between the audio unit wiring harness-side connector terminal and speaker wiring harness-side connector: <ul style="list-style-type: none"> Audio unit—front door speaker — Terminal 1A (LH+)—terminal C — Terminal 1C (LH-)—terminal B — Terminal 1D (RH+)—terminal C — Terminal 1F (RH-)—terminal B Audio unit—rear door speaker — Terminal 1S (LH+)—terminal C — Terminal 1U (LH-)—terminal B — Terminal 1V (RH+)—terminal C — Terminal 1X (RH-)—terminal B Front door speaker—tweeter — Terminal A (LH+)—terminal A — Terminal D (LH-)—terminal B — Terminal A (RH+)—terminal A — Terminal D (RH-)—terminal B • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the suspect wiring harness or speaker unit.
5	<ul style="list-style-type: none"> • Inspect the suspect speaker. • Is the speaker normal? <p>Note</p> <ul style="list-style-type: none"> • If the speaker lead wire contacts to either ground or vehicle frame, replace the speaker. 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Replace the speaker.

09-03D

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

With Bose®

4	No sound from some speakers
Possible DTC	—
Possible cause	<ul style="list-style-type: none"> • Poor connection of audio unit connector, terminal damage • Poor connection of audio amplifier connector • Open or short circuit in wiring harness between audio amplifier and audio unit • Open or short circuit in wiring harness between audio amplifier and speaker • Audio unit malfunction • Short circuit inside speaker • Speaker malfunction (e.g., foreign material, broken)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Switch the ignition to ACC or ON. • Turn the audio unit power to ON. • While pressing the POWER/VOLUME switch, simultaneously press the AUTO-M switch for 0.2 s or more. • Is there any speaker with no sound? 	Yes If no sound from some speaker: <ul style="list-style-type: none"> • Go to the next step. If not sound at all: <ul style="list-style-type: none"> • Go to the troubleshooting of “No.3 No sound from all speakers”.
		No The troubleshooting completed. (The system is normal.)
2	<ul style="list-style-type: none"> • Does the same speaker have no sound if changing the sound source? (Radio, CD) 	Yes Go to the next step.
		No Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) Note <ul style="list-style-type: none"> • If the different speaker has no sound now, the audio unit is malfunctioning.
3	<ul style="list-style-type: none"> • Switch the ignition to off. • Inspect the connection of the audio unit connector (24-pin). (for sound signal line) • Is the connector connected securely? 	Yes Go to the next step.
		No Connect the audio unit connector (24-pin) securely.
4	<ul style="list-style-type: none"> • Switch the ignition to off. • Remove the audio unit. • Disconnect the audio unit connector (24-pin). • Inspect the continuity between the audio unit wiring harness-side connector and ground. <ul style="list-style-type: none"> — Terminal 1A (LH+)—GND — Terminal 1C (LH-)—GND — Terminal 1D (RH+)—GND — Terminal 1F (RH-)—GND — Terminal 1S (LH+)—GND — Terminal 1U (LH-)—GND — Terminal 1V (RH+)—GND — Terminal 1X (RH-)—GND • Is there continuity? 	Yes Go to the next step.
		No Go to Step 6.
5	<ul style="list-style-type: none"> • Inspect the continuity between the following terminals of the audio amplifier wiring harness-side connector (16-pin) and the audio unit wiring harness-side connector (24-pin). <ul style="list-style-type: none"> — Terminal 1A (LH+)—Terminal 1D — Terminal 1C (LH-)—Terminal 1C — Terminal 1D (RH+)—Terminal 1F — Terminal 1F (RH-)—Terminal 1E — Terminal 1S (LH+)— Terminal 1H — Terminal 1U (LH-)— Terminal 1G — Terminal 1V (RH+)— Terminal 1J — Terminal 1X (RH-)— Terminal 1I • Is there continuity? 	Yes Go to the next step.
		No Repair or replace the related wiring harness between the audio amplifier and the audio unit. Then go to the next step.
6	<ul style="list-style-type: none"> • Inspect the connection of the audio amplifier connector. • Is the connector connected securely? 	Yes Go to the next step.
		No Connect the audio amplifier securely.

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

STEP	INSPECTION	ACTION				
7	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the audio amplifier connector. • Inspect continuity between the following terminals of the audio amplifier connector and speaker connector. <p>For front door speaker (LH)</p> <ul style="list-style-type: none"> — Terminal 3D—Terminal C — Terminal 3C—Terminal B <p>For front door speaker (RH)</p> <ul style="list-style-type: none"> — Terminal 3F—Terminal C — Terminal 3E—Terminal B <p>For tweeter (LH)</p> <ul style="list-style-type: none"> — Front door speaker terminal D—Terminal B — Front door speaker terminal A—Terminal A <p>For tweeter (RH)</p> <ul style="list-style-type: none"> — Front door speaker terminal D—Terminal B — Front door speaker terminal A—Terminal A <p>For rear door speaker (LH)</p> <ul style="list-style-type: none"> — Terminal 2D—Terminal C — Terminal 2B—Terminal B <p>For rear door speaker (RH)</p> <ul style="list-style-type: none"> — Terminal 2M—Terminal C — Terminal 2O—Terminal B <p>For front center speaker</p> <ul style="list-style-type: none"> — Terminal 2I—Terminal B — Terminal 2K—Terminal A <p>For rear center speaker (4SD)/Bass-box (5HB)</p> <ul style="list-style-type: none"> — Terminal 3H—Terminal B — Terminal 3G—Terminal D <p>For rear speaker</p> <ul style="list-style-type: none"> — Terminal 2E—Terminal B — Terminal 2G—Terminal A <ul style="list-style-type: none"> • Is there continuity? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; text-align: center;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace the repair related wiring harnesses.</td> </tr> </table>	Yes	Go to the next step.	No	Repair or replace the repair related wiring harnesses.
Yes	Go to the next step.					
No	Repair or replace the repair related wiring harnesses.					

09-03D

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

STEP	INSPECTION	ACTION
8	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the audio amplifier connector. • Inspect the continuity between the audio amplifier connector and ground: <p>For front door speaker</p> <ul style="list-style-type: none"> — Terminal 3D (LH+)—GND — Terminal 3C (LH-)—GND — Terminal 3F (RH+)—GND — Terminal 3E (RH-)—GND <p>For tweeter</p> <ul style="list-style-type: none"> — Terminal 3D (LH+)—GN — Terminal 3C (LH-)—GND — Terminal 3F (RH+)—GND — Terminal 3E (RH-)—GND <p>For rear door speaker</p> <ul style="list-style-type: none"> — Terminal 2D (LH+)—GND — Terminal 2B (LH-)—GND — Terminal 2M (RH+)—GND — Terminal 2O (RH-)—GND <p>For front center speaker</p> <ul style="list-style-type: none"> — Terminal 2I (+)—GND — Terminal 2K (-)—GND <p>For rear center speaker (4SD)/Bass-box (5HB)</p> <ul style="list-style-type: none"> — Terminal 3H (+)—GND — Terminal 3G (-)—GND <p>For rear speaker</p> <ul style="list-style-type: none"> — Terminal 2E—GND — Terminal 2G—GND <ul style="list-style-type: none"> • Is there continuity? 	<p>Yes</p> <p>Repair or replace the related wiring harness or speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-17 TWEETER REMOVAL/INSTALLATION.) (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.) (4SD) (See 09-20-18 BASS-BOX REMOVAL/INSTALLATION.) (5HB)</p> <p>Note</p> <ul style="list-style-type: none"> • If there is a short circuit between the speaker harness or speaker lead wire and ground, the protector circuit inside the audio unit operates to cut the sound.
		<p>No</p> <p>Go to the next step.</p>
9	<ul style="list-style-type: none"> • Inspect the suspect speaker. • Is the speaker normal? <p>Note</p> <ul style="list-style-type: none"> • If the speaker lead wire contacts to either ground or vehicle frame, replace the speaker. 	<p>Yes</p> <p>Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)</p>
		<p>No</p> <p>Replace the speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-17 TWEETER REMOVAL/INSTALLATION.) (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.) (4SD) (See 09-20-18 BASS-BOX REMOVAL/INSTALLATION.) (5HB)</p>

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.5 SOUND BREAK-UP OR POOR SOUND QUALITY [ENTIRE AUDIO SYSTEM]

id0903e2818300

5	Sound break-up or poor sound quality	
Possible DTC	Using the M-MDS	U3000:09
	Without using M-MDS (On-board diagnostic test mode)	09:Er21
Possible cause	<ul style="list-style-type: none"> Improper speaker installation Vibration of door trim and/or package trim Speaker malfunction (e.g., any foreign material, broken) Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Is there broken sound or poor sound quality from all speakers? 	Yes	Go to the next step.
		No	Go to Step 5.
2	<ul style="list-style-type: none"> Inspect the sound while adjusting the sound volume. Is there broken sound or poor sound quality between "30" and "40"? 	Yes	Go to the next step.
		No	The system is normal.
3	<ul style="list-style-type: none"> Inspect the BASS/TREB. Is there poor sound quality at "-3 — +3" of "BASS/TREB"? <p>Note</p> <ul style="list-style-type: none"> The speaker from which the sound is not emitted is specified using by that the speaker voice changes. 	Yes	Go to the next step.
		No	If there is broken sound at "-6 — +6" of BASS/TREB with the maximum volume, the system is normal.
4	<ul style="list-style-type: none"> Attempt to duplicate the symptom on the other vehicle. Is the sound better than the customer's vehicle? 	Yes	Without Bose® <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) With Bose® <ul style="list-style-type: none"> If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> — Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) If noise occurs from the speaker of two or more channels or the volume is minimized and the noise does not occur: <ul style="list-style-type: none"> — Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	The system is normal.
5	<ul style="list-style-type: none"> Identify the speaker with broken sound by adjusting BAL/FADE. Is the speaker installed properly? 	Yes	Go to the next step.
		No	Install the speaker properly.
6	<ul style="list-style-type: none"> Remove the speaker. Is there any foreign material or damage on the speaker? 	Yes	Repair or replace the suspect speaker.
		No	Go to the next step.
7	<ul style="list-style-type: none"> Inspect the sound again. Is there broken sound? 	Yes	Go to the next step.
		No	Inspect the vibration from the door trim and/or package trim. Repair or replace the suspect trim as necessary.

09-03D

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

STEP	INSPECTION	ACTION				
8	<ul style="list-style-type: none"> • Replace with the speaker known to be good. (e.g., swap right and left speakers) • Does the broken sound appear at the same location? 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">Yes</td> <td> <p>Without Bose®:</p> <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> • If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> — Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) • If noise occurs from the speaker of two or more channels or the volume is minimized and the noise dose not occurs: <ul style="list-style-type: none"> — Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) </td> </tr> <tr> <td style="text-align: center;">No</td> <td> <p>Replace the speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-17 TWEETER REMOVAL/INSTALLATION.) (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.) (4SD) (See 09-20-18 BASS-BOX REMOVAL/INSTALLATION.) (5HB)</p> </td> </tr> </table>	Yes	<p>Without Bose®:</p> <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> • If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> — Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) • If noise occurs from the speaker of two or more channels or the volume is minimized and the noise dose not occurs: <ul style="list-style-type: none"> — Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) 	No	<p>Replace the speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-17 TWEETER REMOVAL/INSTALLATION.) (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.) (4SD) (See 09-20-18 BASS-BOX REMOVAL/INSTALLATION.) (5HB)</p>
Yes	<p>Without Bose®:</p> <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> • If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> — Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) • If noise occurs from the speaker of two or more channels or the volume is minimized and the noise dose not occurs: <ul style="list-style-type: none"> — Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) 					
No	<p>Replace the speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-17 TWEETER REMOVAL/INSTALLATION.) (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.) (4SD) (See 09-20-18 BASS-BOX REMOVAL/INSTALLATION.) (5HB)</p>					

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.6 VOLUME INCREASES/DECREASES WHILE DRIVING THE VEHICLE [ENTIRE AUDIO SYSTEM]

id0903e2818500

6	Volume increases/decreases while driving the vehicle
Possible DTC	—
Possible cause	<ul style="list-style-type: none"> Audio unit malfunction (without Bose®) Audio amplifier malfunction (with Bose®) <p>Note</p> <ul style="list-style-type: none"> Inspect the ALC function (without Bose®)/AudioPilot®2 function (with Bose®) while driving the vehicle with playing the CD, etc.

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	<ul style="list-style-type: none"> Does the ALC (Without Bose®)/AudioPilot®2 function (With Bose®) turn on? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">Yes</td> <td>Go to the next step.</td> </tr> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">No</td> <td> <p>Without Bose®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) </td> </tr> </table>	Yes	Go to the next step.	No	<p>Without Bose®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.)
Yes	Go to the next step.					
No	<p>Without Bose®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) 					
2	<ul style="list-style-type: none"> Turn off the ALC (Without Bose®)/AudioPilot®2 function (With Bose®). Does the sound change while driving the vehicle? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">Yes</td> <td> <p>Without Bose®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) </td> </tr> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">No</td> <td>The system is normal. Explains the ALC (Without Bose®)/AudioPilot®2 function (with Bose®) to the customer.</td> </tr> </table>	Yes	<p>Without Bose®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) 	No	The system is normal. Explains the ALC (Without Bose®)/AudioPilot®2 function (with Bose®) to the customer.
Yes	<p>Without Bose®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>With Bose®:</p> <ul style="list-style-type: none"> Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.) 					
No	The system is normal. Explains the ALC (Without Bose®)/AudioPilot®2 function (with Bose®) to the customer.					

09-03D

NO.7 ALC FUNCTION IS INOPERATIVE [ENTIRE AUDIO SYSTEM]

id0903e2803600

7	ALC function is inoperative	
Possible DTC	Using the M-MDS	U0155:00, U0010:88
	Without using M-MDS (On-board diagnostic test mode)	16:Er11, 17:Er12, 16:Er12
Possible cause	<ul style="list-style-type: none"> Open or short circuit in vehicle speed signal wiring harness (e. g., instrument cluster) CAN signal wiring harness malfunction Audio unit malfunction <p>Note</p> <ul style="list-style-type: none"> Inspect the ALC function while driving the vehicle with playing the CD, etc. 	

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	<ul style="list-style-type: none"> Turn the ALC function to ON. Inspect the ALC function operation when driving the vehicle at ALC level 3. Does the ALC system operate properly? 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">Yes</td> <td>The system is normal. Explains the ALC function to the customer.</td> </tr> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	The system is normal. Explains the ALC function to the customer.	No	Go to the next step.
Yes	The system is normal. Explains the ALC function to the customer.					
No	Go to the next step.					
2	<ul style="list-style-type: none"> Retrieve the DTCs from all vehicle modules using the M-MDS. Is there the following DTC displayed? <ul style="list-style-type: none"> — Vehicle speed signal wiring harness — CAN signal wiring harness 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">Yes</td> <td>Go to the appropriate DTC inspection.</td> </tr> <tr> <td style="width: 5%; text-align: center; vertical-align: top;">No</td> <td>Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)</td> </tr> </table>	Yes	Go to the appropriate DTC inspection.	No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
Yes	Go to the appropriate DTC inspection.					
No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)					

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.8 AudioPilot®2 FUNCTION IS INOPERATIVE [ENTIRE AUDIO SYSTEM]

id0903e2996400

8	AudioPilot®2 function is inoperative	
Possible DTC	Using the M-MDS	U0155:00, U0010:88
	Without using M-MDS (On-board diagnostic test mode)	16:Er11, 17:Er12, 16:Er12
Possible cause	<ul style="list-style-type: none"> • Audio amplifier malfunction • Open or short circuit in AudioPilot®2 signal wiring harness • Open or short circuit in AudioPilot®2 microphone signal wiring harness • Open or short circuit in vehicle speed signal wiring harness (e. g., instrument cluster) <p>Note</p> <ul style="list-style-type: none"> • Inspect the AudioPilot®2 function while driving the vehicle and playing a CD. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the AudioPilot®2 function on. • Inspect the AudioPilot®2 function operation while driving the vehicle. • Does the AudioPilot®2 system operation properly? 	Yes	The system is normal. Explain the AudioPilot®2 function to the customer.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the connection of the audio amplifier connector (AudioPilot®2 microphone signal). • Inspect both the audio amplifier wiring harness-side connector terminal 1O, 1P and 1B for a poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	Yes	Repair or replace the pins and/or the connector.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Inspect the connection of the AudioPilot®2 microphone connector (2-pin). • Inspect the AudioPilot®2 microphone wiring harness-side connector terminal A and B (2-pin) for poor connection (such as damaged/pulled-out pins, corrosion). • Are all pins normal? 	Yes	Repair or replace the pins and/or the connector.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Inspect continuity between the following terminals of the audio amplifier connector and body ground. <ul style="list-style-type: none"> — Terminal 1O (AudioPilot®2 microphone+) — Terminal 1P (AudioPilot®2 microphone-) — Terminal 1B (vehicle speed signal) • Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground.
		No	Go to the next step.
5	<ul style="list-style-type: none"> • Inspect continuity between the following terminals of the audio amplifier connector and AudioPilot®2 microphone/instrument cluster connector. <ul style="list-style-type: none"> — Terminal 1O—AudioPilot®2 microphone terminal B (+) — Terminal 1P—AudioPilot®2 microphone terminal A (-) — Terminal 1B—Instrument cluster terminal 2O (vehicle speed signal) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace for open circuit.
6	<ul style="list-style-type: none"> • Retrieve the DTCs from all vehicle modules using the M-MDS. • Is there the following DTC displayed? <ul style="list-style-type: none"> — Vehicle speed signal — CAN communication 	Yes	Go to the appropriate DTC inspection.
		No	Replace the audio amplifier. (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.9 NO AUDIO SYSTEM ILLUMINATION [ENTIRE AUDIO SYSTEM]

id0903e2826600

9	No audio system illumination	
Possible DTC	Using the M-MDS	U3003:16
	Without using M-MDS (On-board diagnostic test mode)	09:Er20
Possible cause	<ul style="list-style-type: none"> Burnt fuse (TNS signal) Open or short circuit in TNS signal wiring harness Poor connection of audio unit connector, terminal damage Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Are all illumination on the audio unit turned OFF? 	Yes	Go to the next step.
		No	Replace the audio panel. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
2	<ul style="list-style-type: none"> Switch the ignition to off. Inspect the fuse (ILLUMI). Is the fuse normal? 	Yes	Go to Step 4.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Disconnect the audio unit connector (24-pin) and inspect the continuity between the audio unit wiring harness-side connector terminal 1E (TNS) and the ground. Is there continuity? 	Yes	Repair or replace the short circuit in the suspect wiring harness. After repair the harness, replace with the appropriate standard fuse.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Inspect the connection of the audio unit connector (24-pin). Inspect both the audio unit and wiring harness-side connector terminal 1E for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	If poor connection of audio unit connector: <ul style="list-style-type: none"> Securely connect the audio unit connector. If the audio unit side connector is wrong: <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) If the wiring harness-side connector is wrong: <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
5	<ul style="list-style-type: none"> Connect the audio unit connector (24-pin). Switch the ignition to ACC. Inspect the voltage at the audio unit connector terminal 1E (TNS). Is the voltage B+ when the light switch is turned to the TNS position? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Repair or replace the suspect wiring harness (TNS signal).

09-03D

SYMPTOM TROUBLESHOOTING [ENTIRE AUDIO SYSTEM]

NO.10 LCD DOES NOT DISPLAY AT ALL [ENTIRE AUDIO SYSTEM]

id0903e2825300

10	LCD does not display at all	
Possible DTC	Using the M-MDS	U3003:16, U0010:88
	Without using M-MDS (On-board diagnostic test mode)	09:Er20, 16:Er12
Possible cause	<ul style="list-style-type: none"> • Audio unit malfunction • Information display malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Inspect the information display. (See 09-22-14 INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE.) • Does the LCD display properly? 	Yes	Go to the next step.
		No	Replace the information display.
2	<ul style="list-style-type: none"> • Press either INFO switch on the information display. • Does the beep sound? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Replace both audio unit and information display. (CAN communication malfunction)

09-03E SYMPTOM TROUBLESHOOTING [RADIO]

<p>FOREWORD [RADIO]..... 09-03E-1</p> <p> Troubleshooting Index 09-03E-1</p> <p> Quick Diagnostic Chart (Radio) 09-03E-2</p> <p>CONFIRMATION STEP 1:</p> <p> RECEPTION CONDITION</p> <p> SYMPTOM (EXAMPLE) [RADIO]..... 09-03E-2</p> <p> CONFIRMATION STEP 2:</p> <p> ANTENNA SYSTEM SYMPTOM</p> <p> (EXAMPLE) [RADIO] 09-03E-3</p> <p> CONFIRMATION STEP 3:</p> <p> ANTENNA SYSTEM SIMPLE</p> <p> INSPECTION [RADIO] 09-03E-3</p> <p> NO.1 NO RADIO RECEPTION</p> <p> (AM/FM)/NO OR LOW VOLUME</p> <p> [RADIO]..... 09-03E-4</p> <p> NO.2 NO RADIO RECEPTION</p> <p> (SIRIUS SATELLITE RADIO)</p> <p> [RADIO]..... 09-03E-5</p> <p> NO.3 NOISE FROM RADIO</p> <p> (AM ONLY) [RADIO] 09-03E-7</p>	<p> NO.4 NOISE FROM RADIO</p> <p> (FM ONLY) [RADIO]..... 09-03E-9</p> <p> NO.5 NOISE FROM RADIO</p> <p> (SIRIUS SATELLITE RADIO</p> <p> ONLY) [RADIO]..... 09-03E-11</p> <p> NO.6 CANNOT TUNE</p> <p> (SEEK DOES NOT STOP) [RADIO].... 09-03E-13</p> <p> NO.7 CANNOT PRESET</p> <p> (PRESET FUNCTION DOES NOT</p> <p> OPERATE) [RADIO]..... 09-03E-14</p> <p> NO.8 RECEPTION FREQUENCY</p> <p> OF RADIO SLIPS [RADIO] 09-03E-14</p> <p> REFERENCE [RADIO]..... 09-03E-15</p> <p> 1. Multipath Noise 09-03E-15</p> <p> 2. Flutter/Skip Noise 09-03E-15</p> <p> 3. Stereo and Monaural Receptions . . . 09-03E-15</p> <p> Measures in Audio System 09-03E-15</p> <p> Effect Setting of Separation</p> <p> Control and High Tone Control 09-03E-15</p>
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FOREWORD [RADIO]

id0903e3802700

Note

- In case location, time, and broadcasting station etc. can be specified through interview to customer, possibility that signal environment causes problem is high.
- Perform confirmation of symptom and evaluation under conditions that customer reported (location, time, broadcasting station etc.). If not possible, perform it under equivalent conditions.
- Before inspection or repair, record the broadcasting stations that customer preset and reset them accordingly after the inspection or repair. Adjust the clock too.

09-03E

Troubleshooting Index

No.	Symptom	Possible DTC	
		Using the M-MDS	Without using M-MDS (On-board diagnostic test mode)
1	09-03E-4 NO.1 NO RADIO RECEPTION (AM/FM)/NO OR LOW VOLUME [RADIO]	U3003:16, U3000:04	09:Er20, 09:Er22
2	09-03E-5 NO.2 NO RADIO RECEPTION (SIRIUS SATELLITE RADIO) [RADIO]	B1A89:13	—
3	09-03E-7 NO.3 NOISE FROM RADIO (AM ONLY) [RADIO]	U3000:04	09:Er22
4	09-03E-9 NO.4 NOISE FROM RADIO (FM ONLY) [RADIO]	U3000:04	09:Er22
5	09-03E-11 NO.5 NOISE FROM RADIO (SIRIUS SATELLITE RADIO ONLY) [RADIO]	B1A89:13	—
6	09-03E-13 NO.6 CANNOT TUNE (SEEK DOES NOT STOP) [RADIO]	U3003:16, U3000:04	09:Er20, 09:Er22
7	09-03E-14 NO.7 CANNOT PRESET (PRESET FUNCTION DOES NOT OPERATE) [RADIO]	—	—
8	09-03E-14 NO.8 RECEPTION FREQUENCY OF RADIO SLIPS [RADIO]	U3000:04	09:Er22

SYMPTOM TROUBLESHOOTING [RADIO]

Quick Diagnostic Chart (Radio)

X: Applicable

Possible factor	Troubleshooting item							
	1 No radio reception (AM/FM)/No or low volume	2 No radio reception (SIRIUS satellite radio)	3 Noise from radio (AM only)	4 Noise from radio (FM only)	5 Noise from radio (SIRIUS satellite radio only)	6 Cannot tune (SEEK does not stop)	7 Cannot preset (preset function does not operate)	8 Reception frequency of radio slips
Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc)	X	X	X	X	X			
Audio unit/car navigation unit	X	X	X	X		X	X	X
Antenna plug poor connection	X	X	X	X	X	X		
Antenna feeder	X	X	X	X	X	X		
Electronic jamming from outside, or inferior condition of broadcasting station radio wave	X	X	X	X	X	X		X
Noise from electrical system on vehicle (e.g.fuel pump)			X	X	X			
Battery		X	X	X	X			
Charging system			X	X	X			
Antenna installation loosened		X	X	X	X			
Center panel (without car-navigation system)		X				X	X	
SIRIUS satellite radio unit		X			X			
Open or short circuit in wiring harness between SIRIUS satellite radio unit and audio unit		X						
Communication error between SIRIUS satellite radio unit and audio unit		X						
Antenna rod not installed.	X	X	X	X				

am3uuw0002224

CONFIRMATION STEP 1: RECEPTION CONDITION SYMPTOM (EXAMPLE) [RADIO]

id0903e3804000

Symptom	Antenna signal condition	Source
Only a buzzing sound from the speakers	<ul style="list-style-type: none"> There is no broadcasting wave. Signals from antenna to audio unit/car-navigation unit are not transmitted. 	<ul style="list-style-type: none"> Electric noise caused by the operation of internal circuit from audio unit it self Atmosphere noise
A buzzing or crunching sound and normal sound produced at the same time from the speakers	<ul style="list-style-type: none"> Though signals are transmitted from antenna to audio unit, electric noise from other sources is larger. 	<ul style="list-style-type: none"> Electrical noise caused by operation of electrical component on vehicle Electrical noise from high tension wire, transformer substation (factory), electrical feeder line (street car), or motorcycle.
A thumping sound and normal sound produced at the same time from the speakers (FM only)	<ul style="list-style-type: none"> Noise occurs due to radio wave environment at specific places (e.g. in valleys between buildings). Noise varies when own vehicle or surrounding vehicles moves. (FM only) 	<ul style="list-style-type: none"> Interference between direct and reflected waves of FM signals causes noise (Multipass noise).

SYMPTOM TROUBLESHOOTING [RADIO]

CONFIRMATION STEP 2: ANTENNA SYSTEM SYMPTOM (EXAMPLE) [RADIO]

id0903e3804100

Possible cause	AM reception condition	FM reception condition	SIRIUS satellite radio reception
<ul style="list-style-type: none"> Antenna feeder axis, open circuit Antenna feeder plug not attached 	NG: No reception	YES: Reception possible. (Sensitivity decreases, but reception is possible under strong electric field.)	NG: No reception
<ul style="list-style-type: none"> Antenna feeder axis (+) to ground (-), open circuit 	NG: No reception	NG: No reception	NG: No reception
<ul style="list-style-type: none"> Antenna feeder and antenna, poor ground 	YES: Reception possible (Noise may occur)	YES: Reception possible (Sensitivity decreases, but reception is possible under strong electric field.)	YES: Reception possible (Noise may occur)
<ul style="list-style-type: none"> Antenna feeder, jack and plug poor connection 	NG: No reception (Depending on connection conditions)	YES: Reception possible (Depending on connection conditions)	NG: No reception (Depending on connection conditions)

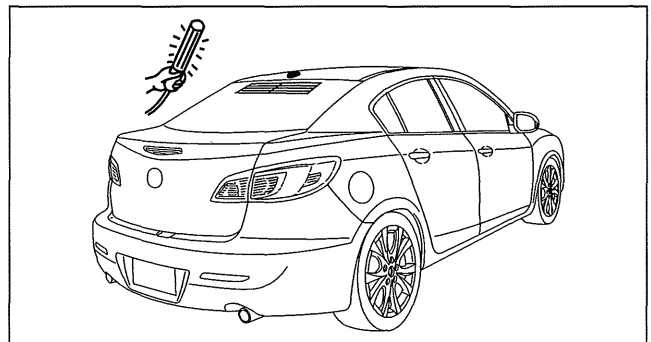
CONFIRMATION STEP 3: ANTENNA SYSTEM SIMPLE INSPECTION [RADIO]

id0903e3804200

- Because the antenna system is equipped with a capacitor, the continuity cannot be checked. Therefore proceed the following simple inspection.
 - Turn the AM radio on.
 - Tune to the frequency that there is no broadcast and you will hear a buzzing sound.
 - Turn a work light on and shake it around the antenna rod (around 10—20 mm {0.40—0.78 in})

Note

- Use a fluorescent light type for the inspection. Accurate diagnostic cannot be done with a different type of light.
- If a whirring sound from the speaker synchronized to the work light movement is confirmed, the antenna system is normal.



am3uuw0000500

09-03E

SYMPTOM TROUBLESHOOTING [RADIO]

NO.1 NO RADIO RECEPTION (AM/FM)/NO OR LOW VOLUME [RADIO]

id0903e3804300

1	No radio reception (AM/FM)/no or low volume	
Possible DTC	Using the M-MDS	U3003:16, U3000:04
	Without using M-MDS (On-board diagnostic test mode)	09:Er20, 09:Er22
Possible cause	<ul style="list-style-type: none"> • Low vehicle battery voltage • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Antenna plug poor connection • Antenna feeder malfunction • Audio unit malfunction • Antenna rod not installed 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the audio unit power to ON. • Is the LCD indicated correctly? 	Yes	Go to Step 3.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Measure voltage at B+ and ACC terminals. • Is voltage okay? <p>Specification With ignition switch ON: 11.5 V or more At idling: 12.5 V or more</p>	Yes	Go to the next step.
		No	Follow diagnostic procedure for symptom No. 2 (AUDIO).
3	<ul style="list-style-type: none"> • Set volume to 10 to 15. • Is buzzing sound or voice confirmed? 	Yes	Go to the next step.
		No	Follow diagnostic procedure for symptom No. 3 (AUDIO) or No. 4 (AUDIO).
4	<ul style="list-style-type: none"> • Tune to local broadcasting station and check reception condition. • Is reception okay? 	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none"> • Push PRESET switches and check preset conditions. • Has preset been stored? 	Yes	The system is normal.
		No	Preset broadcasting stations.
6	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? <p>Note</p> <ul style="list-style-type: none"> • TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	Yes	Go to the next step.
		No	Go to Step 8.
7	<ul style="list-style-type: none"> • Remove aftermarket electronic equipment. • Turn audio unit ON and check reception condition. • Is reception improved? 	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
8	<ul style="list-style-type: none"> • Refer to confirmation step 3, and inspect antenna system. • Is a whirring sound present? 	Yes	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Inspect antenna plug connection condition. • Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
10	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure continuity between antenna feeder axis and ground. • Is there any continuity? 	Yes	Replace antenna feeder.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [RADIO]

STEP	INSPECTION	ACTION	
11	<ul style="list-style-type: none"> • Compare reception with other audio unit on same model (model/unit) under same problem conditions. • Is reception equivalent between customer's unit and compared unit? <p>Note</p> <ul style="list-style-type: none"> • Due to following differences, you may feel difference in reception efficiency. <p>(Vehicle side factor)</p> <ul style="list-style-type: none"> — Antenna installation location, height, feeder wiring routing, optional electrical equipment <p>(Audio unit factor)</p> <ul style="list-style-type: none"> — Volume concern type: It decreases change of volume when signals become weak. (Noise is easily noticed) — Noise decrease type: It decreases volume when signals become weak, so that noise is not noticeable. 	Yes	The system is normal. (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition.)
		No	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

NO.2 NO RADIO RECEPTION (SIRIUS SATELLITE RADIO) [RADIO]

id0903e3904500

2	No radio reception (SIRIUS satellite radio)	
Possible DTC	Using the M-MDS	B1A89:13
	Without using M-MDS (On-board diagnostic test mode)	—
Possible cause	<ul style="list-style-type: none"> • Low battery voltage • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Antenna plug poor connection • Antenna feeder malfunction • SIRIUS satellite radio unit malfunction • Open or short circuit in wiring harness between SIRIUS satellite radio unit and audio unit • Communication error between SIRIUS satellite radio unit and audio unit • Audio unit malfunction • Antenna rod not installed 	

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Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Verify that the AM radio and FM radio reception conditions. • Are AM radio and FM radio reception normally? 	Yes	Go to the next step.
		No	Perform symptom "No.1 no radio reception (AM/FM)/no or low volume" troubleshooting procedure.
2	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? <p>Note</p> <ul style="list-style-type: none"> • TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	Yes	Go to the next step.
		No	Go to Step 4.
3	<ul style="list-style-type: none"> • Remove aftermarket electronic equipment. • Turn audio unit ON and check reception condition. • Is reception improved? 	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Inspect SIRIUS satellite radio antenna plug connection condition. • Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
5	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure continuity between SIRIUS satellite radio antenna feeder axis and ground. • Is there any continuity? 	Yes	Replace the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION.)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [RADIO]

STEP	INSPECTION	ACTION	
6	<ul style="list-style-type: none"> • Inspect the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.) • Is the SIRIUS satellite radio antenna feeder normal? 	Yes	Go to the next step.
		No	Replace the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION.)
7	<ul style="list-style-type: none"> • Inspect the SIRIUS satellite radio antenna. (See 09-20-23 CENTER ROOF ANTENNA INSPECTION.) • Is the SIRIUS satellite radio antenna normal? 	Yes	Go to the next step.
		No	Replace the SIRIUS satellite radio antenna. (See 09-20-19 CENTER ROOF ANTENNA REMOVAL/INSTALLATION.)
8	<ul style="list-style-type: none"> • Inspect the following wiring harness for open or short circuit. <ul style="list-style-type: none"> — Between SIRIUS satellite radio unit harness side connector terminal L and audio unit terminal 1O — Between SIRIUS satellite radio unit harness side connector terminal K and audio unit terminal 1Q — Between SIRIUS satellite radio unit harness side connector terminal O and main fuse block — Between SIRIUS satellite radio unit harness side connector terminal P and ignition switch (without advanced keyless entry and push button start system)/ACC relay (with advanced keyless entry and push button start system) — Between SIRIUS satellite radio unit harness side connector terminal C and audio unit terminal 2C — Between SIRIUS satellite radio unit harness side connector terminal E and audio unit terminal 2E — Between SIRIUS satellite radio unit harness side connector terminal G and audio unit terminal 2D — Between SIRIUS satellite radio unit harness side connector terminal A and GND — Is there any open or short circuit detected? 	Yes	Repair or replace malfunctioning part.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Install all removed parts. • Compare reception with other Audio unit on same model (model/unit) under same problem conditions. • Is reception equivalent between customer's unit and compared unit? <p>Note</p> <ul style="list-style-type: none"> • Due to following differences, you may feel difference in reception efficiency. <p>(Vehicle side factor)</p> <ul style="list-style-type: none"> — Antenna installation location, height, feeder wiring routing, optional electrical equipment <p>(Audio unit factor)</p> <ul style="list-style-type: none"> — Volume concern type: It decreases change of volume when signals become weak. (Noise is easily noticed) — Volume concern type: It decreases change of volume when signals become weak. (Noise is easily noticed) 	Yes	The system is normal. (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition.)
		No	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

SYMPTOM TROUBLESHOOTING [RADIO]

NO.3 NOISE FROM RADIO (AM ONLY) [RADIO]

id0903e3904600

3	Noise from radio (AM only)	
Possible DTC	Using the M-MDS	U3000:04
	Without using M-MDS (On-board diagnostic test mode)	09:Er22
Possible cause	<ul style="list-style-type: none"> • Antenna rod not installed • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Battery malfunction • Noise from electrical system on vehicle (e.g. fuel pump) • Charging system malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Antenna installation loosened • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Tune to local broadcasting station and check reception condition. • Is reception okay? 	Yes	Tune to correct frequency of broadcasting station. If not preset, preset it.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? <p>Note</p> <ul style="list-style-type: none"> • TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	Yes	Go to the next step.
		No	Go to Step 4.
3	<ul style="list-style-type: none"> • Remove aftermarket electronic equipment. • Turn audio unit ON and check reception condition. • Is reception improved? 	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Measure battery voltage. • Is battery voltage okay? <p>Specification:</p> <p>With ignition switch ON: 11.5 V or more</p> <p>At idling: 12.5 V or more</p> <p>Note</p> <ul style="list-style-type: none"> • Inspect that battery cables are connected to terminals securely. 	Yes	Go to the next step.
		No	Charge battery. Inspect charging system, and repair or replace if necessary.
5	<ul style="list-style-type: none"> • Is noise occurring only when vehicle electrical system (e.g. fuel pump) operates? <p>Note</p> <ul style="list-style-type: none"> • Identify subject electrical component by disconnecting fuse, turning switch ON & OFF, or disconnecting & connecting connector. • It will be easy when simulation function on M-MDS is used. 	Yes	Go to the next step.
		No	Go to Step 7.

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SYMPTOM TROUBLESHOOTING [RADIO]

STEP	INSPECTION	ACTION	
6	<ul style="list-style-type: none"> • Inspect power supply, ground condition, and noise prevention capacitor for electrical component. • Is noise present after inspection? <p>Note</p> <ul style="list-style-type: none"> • Inspect following: <ul style="list-style-type: none"> — Power supply to electrical component for voltage drop (compare with battery voltage) — Resistance between ground of electrical component and body. (Should be close to 0 ohm) — Installation condition of noise prevention capacitor for fuel pump etc. 	Yes	Go to the next step.
		No	Troubleshooting completed. <p>Note</p> <ul style="list-style-type: none"> • The audio unit supplies 12 V battery power to the antenna amplifier for the AM radio reception in the radio mode. The audio unit cannot receive the AM signals without the 12 V battery power to the antenna amplifier. If the AM signals become strong, the audio/unit car-navigation unit may receive the signal with noises.
7	<ul style="list-style-type: none"> • Inspect antenna plug connection condition. • Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
8	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure continuity between antenna feeder axis and ground. • Is there any continuity? 	Yes	Replace antenna feeder.
		No	Go to the next step.
9	Compare reception with other audio unit on same model (model/unit) under same problem conditions. <ul style="list-style-type: none"> • Is reception equivalent between customer's unit and compared unit? <p>Note</p> <ul style="list-style-type: none"> • Due to following differences, you may feel difference in reception efficiency. <ul style="list-style-type: none"> (Vehicle side factor) <ul style="list-style-type: none"> — Antenna installation location, height, feeder wiring routing, optional electrical equipment (Audio unit factor) <ul style="list-style-type: none"> — Volume concern type: It decreases change of volume when signals become weak. (Noise is easily noticed) — Noise decrease type: It decreases volume when signals become weak, so that noise is not noticeable. 	Yes	The system is normal (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition).
		No	Go to the next step.
10	<ul style="list-style-type: none"> • Retighten ground fixation for antenna installation part and antenna amplifier. • Is noise present, after retightening? 	Yes	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Troubleshooting completed.

SYMPTOM TROUBLESHOOTING [RADIO]

NO.4 NOISE FROM RADIO (FM ONLY) [RADIO]

id0903e3904700

4	Noise from radio (FM only)	
Possible DTC	Using the M-MDS	U3000:04
	Without using M-MDS (On-board diagnostic test mode)	09:Er22
Possible cause	<ul style="list-style-type: none"> • Antenna rod not installed • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Battery malfunction • Noise from electrical system on vehicle (e.g. fuel pump) • Charging system malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Antenna installation loosened • Audio unit malfunction <p>Note</p> <ul style="list-style-type: none"> • FM broadcast has feature “sound quality is good” and “resistant to noise”, but FM broadcast has particular noises. Though audio unit is designed to reduce noise, there are times noise occurs due to conditions. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Tune to local broadcasting station and check reception condition. • Is reception okay? 	Yes	Tune to correct frequency of broadcasting station. If not preset, preset it.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? 	Yes	Go to the next step.
		No	Go to Step 4.
3	<ul style="list-style-type: none"> • Remove aftermarket electronic equipment. • Turn audio unit ON and check reception condition. • Is reception improved? 	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Measure battery voltage. • Is battery voltage okay? <p>Specification: With ignition switch ON: 11.5 V or more At idling: 12.5 V or more</p> <p>Note</p> <ul style="list-style-type: none"> • Inspect that battery cables are connected to terminals securely. 	Yes	Go to the next step.
		No	Charge battery. Inspect charging system, and repair or replace if necessary.
5	<ul style="list-style-type: none"> • Is noise occurring only when vehicle electrical system (e.g. fuel pump) operates? <p>Note</p> <ul style="list-style-type: none"> • Identify subject electrical component by disconnecting fuse, turning switch ON & OFF, or disconnecting & connecting connector. • It will be easy when simulation function on M-MDS is used. 	Yes	Go to the next step.
		No	Go to Step 7.

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SYMPTOM TROUBLESHOOTING [RADIO]

STEP	INSPECTION	ACTION	
6	<ul style="list-style-type: none"> • Inspect power supply, ground condition, and noise prevention capacitor for electrical component. • Is noise present after inspection? <p>Note</p> <ul style="list-style-type: none"> • Inspect following: <ul style="list-style-type: none"> — Power supply to electrical component for voltage drop (compare with battery voltage) — Resistance between ground of electrical component and body. (Should be close to 0 ohm) — Installation condition of noise prevention capacitor for fuel pump etc. 	Yes	Go to the next step.
		No	Troubleshooting completed.
7	<ul style="list-style-type: none"> • Inspect antenna plug connection condition. • Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
8	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure continuity between antenna feeder axis and ground. • Is there any continuity? 	Yes	Replace antenna feeder.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Compare reception with other audio unit on same model (model/unit) under same problem conditions. • Is reception equivalent between customer's unit and compared unit? 	Yes	The system is normal (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition).
		No	Go to the next step.
10	<ul style="list-style-type: none"> • Retighten ground fixation for antenna installation part and antenna amplifier. • Is noise present, after retightening? <p>Note</p> <ul style="list-style-type: none"> • When antenna is not grounded perfectly, FM particular noise is likely to be noticeable. 	Yes	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Troubleshooting completed.

SYMPTOM TROUBLESHOOTING [RADIO]

NO.5 NOISE FROM RADIO (SIRIUS SATELLITE RADIO ONLY) [RADIO]

id0903e3904800

5	Noise from radio (SIRIUS satellite audio only)	
Possible DTC	Using the M-MDS	B1A89:13
	Without using M-MDS (On-board diagnostic test mode)	—
Possible cause	<ul style="list-style-type: none"> • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Battery malfunction • Noise from electrical system on vehicle (e.g. fuel pump) • Charging system malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Antenna installation loosened • SIRIUS satellite radio unit malfunction • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? <p>Note</p> <ul style="list-style-type: none"> • TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	Yes Go to the next step.
		No Go to Step 3.
2	<ul style="list-style-type: none"> • Remove aftermarket electronic equipment. • Turn audio unit ON and check reception condition. • Is reception improved? 	Yes The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No Go to the next step.
3	<ul style="list-style-type: none"> • Measure the voltage at battery. • Is the battery voltage okay? <p>Specification: Ignition switch ON: 11.5 V or more Idle: 12.5 V or more</p> <p>Note</p> <ul style="list-style-type: none"> • Inspect that battery cables are connected to terminals securely. 	Yes Go to the next step.
		No Charge battery. Inspect charging system, and repair or replace if necessary.
4	<ul style="list-style-type: none"> • Is noise occurring only when vehicle electrical system (e.g. fuel pump) operates? <p>Note</p> <ul style="list-style-type: none"> • Identify subject electrical component by disconnecting fuse, turning switch ON & OFF, or disconnecting & connecting connector. • It will be easy when simulation function on M-MDS is used. 	Yes Go to the next step.
		No Go to Step 6.
5	<ul style="list-style-type: none"> • Inspect power supply, ground condition, and noise prevention capacitor for electrical component. • Is noise present after inspection? <p>Note</p> <ul style="list-style-type: none"> • Inspect following: <ul style="list-style-type: none"> — Power supply to electrical component for voltage drop (compare with battery voltage) — Resistance between ground of electrical component and body. (Should be close to 0 ohm) — Installation condition of noise prevention capacitor for fuel pump etc. 	Yes Go to the next step.
		No Troubleshooting completed.
		<p>Note</p> <ul style="list-style-type: none"> • The SIRIUS satellite radio is supplied 12 V battery power for the AM radio reception in the radio mode. The audio unit cannot receive the AM signals without the 12 V battery power to the antenna amplifier. If the SIRIUS satellite radio signals become strong, the audio unit may receive the signal with noises.

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SYMPTOM TROUBLESHOOTING [RADIO]

STEP	INSPECTION	ACTION	
6	<ul style="list-style-type: none"> • Inspect SIRIUS satellite radio antenna plug connection condition. • Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
7	<ul style="list-style-type: none"> • Inspect the SIRIUS satellite radio antenna. (See 09-20-23 CENTER ROOF ANTENNA INSPECTION.) • Is the SIRIUS satellite radio antenna normal 	Yes	Go to the next step.
		No	Replace the SIRIUS satellite radio antenna. (See 09-20-19 CENTER ROOF ANTENNA REMOVAL/INSTALLATION.)
8	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure continuity between SIRIUS satellite radio antenna feeder axis and ground. • Is there any continuity? 	Yes	Replace the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION.)
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Inspect the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.) • Is the SIRIUS satellite radio antenna feeder normal? 	Yes	Go to the next step.
		No	Replace the SIRIUS satellite radio antenna feeder. (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION.)
10	<ul style="list-style-type: none"> • Compare reception with other audio unit on same model (model/unit) under same problem conditions. • Is reception equivalent between customer unit and compared unit? <p>Note</p> <ul style="list-style-type: none"> • Due to following differences, you may feel difference in reception efficiency. <ul style="list-style-type: none"> (Vehicle side factor) <ul style="list-style-type: none"> — Antenna installation location, height, feeder wiring routing, optional electrical equipment (Audio unit factor) <ul style="list-style-type: none"> — Volume concern type: It decreases change of volume when signals become weak. (Noise is easily noticed) — Noise decrease type: It decreases volume when signals become weak, so that noise is not noticeable. 	Yes	The system is normal. (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition.)
		No	Go to the next step.
11	<ul style="list-style-type: none"> • Retighten ground fixation for antenna installation part and antenna feeder. • Is noise present, after retightening? 	Yes	Replace the SIRIUS satellite radio unit. (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)
		No	Troubleshooting completed.

SYMPTOM TROUBLESHOOTING [RADIO]

NO.6 CANNOT TUNE (SEEK DOES NOT STOP) [RADIO]

id0903e3904900

6	Cannot tune (seek does not stop)	
Possible DTC	Using the M-MDS	U3003:16, U3000:04
	Without using M-MDS (On-board diagnostic test mode)	09:Er20, 09:Er22
Possible cause	<ul style="list-style-type: none"> • Audio panel malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Inspect if feel of SEEK switch is normal when switch is pushed and released. • Is it okay? 	Yes	Go to the next step.
		No	Perform confirmation step 1: audio panel switch confirmation. Replace audio panel if necessary.
2	<ul style="list-style-type: none"> • Inspect indication of LCD. • Is frequency indication increased or decreased when SEEK switch is pushed? 	Yes	Go to the next step.
		No	Perform confirmation step 1: audio panel switch confirmation. Replace audio panel if necessary.
3	<ul style="list-style-type: none"> • Manually tune to local broadcasting station and check reception condition. • Is reception okay? 	Yes	Go to Step 6.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Inspect antenna plug connection condition. • Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
5	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure continuity between antenna feeder axis and ground. • Is there any continuity? 	Yes	Replace antenna feeder.
		No	Go to the next step.
6	<ul style="list-style-type: none"> • Check if number of broadcasting stations changes depending on time and place. • Does it change? 	Yes	The system is normal. (Explain to customer that SEEK sometimes does not stop depending on signal reception condition.) Note <ul style="list-style-type: none"> • Signals tend to reach longer distances in the night. It is noticeable in AM signals, several audio functions may stop due to foreign broadcasting station or noise. Though the audio system restrains sensitivity of SEEK and SCAN functions in the night, the audio system may select other than desired broadcasting station when signals are considerably strong. This function is linked to the parking light. When the parking light or headlight is turned on, SEEK and SCAN may not function for weak signals.
		No	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

09-03E

SYMPTOM TROUBLESHOOTING [RADIO]

NO.7 CANNOT PRESET (PRESET FUNCTION DOES NOT OPERATE) [RADIO]

id0903e3905000

7	Cannot preset (preset function does not operate)
Possible DTC	—
Possible cause	<ul style="list-style-type: none"> • Audio unit malfunction • Audio panel malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Tune to desired station and push channel preset button 1 for about 2 seconds to store it. • Repeat above for other stations using PRESET switch 2 to 5. • Push channel preset switch 1 to 6 one by one. • Are stored stations present? 	Yes	Go to the next step.
		No	Go to Step 3.
2	<ul style="list-style-type: none"> • Switch the ignition to off and then to ACC. • Check if preset stations are stored by pushing preset switches. • Are stations stored? 	Yes	The system is normal. (Explain preset procedure to customer using Owner's Manual)
		No	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> • Remove audio panel from audio unit, and reinstall audio panel to audio unit. • Turn the audio unit power to ON. • While pressing the POWER/VOLUME switch, simultaneously press the RDM/PRESET switch 3 for 0.2 s or more. • Push all switches and check if buzzer sounds. • Is all switches okay? 	Yes	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Replace audio panel. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

NO.8 RECEPTION FREQUENCY OF RADIO SLIPS [RADIO]

id0903e3905100

8	Reception frequency of radio slip	
Possible DTC	Using the M-MDS	U3000:04
	Without using M-MDS (On-board diagnostic test mode)	09:Er22
Possible cause	<ul style="list-style-type: none"> • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Push SEEK switch and check if desired broadcasting station is tuned. • Is it okay? 	Yes	Go to Step 3.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Check if other broadcasting station is received at certain place when indication of reception frequency stays. • Is other station received? <p>Note</p> <ul style="list-style-type: none"> • When you receive weak signal from one broadcasting station and come close to broadcasting antenna which emits strong signal, broadcasting with strong signal is sometimes received. 	Yes	Go to the next step.
		No	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> • Compare reception with other audio unit on same model (model/unit) under same problem conditions. • Is reception equivalent between customer's unit and compared unit? 	Yes	Troubleshooting completed.
		No	Replace audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

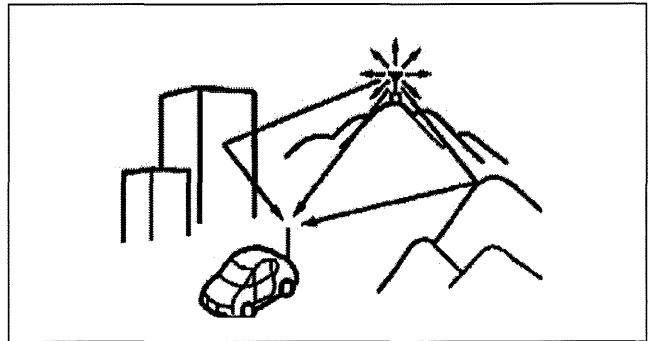
SYMPTOM TROUBLESHOOTING [RADIO]

REFERENCE [RADIO]

id0903e383000

1. Multipath Noise

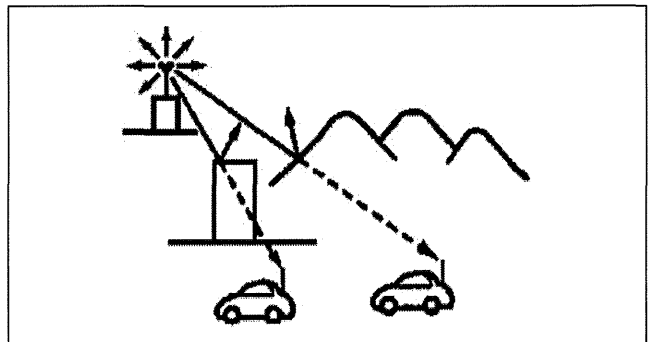
- Signals from an FM transmitter are a high frequency and similar to beams of light because they do not bend around corners, but they do reflect. Since FM signals can be reflected by obstructions, it is possible to receive both the direct signal and the reflected signal at the same time. This causes a slight delay in reception and may be heard as a broken sound or a distortion.



atraaw00001761

2. Flutter/Skip Noise

- Signals become weak in valleys between mountains, tall building, and other obstacles. When the vehicle passes through such an area, the reception conditions may change suddenly, resulting in annoying noise.



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09-03E

3. Stereo and Monaural Receptions

- As signals become weak, noise may appear more in stereo reception. Comparing to stereo reception, noise in monaural receptions is relatively less striking.

Measures in Audio System

Separation control

- Utilizing the characteristic of monaural reception that noise is relatively less striking than stereo reception, the audio system automatically changes the reception from stereo to monaural and lessens annoying noise when signals become weak or a multipath phenomenon occurs.

High tone control

- When signals become weak or a multipath phenomenon occurs, the audio system restrains volume level in high frequency band and lessens annoying noise.

Effect Setting of Separation Control and High Tone Control

- The separation and high tone controls influence sound quality, Therefore they are specifically tuned for individual model. (Comparison of characteristic must be done on the same models)

High tone setting → Less effective range → Noise is conspicuous

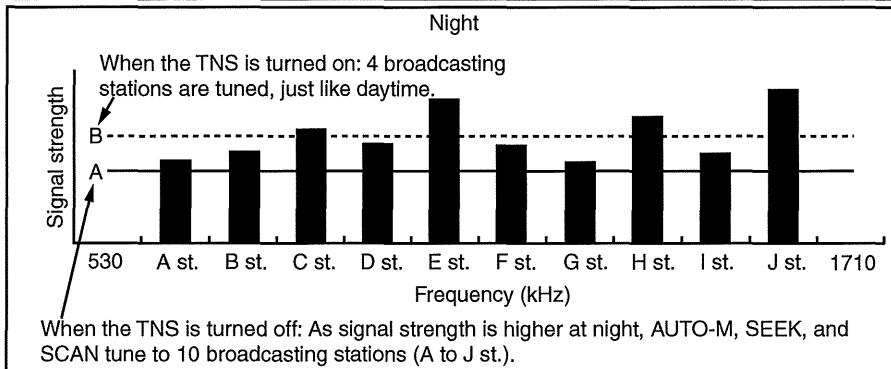
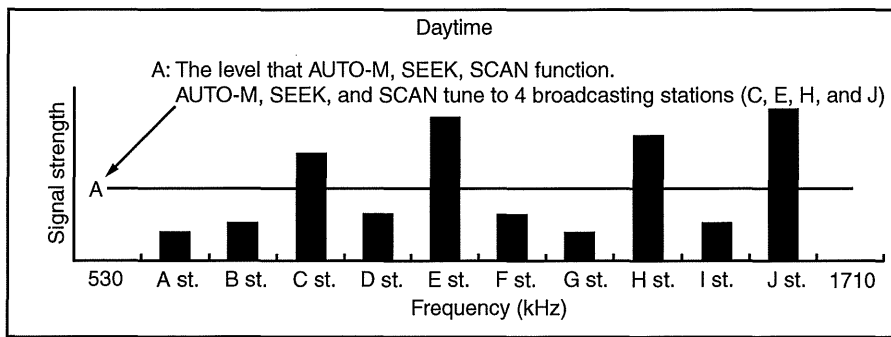
Noise restraint setting → Wider effective range → Noise is less conspicuous

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SYMPTOM TROUBLESHOOTING [RADIO]

Remarks

- Signals tend to reach longer distances at night. It is conspicuous in AM signals, several audio functions may stop due to foreign broadcasting station or noise. Though the audio system restrains sensitivity of SEEK and SCAN functions at night, the audio system may select other than desired broadcasting station when signals are considerably strong. This function is linked to the parking light. When the parking light or headlight is turned on, SEEK and SCAN may not function for weak signals.



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09-03F SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

FOREWORD

[CD PLAYER/CHANGER] 09-03F-2

Troubleshooting Index 09-03F-2

NO.1 CD PLAYER/CHANGER

DOES NOT LOAD THE CD OR
EJECTS THE CD IMMEDIATELY

[CD PLAYER/CHANGER] 09-03F-4

NO.2 CD PLAYER/CHANGER

DOES NOT EJECT THE CD

[CD PLAYER/CHANGER] 09-03F-5

NO.3 CD PLAYER/CHANGER

DOES NOT PLAY THE CD/NO

SOUND [CD PLAYER/CHANGER] 09-03F-6

NO.4 SOUND JUMPS

[CD PLAYER/CHANGER] 09-03F-6

NO.5 CD PLAYER/CHANGER

SCRATCHES ON THE CD

[CD PLAYER/CHANGER] 09-03F-7

NO.6 DISC CHANGE IS

INOPERATIVE

[CD PLAYER/CHANGER] 09-03F-7

NO.7 CD PLAYER DOES NOT

PLAY THE MP3/WMA-FORMATTED

FILE [CD PLAYER/CHANGER] 09-03F-8

NO.8 MP3/WMA-FORMATTED FILE

FOLDER SELECTION IS

INOPERATIVE/TRACK SEARCH IS

INOPERATIVE

[CD PLAYER/CHANGER] 09-03F-9

NO.9 CD PLAYER DOES NOT

INDICATE THE MP3/WMA TITLE

TEXT [CD PLAYER/CHANGER] 09-03F-10

NO.10 CD PLAYER DOES NOT

PLAY THE AUDIO DATA (CDDA)

[CD PLAYER/CHANGER] 09-03F-11

NO.11 TRACK CHANGE IS

INOPERATIVE

[CD PLAYER/CHANGER] 09-03F-12

REFERENCE

[CD PLAYER/CHANGER] 09-03F-12

MP3/WMA-Formatted File 09-03F-13

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

FOREWORD [CD PLAYER/CHANGER]

id0903e5802700

Troubleshooting Index

No.	Items	Symptom	Possible DTC	
			Using the M-MDS	Without using M-MDS (On-board diagnostic test mode)
1	CD player/changer	09-03F-4 NO.1 CD PLAYER/CHANGER DOES NOT LOAD THE CD OR EJECTS THE CD IMMEDIATELY [CD PLAYER/CHANGER]	B1D19:79	10:Er01, 22:Er01
2		09-03F-5 NO.2 CD PLAYER/CHANGER DOES NOT EJECT THE CD [CD PLAYER/CHANGER]	B1D19:79	10:Er01, 22:Er01
3		09-03F-6 NO.3 CD PLAYER/CHANGER DOES NOT PLAY THE CD/NO SOUND [CD PLAYER/CHANGER]	B1188:64	10:Er07, 22:Er07
4		09-03F-6 NO.4 SOUND JUMPS [CD PLAYER/CHANGER]	B1188:64	10:Er07, 22:Er07
5		09-03F-7 NO.5 CD PLAYER/CHANGER SCRATCHES ON THE CD [CD PLAYER/CHANGER]	B1188:64	10:Er07, 22:Er07
6	CD changer	09-03F-7 NO.6 DISC CHANGE IS INOPERATIVE [CD PLAYER/CHANGER]	B1188:64	22:Er07
7	CD player/changer (MP3/WMA formatted file playback function)	09-03F-8 NO.7 CD PLAYER DOES NOT PLAY THE MP3/WMA-FORMATTED FILE [CD PLAYER/CHANGER]	B1188:64	10:Er07, 22:Er07
8		09-03F-9 NO.8 MP3/WMA-FORMATTED FILE FOLDER SELECTION IS INOPERATIVE/TRACK SEARCH IS INOPERATIVE [CD PLAYER/CHANGER]	B1D19:71	10:Er02, 22:Er02
9		09-03F-10 NO.9 CD PLAYER DOES NOT INDICATE THE MP3/WMA TITLE TEXT [CD PLAYER/CHANGER]	B1D19:71, B1188:64	10:Er02, 10:Er07, 22:Er02, 22:Er07
10		09-03F-11 NO.10 CD PLAYER DOES NOT PLAY THE AUDIO DATA (CDDA) [CD PLAYER/CHANGER]	B1D19:71, B1188:64	10:Er02, 10:Er07, 22:Er02, 22:Er07
11	CD player/changer	09-03F-12 NO.11 TRACK CHANGE IS INOPERATIVE [CD PLAYER/CHANGER]	B1D19:71	10:Er02, 22:Er02

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

X: Applicable

Troubleshooting Item	CD player/changer					CD changer	MP3/WMA (Windows media audio) applicable CD player/changer				CD player/changer
	1	2	3	4	5	6	7	8	9	10	11
Possible factor	CD player/changer does not load the CD or ejects the CD immediately	CD player/changer does not eject the CD	CD player/changer does not play the CD/No sound	Sound jumps	CD player/changer scratches on the CD	Disc change is inoperative	CD player does not play the MP3/WMA-formatted file	MP3/WMA-formatted file folder selection is inoperative /track search is inoperative	CD player does not indicate the MP3/WMA title text	CD player does not play the audio data (CODA)	Track change is inoperative
CD is inserted upside down	X		X								
Audio unit is malfunctioning	X	X	X	X	X	X					X
Defective CD (egg., cracked, badly bent, rough edges, scratch, dirty CD, condensation)	X	X	X	X							X
Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc)	X	X	X								X
Poor connection of audio unit connector or terminal (e.g., damaged, bent, pull-out pin, corrosion)	X	X									
Improper center panel installation		X				X					
Improper CD cover installation		X									
Improper audio unit installation (e.g., rattle, loose)				X							
Inadequate tire pressure				X							
Deformed disc is used (e.g., out of specification (thickness), bent disc)	X	X			X						
Multiple CDs are inserted into the CD player at the same time		X			X						
Center panel is malfunctioning						X					X
CD-R/RW written format is out of specification							X			X	
MP3 and other format data are in the CD-R/RW							X				
File extension for MP3-formatted file is incorrect (Correct: ".mp3"/".wma", Incorrect: e.g., RIFF)							X				
Defective CD-R/RW (e.g., dirty, scratch)							X	X	X	X	
CD-R/RW (MP3 files are all written to RIFF format)							X				
Conflict of ID tag version for CD-R/RW								X	X		
Improper folder and/or music title in CD-R/RW								X			
The number of characters of folder/music file name in CD-R/RW exceeds the maximum number of characters								X	X		
Improper encode in CD-R/RW								X	X		
MP3/WMA (Windows media audio) applicable CD player/changer is malfunction							X	X	X	X	X
No title input in CD-R/RW									X		
Input title text by 2-bytes characters									X		
Data other than the audio data is in CD-R/RW										X	

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09-03F

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.1 CD PLAYER/CHANGER DOES NOT LOAD THE CD OR EJECTS THE CD IMMEDIATELY [CD PLAYER/CHANGER]

id0903e5826100

1	CD player/changer does not load the CD or ejects the CD immediately	
Possible DTC	Using the M-MDS	B1D19:79
	Without using M-MDS (On-board diagnostic test mode)	10:Er01, 22:Er01
Possible cause	<ul style="list-style-type: none"> CD is inserted upside down Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) Deformed disc is used (e.g., out of specification (thickness), bent disc) Poor connection of audio unit connector or terminal (e.g., damaged, bent, pulled-out pin, corrosion) Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Is CD inserted properly, label-side up? 	Yes	Go to the next step.
		No	Explain to the customer that CD should be inserted into the slot, label-side up.
2	<ul style="list-style-type: none"> Replace with a CD known to be good. Does the CD player/changer load the CD? 	Yes	Go to the next step.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> Visually inspect the CD. <ul style="list-style-type: none"> — Is there any dirt, scratch or deformation on the CD? — Is the CD a non-conventional disc? 	Yes	Explain to the customer that the defective CD or non-conventional disc cannot be use.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Switch the ignition to off. Inspect the connection of the audio unit connector (24-pin). Inspect both audio unit connector and wiring harness-side connector for poor connection. (such as damaged/bent/pulled-out pins, corrosion) All the pins and connector normal? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	If the audio unit connector/ pin is wrong: <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) If the wiring harness-side connector/pin is wrong: <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.2 CD PLAYER/CHANGER DOES NOT EJECT THE CD [CD PLAYER/CHANGER]

id0903e5826200

2	CD player/changer does not eject the CD	
Possible DTC	Using the M-MDS	B1D19:79
	Without using M-MDS (On-board diagnostic test mode)	10:Er01, 22:Er01
Possible cause	<ul style="list-style-type: none"> Defective CD. (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) Poor connection of audio unit connector or terminal (e.g., damaged, bent, pulled-out pin, corrosion) Deformed disc is used (e.g., out of specification (thickness), bent disc). Multiple CDs are inserted into the CD player at the same time Audio unit malfunction <p>Note</p> <ul style="list-style-type: none"> The CD may be malfunctioning if the CD player/changer does not eject the certain CD only. Inspect the CD player/changer operation using the CD known to be good. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Inspect the operation of the audio system other than CD player/changer (e.g. Radio). Does other audio system operate? 	Yes	Go to Step 3.
		No	Go to the next step.
2	<ul style="list-style-type: none"> Switch the ignition to off. Inspect the connection of the audio unit connector (24-pin). Inspect both audio unit connector and wiring harness-side connector for poor connection. (such as damaged/bent/pulled-out pins, corrosion) All the pins and connector normal? 	Yes	Go to the next step.
		No	<p>If the audio unit connector/pin is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) <p>If the wiring harness-side connector/pin is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
3	<ul style="list-style-type: none"> Eject the CD. Is the CD ejected from the CD player/changer? 	Yes	Go to the next step.
		No	Inspect the panel switch and CD cover installation. Securely install the panel switch and/or CD cover as necessary.
4	<ul style="list-style-type: none"> Insert the CD into the CD player/changer. Does the CD insert into the CD player/changer smoothly? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Install the audio panel and/or CD cover properly, then go to the next step.
5	<ul style="list-style-type: none"> Is the CD ejected from the CD player/changer? 	Yes	Troubleshooting completed. Explain repairs to the customers.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

09-03F

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.3 CD PLAYER/CHANGER DOES NOT PLAY THE CD/NO SOUND [CD PLAYER/CHANGER]

id0903e5806100

3	CD player/changer does not play the CD/No sound	
Possible DTC	Using the M-MDS	B1188:64
	Without using M-MDS (On-board diagnostic test mode)	10:Er07, 22:Er07
Possible cause	<ul style="list-style-type: none"> • CD is inserted upside down • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the radio ON and inspect that there is sound. • Is there sound? <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • Check for the volume dial position. 	Yes	Go to the next step.
		No	Go to the symptom troubleshooting No.3 (Audio system).
2	<ul style="list-style-type: none"> • Was CD inserted properly, label-side up? 	Yes	Go to the next step.
		No	Explain to the customer that CD should be inserted into the slot, label-side up.
3	<ul style="list-style-type: none"> • Replace the CD known to be good. • Does the CD player/changer load the CD? 	Yes	Go to the next step.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
4	<ul style="list-style-type: none"> • Visually inspect the CD. <ul style="list-style-type: none"> — Is there any dirt, scratch or deformation on the CD? — Is the CD a non-conventional disc? — Is there a CD in MP3/WMA recording? 	Yes	Explain to the customer that the defective CD or non-conventional disc cannot be use.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

NO.4 SOUND JUMPS [CD PLAYER/CHANGER]

id0903e5806200

4	Sound jumps	
Possible DTC	Using the M-MDS	B1188:64
	Without using M-MDS (On-board diagnostic test mode)	10:Er07, 22:Er07
Possible cause	<ul style="list-style-type: none"> • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Improper audio unit installation (e.g., rattle, loose) • Inadequate tire pressure • Audio unit malfunction <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • The CD may be malfunctioning if the sound jumps on the certain CD only. Inspect the CD player/changer operation using the CD known to be good. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Does the sound jump when the vehicle is stopped? 	Yes	Go to Step 6.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Drive the vehicle. • Does the sound jump when driving over uneven surfaces? 	Yes	Go to the next step.
		No	Go to Step 6.
3	<ul style="list-style-type: none"> • Is the audio unit installed securely? 	Yes	Go to the next step.
		No	Install the audio unit securely.
4	<ul style="list-style-type: none"> • Inspect the tire pressure. • Is the tire pressure normal? 	Yes	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

STEP	INSPECTION	ACTION
5	<ul style="list-style-type: none"> Adjust the tire pressure within specification. Does the sound jump when driving the vehicle? 	Yes Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No Audio system is normal. Explain repairs to the customers.
6	<ul style="list-style-type: none"> Replace the CD known to be good. Does the sound jump when driving the vehicle? 	Yes Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No Audio system is normal. Explain to the customer that the CD is malfunctioning.

NO.5 CD PLAYER/CHANGER SCRATCHES ON THE CD [CD PLAYER/CHANGER]

id0903e5806300

5	CD player/changer scratches on the CD	
Possible DTC	Using the M-MDS	B1188:64
	Without using M-MDS (On-board diagnostic test mode)	10:Er07, 22:Er07
Possible cause	<ul style="list-style-type: none"> Deformed disc is used (e.g., out of specification (thickness), bent disc) Multiple CDs are inserted into the CD player at the same time Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Were the multiple CDs inserted into the CD player at the same time? 	Yes Explain to the customer to insert a CD one by one.
		No Go to the next step.
2	<ul style="list-style-type: none"> Visually inspect the CD. Is the CD a deformed disc (e.g., out of specification (thickness), bent disc)? 	Yes Audio system is normal. Explain to the customer that the CD is malfunctioning.
		No Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

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NO.6 DISC CHANGE IS INOPERATIVE [CD PLAYER/CHANGER]

id0903e5806400

6	Disc change is inoperative	
Possible DTC	Using the M-MDS	B1188:64
	Without using M-MDS (On-board diagnostic test mode)	22:Er07
Possible cause	<ul style="list-style-type: none"> Improper panel switch installation Audio panel switch is malfunctioning Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Inspect the CD changer operation. Does the CD changer operate properly? 	Yes Go to the next step.
		No Go to the symptom troubleshooting "No.3 CD player/changer does not play the CD/No sound".
2	<ul style="list-style-type: none"> Inspect the followings: <ul style="list-style-type: none"> Is the display shown properly when operating the disc change switch? Does the radio band selection operate properly? 	Yes Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No Go to the next step.
3	<ul style="list-style-type: none"> Inspect the audio panel switch installation. Does the CD changer change the disc properly after re-installing the audio panel switch? 	Yes Install the audio panel switch securely and properly.
		No Go to the "No.1 Audio panel switch inspection" in this section. Replace the audio panel as necessary.

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.7 CD PLAYER DOES NOT PLAY THE MP3/WMA-FORMATTED FILE [CD PLAYER/CHANGER]

id0903e5888100

7	CD player does not play the MP3/WMA-formatted file	
Possible DTC	Using the M-MDS	B1188:64
	Without using M-MDS (On-board diagnostic test mode)	10:Er07, 22:Er07
Possible cause	<ul style="list-style-type: none"> • CD-R/RW written format is out of specification • MP3/WMA and other format data are in the CD-R/RW • File extension for MP3-formatted file is incorrect (Correct: “.mp3”/“.wma”, incorrect: e.g., RIFF) • Defective CD-R/RW (e.g. dirty CD, scratch) • Audio unit malfunction <p style="margin-top: 10px;">Note</p> <ul style="list-style-type: none"> • The free-software for the MP3-formatted file in the field may cause the deterioration of sound quality, noise, or defective play, so that the CD player won't play the customer made MP3-formatted file. • The CD player may not play the CD-R/RW properly due to the disc condition. • If there are MP3/WMA-formatted file and other file in the same disc, the CD player may not play the disc. • If there are MP3/WMA-formatted file and audio data in the same disc, the CD player loads and plays the first session of the data only. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Inspect the written format of the recorded data on the CD-R/RW. • Is the written format correct? 	Yes	Go to the next step.
		No	Write the CD-R/RW with the correct specification.
2	<ul style="list-style-type: none"> • Inspect the recorded data in the CD-R/RW. • Is there MP3/WMA and other format data in the CD-R/RW. 	Yes	Replace with the CD-R/RW known to be good (MP3/WMA-formatted file data only), then inspect the CD player operation. If the CD player plays the MP3/WMA-formatted file: <ul style="list-style-type: none"> • Audio system is normal. Explain to the customer that the CD player does not operate properly if the MP3/WMA and other format data are in the CD-R/RW. If the CD player does not play the MP3/WMA-formatted file: <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Inspect the CD-R/RW written format. • Is the written format within the specification (“.mp3”/“.wma” is the correct file extension)? 	Yes	Replace with the CD-R/RW using the “.mp3”/“.wma” file extension, then inspect the CD player operation. If the CD player plays the MP3/WMA-formatted file: <ul style="list-style-type: none"> • Audio system is normal. Explain to the customer that the CD player does not operate properly if the correct file extension is not used. If the CD player does not play the MP3/WMA-formatted file: <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Visually inspect the CD-R/RW. • Is there any dirt or scratch on the CD-R/RW? 	Yes	Clean the disc or replace with the CD-R/RW known to be good.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.8 MP3/WMA-FORMATTED FILE FOLDER SELECTION IS INOPERATIVE/TRACK SEARCH IS INOPERATIVE [CD PLAYER/CHANGER]

id0903e5889100

8	MP3/WMA-formatted file folder selection is inoperative/Track search is inoperative	
Possible DTC	Using the M-MDS	B1D19:71
	Without using M-MDS (On-board diagnostic test mode)	10:Er02, 22:Er02
Possible cause	<ul style="list-style-type: none"> • Defective CD-R/RW (e.g. dirty CD, scratch) • Conflict of ID tag version for CD-R/RW (MP-3) • Improper folder and/or music title in CD-R/RW • The number of characters of folder/audio file name in CD-R/RW exceeds the maximum number of characters • Improper encode in CD-R/RW • Audio unit malfunction 	

Note

- ID3 is a tagging format for MP3-formatted file. ID3 allows metadata (e.g., title, artist, track number, etc.) to be added to the MP3-formatted file.
- There are two versions in the ID tag.
 - ID3v1: This is the most widespread standard tag formats and most software is compatible with this version. There is a limitation on the maximum number of characters for the text data.
 - ID3v2: There are a variety of version in V2, but there is no interchangeability among the versions.

Limitation on the maximum number of characters for the text data (ID3v1)

Item	Maximum number of characters	Description
Title	30	Music title
Artist	30	Artist name
Album	30	Album title
Year	4	Album produced year/CD wholesale year
Genre	—	Music category selection
Comment	30	Free comment
Track	3	Track number

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- In a WMA file, the track name, artist name and album name are recorded with data called “WMA-Tag”, and the information can be displayed.
- WMA files which do not comply with the specific standard may not be played correctly or its file and folder name may not be displayed correctly.
- The file extension may not be provided depending on the computer operating system, version, software, or setting. In this case, add the file extension “.wma” to the end of the file name, and then write the disc.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Visually inspect the CD-R/RW. • Is there any dirt or scratch on the CD/R/RW? 	Yes Clean the disc or replace with the CD-R/RW known to be good.
		No Go to the next step. (MP-3)/Go to the step 3.(WMA)
2	<ul style="list-style-type: none"> • Inspect the ID tag version. • Is ID tag correct? 	Yes Go to the next step.
		No Write the CD-R/RW with the correct ID tag version.
3	<ul style="list-style-type: none"> • Inspect folder and audio file name. • Are all file name input correctly? 	Yes Go to the next step.
		No Use the CD-R/RW that a folder and audio file name is input correctly.
4	<ul style="list-style-type: none"> • Inspect the encode for the folder and audio file name in the CD-R/RW. • Is the encode correct? <p style="margin-left: 20px;">Note</p> <ul style="list-style-type: none"> • Unreadable characters may be displayed if incorrect encode is used. 	Yes Go to the next step.
		No Use the correct encode.
5	<ul style="list-style-type: none"> • Inspect the number of characters for the folder and audio file name. • Is the number of characters within the maximum number of characters? 	Yes Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No Input the folder and audio file name within the maximum number of characters.

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.9 CD PLAYER DOES NOT INDICATE THE MP3/WMA TITLE TEXT [CD PLAYER/CHANGER]

id0903e5889500

9	CD player does not indicate the MP3/WMA title text	
Possible DTC	Using the M-MDS	B1D19:71, B1188:64
	Without using M-MDS (On-board diagnostic test mode)	10:Er02, 10:Er07, 22:Er02, 22:Er07
Possible cause	<ul style="list-style-type: none"> • Defective CD-R/RW (e.g. dirty CD, scratch) • Conflict of ID tag version for CD-R/RW (MP-3) • The number of characters of folder/audio file name in CD-R/RW exceeds the maximum number of characters • Improper encode in CD-R/RW • No title input in CD-R/RW • Input title text by 2-bytes characters • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Visually inspect the CD-R/RW. • Is there any dirt or scratch on the CD/R/RW? 	Yes Clean the disc or replace with the CD-R/RW known to be good.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the display the LCD. • Is the CD (other than MP3/WMA compatible) displayed on the LCD? 	Yes Go to the next step. (MP-3)/Go to the step 4. (WMA)
		No Replace the audio panel. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> • Inspect the ID tag version. • Is the ID tag correct? 	Yes Go to the next step.
		No Write the CD-R/RW with the correct ID tag version.
4	<ul style="list-style-type: none"> • Is the title text input into the CD-R/RW? 	Yes Go to the next step.
		No Input the title text. Note • Do not input the title text by two-bytes character.
5	<ul style="list-style-type: none"> • Inspect the encode for the folder and audio file name in the CD-R/RW. • Is the encode correct? 	Yes Go to the next step.
		No Use the correct encode.
6	<ul style="list-style-type: none"> • Inspect the number of characters for the folder and audio file name. • Is the number of characters within the maximum number of characters? 	Yes Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No Input the folder and audio file name within the maximum number of characters.

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.10 CD PLAYER DOES NOT PLAY THE AUDIO DATA (CDDA) [CD PLAYER/CHANGER]

id0903e5806800

10	CD player does not play the audio data (CDDA)	
Possible DTC	Using the M-MDS	B1D19:71, B1188:64
	Without using M-MDS (On-board diagnostic test mode)	10:Er02, 10:Er07, 22:Er02, 22:Er07
Possible cause	<ul style="list-style-type: none"> • CD-R/RW written format is out of specification • Defective CD-R/RW (e.g., dirty CD, scratch) • Data other than the audio data is in CD-R/RW • Audio unit malfunction <p>Note</p> <ul style="list-style-type: none"> • The CD player may not play the CD-R/RW properly due to the disc condition. • If there are MP3-formatted file and audio data in the same disc, the CD player loads and plays the first session of the data only. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Replace with the audio-CD known to be good. • Does the CD player play the audio-CD properly? 	Yes	Go to the next step.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
2	<ul style="list-style-type: none"> • Inspect the written format of the recorded data on the CD-R/RW. • Is the written format correct? 	Yes	Go to the next step.
		No	Write the CD-R/RW with the correct specification.
3	<ul style="list-style-type: none"> • Inspect the recorded data in the CD-R/RW. • Is any data other than the audio data recorded in the CD-R/RW? 	Yes	Replace with the CD-R/RW known to be good (record audio data only), then inspect the CD player operation. If the CD-R/RW plays: <ul style="list-style-type: none"> • Audio system is normal. Explain to the customer that the CD player does not operate properly if the audio data and other data are recorded in the CD-R/RW. If the CD-R/RW does not play: <ul style="list-style-type: none"> • Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Visually inspect the CD-R/RW. • Is there any dirt or scratch on the CD-R/RW? 	Yes	Clean the disc or replace with the CD-R/RW known to be good.
		No	Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)

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SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

NO.11 TRACK CHANGE IS INOPERATIVE [CD PLAYER/CHANGER]

id0903e5806900

11	Track change is inoperative	
Possible DTC	Using the M-MDS	B1D19:71
	Without using M-MDS (On-board diagnostic test mode)	10:Er02, 22:Er02
Possible cause	<ul style="list-style-type: none"> • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) • Audio panel malfunction • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Replace the CD known to be good. • Does the CD player change the track? 	Yes Explain to the customer that the defective CD or non-conventional disc cannot be used.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the panel switch installation. • Does the CD player change the track number on the display when pressing the track up or down switch? 	Yes Replace the audio unit. (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.)
		No Go to the "No.1 Audio panel switch inspection" in this section. Replace the audio panel as necessary.

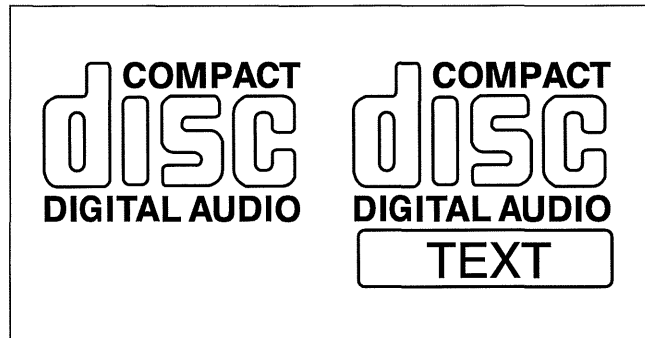
REFERENCE [CD PLAYER/CHANGER]

id0903e5830000

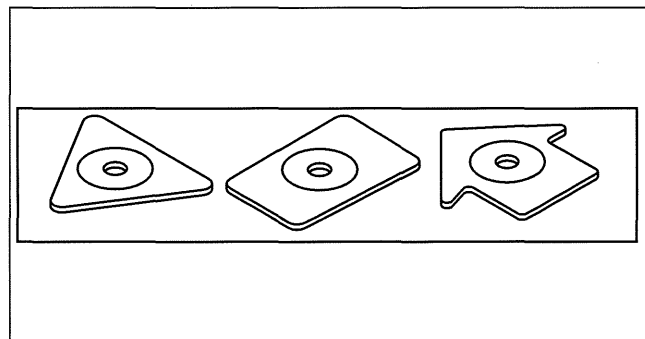
- The CD player/changer has been designed to play CDs bearing the identification logo, COMPACT DISC DIGITAL AUDIO, as shown. No other discs can be played on the CD player/changer other than MP3/WMA applicable one.
- The CD player/changer may not play the following CD:
 - Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD condensation)
 - 8 cm (3 in) CDs accessories (e.g., 8 cm (3 in) disc adapter, sticker, label)
 - Nonstandard CD (e.g., Diameter/thickness is out of specification)
Specification: 119.7—120.3 mm (4.668—4.692 in) of diameter, 1.2+0.3 or -0.1 mm (0.047+0.012 or 0.004 in) of thickness
- Do not use non-conventional discs. The CD player/changer could be damaged.

Examples:

- Although the same physical size as the compact disc, SACD uses a different kind of digital audio signal, Direct Stream Digital.
- The CD player/changer may not play the CD-R/RW properly due to the disc condition (excluding the MP3/WMA).



ar8uuw00000226



ar8uuw00000227

SYMPTOM TROUBLESHOOTING [CD PLAYER/CHANGER]

MP3/WMA-Formatted File

Outline of CD-R and CD-RW

- Definition
 - CD-R: The CD-R is a non-rewritable version. Once a section of a CD-R is written, it cannot be erased or rewritten.
 - CD-RW: The CD-RW is a re-writable version of CD-ROM and can be written the data an unlimited number of times.
 - Since a reflected laser beam amount of the CD-R/RW is less than the reflected laser beam amount of the conventional CD media, the CD player/changer may not play the CD-R/RW or have the sound jumped.
 - Since the recording quality of the CD-R/RW vary widely, some CD-R/RW may not be played.

Recording method

- There are two methods for recording.
- Classification by recorder
 - Record the audio data in the audio-CD by audio recorder
 - The price of the audio recorder and original audio-CD includes the copyright fee.
 - Recorded the audio data in the conventional data-CD by the personal computer
 - The data-CD is cheaper than the audio-CD. But, there is a CD with the low quality.
- Classification by audio data uncompression/compression
 - Uncompressed audio data
 - The CD-R/RW player can play the uncompressed audio data.
 - Compressed audio data
 - It is possible to record the large quantity of music in a disc. The sound quality varies depends on the audio data compression format. The compressed audio data can be played on the applicable player only.
 - Type of compression format:
 - MP3: MPEG Audio Layer 3 — Mazda genie MP3 applicable CD player is available.
 - WMA: Windows Media Audio
 - ATRAG: Adaptive TRansform Acoustic Coding

MP3

- The following condition should be met in order to record the MP3-formatted data on the MP3 applicable CD player:

Media	Applicable to the CD-R/RW
Logical format	ISO 9660 level 1&2 / Joliet / Romeo
Number of directly	8 directly
Number of files	Maximum 255 as a total number of file and folder Maximum 155 for folder
ID3 TAG	Applicable to Ver1.1, 2.3 and 2.4
File extension	MP3
Packet writing	Not applicable
Bit rate	8 kbps—320 kbps/VBR
Sampling rate	11.025 kHz—48 kHz

WMA (Windows media audio)

- CD-R and CD-RW including WMA files can be played with this unit. Discs which conform to the following formats can be played.
Playable WMA files are as follows:

Item	Content
Specification	Windows Media Audio Version 7.0, 8.0, 9.0
Sampling frequency	32kHz — 32, 40, 48 kbps
	44.1kHz — 32, 48, 64, 80, 96, 128, 160, 192, 256, 320 kbps
	48kHz — 64, 96, 128, 160, 192 kbps
VBR (Variable Bit Rate)	Supported
Channel mode	Stereo/Monaural
WMA tag	Title, artist name, album name

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SYMPTOM TROUBLESHOOTING [IMMOBILIZER SYSTEM]

09-03G SYMPTOM TROUBLESHOOTING [IMMOBILIZER SYSTEM]

SYMPTOM TROUBLESHOOTING CHART [IMMOBILIZER SYSTEM] 09-03G-1

NO.1 SECURITY LIGHT DISPLAY IS NOT NORMAL [IMMOBILIZER SYSTEM]09-03G-1

SYMPTOM TROUBLESHOOTING CHART [IMMOBILIZER SYSTEM]

id0903f5814200

No.	TROUBLESHOOTING ITEM	PAGE
1	The security light display is not normal.	09-03G-1 NO.1 SECURITY LIGHT DISPLAY IS NOT NORMAL [IMMOBILIZER SYSTEM]

NO.1 SECURITY LIGHT DISPLAY IS NOT NORMAL [IMMOBILIZER SYSTEM]

id0903f5800200

1	The security light display is not normal.
DESCRIPTION	<ul style="list-style-type: none"> The security light remains illuminated 2 min or more after the ignition is switched to ON. The security light does not illuminate when the ignition is switched to ON. The security light remains illuminated while the ignition is switched off. The security light does not flash or the flashing interval is abnormal while the ignition is switched off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module malfunction (with advanced keyless entry and push button start system) Instrument cluster malfunction <p>Note</p> <ul style="list-style-type: none"> If the security light remains illuminated for approx. 1 min after the ignition is switched to ON and a DTC is displayed, perform the immobilizer system malfunction diagnosis according to that DTC. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) While performing the immobilizer system security access using the M-MDS, the security light does not illuminate even if the ignition is switched to ON. Verify the illumination condition of the security light by disconnecting the DLC-2 to release security access. <p style="text-align: center;">NOTE: SECURITY LIGHT FLASHING SEQUENCE WHEN IGNITION IS SWITCHED TO OFF (IMMOBILIZER SYSTEM IS NORMAL)</p> <div style="text-align: center;"> <p style="font-size: small;">ILLUMINATED APPROX. 1.9 S APPROX. 1.9 S</p> <p style="font-size: small;">TURNS OFF APPROX. 0.1 S</p> </div>

09-03G

Note

- Normal operation of the security light is as follows. The light starts flashing every 2 s when the ignition is switched from ON to ACC and the immobilizer system is armed. The light stops flashing when the ignition is switched to ON with the correct ignition key. At this time, the immobilizer system is disarmed and the security light illuminates for about 3 s and then goes out.

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> Switch the ignition to ON. Do other warning lights in the instrument cluster illuminate normally? Do the warning lights illumination normal? 	Yes	Go to the next step.
		No	Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)
2	<ul style="list-style-type: none"> Switch the ignition to ON. Verify that the security light illuminates. Does the security light remain illuminates for 2 min or more? 	Yes	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No	Go to the next step.
3	<ul style="list-style-type: none"> Switch the ignition to off. Verify that the security light illuminates. Does the security light remain illumination? 	Yes	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [IMMOBILIZER SYSTEM]

STEP	INSPECTION	ACTION	
4	<ul style="list-style-type: none"> • Switch the ignition to off. • Verify that the security light is flashing. • Does the security light flash normally? 	Yes	Go to the next step.
		No	If the security light flashes with DTC patterns, perform the applicable DTC troubleshooting procedure. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-02C-4 DTC TABLE [IMMOBILIZER SYSTEM (KEYLESS ENTRY SYSTEM)].) If the security light does not flash, replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
5	<ul style="list-style-type: none"> • Is the advanced keyless entry and push button start system equipped? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
6	<ul style="list-style-type: none"> • Disconnect the negative battery. • Disconnect the keyless control module connectors. • Connect the negative battery. • Switch the ignition to ON. • Verify that the security light illuminates. • Does the security light illuminate normally? 	Yes	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

09-03H SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)] 09-03H-1
 Troubleshooting Index 09-03H-1

No.1 HANDS-FREE TELEPHONE SYSTEM DOES NOT RECEIVE/TRANSMIT CALLS, DOES NOT CONNECT [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]..... 09-03H-2
 Diagnostic procedure..... 09-03H-2

No.2 CALLER'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]09-03H-4
 Diagnostic procedure09-03H-4

No.3 ADDRESSEE'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]09-03H-6
 Diagnostic procedure09-03H-6

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0903h5807200

Troubleshooting Index

No.	Symptom	Possible DTC	
		Using the M-MDS	Without using M-MDS (On-board diagnostic test mode)
1	09-03H-2 No.1 HANDS-FREE TELEPHONE SYSTEM DOES NOT RECEIVE/TRANSMIT CALLS, DOES NOT CONNECT [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]	U0498:68, B116A:12, B116A:16, B116A:13, B1134:23	26:Er81, 26:Er82, 26:Er83, 26:Er84, 26:Er85
2	09-03H-4 No.2 CALLER'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]	U0498:68	26:Er81
3	09-03H-6 No.3 ADDRESSEE'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]	U0498:68	26:Er81

09-03H

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

No.1 HANDS-FREE TELEPHONE SYSTEM DOES NOT RECEIVE/TRANSMIT CALLS, DOES NOT CONNECT [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0903h5844000

1	Hands-free telephone system does not receive/transmit calls, does not connect	
Possible DTC	Using the M-MDS	U0498:68, B116A:12, B116A:16, B116A:13, B1134:23
	Without using M-MDS (On-board diagnostic test mode)	26:Er81, 26:Er82, 26:Er83, 26:Er84, 26:Er85
Possible cause	<ul style="list-style-type: none"> • Malfunction in steering switch related parts <ul style="list-style-type: none"> — Open or short circuit in the wiring harness between the Hang-up/Pick-up/Talk switch and Bluetooth unit — CAN communication error between the audio unit and Bluetooth unit — Hang-up/Pick-up/Talk switch malfunction — Poor connection in the connector • Malfunction in microphone related parts <ul style="list-style-type: none"> — Open or short circuit in the wiring harness between the microphone and Bluetooth unit — Microphone malfunction — Poor connection in the connector • Malfunction in audio system <ul style="list-style-type: none"> — Open or short circuit in the wiring harness between the Bluetooth unit and the speaker through the audio amplifier (with Bose® system) — Open or short circuit in the wiring harness between the Bluetooth unit and the speaker through the audio unit (without Bose®) — Poor connection in the connector • Bluetooth unit does not respond <ul style="list-style-type: none"> — Bluetooth unit malfunction — Open or short circuit in the wiring harness between the Bluetooth unit and the audio unit (without Bose® system) — Open or short circuit in the wiring harness between the Bluetooth unit and the audio amplifier (with Bose® system) — Open or short circuit in the wiring harness of the Bluetooth unit power supply or ground circuit — Poor connection in the connector • Problem in cellular phone <ul style="list-style-type: none"> — Cellular phone does not set up to Bluetooth system — Cellular phone does not operate (low battery voltage, power off) — Cellular phone is outside of the signal transmission area — Bluetooth does not operate — A cellular phone other than a Hands-free telephone system-enabled models is used. 	

Diagnostic procedure

- When performing an asterisk (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Verify if the customer's cellular phone is a Hands-free telephone system-enabled model by referring to http://www.mazdausa.com/MusaWeb/displayPage.action?pageParameter=bluetoothHandsFreeSystem. • Is the customer's cellular phone a Hands-free telephone system-enabled model? 	Yes	Go to the next step.
		No	Explain to the customer that the customer's cellular phone is not a Hands-free telephone system-enabled model.
2	<ul style="list-style-type: none"> • Verify that the cellular phone is communicating with the Bluetooth unit. • Does the cellular phone connect to the Bluetooth unit via Bluetooth when the Hands-free telephone system is activated? 	Yes	Enter a cellular phone signal transmission area and reinspect the Bluetooth system operation.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Inspect the cellular phone condition while the hands free phone does not operate. • Can the following conditions be verified? <ul style="list-style-type: none"> — Low battery voltage — Power is off — Out of signal transmission area 	Yes	Enter a cellular phone signal transmission area and reinspect the Bluetooth system operation.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Does the cellular phone set up to the Bluetooth unit? 	Yes	Set up the cellular phone to the Bluetooth unit.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

STEP	INSPECTION	ACTION	
5	<ul style="list-style-type: none"> • Is the audio system sound output normal? 	Yes	Go to the next step.
		No	Perform the audio system troubleshooting procedure.
6	<ul style="list-style-type: none"> • Perform the Bluetooth system (hands-free telephone (HF/TEL) system) DTC inspection. • Are the following DTC displayed? <ul style="list-style-type: none"> — B116A:12/26:Er82 — B116A:16/26:Er83 — B116A:13/26:Er84 	Yes	Go to the next step.
		No	Go to Step 8.
7*	<ul style="list-style-type: none"> • Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> — Between microphone terminal A and Bluetooth unit terminal A — Between microphone terminal B and Bluetooth unit terminal B — Between microphone terminal C and Bluetooth unit terminal C — Between microphone terminal D and Bluetooth unit terminal D — Between microphone terminal E and Bluetooth unit terminal E • Are the harnesses and connector connections normal? 	Yes	Replace the microphone. (See 09-20-50 MICROPHONE REMOVAL/INSTALLATION.)
		No	Repair or replace malfunctioning parts.
8	<ul style="list-style-type: none"> • Perform the Bluetooth system (hands-free telephone (HF/TEL) system) DTC inspection. • Is U0498:68/26:Er81 displayed? 	Yes	Inspect and repair the audio system CAN communication.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Inspect the Hang-up/Pick-up/Talk switch. (See 09-20-46 STEERING SWITCH INSPECTION.) • Is the Hang-up/Pick-up/Talk switch normal? 	Yes	Go to the next step.
		No	Replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
10*	<ul style="list-style-type: none"> • Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> — Between steering switch terminal I and audio unit (24-pin) terminal 1P — Between steering switch terminal N and Bluetooth unit (28-pin) terminal F — Between audio unit (24-pin) terminal 1O and Bluetooth unit (28-pin) terminal Y — Between audio unit (24-pin) terminal 1Q and Bluetooth unit (28-pin) terminal Z • Are the harnesses and connector connections normal? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.
11	<ul style="list-style-type: none"> • Call the hands-free cell phone using another cellular phone. • Do the same symptoms appear? 	Yes	Replace the Bluetooth unit. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	The cellular phone Bluetooth system is malfunctioning.

09-03H

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

No.2 CALLER'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0903h5844100

2	Caller's voice volume too low, or noise interrupts call	
Possible DTC	Using the M-MDS	U0498:68
	Without using M-MDS (On-board diagnostic test mode)	26:Er81
Possible cause	<ul style="list-style-type: none"> • Malfunction in the microphone related parts <ul style="list-style-type: none"> — Open or short circuit in the wiring harness between the microphone and the Bluetooth unit — Microphone malfunction — Poor connection in the connector • Malfunction in the Hang-up/Pick-up/Talk switch <ul style="list-style-type: none"> — Hang-up/Pick-up/Talk switch malfunction — Open or short circuit in the wiring harness between the Hang-up/Pick-up/Talk switch and the audio unit — Poor connection in the connector • Bluetooth unit does not receive the vehicle speed signal <ul style="list-style-type: none"> — CAN communication error • Malfunction in the audio system <ul style="list-style-type: none"> — Steering switch (+) and/or related circuit malfunction • Influence due to vehicle driving conditions <ul style="list-style-type: none"> — Noise while driving is loud (engine, tire noise, blower fan noise) — Windows and/or sunroof are open • Bluetooth unit malfunction • Problem in the cellular phone <ul style="list-style-type: none"> — Vehicle is in a place where signal transmission is weak — Bluetooth does not operate — A cellular phone other than a Hands-free telephone system-enabled models is used. 	

Diagnostic procedure

- When performing an asterisk (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Verify if the customer's cellular phone is a Hands-free telephone system-enabled model by referring to http://www.mazdausa.com/MusaWeb/displayPage.action?pageParameter=bluetoothHandsFreeSystem. • Is the customer's cellular phone a Hands-free telephone system-enabled model? 	Yes	Go to the next step.
		No	Explain to the customer that the customer's cellular phone is not a Hands-free telephone system-enabled model.
2*	<ul style="list-style-type: none"> • Can the audio volume be controlled using steering switch? 	Yes	Go to the next step.
		No	Inspect and repair the steering switch and related wiring harness.
3	<ul style="list-style-type: none"> • Does the symptom appear under following conditions? <ul style="list-style-type: none"> — Windows and/or sunroof are open — Noise while driving is loud (engine, tire noise, blower fan noise) 	Yes	The system is normal. (Influence due to vehicle driving conditions)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Perform the Bluetooth system (hands-free telephone (HF/TEL) system) DTC inspection. • Is U0498:68/26:Er81 displayed? 	Yes	Inspect and repair the audio system CAN communication.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

STEP	INSPECTION	ACTION	
5*	<ul style="list-style-type: none"> • Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> — Between microphone terminal A and Bluetooth unit terminal A — Between microphone terminal B and Bluetooth unit terminal B — Between microphone terminal C and Bluetooth unit terminal C — Between microphone terminal D and Bluetooth unit terminal D — Between microphone terminal E and Bluetooth unit terminal E • Are the harnesses and connector connections normal? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.
6	<ul style="list-style-type: none"> • Inspect the following switches. (See 09-20-46 STEERING SWITCH INSPECTION.) <ul style="list-style-type: none"> — Hung-up switch — Pic-up switch — Talk switch • Are the switches normal? 	Yes	Go to the next step.
		No	Replace the steering switch. (See 09-20-43 STEERING SWITCH REMOVAL/INSTALLATION.)
7*	<ul style="list-style-type: none"> • Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> — Between audio unit (24-pin) terminal 1P and steering switch terminal I • Are the harnesses and connector connections normal? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.
8	<ul style="list-style-type: none"> • Make a call with the cellular phone without using Bluetooth system. • Does the same symptom appear? 	Yes	Cellular phone related problem.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Call the hands-free cell phone using another cellular phone. • Does the same symptom appear? 	Yes	Go to the next step.
		No	The cellular phone Bluetooth system is malfunctioning.
10	<ul style="list-style-type: none"> • Replace the microphone. (See 09-20-50 MICROPHONE REMOVAL/INSTALLATION.) • Does the same symptom appear? 	Yes	Replace the Bluetooth unit. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	Troubleshooting is completed. (The microphone is malfunctioning.)

09-03H

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

No.3 ADDRESSEE'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

id0903h5844200

3	Addressee's voice volume too low, or noise interrupts call	
Possible DTC	Using the M-MDS	U0498:68
	Without using M-MDS (On-board diagnostic test mode)	26:Er81
Possible cause	<ul style="list-style-type: none"> • Malfunction in the audio system <ul style="list-style-type: none"> — Open or short circuit in the wiring harness between the Bluetooth unit and the speaker through the audio amplifier (with Bose® system) — Open or short circuit in the wiring harness between the Bluetooth unit and the speaker through the audio unit (without Bose®) — Steering switch (+) and/or related circuit malfunction — Poor connection in the connector • Bluetooth unit does not receive the vehicle speed signal <ul style="list-style-type: none"> — CAN communication error • Bluetooth unit malfunction • The volume of the Hands-free telephone system is set at a low level or zero. • Problem in the cellular phone <ul style="list-style-type: none"> — Vehicle is in a place where signal transmission is weak — Bluetooth does not operate — A cellular phone other than a Hands-free telephone system-enabled models is used. 	

Diagnostic procedure

- When performing an asterisk (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Verify if the customer's cellular phone is a Hands-free telephone system-enabled model by referring to http://www.mazdausa.com/MusaWeb/displayPage.action?pageParameter=bluetoothHandsFreeSystem. • Is the customer's cellular phone a Hands-free telephone system-enabled model? 	Yes	Go to the next step.
		No	Explain to the customer that the customer's cellular phone is not a Hands-free telephone system-enabled model.
2	<ul style="list-style-type: none"> • Verify the volume setting of the Hands-free telephone system. • Is the volume set at a low level or zero? 	Yes	<ul style="list-style-type: none"> • Verify if the malfunction symptom is eliminated after the volume is set to a higher level. • If the malfunction is not resolved, go to the next step. • If the malfunction is resolved, explain to the customer that the malfunction occurred due to an inappropriate volume setting
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Is the audio system sound output normal? 	Yes	Go to the next step.
		No	Perform the audio system troubleshooting procedure.
4	<ul style="list-style-type: none"> • Can the audio volume be controlled using steering switch? 	Yes	Go to the next step.
		No	Inspect and repair the steering switch and related wiring harness.
5	<ul style="list-style-type: none"> • Perform the Bluetooth system (hands-free telephone (HF/TEL) system) DTC inspection. • Is U0498:68/26:Er81 displayed? 	Yes	Inspect and repair the audio system CAN communication.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [Bluetooth SYSTEM (HANDS-FREE TELEPHONE (HF/TEL) SYSTEM)]

STEP	INSPECTION	ACTION	
6*	<ul style="list-style-type: none"> • Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. (With Bose® system) <ul style="list-style-type: none"> — Between Bluetooth unit (28-pin) terminal I and audio unit (16-pin) terminal 2B — Between Bluetooth unit (28-pin) terminal J and audio unit (16-pin) terminal 2J — Between Bluetooth unit (28-pin) terminal L and shield wire (Without Bose® system) <ul style="list-style-type: none"> — Between Bluetooth unit (28-pin) terminal M and audio unit (24-pin) terminal 2E — Between Bluetooth unit (28-pin) terminal N and audio unit (24-pin) terminal 2C — Between Bluetooth unit (28-pin) terminal L and shield wire • Are the harnesses and connector connections normal? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.
7	<ul style="list-style-type: none"> • Make a call with the cellular phone without using Bluetooth system. • Does the same symptom appear? 	Yes	Cellular phone related problem.
		No	Go to the next step.
8	<ul style="list-style-type: none"> • Call the hands-free cell phone using another cellular phone. • Does the same symptom appear? 	Yes	Replace the Bluetooth unit. (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
		No	The cellular phone Bluetooth system is malfunctioning.

09-03H

09-03I SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

FOREWORD [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)] 09-03I-1

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)] 09-03I-1

No.1 AFS OFF LIGHT ILLUMINATES CONTINUOUSLY [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)] 09-03I-2

No.2 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) DOES NOT OPERATE IN THE LEFT AND RIGHT DIRECTIONS [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)] 09-03I-3

No.3 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OPERATES WHEN OPERATING AFS OFF SWITCH [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]09-03I-5

No.4 AFS OFF LIGHT ILLUMINATES WHEN THE IGNITION IS SWITCHED TO ON [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]09-03I-6

No.5 AUTO LEVELING DOES NOT ADJUST OPTICAL AXIS OF THE HEADLIGHTS FOR VEHICLE POSTURE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]09-03I-8

FOREWORD [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9912600

- The AFS control module does not activate the AFS until it detects the steering wheel neutral position. (See 09-18-20 STEERING ANGLE SENSOR INITIALIZATION PROCEDURE.)

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9958600

No.	Troubleshooting item	Description
1	09-03I-2 No.1 AFS OFF LIGHT ILLUMINATES CONTINUOUSLY [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	<ul style="list-style-type: none"> The AFS OFF light remains illuminated with the ignition switched ON and the AFS does not operate.
2	09-03I-3 No.2 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) DOES NOT OPERATE IN THE LEFT AND RIGHT DIRECTIONS [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	<ul style="list-style-type: none"> The AFS OFF light is not illuminated while the vehicle speed is 2 km/h or more and the AFS does not operated in the left or right direction when the shift position is in the D or M range (ATX) or in a position other than R (MTX).
3	09-03I-5 No.3 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OPERATES WHEN OPERATING AFS OFF SWITCH [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	<ul style="list-style-type: none"> The AFS operates while the AFS OFF switch is off.
4	09-03I-6 No.4 AFS OFF LIGHT ILLUMINATES WHEN THE IGNITION IS SWITCHED TO ON [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	<ul style="list-style-type: none"> The AFS OFF light flashes when the ignition is switched ON. The AFS OFF light illuminates when the ignition is switched ON.
5	09-03I-8 No.5 AUTO LEVELING DOES NOT ADJUST OPTICAL AXIS OF THE HEADLIGHTS FOR VEHICLE POSTURE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]	<ul style="list-style-type: none"> The auto leveling does not adjust the optical axis of the headlights according to the cargo and passenger weight conditions.

09-03I

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

No.1 AFS OFF LIGHT ILLUMINATES CONTINUOUSLY [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9925200

1	The AFS (adaptive front lighting system) OFF LIGHT illuminates continuously
DESCRIPTION	The AFS OFF light remains illuminated with the ignition switched ON and the AFS does not operate.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Constant AFS OFF signal malfunction to the AFS control module. <ul style="list-style-type: none"> — AFS OFF switch malfunction (stuck on) — Short in wiring harness ground between AFS OFF switch terminal H and AFS control module terminal P • Instrument cluster malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT IF MALFUNCTION IS IN AFS OFF SWITCH <ul style="list-style-type: none"> • Switch the ignition off. • Disconnect the AFS OFF switch connector. • Switch the ignition ON. • Verify that the AFS OFF light illuminates. • Does the AFS OFF switch illumination turn off after illuminating for several seconds directly after the ignition is switched ON? 	Yes	Replace the AFS OFF switch. (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH REMOVAL/ INSTALLATION.)
		No	Go to the next step.
2	INSPECT AFS OFF SWITCH SIGNAL WIRING HARNESS <ul style="list-style-type: none"> • Disconnect the AFS control module connector. • Verify the continuity between AFS OFF switch terminal H and body ground. • Is there continuity? 	Yes	Repair for a short circuit to the wiring harness ground between AFS OFF switch terminal H and AFS control module terminal P.
		No	Go to the next step.
3	INSPECT AUTO LEVELING SENSOR SIGNAL CIRCUIT <ul style="list-style-type: none"> • Verify the continuity between AFS control module terminal E/G and body ground. • Is there continuity? 	Yes	Repair or replace the related wiring harness.
		No	Go to the next step.
4	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Turn off the AFS OFF light using the instrument cluster active command modes WL + IL and the M-MDS. (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].) • Does the AFS OFF light turn off with the simulation operation? 	Yes	Replace the AFS control module. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/ INSTALLATION.)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

No.2 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) DOES NOT OPERATE IN THE LEFT AND RIGHT DIRECTIONS [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9913300

2	AFS (adaptive front lighting system) does not operate in the left and right directions
DESCRIPTION	The AFS OFF light is not illuminated while the vehicle speed is 2 km/h or more and the AFS does not operate in the left or right direction when the shift position is in the D or M range (ATX) or in a position other than R (MTX).
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The necessary signal for controlling the AFS control module is not input. <ul style="list-style-type: none"> — Steering angle signal error <ul style="list-style-type: none"> • Steering angle sensor malfunction • Communication error between BCM and AFS control modules — Engine speed signal, vehicle speed signal error <ul style="list-style-type: none"> • Communication error between PCM and AFS control modules — Transaxle range signal error <ul style="list-style-type: none"> • Communication error between TCM and BCM • Communication error between BCM and AFS control modules — Manual transmission backlight switch signal error <ul style="list-style-type: none"> • Backlight switch malfunction (stuck on) — Headlight left/right position signal error <ul style="list-style-type: none"> • Hall sensor (swivel actuator) malfunction • Vehicle steering conditions are not correctly input to AFS control module <ul style="list-style-type: none"> — Steering angle sensor malfunction — Wheel alignment adjustment malfunction (right run/left run) • Swivel actuator which receives control signal from AFS control module does not operate <ul style="list-style-type: none"> — Swivel actuator malfunction — Malfunction in wiring harness between AFS control module and front combination light • AFS OFF light malfunction <ul style="list-style-type: none"> — Instrument cluster (AFS OFF light) malfunction

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT DTCs FOR MODULES COMPRISING SYSTEM <ul style="list-style-type: none"> • Verify DTCs for the following modules using the diagnostic tester. <ul style="list-style-type: none"> — BCM — PCM — TCM — AFS • Can DTCs be verified? 	Yes	Go to the applicable DTC inspection.
		No	Go to the next step.
2	INSPECT IF MALFUNCTION IS SWIVEL ACTUATOR <ul style="list-style-type: none"> • Do both the left and right headlights not move? 	Yes	Go to the next step.
		No	Go to Step 8.
3	INSPECT IF MALFUNCTION IS AFS OFF LIGHT <ul style="list-style-type: none"> • Start the engine. • Turn on the headlights. • Verify that the AFS OFF light illuminates by operating the AFS OFF switch ON/OFF. • Does the AFS OFF switch illuminate/turn off according to the switch operation? 	Yes	Go to Step 6.
		No	Go to the next step.
4	INSPECT AFS OFF SWITCH SIGNAL WIRING HARNESS <ul style="list-style-type: none"> • Disconnect the AFS control module connector. • Verify the continuity between AFS OFF switch terminal H and body ground. • Is there continuity? 	Yes	Repair for a short circuit to the wiring harness ground between AFS OFF switch terminal H and AFS control module terminal P.
		No	Go to the next step.
5	INSPECT AFS OFF SWITCH <ul style="list-style-type: none"> • Inspect the AFS OFF switch. (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH INSPECTION.) • Is the AFS OFF switch normal? 	Yes	Turn off the AFS OFF light using the instrument cluster active command modes WL + IL and the M-MDS. (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].)
		No	Replace the AFS OFF switch. (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH REMOVAL/INSTALLATION.)

09-031

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

Step	Inspection	Action	
6	STEERING ANGLE SENSOR INSPECTION <ul style="list-style-type: none"> • Inspect the steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.) • Is the steering angle sensor normal? 	Yes	Go to the next step.
		No	Replace the steering angle sensor. (See 09-18-19 STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
7	VERIFY THAT VEHICLE TRAVELS STRAIGHT <ul style="list-style-type: none"> • Drive the vehicle on a flat, straight road. • Is there frequent steering correction (right run/left run) while on course? 	Yes	Inspect the wheel alignment and perform adjustments. (See 02-11-1 FRONT WHEEL ALIGNMENT.) (See 02-11-3 REAR WHEEL ALIGNMENT.)
		No	Inspect the following AFS control module PIDs. If not within the specification, inspect related parts and wiring harnesses. <ul style="list-style-type: none"> • Engine speed (RPM) • Vehicle speed (VSPD) • Reverse gear switch (R_GEAR_SW) (See 09-021-20 PID/DATA MONITOR TABLE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)].) • Transaxle position (TR) (See 05-02-5 ON-BOARD DIAGNOSTIC SYSTEM PID/DATA MONITOR INSPECTION [FS5A-EL].)
8	INSPECT WIRING HARNESS BETWEEN SWIVEL ACTUATOR AND AFS CONTROL MODULE <ul style="list-style-type: none"> • Inspect the following wiring harnesses and connectors: Swivel actuator (RH) <ul style="list-style-type: none"> — Terminal F to AFS control module terminal I — Terminal I to AFS control module terminal J — Terminal J to AFS control module terminal X — Terminal K to AFS control module terminal R — Terminal L to AFS control module terminal L Swivel actuator (LH) <ul style="list-style-type: none"> — Terminal F to AFS control module terminal K — Terminal I to AFS control module terminal J — Terminal J to AFS control module terminal U — Terminal K to AFS control module terminal T — Terminal L to AFS control module terminal L • Is there an open or short circuit, or poor contact? 	Yes	Repair or replace the malfunctioning part.
		No	Replace the AFS control module. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
9	INSPECT IF MALFUNCTION OCCURS IN SWIVEL ACTUATOR OR AFS CONTROL MODULE <ul style="list-style-type: none"> • Replace the AFS control module. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.) • Is the AFS operation normal? 	Yes	Troubleshooting completed.
		No	Replace the front combination light. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

No.3 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OPERATES WHEN OPERATING AFS OFF SWITCH [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9913600

3	AFS (adaptive front lighting system) operates when operating AFS OFF switch
DESCRIPTION	The AFS operates while the AFS OFF switch is off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • AFS OFF signal error to AFS control module <ul style="list-style-type: none"> — AFS OFF switch malfunction (stuck off) — Open circuit in wiring harness between AFS OFF switch terminal H and AFS control module terminal P — Open circuit in wiring harness between AFS OFF switch terminal K and ground. • AFS control module malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT IF MALFUNCTION IS AFS OFF SWITCH <ul style="list-style-type: none"> • Switch the ignition ON. • Turn the AFS OFF switch on and off. • Does the AFS OFF light illumination change in accordance with the switch operation? 	Yes	Go to the next step.
		No	Turn off the AFS OFF light using the instrument cluster active command modes WL + IL and the M-MDS. (See 09-02E-24 ACTIVE COMMAND MODES TABLE [INSTRUMENT CLUSTER].)
2	INSPECT IF MALFUNCTION IS AFS CONTROL MODULE <ul style="list-style-type: none"> • Disconnect the AFS control module connector. • Verify that there is continuity between the AFS control module wiring harness-side terminal P and body ground. • Is there continuity when the AFS OFF switch is on? 	Yes	Inspect the AFS control module terminal P connection condition. If a malfunction is detected, repair or replace the terminal. If a malfunction is not detected, replace the AFS control module. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	INSPECT AFS OFF SWITCH SIGNAL WIRING HARNESS <ul style="list-style-type: none"> • Disconnect the AFS OFF switch connector. • Verify the continuity between the AFS OFF switch terminal H and AFS control module terminal P. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning location.
4	INSPECT AFS OFF SWITCH <ul style="list-style-type: none"> • Inspect the AFS OFF switch. (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH INSPECTION.) • Is the AFS OFF switch normal? 	Yes	Inspect the following and repair or replace the malfunctioning location. <ul style="list-style-type: none"> • AFS OFF switch terminal K to body ground • Looseness, lifting at ground points
		No	Replace the AFS switch. (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH REMOVAL/INSTALLATION.)

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SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

No.4 AFS OFF LIGHT ILLUMINATES WHEN THE IGNITION IS SWITCHED TO ON [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9993900

4	AFS OFF light illuminates when the ignition is switched to ON
DESCRIPTION	<ul style="list-style-type: none"> • The AFS OFF light flashes when the ignition is switched ON. • The AFS OFF light illuminates when the ignition is switched ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Headlight auto leveling function related electrical part malfunction <ul style="list-style-type: none"> — Front auto leveling sensor related part malfunction <ul style="list-style-type: none"> • Output signal excessively high or low • Front auto leveling sensor malfunction — Rear auto leveling sensor related part malfunction <ul style="list-style-type: none"> • Output signal excessively high or low • Rear auto leveling sensor malfunction — AFS control module malfunction — AFS control module power supply voltage excessively high • AFS OFF light illumination circuit malfunction <ul style="list-style-type: none"> — Instrument cluster malfunction — Communication error between AFS control module and Instrument cluster

Diagnostic Procedure

Step	Inspection		Action
1	INSPECT FRONT AND REAR AUTO LEVELING SENSOR INSTALLATION <ul style="list-style-type: none"> • Inspect the front and rear auto leveling sensor installation. • Is there any bending, damage or dislocated links at the bracket? 	Yes	Repair or replace the malfunctioning part.
		No	Go to the next step.
2	INSPECT AFS CONTROL MODULE POWER SUPPLY VOLTAGE <ul style="list-style-type: none"> • Switch the ignition to ON. • Measure the voltage between AFS control module terminals H and ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect and repair or replace the malfunctioning part for an open circuit between the ignition switch (push start) and AFS control module terminals H.
3	INSPECT AFS GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the AFS control module connector. • Verify the continuity between the AFS control module wiring harness-side connector terminal F and ground. • Is there continuity? 	Yes	Connect the AFS control module connector, then go to the next step.
		No	Inspect and repair for a loose or poor connection in the AFS control module ground point.
4	INSPECT IF MALFUNCTION IS IN FRONT AUTO LEVELING SENSOR OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to ON. • Turn the headlights on. • Measure the voltage between AFS control module terminal G and ground. • Is the voltage 0.5—4.5V? 	Yes	Go to the next step.
		No	Go to Step 8.
5	INSPECT IF MALFUNCTION IS IN REAR AUTO LEVELING SENSOR OR ELSEWHERE <ul style="list-style-type: none"> • Turn the headlights on. • Measure the voltage between AFS control module terminal E and ground. • Is the voltage 0.5—4.5V? 	Yes	Go to Step 10.
		No	Go to the next step.
6	INSPECT REAR AUTO LEVELING SENSOR SIGNAL RELATED CIRCUIT <ul style="list-style-type: none"> • Inspect for an open or short circuit in the wiring harness between AFS control module terminal E and rear auto leveling sensor terminal B. • Is an open or short circuit detected? 	Yes	Repair or replace the malfunctioning part for an open or short circuit.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

Step	Inspection	Action	
7	INSPECT REAR AUTO LEVELING SENSOR <ul style="list-style-type: none"> • Inspect the rear auto leveling sensor. (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.) • Is the rear auto leveling sensor normal? 	Yes	Repair or replace the malfunctioning part for an open circuit in the following: <ul style="list-style-type: none"> • Between AFS control module terminal M and rear leveling sensor terminal C • Between AFS control module terminal D and rear auto leveling sensor terminal A
		No	Replace the rear auto leveling sensor. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
8	INSPECT IF MALFUNCTION IS IN FRONT AUTO LEVELING SENSOR POWER OR GROUND CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the front and rear auto leveling sensor connectors. • Switch the ignition to ON. • Turn the headlights on. • Measure the voltage between front auto leveling sensor terminals A and C at the wiring harness-side connector. • Is the voltage 4.75—5.25V? 	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the following: <ul style="list-style-type: none"> • Between AFS control module terminal M and front auto leveling sensor terminal C • Between AFS control module terminal M and rear auto leveling sensor terminal C • Between AFS control module terminal D and front auto leveling sensor terminal A • Between AFS control module terminal D and rear auto leveling sensor terminal A Repair or replace the malfunctioning part for an open or short circuit.
9	INSPECT FRONT AUTO LEVELING SENSOR SIGNAL CIRCUIT FOR OPEN OR SHORT CIRCUIT <ul style="list-style-type: none"> • Inspect for an open or short circuit in the wiring harness between AFS control module terminal G and front auto leveling sensor terminal B • Is an open or short circuit detected? 	Yes	Repair or replace malfunctioning part for an open or short circuit.
		No	Inspect the front auto leveling sensor. If it is malfunctioning, replace the front auto leveling sensor. (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.) (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
10	INSPECT IF MALFUNCTION IS IN COMMUNICATION BETWEEN AFS CONTROL MODULE AND INSTRUMENT CLUSTER OR ELSEWHERE <ul style="list-style-type: none"> • Retrieve the DTCs for the AFS control module and the instrument cluster using the M-MDS. • Are the following DTCs displayed? <ul style="list-style-type: none"> — AFS control module:U0001-88 — Instrument cluster:U0001-88, U0182-00 	Yes	Go to the applicable DTC inspection.
		No	Go to the next step.
11	INSPECT IF MALFUNCTION IS IN INSTRUMENT CLUSTER OR AFS CONTROL MODULE <ul style="list-style-type: none"> • Inspect the instrument cluster. (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) • Is the instrument cluster normal? 	Yes	Replace the AFS control module. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Replace the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

09-031

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

No.5 AUTO LEVELING DOES NOT ADJUST OPTICAL AXIS OF THE HEADLIGHTS FOR VEHICLE POSTURE [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

id0903h9912500

5	Auto leveling does not adjust optical axis of headlights according to vehicle attitude
DESCRIPTION	<ul style="list-style-type: none"> Auto leveling does not adjust optical axis of headlights according to cargo and passenger weight conditions
POSSIBLE CAUSE	<ul style="list-style-type: none"> Headlight auto leveling actuator malfunction AFS control module malfunction Front auto leveling sensor malfunction Rear auto leveling sensor malfunction Front auto leveling sensor is not installed properly Rear auto leveling sensor is not installed properly

Diagnostic Procedure

Step	Inspection	Action	
1	INSPECT AFS OFF LIGHT ILLUMINATION <ul style="list-style-type: none"> Switch the ignition to ON. Inspect the AFS OFF light indicator light condition. Does the headlight AFS OFF light illuminate 3 s after switching the ignition to ON? 	Yes	Go to symptom "No.4 AFS OFF light illuminates when the ignition is switched to ON" troubleshooting procedure.
		No	Go to the next step.
2	INSPECT IF MALFUNCTION IS IN AUTO LEVELING SENSOR OR ELSEWHERE <ul style="list-style-type: none"> Switch the ignition to off. Switch the ignition to ON. Turn the headlights on at low beam. Jump DLC-2 terminal B to ground using a jumper wire. Inspect the headlight optical axis movement. Does the optical axis move up and down on both sides? 	Yes	Go to the next step.
		No	Go to Step 5.
3	INSPECT IF MALFUNCTION IS IN WIRING HARNESS BETWEEN HEADLIGHT AUTO LEVELING ACTUATOR AND AFS CONTROL MODULE OR ELSEWHERE <ul style="list-style-type: none"> Inspect for an open or short circuit in the wiring harness on the side where the auto leveling function does not operate. RH: <ul style="list-style-type: none"> — AFS control module terminal J—front combination light (RH) terminal (14-pin) I — AFS control module terminal I—front combination light (RH) terminal (14-pin) F — AFS control module terminal L—front combination light (RH) terminal (14-pin) L LH: <ul style="list-style-type: none"> — AFS control module terminal J—front combination light (LH) terminal (14-pin) I — AFS control module terminal K—front combination light (LH) terminal (14-pin) F — AFS control module terminal L—front combination light (LH) terminal (14-pin) L <ul style="list-style-type: none"> Is an open or short circuit detected? 	Yes	Repair or replace the malfunctioning part for an open or short circuit.
		No	Go to the next step.
4	INSPECT IF MALFUNCTION IS IN HEADLIGHT AUTO LEVELING ACTUATOR OR ELSEWHERE <ul style="list-style-type: none"> Replace the front combination light on the suspected side. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.) Perform Step 2 inspection procedure again. Does the optical axis move up and down? 	Yes	Troubleshooting is completed. (The malfunction is in headlight leveling actuator.)
		No	Replace the AFS control module. (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)

SYMPTOM TROUBLESHOOTING [AFS (ADAPTIVE FRONT LIGHTING SYSTEM)]

Step	Inspection	Action	
5	INSPECT IF MALFUNCTION IS IN WIRING HARNESS BETWEEN AFS CONTROL MODULE AND HEADLIGHT AUTO LEVELING ACTUATOR <ul style="list-style-type: none"> • Inspect for an open or short circuit in the wiring harness on the side where the auto leveling function does not operate. RH: <ul style="list-style-type: none"> — AFS control module terminal J—front combination light (RH) terminal (14-pin) I — AFS control module terminal L—front combination light (RH) terminal (14-pin) L LH: <ul style="list-style-type: none"> — AFS control module terminal J—front combination light (LH) terminal (14-pin) I — AFS control module terminal L—front combination light (LH) terminal (14-pin) L <ul style="list-style-type: none"> • Is an open or short circuit detected? 	Yes	Repair or replace for an open or short to the ground circuit.
		No	Go to the next step.
6	INSPECT FRONT AND REAR AUTO LEVELING SENSOR INSTALLATION <ul style="list-style-type: none"> • Inspect the front and rear auto leveling sensor installation (bent or damaged bracket, or dislocated link). • Are the front and rear auto leveling sensors installed properly? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part, then install the auto leveling sensor properly. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
7	INSPECT FRONT AUTO LEVELING SENSOR <ul style="list-style-type: none"> • Inspect the front auto leveling sensor. (See 09-18-51 AUTO LEVELING SENSOR INSPECTION) • Is the front auto leveling sensor normal? 	Yes	Go to the next step.
		No	Replace the front auto leveling sensor. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
8	INSPECT REAR AUTO LEVELING SENSOR <ul style="list-style-type: none"> • Inspect the rear auto leveling sensor. (See 09-18-51 AUTO LEVELING SENSOR INSPECTION) • Is the rear auto leveling sensor normal? 	Yes	Go to the next step.
		No	Replace the rear auto leveling sensor. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
9	VERIFY IF MALFUNCTION IS NO VEHICLE SPEED SIGNAL OR AFS CONTROL MODULE <ul style="list-style-type: none"> • Verify that the speedometer indication. • Does the speedometer indicate properly? 	Yes	Replace the AFS control module.
		No	Perform the instrument cluster symptom troubleshooting “No.7 Speedometer indication is defective” procedure. (See 09-03C-9 NO. 7 SPEEDOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER].)

09-03I

**09-03J SYMPTOM TROUBLESHOOTING [ADVANCED
KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]**

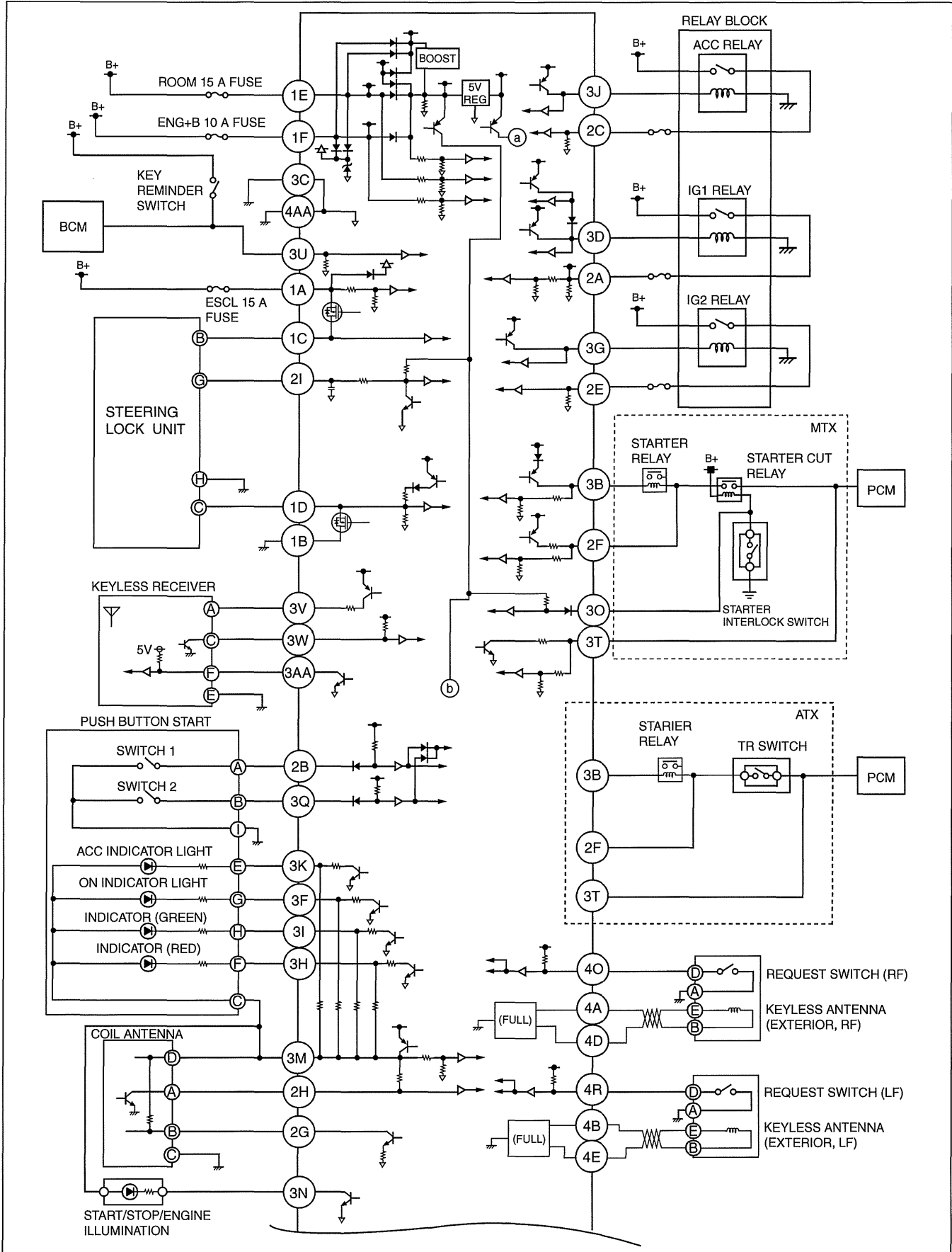
KEYLESS ENTRY SYSTEM WIRING DIAGRAM [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-2	NO.3 PUSH BUTTON START SYSTEM DOES NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-13
SYMPTOM TROUBLESHOOTING CHART [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-4	NO.4 AFTER ENGINE START, ELECTRICAL DEVICES DO NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-16
TROUBLESHOOTING INDEX [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-4	NO.5 ELECTRONIC STEERING MECHANISM DOES NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-17
KEYLESS ENTRY SYSTEM CHECK SHEET [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-5	NO.6 PUSH BUTTON START SYSTEM DOES NOT TURN OFF (IG OFF) [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-19
NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY ADVANCED KEY [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-6		
NO.2 ADVANCED KEYLESS ENTRY FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]	09-03J-9		

09-03J

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

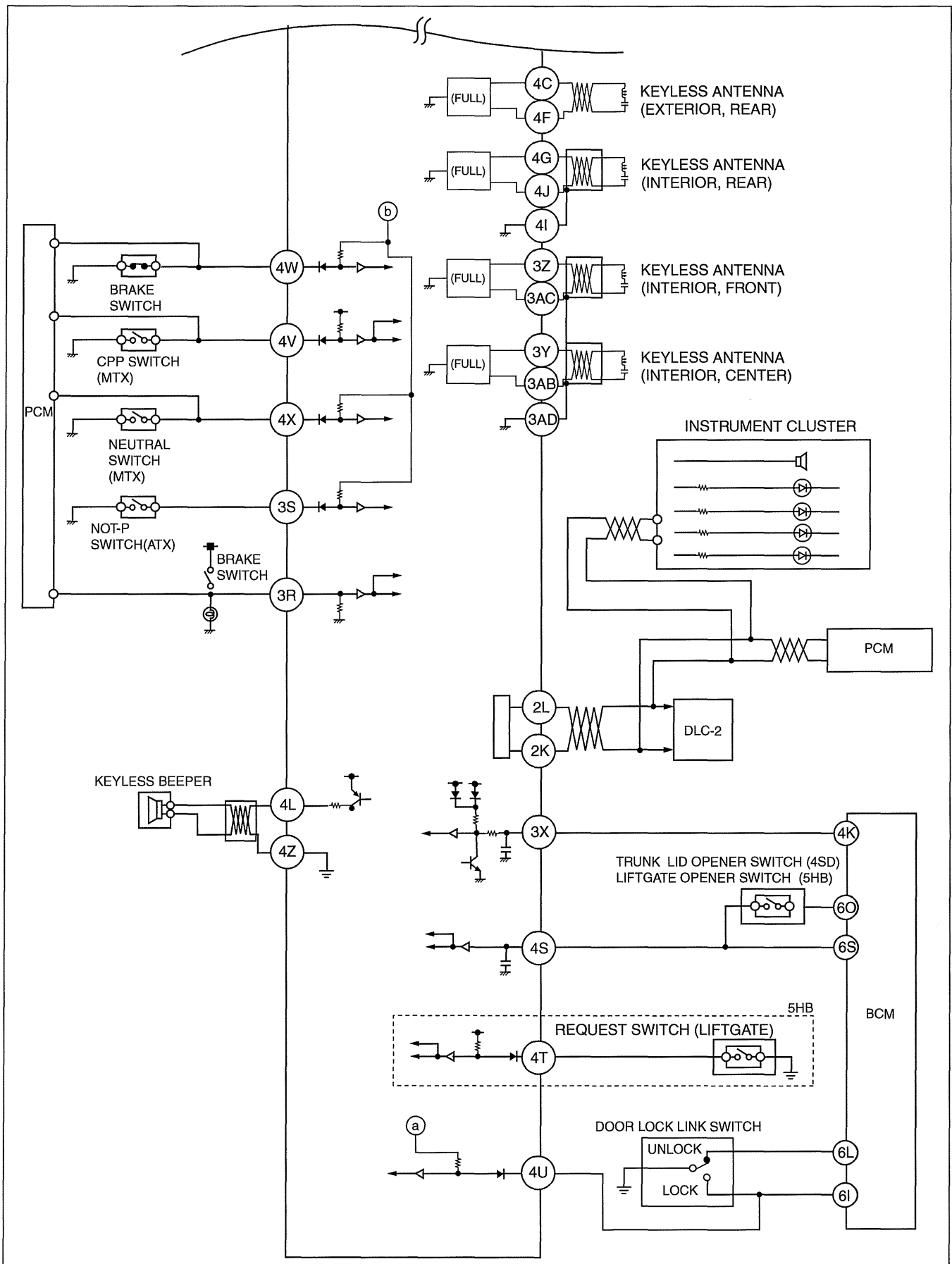
KEYLESS ENTRY SYSTEM WIRING DIAGRAM [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]



09-03J

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

SYMPTOM TROUBLESHOOTING CHART [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

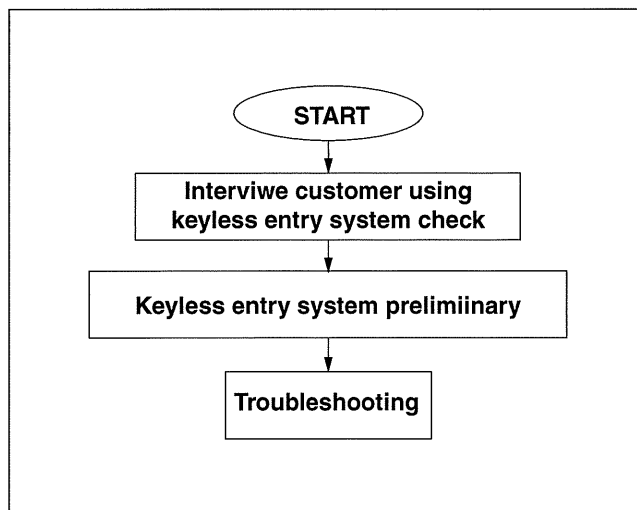
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No.	Troubleshooting item	Description	Page
1	Door cannot be locked/unlocked by advanced key	<ul style="list-style-type: none"> Cannot door lock and/or unlock with transmitter (electrical key button) 	(See 09-03J-6 NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY ADVANCED KEY [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2	Advanced keyless entry function inoperative	<ul style="list-style-type: none"> Cannot door lock/unlock with request switch Cannot trunk lid/liftgate open with trunk lid/liftgate opener switch 	(See 09-03J-9 NO.2 ADVANCED KEYLESS ENTRY FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
3	Push button start system does not operate	<ul style="list-style-type: none"> Cannot switch to ACC or ignition to ON Engine does not start 	(See 09-03J-13 NO.3 PUSH BUTTON START SYSTEM DOES NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4	After engine start, electrical devices do not operate	<ul style="list-style-type: none"> Possible cause related to non-operation of electrical devices (such as blower motor, rear wiper) with ignition is switched to ON (IG2), after engine start. 	(See 09-03J-16 NO.4 AFTER ENGINE START, ELECTRICAL DEVICES DO NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
5	Electronic steering mechanism does not operate	<ul style="list-style-type: none"> Steering does not lock during system ignition to off, door lock, door open/close 	(See 09-03J-17 NO.5 ELECTRONIC STEERING MECHANISM DOES NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
6	Push button start system does not turn off (ignition to off)	<ul style="list-style-type: none"> Engine does not turn off even if engine shut off operation is performed. Electrical devices continue to operate after engine is turned off. Dead battery Engine does not turn off even if the emergency engine stop (continuously pressing the push button start or quickly pressing it any number of times) is performed. 	(See 09-03J-19 NO.6 PUSH BUTTON START SYSTEM DOES NOT TURN OFF (IG OFF) [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

TROUBLESHOOTING INDEX [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

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- The advanced keyless entry and push button start system is controlled by the keyless control module.
- Go to troubleshooting after identifying the specific malfunction by doing a advanced keyless entry and push-button start system preliminary inspection.



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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

KEYLESS ENTRY SYSTEM CHECK SHEET [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0903z3871400

- Use the sheet below as a customer interview sheet when accepting a vehicle for service.
- If the symptom is "Power door lock system does not operate with advanced key at all," find out how the customer uses the keyless entry system by following the check sheet below.

Perform the following inspection with customer.

Q1. What's the customer's complaint?

- Power door lock system does not operate with advanced key (door does not lock/unlock).
- Other _____

Q2. Is system factory-installed or after-market?

- Factory-installed system
→ Go to Q3.

- After-market system
→ Perform troubleshooting according to after-market keyless entry system manual.

Q3. Operate advanced key with customer from 2.5 m {8.2 ft} away from center of vehicle. (Make sure the ignition key is either in the LOCK position or removed.)

Does keyless entry system work?

- Yes

→ Explain the following to the customer.

- Keyless entry system does not work when ignition switch is in except for off.
- Keyless entry system does not work form excessive distances (more than 2.5 m {8.2 ft} away from center of vehicle).
- The auxiliary key is inserted into the key slot.

- No

→ Go to Q4.

Q4. Check location where customer uses keyless entry system.

Does a particular area, such as being near TV towers, power plants, power lines, or factories, have an effect on malfunction?

- Yes Place _____

→ Area of operation is bad. Explain effect of outside interference on advanced key to customer.

- No

→ Go to Q5.

Q5. Make sure there are no after-market electrical parts installed on vehicle.

Are there any of the following present?

- Cellular phone
- Radio-wave equipment
- Remote engine starter
- TV, etc.

- Yes Parts _____

- No

Perform the keyless entry system preliminary inspection.

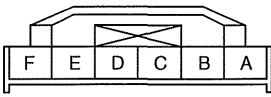
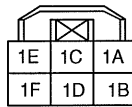
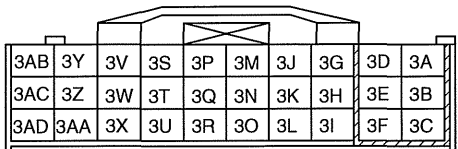
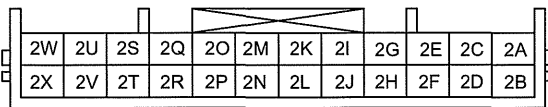
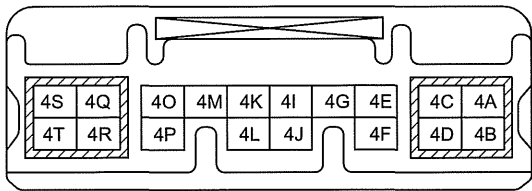
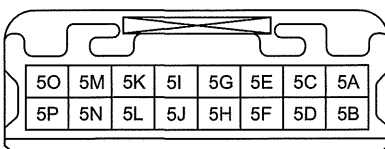
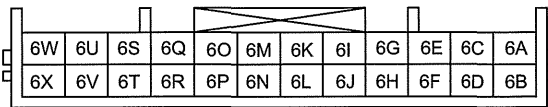
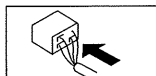
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09-03J

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY ADVANCED KEY [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0903z3901500

1	Door cannot be locked/unlocked by advanced key
DESCRIPTION	<ul style="list-style-type: none"> • Cannot door lock and/or unlock with transmitter (electrical key button)
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in advanced key battery or advanced key • Malfunction in keyless control module • Malfunction in keyless receiver • Malfunction in BCM • Malfunction in door switch, key remainder switch or trunk lid/liftgate opener switch • Open or short circuit in wiring between trunk lid/liftgate latch switch and BCM • Open or short circuit in wiring harness door latch switch and BCM • Open or short circuit in wiring harness key reminder switch and BCM • Malfunction in door lock actuator • Open or short circuit in wiring between door lock actuator and BCM • Open or short circuit in wiring between keyless control module and BCM • Poor connection of connector, terminal damage • Wrong usage • The after-market electrical parts are interfering with the keyless entry system
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>KEYLESS RECEIVER</p>  </div> <div style="text-align: center;"> <p>KEYLESS CONTROL MODULE</p>  </div> <div style="text-align: center;">  </div> </div> <p style="text-align: center; margin: 10px 0;">BCM</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="text-align: center; margin-top: 20px;">  </div>	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Attempt to lock/unlock the door with transmitter (electrical key button). • Does the advanced key LED illuminate? 	Yes	Go to the next step.
		No	Go to Step 9.
2	<ul style="list-style-type: none"> • Did the customer activate the keyless entry system within operative area (2.5 m {8.2 ft} from vehicle)? 	Yes	Go to the next step.
		No	The system is normal. Explain to the customer that the system does not work without the system operative area.
3	<ul style="list-style-type: none"> • Did the customer use the keyless entry system in particular area, such as being near TV towers, power plants, power lines, or factories? 	Yes	The system is normal. Area of operation is subject. Explain effect of outside interference on the advanced key to the customer.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

STEP	INSPECTION	ACTION	
4	<ul style="list-style-type: none"> • Did the customer activate the advanced keyless entry system with all following conditions satisfied? <ul style="list-style-type: none"> — All doors and trunk lid/liftgate closed — Switch the ignition to off. (without ACC and ignition to ON position) — The auxiliary key is inserted in the key slot. 	Yes	Go to the next step.
		No	The system is normal. Explain to the customer that the system does not work without these conditions satisfied.
5	<ul style="list-style-type: none"> • Are any of the following after-market electrical parts on the vehicle? <ul style="list-style-type: none"> — Cellular phone — Parts with built-in microcomputer — Remote engine starter — TV — Other 	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none"> • Disconnect the after-market electrical parts connectors and attempt to lock/unlock the doors with transmitter (electrical key button). • Does the keyless entry system work only near the receiver? 	Yes	The system is normal. The after-market electrical parts are interfering with the keyless entry system.
		No	Go to the next step.
7	<ul style="list-style-type: none"> • Attempt to lock/unlock the doors with transmitter (electrical key button). • Does the door lock system work? 	Yes	Go to the next step.
		No	Go to Step 9.
8	<ul style="list-style-type: none"> • Replace with a advanced key battery known to be good. • Does the keyless entry system operate properly? 	Yes	Replace the advanced key battery, and then go to Step 21.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Visually inspect the advanced key battery. • Are the below items correct? <ul style="list-style-type: none"> — Advanced key battery installation (correct polarity) — Battery type (CR2025) 	Yes	Go to the next step.
		No	Install the advanced key battery properly or replace with the specified advanced key battery (CR2025), then go to Step 21.
10	<ul style="list-style-type: none"> • Visually inspect the advanced key. <ul style="list-style-type: none"> — Is there rust on the advanced key battery terminals (positive or negative)? — Is there poor connection between the terminals and battery? 	Yes	Replace the advanced key or repair the advanced key battery terminal, then go to Step 21.
		No	Go to the next step.
11	<ul style="list-style-type: none"> • Inspect advanced key battery. • Is the battery voltage normal? 	Yes	Go to Step 13.
		No	Go to the next step.
12	<ul style="list-style-type: none"> • Replace with a advanced key battery known to be good. • Does the keyless entry system operate properly? 	Yes	Replace the advanced key battery, and then go to Step 21.
		No	Replace the advanced key, and then go to Step 21.
13	<ul style="list-style-type: none"> • Inspect for the keyless receiver installation. • Is the bracket securely installed on the keyless receiver? 	Yes	Go to the next step.
		No	Install the bracket securely, and then go to the next step.
14	<ul style="list-style-type: none"> • Switch the ignition to off. • Measure the voltage at keyless receiver terminal A? • Is the voltage B+? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect ROOM 15 A fuse. • Inspect and repair the wiring harness between the keyless control module and the keyless receiver as necessary. • Then go to Step 21.
15	<ul style="list-style-type: none"> • Measure the voltage at keyless receiver terminal E? • Is the voltage below 1.0? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the ground wire and the keyless receiver as necessary. • Re-tighten the ground wire as necessary. • Then go to Step 21.

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

STEP	INSPECTION	ACTION	
16	<ul style="list-style-type: none"> • Disconnect the keyless receiver connector (6-pin) and keyless control module connector (30-pin). • Is there continuity between the following terminals? <ul style="list-style-type: none"> — Keyless receiver connector terminal C—keyless control module connector terminal 3W — Keyless receiver connector terminal A—keyless control module connector terminal 3AA 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the keyless control module and the keyless receiver, then go to the next step.
17	<ul style="list-style-type: none"> • Measure the voltage at the keyless control module terminals 1E, 1A and 1F. <ul style="list-style-type: none"> — Terminal 1E: B+ — Terminal 1F: B+ • Is the voltage as above? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect for fuse. • Inspect and repair the wiring harness between the keyless control module and the main fuse block as necessary. • Then go to the Step 21.
18	<ul style="list-style-type: none"> • Measure the voltage at keyless control module terminal 3C, 4AA? • Is the voltage below 1.0 V or less? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the ground wire and the keyless control module as necessary. • Re-tighten the ground wire as necessary. • Then go to the Step 21.
19	<ul style="list-style-type: none"> • Measure the following BCM terminal voltage. (See 09-40-6 BODY CONTROL MODULE (BCM) INSPECTION.) • Are terminal voltages normal? <ul style="list-style-type: none"> — Driver's door closed: 1.0 V or less (Terminal 6G) — Driver's door opened: B+ (Terminal 6G) — Passenger's door closed: 1.0 V or less (Terminal 6H) — Passenger's door opened: 5.0 V (Terminal 6H) — Left rear door closed: 1.0 V or less (Terminal 6E) — Left rear door opened: 2.5 V (Terminal 6E) — Right rear door closed: 1.0 V or less (Terminal 6K) — Right rear door opened: 2.5 V (Terminal 6K) — Trunk lid/liftgate closed: B+ (Terminal 6F) — Trunk lid/liftgate opened: 1.0 V or less (Terminal 6F) — The auxiliary key is inserted in the key slot: B+ (Terminal 2J) — The auxiliary key is not inserted in the key slot: 1.0 V or less (Terminal 2J) 	Yes	<ul style="list-style-type: none"> • Inspect for open or short circuit in wiring harness between keyless control module terminal 3X terminal and BCM terminal 4K. <ul style="list-style-type: none"> — If the wiring harness is not normal, repair or replace malfunctioning part. Then go to Step 21. — If the wiring harness is normal, go to the next step. • Then go to Step 21.
		No	<ul style="list-style-type: none"> • Inspect suspect door switch, key remainder switch or trunk lid/liftgate latch switch. • Inspect for open or short circuit in wiring harness between suspect switch and BCM. • Then go to Step 21.
20	<ul style="list-style-type: none"> • Measure the voltage at the BCM terminals 5M, 5O and 5K while operating the transmitter (electrical key button). <ul style="list-style-type: none"> — Lock all doors with transmitter (electrical key button): 1.0 V or less → B+ → 1.0 V or less (terminal 5O) — Unlock all doors with transmitter (electrical key button): 1.0 V or less → B+ → 1.0 V or less (terminal 5K) — Unlock driver's side door with the advanced key: 1.0 V or less → B+ → 1.0 V or less (terminal 5M) • Is the voltage as above? 	Yes	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the BCM and the door lock actuator. • Inspect for door lock actuator. • Then go to the next step.
		No	<ul style="list-style-type: none"> • Replace the BCM. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.) • Then go to the next step.
21	<ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customers.
		No	Re-inspect the malfunction symptoms, then repeat form Step 1 if malfunction recurs.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

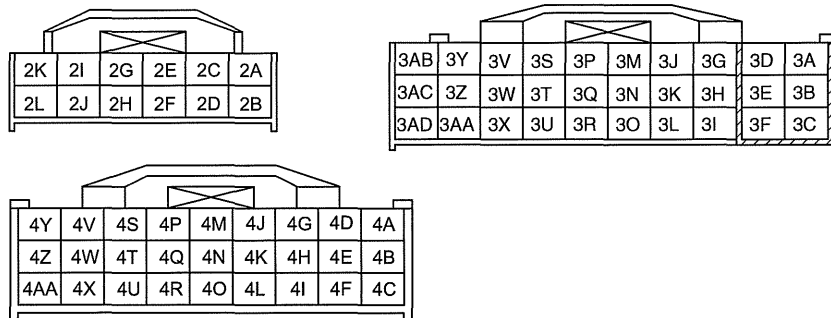
NO.2 ADVANCED KEYLESS ENTRY FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0903z3901600

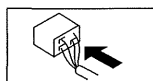
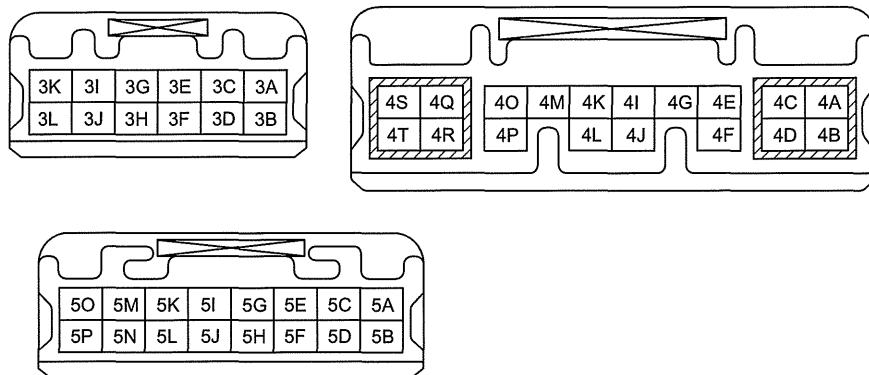
2	Advanced keyless entry function inoperative
DESCRIPTION	<ul style="list-style-type: none"> • Cannot door lock with door lock request switch • Cannot trunk lid/liftgate open with trunk lid/liftgate opener switch
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in advanced key battery or advanced key • Malfunction in the keyless control module. • Malfunction in the request switch • Open or short circuit in wiring between request switch and keyless control module • Malfunction in the keyless receiver. • Open or short circuit in wiring between keyless receiver and keyless control module • Malfunction in the keyless antenna. • Malfunction in the lock link switch. • Open circuit in wiring between lock link switch and keyless control module • Malfunction in door latch switch or trunk lid/liftgate latch switch • Open or short circuit in wiring between trunk lid/liftgate switch and BCM • Open or short circuit in wiring between trunk lid/liftgate switch and keyless control module • Open or short circuit in wiring harness between door latch switch and BCM • Open or short circuit in wiring harness between door latch switch and keyless control module • Malfunction in trunk lid/liftgate opener switch • Open or short circuit in wiring harness between trunk lid/liftgate opener switch and BCM • Open or short circuit in wiring harness between trunk lid/liftgate opener switch and keyless control module • Keyless antenna (exterior) malfunction • Open or short circuit in wiring harness between keyless antenna (exterior) and keyless control module • Malfunction in door lock actuator • Open or short circuit in wiring between door lock actuator and BCM • Malfunction in the BCM. • Poor connection of connector, terminal damage • Wrong usage.

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KEYLESS CONTROL MODULE



BCM



SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Retrieve the advanced keyless system DTC using the M-MDS. Are there DTC displayed? 	Yes	Go to the applicable DTC troubleshooting procedures. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Prepare the followings: <ul style="list-style-type: none"> All doors and trunk lid/liftgate closed Switch the ignition to off. (without ACC and ignition to ON) Make sure that the advanced key is within the advanced keyless system operative area (within 80 cm {2.6 ft} from front door) The auxiliary key is not inserted in the key slot. Does the advanced keyless system operate properly? 	Yes	The system is normal. Explain the advanced keyless system operation.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Confirm the problem using another advanced key. Is the same problem remained? 	Yes	Go to Step 5.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Lock and unlock operation using advanced key button that has problem. Are the lock and unlock operations properly? 	Yes	Replace the electrical key. (internal malfunction)
		No	Replace the electrical key battery, then go to Step 23.
5	<ul style="list-style-type: none"> Verify that the trouble occurred condition. Is the problem occurred lock operation only? 	Yes	Go to Step 7
		No	Go to the next step.
6	<ul style="list-style-type: none"> Verify that the trouble occurred condition. Is the problem occurred unlock operation only? 	Yes	Go to Step 13.
		No	Go to Step 15.
7	<ul style="list-style-type: none"> Monitor the following keyless control module PIDs using the M-MDS. <ul style="list-style-type: none"> REQ_SW_R (RF lock request switch) REQ_SW_L (LF lock request switch) LGATE_L_SW (liftgate request switch) Are PIDs indicated properly? <p>Specification Switch pushed: ON Other: OFF</p>	Yes	Go to Step 11.
		No	Go to the next step.
8	<ul style="list-style-type: none"> Switch the ignition to off. Disconnect the keyless control module (30-pin) door handle (incorrect PID value at Step 7) connectors. Verify continuity between suspect door handle harness-side connector terminal D and GND. Is there continuity? 	Yes	<ul style="list-style-type: none"> Repair or replace wiring harness for short to GND circuit. Then go to Step 23.
		No	Go to the next step.
9	<ul style="list-style-type: none"> Keyless control module and handle switch disconnected. Verify continuity between door handle connector terminal D and following keyless control module terminal at each harness-side connector. <ul style="list-style-type: none"> Terminal 4O for right-side door handle Terminal 4R for left-side door handle Terminal 4T for request switch (liftgate) Is there continuity? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Repair or replace for open circuit. Then go to Step 23.
10	<ul style="list-style-type: none"> Handle switch disconnected. Verify continuity between suspect door handle harness-side connector terminal A and GND. Is there continuity? 	Yes	<ul style="list-style-type: none"> Replace suspect door handle. (See 09-14-8 FRONT OUTER HANDLE REMOVAL/INSTALLATION.) Then go to Step 23.
		No	<ul style="list-style-type: none"> Repair or replace wiring harness for open circuit. Re-tighten the ground wire as necessary. Then go to Step 23.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

STEP	INSPECTION	ACTION	
11	<ul style="list-style-type: none"> • Monitor the following BCM PIDs using the M-MDS. <ul style="list-style-type: none"> — DRSW_RR (Right rear door latch switch) — DRSW_LR (Left rear door latch switch) — DRSW_P (Passenger's door latch switch) — DRSW_D (Driver's door latch switch) • Are PIDs indicated properly? 	Yes	<ul style="list-style-type: none"> • Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect suspect door latch switch and wiring harness. (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.) • (See 09-14-49 REAR DOOR LATCH SWITCH INSPECTION.) • (See 09-14-53 TRUNK LID LATCH SWITCH INSPECTION.) • (See 09-14-63 LIFTGATE LATCH SWITCH INSPECTION.) • Repair or replace as necessary. • Then go to Step 23.
12	<ul style="list-style-type: none"> • Measure the voltage at the BCM terminals 5O and 5K while the lock door using the request switch. <ul style="list-style-type: none"> — Lock all doors with the advanced key: 1.0 V or less → B+ → 1.0 V or less (terminal 5O) • Is the voltage as above? 	Yes	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the BCM and the door lock actuator. • Inspect for door lock actuator. • Then go to Step 23.
		No	<ul style="list-style-type: none"> • Replace the BCM. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.) • Then go to Step 23.
13	<ul style="list-style-type: none"> • Measure the voltage at the BCM terminals 5M and 5K while the unlock door using the request switch. <ul style="list-style-type: none"> — Unlock driver's doors with the advanced key: 1.0 V or less → B+ → 1.0 V or less (terminal 5M) — Unlock all doors with the advanced key: 1.0 V or less → B+ → 1.0 V or less (terminal 5K) • Is the voltage as above? 	Yes	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the BCM and the door lock actuator. • Inspect for door lock actuator. • Then go to Step 23.
		No	Go to the next step.
14	<ul style="list-style-type: none"> • Monitor the following keyless control module PIDs using the M-MDS. <ul style="list-style-type: none"> — LOCK_SW_D (door lock link switch) • Are PIDs indicated properly? <p>Specification</p> <p>Driver's door: LOCK: Lock</p> <p>Driver's door: UNLOCK: Unlock</p>	Yes	Go to the next Step.
		No	Inspect the door lock link switch, replace it as necessary. <ul style="list-style-type: none"> • Door lock link switch • Verify continuity between door lock link switch connector terminal J and keyless control module terminal 4U at each harness-side connector
15	<ul style="list-style-type: none"> • Verify that the trunk lid/liftgate open function. • Is the trunk lid/liftgate open with trunk lid/liftgate opener switch? 	Yes	Go to Step 19.
		No	Go to the next step.
16	<ul style="list-style-type: none"> • Measure the voltage at the keyless control module terminal 4S. • Is the voltage normal? <p>Specification</p> <p>Trunk lid/liftgate opener switch pressed: 3.0 or more</p> <p>Trunk lid/liftgate opener switch released: 1.0 or less</p>	Yes	Go to Step 21.
		No	Go to the next step.
17	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the keyless control module (30-pin) and trunk lid/liftgate opener switch connectors. • Verify continuity between trunk lid/liftgate opener switch harness-side connector terminal A and GND. • Is there continuity? 	Yes	<ul style="list-style-type: none"> • Repair or replace wiring harness for short to GND circuit. • Then go to Step 23.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

STEP	INSPECTION	ACTION
18	<ul style="list-style-type: none"> • Keyless control module and opener switch disconnected. • Verify continuity between trunk lid/liftgate opener switch terminal A and keyless control module terminal 4S at each harness-side connector. • Is there continuity? 	Yes <ul style="list-style-type: none"> • Inspect the trunk lid/liftgate opener switch, replace it as necessary. <ul style="list-style-type: none"> — If normal, inspect following parts and repair or replace as necessary. <ul style="list-style-type: none"> • Trunk lid/liftgate latch and actuator • Open or short circuit in wiring harness between trunk lid/liftgate latch and BCM. • Open or short circuit in wiring harness between trunk lid/liftgate actuator and BCM. • Then go to Step 23.
		No <ul style="list-style-type: none"> • Repair or replace for open circuit. • Then go to Step 23.
19	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the keyless control module and suspect exterior keyless antenna connector. • Verify continuity between following suspect keyless antenna harness-side connector terminal and GND. <ul style="list-style-type: none"> — Door handle terminal B (exterior LH/RH) — Door handle terminal E (exterior LH/RH) — Keyless antenna (exterior rear) terminal A — Keyless antenna (exterior rear) terminal B • Is there continuity? 	Yes <ul style="list-style-type: none"> • Repair or replace for short to GND, then go to Step 23.
		No <ul style="list-style-type: none"> • Go to the next step.
20	<ul style="list-style-type: none"> • Replace the suspect exterior keyless antenna to other keyless antenna (interior rear, other side door handle) temporarily. <ul style="list-style-type: none"> — If the symptom is occurring while the front outer handle switch operates, replace to the other side front outer handle with connector is connected. • Verify the malfunction symptom. • Is the symptom solved? 	Yes <ul style="list-style-type: none"> • Replace the suspect exterior keyless antenna, then go to Step 23. (See 09-14-8 FRONT OUTER HANDLE REMOVAL/INSTALLATION.) (See 09-14-76 KEYLESS ANTENNA REMOVAL/INSTALLATION.)
		No <ul style="list-style-type: none"> • Go to the next step.
21	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the BCM (16-pin) and keyless control module (12-pin) connectors. • Verify continuity between keyless control module harness-side connector terminal 3X and GND. • Is there continuity? 	Yes <ul style="list-style-type: none"> • Repair or replace wiring harness for short to GND circuit. • Then go to Step 23.
		No <ul style="list-style-type: none"> • Go to the next step.
22	<ul style="list-style-type: none"> • BCM (16-pin) and keyless control module (12-pin) connectors disconnected. • Verify continuity between BCM connector terminal 4K and keyless control module terminal 3X at each harness-side connector. • Is there continuity? 	Yes <ul style="list-style-type: none"> • Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) • Then go to the next step.
		No <ul style="list-style-type: none"> • Repair or replace wiring harness for open circuit. • Then go to the next step.
23	<ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes <ul style="list-style-type: none"> • Troubleshooting completed. Explain repairs to the customers.
		No <ul style="list-style-type: none"> • Re-inspect the malfunction symptoms, then repeat form Step 1 if malfunction recurs.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

NO.3 PUSH BUTTON START SYSTEM DOES NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Id0903z3901700

3	Push button start system does not operate
DESCRIPTION	<ul style="list-style-type: none"> Cannot switch to ACC or ignition to ON Engine does not start
Possible Causes	<ul style="list-style-type: none"> Advanced key battery malfunction (battery power depleted) Advanced key malfunction Keyless control module malfunction Open or short circuit in keyless control module power supply ENG+B fuse, ESCL fuse or ROOM fuse malfunction Front keyless antenna malfunction Open or short circuit in wiring harness between front keyless antenna and keyless control module Open or short circuit in wiring harness between push button start switch and keyless control module PCM malfunction Engine starting system malfunction Short to power supply in starter relay wiring harness Steering lock unit malfunction Open or short circuit in wiring harness between keyless control module and steering lock unit Relay block (ACC relay, IG1 relay, IG2 relay) malfunction Open or short circuit in wiring harness between relay block (ACC relay, IG1 relay, IG2 relay) and keyless control module CAN system malfunction. Effect of after-market electronic device installation Mechanical catching of steering lock (system is normal)

Diagnostic procedure

Step	Inspection		Action
1	<ul style="list-style-type: none"> Verify that the advanced keyless entry system is operating. Is the advanced keyless entry system operating normally? 	Yes	Go to the next step.
		No	Go to applicable malfunction diagnostic procedure. (See 09-03J-4 SYMPTOM TROUBLESHOOTING CHART [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2	<ul style="list-style-type: none"> Move the steering wheel slightly while pressing the push button start. Does the steering lock release and the push button start operate? 	Yes	System is normal. Note <ul style="list-style-type: none"> Depending on the steering wheel position, the steering lock mechanism could catch due to spring force from the tires.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
3	<ul style="list-style-type: none"> • Measure the voltage at keyless control module terminal 1E and 1F. • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the condition of the ENG+B fuse ESCL fuse or ROOM fuse If the fuse is broken: <ul style="list-style-type: none"> • Replace the suspect fuse. If the ROOM fuse is burnt out: <ul style="list-style-type: none"> • After repairing for a short to ground in the wiring harness between battery + terminal and keyless control module terminal 1E, replace the ROOM fuse. If the ENG+B fuse is burnt out: <ul style="list-style-type: none"> • After repairing for a short to ground in the wiring harness between battery + terminal and keyless control module terminal 1F, replace the ENG+B fuse. • Repair for an open circuit to the wiring harness between the battery+ terminal and keyless control module terminal 1A. If the fuse is normal: <ul style="list-style-type: none"> • Repair for an open circuit to the wiring harness between the battery + terminal and keyless control module terminal 1E. • Repair for an open circuit to the wiring harness between the battery + terminal and keyless control module terminal 1F. If the ESCL fuse is burnt out: <ul style="list-style-type: none"> • After replacing for a short to ground in wiring harness between battery + terminal and keyless control module terminal 1A, replace the ESCL fuse. After repair procedure, go to Step 14.
4	Note <ul style="list-style-type: none"> • If the malfunction is the ignition not switching to ACC or ignition to ON, switch to ignition to ON using the M-MDS and the forced Ignition to ON function. • If the M-MDS forced ignition to ON function cannot be used, Inspect and repair for keyless control module terminals 1A, 1C, 2I and 3D related harnesses. Reset Step 4. <ul style="list-style-type: none"> • Verify the keyless control module DTCs using the M-MDS. • Can DTCs be verified? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step. If the FAIL is displayed on the M-MDS, inspect for open circuit between connector terminal 2K, 2I on the keyless control module vehicle wiring harness and DLC-2.
5	<ul style="list-style-type: none"> • Has a non-standard electronic device been installed? <ul style="list-style-type: none"> — Cellular phone — Part with built-in micro computer — Remote engine starter — TV 	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none"> • Disconnect all non-standard electronic device connectors and start the engine. • Does the engine start? 	Yes	System is normal. Explain to the customer that the effects of installed non-standard electronic devices is the reason for the non-operation.
		No	Go to the next step.
7	<ul style="list-style-type: none"> • Press the push button start with brake pedal (ATX)/clutch pedal (MTX) is depressed. • Verify condition of push button start warning light (red). • Does the push button start system warning light (red) flash? 	Yes	<ul style="list-style-type: none"> • Inspect or repair the front keyless antenna and related wiring harness connectors. • Inspect or repair for open or short circuit in the wiring harness between keyless control module terminal 3W and keyless receiver terminal C. • After repair procedure, go to Step 14.
		No	Go to the next step.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
8	<ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Verify the continuity between following keyless control module harness side connector terminal and GND. <ul style="list-style-type: none"> — Terminal 2B — Terminal 3Q • Is the continuity changing according to the push button start status? <ul style="list-style-type: none"> — While push button start is pressed: continuity — While push button start is not pressed: not continuity 	Yes	Go to Step 11.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the push button start connector. • Verify the continuity between connector terminal I on the push start switch vehicle wiring harness side and ground. • Can continuity be verified? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the following and repair or replace the malfunctioning location. <ul style="list-style-type: none"> — Wiring harness between push button start and ground (open circuit). — Ground point (looseness, bad contact) • If there is no malfunction, replace the push button start. • After repair procedure, go to Step 14.
10	<ul style="list-style-type: none"> • Switch the ignition to off. (PUSH BUTTON START CIRCUIT INSPECTION (SHORT TO GROUND CIRCUIT)). • Leave the push button start connector disconnected. • Disconnect the keyless control module connector (12-pin). • Verify the continuity between the following connector terminals on the push button start vehicle wiring harness side and ground. <ul style="list-style-type: none"> — Terminal A — Terminal B • Can continuity be verified? 	Yes	<ul style="list-style-type: none"> • Repair for a short to ground in the wiring harness between the push button start and the keyless control module. • After repair procedure, go to Step 14.
		No	Go to the next step.
11	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the steering lock unit connector. • Verify the continuity between connector terminal H of the steering lock unit on the vehicle wiring harness side and ground. • Can continuity be verified? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the following and repair or replace the malfunctioning location. <ul style="list-style-type: none"> — Wiring harness between steering lock unit terminal H and ground (open circuit) — Ground point (looseness, bad contact) • After repair procedure, go to Step 14.
12	<ul style="list-style-type: none"> • Perform engine starting procedure. • Verify the system switching related to the push button start operation. • Does the system switch as follows: OFF→ACC→IG1→OFF? 	Yes	Go to the next step.
		No	Perform engine control system symptom troubleshooting in "No.3 Engine does not start".
13	<ul style="list-style-type: none"> • Monitor the following keyless control module PIDs using the M-MDS: MTX vehicles <ul style="list-style-type: none"> — SHIFT_N (Neutral switch) — CLUTCH_SW (Clutch switch) • ATX vehicles <ul style="list-style-type: none"> — SHIFT_P (P position signal) — BRAKE_SW2 (Brake switch) • Are the PID values correctly indicated for each switch operation? 	Yes	<ul style="list-style-type: none"> • Replace the keyless control module (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) • After replacement, go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair parts and wiring harnesses which are not correctly displayed. • After repair, go to the next step.
14	<ul style="list-style-type: none"> • Does the push button start operate correctly? 	Yes	Troubleshooting completed. Explain the contents of the servicing to the customer.
		No	If the malfunction has not been resolved, repeat the inspection from Step 1.

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

NO.4 AFTER ENGINE START, ELECTRICAL DEVICES DO NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0903z3888200

4	After engine start, electrical devices do not operate
DESCRIPTION	<ul style="list-style-type: none"> Possible cause related to non-operation of electrical devices (such as blower motor, rear wiper) with ignition switched to ignition to ON (IG2), after engine start.
Possible Causes	<ul style="list-style-type: none"> Open or short circuit in wiring harness between battery and relay block (IG2 relay) and each part Fuse burnt out (short to ground in related wiring harness) Open circuit in wiring harness between keyless control module and relay block (IG2 relay) Relay block (IG2 relay) malfunction (stuck open) Keyless control module malfunction

Diagnostic Procedure

Step	Inspection	Action	
1	<ul style="list-style-type: none"> Do the electrical devices operate with the ignition is switched to ACC, ignition to ON (IG1)? 	Yes	Go to the next step.
		No	Go to symptom troubleshooting procedure "No.3 Push button start does not operate".
2	<ul style="list-style-type: none"> Disconnect the keyless control module connector. Connect battery positive voltage to the following connector terminal on the keyless control module vehicle wiring harness side. <ul style="list-style-type: none"> Terminal 3G (IG2) Measure the voltage of the following connector terminal on the keyless control module vehicle wiring harness side. <ul style="list-style-type: none"> Terminal 2E (IG2) Is the voltage B+? 	Yes	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) After replacement, go to Step 7.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Leave the keyless control module connector disconnected. Disconnect the relay block connector. Verify the continuity between the following connector terminals on the vehicle wiring harness side: <ul style="list-style-type: none"> Between keyless control module terminal 2E and relay block terminal 1C (6-pin) (IG2 monitor). Between keyless control module terminal 3G and relay block terminal 2A (8-pin) (IG2 relay primary power supply). Can continuity be verified? 	Yes	Go to the next step.
		No	After repairing for an open circuit in the wiring harness, go to Step 7.
4	<ul style="list-style-type: none"> Leave the relay block connector disconnected. Verify the continuity between connector terminal 2C (8-pin) on the relay block vehicle wiring harness side and ground. Can continuity be verified? 	Yes	Go to the next step.
		No	Repair for an open circuit in the wiring harness. Inspect and repair the ground point. After repair procedure, go to Step 7.
5	<ul style="list-style-type: none"> Leave the relay block connector disconnected. Measure the voltage of connector terminal 1A (6-pin) and terminal 1E (6-pin) on the relay block vehicle wiring harness side. Is the voltage B+? 	Yes	Go to the next step.
		No	After repairing for an open circuit in the wiring harness, go to Step 7.
6	<ul style="list-style-type: none"> Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) Is the relay block normal? 	Yes	<ul style="list-style-type: none"> Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) After replacement, go to the next step.
		No	Replace the relay block, then go to the next step.
7	<ul style="list-style-type: none"> Do the electrical devices (such as blower motor, rear wiper) operate normally after starting the engine? 	Yes	Troubleshooting completed. Explain the contents of the servicing to the customer.
		No	If the malfunction has not been resolved, repeat the inspection from Step 1.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

NO.5 ELECTRONIC STEERING MECHANISM DOES NOT OPERATE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0903z3888300

5	Electronic steering mechanism does not operate
DESCRIPTION	<ul style="list-style-type: none"> • Steering does not lock during system ignition to OFF, door lock, door open/close
Possible Causes	<ul style="list-style-type: none"> • Steering lock unit malfunction • ENG+B fuse ESCL fuse malfunction • Open/short circuit in wiring harness between battery + terminal and keyless control module • Open or short circuit in wiring harness between keyless control module and steering lock unit • Connector connection malfunction • Open circuit in wiring harness between keyless control module and DSC CM • Open circuit in wiring harness between door lock link switch and keyless control module • Open circuit in wiring harness between keyless control module and ground. • Communication error between keyless control module and DSC CM • Keyless control module malfunction • DSC CM malfunction • ABSCM malfunction • CAN system malfunction

Diagnostic Procedure

Step	Inspection		Action
1	<ul style="list-style-type: none"> • Verify that the advanced keyless entry system is operating. • Is the advanced keyless entry system operating normally? 	Yes	Go to the next step.
		No	Go to applicable malfunction diagnostic procedure. (See 09-03J-4 SYMPTOM TROUBLESHOOTING CHART [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
2	<ul style="list-style-type: none"> • Does the system switch to ACC and ignition to ON (IG1)? 	Yes	Go to the next step.
		No	Go to symptom troubleshooting procedure "No.3 Push button start does not operate".
3	<ul style="list-style-type: none"> • Verify the keyless control module DTCs using the M-MDS. • Can DTCs be verified? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) If the FAIL is displayed on the M-MDS, inspect for open circuit between connector terminal 2K, 2L on the keyless control module vehicle wiring harness and DLC-2.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the keyless control system connector. • Verify the continuity between connector terminal 1D on the keyless control module vehicle wiring harness side and ground. • Can continuity be verified? 	Yes	Go to the next step.
		No	After repairing or replacing for an open circuit in the wiring harness, go to Step 17.
5	<ul style="list-style-type: none"> • Does the engine stop normally? 	Yes	Go to the next step.
		No	Go to Step 8.
6	<ul style="list-style-type: none"> • Lock the doors using the advanced keyless entry mechanism. • Does the steering lock mechanism lock? 	Yes	Go to the next step.
		No	Go to Step 11.
7	<ul style="list-style-type: none"> • Switch the ignition to off. • Change the door condition (Open→Close, Close→Open) • Does the steering lock mechanism lock? 	Yes	After repairing or replacing for intermittent connection malfunctions of the following part connectors and malfunction areas, go to Step 17. <ul style="list-style-type: none"> • Keyless control module • BCM • Electronic steering lock unit
		No	Go to Step 16.
8	<ul style="list-style-type: none"> • Monitor the instrument cluster PID SPDMTR using the M-MDS data monitor function. • Is the monitor value when the vehicle is stopped 0 km/h? 	Yes	Go to Step 10.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
9	<ul style="list-style-type: none"> • Monitor the following PIDs concerning the ABS (ABS equipped vehicles) and DSC (DSC equipped vehicle) CM using the M-MDS data monitor function. <ul style="list-style-type: none"> — LF_WSPD — LR_WSPD — RF_WSPD — RR_WSPD • Does the monitor value agree with the vehicle driving conditions? 	Yes	Go to the instrument cluster symptom troubleshooting "Speedometer indication malfunction".
		No	Inspect the ABS wheel-speed sensor. (See 04-13-7 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-13-10 REAR ABS WHEEL-SPEED SENSOR INSPECTION.) After inspection and repair, go to Step 17.
10	<ul style="list-style-type: none"> • Verify the keyless control module PID LOCK_SW_D (door lock signal) using the M-MDS data monitor function. • Is the monitor value linked to the door lock condition? 	Yes	Replace the steering lock unit, then go to Step 17. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
11	<ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the keyless control module, BCM, and door lock link switch connectors. • Verify the continuity between the following connector terminals on the vehicle wiring harness side: <ul style="list-style-type: none"> — Between keyless control module terminal 4U and door lock link switch terminal D. — Between BCM terminal 6I and door lock link switch terminal D • Is there continuity? 	Yes	Go to the next step.
		No	After repairing or replacing for an open circuit in the wiring harness, go to Step 17.
12	<ul style="list-style-type: none"> • Leave the keyless control module, BCM, door lock link switch connectors disconnected. • Verify the continuity between connector terminal 4U of the keyless control module on the vehicle wiring harness side and ground. • Is there continuity? 	Yes	After repairing or replacing for a short to the wiring harness ground, go to Step 17. <ul style="list-style-type: none"> • Between keyless control module terminal 4U and door lock link switch terminal D. • Between BCM terminal 8G and door lock link switch terminal D
		No	Go to the next step.
13	<ul style="list-style-type: none"> • Leave the keyless control module, BCM, door lock link switch connectors disconnected. • Measure the voltage of connector terminal 4U on the keyless control module vehicle wiring harness side. • Is the voltage 1.0 V or more? 	Yes	After repairing or replacing for a short to the power supply wiring harness, go to Step 17. <ul style="list-style-type: none"> • Between keyless control module terminal 4U and door lock link switch terminal D. • Between BCM terminal 6I and door lock link switch terminal D
		No	Go to the next step.
14	<ul style="list-style-type: none"> • Leave the door lock link switch connector disconnected. • Verify the continuity between connector terminal J on the door lock link switch vehicle wiring harness side and ground. • Is there continuity? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the following and repair or replace the malfunctioning location. <ul style="list-style-type: none"> — Wiring harness between connector terminal J of the door lock link switch vehicle wiring harness side (open circuit). — Ground point (looseness, bad contact) • After repair procedure, go to Step 17.
15	<ul style="list-style-type: none"> • Inspect the door lock-link switch. (See 09-14-15 DOOR LOCK SWITCH INSPECTION.) • Is the door lock-link switch normal? 	Yes	Go to the next step.
		No	Replace the door lock-link switch. After replacement, go to Step 17.
16	<ul style="list-style-type: none"> • Leave the keyless control module and BCM connectors disconnected. • Measure the voltage of connector terminal 3X on the keyless control module vehicle wiring harness side. • Is the voltage 1.0 V or more? 	Yes	After repairing or replacing for a short to the power supply wiring harness, go to Step 15.
		No	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)
17	<ul style="list-style-type: none"> • Is the electronic steering lock operating normally? 	Yes	Troubleshooting completed. Explain the contents of the servicing to the customer.
		No	If the malfunction has not been resolved, repeat the inspection from Step 1.

SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

NO.6 PUSH BUTTON START SYSTEM DOES NOT TURN OFF (IG OFF) [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0903z3888400

6	Push button start system does not turn off (ignition to OFF)
DESCRIPTION	<ul style="list-style-type: none"> Engine does not turn off even if engine shut off operation is performed. Electrical devices continue to operate after engine is turned off. Dead battery Engine does not turn off even if the emergency engine stop (continuously pressing the push button start or quickly pressing it any number of items) is performed.
Possible Causes	<ul style="list-style-type: none"> Communication error between keyless control module and ABS, DSC CM Relay block (ACC relay) malfunction Short to power supply in wiring harness between relay block (ACC relay) and keyless control module Relay block (IG1 relay) malfunction Short to power supply in wiring harness between relay block (IG1 relay) and keyless control module Relay block (IG2 relay) malfunction Short to power supply in wiring harness between relay block (IG2 relay) and keyless control module Keyless control module malfunction ABS, DSC CM malfunction CAN system malfunction Open circuit in wiring harness between push button start and keyless control module

Diagnostic Procedure

Step	Inspection		Action
1	<ul style="list-style-type: none"> Verify the keyless control module DTCs using the M-MDS. Can DTCs be verified? 	Yes	Go to the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Perform engine stop operation. Does the engine stop normally? 	Yes	Go to Step 8.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Connect the M-MDS to the DLC-2 connector. Monitor the keyless control module PID PUSH_ST1, and PUSH_ST2. Operate the push button start. Does the PID display change according to the push button start status? <ul style="list-style-type: none"> — While push button start is pressed: ON — While push button start is not pressed: OFF 	Yes	Go to Step 6.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Switch the ignition to off. Disconnect the push button start connector. Verify the continuity between connector terminal 1 on the push start switch vehicle wiring harness side and ground. Can continuity be verified? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Inspect the following and repair or replace the malfunctioning location. <ul style="list-style-type: none"> — Wiring harness between push button start and ground (open circuit). — Ground point (looseness, bad contact) If there is no malfunction, replace the push button start. After repair procedure, go to Step 13.
5	<ul style="list-style-type: none"> Switch the ignition to off. Leave the push button start connector disconnected. Disconnect the keyless control module connector (12-pin). Verify the continuity between the following connector terminals on the push button start vehicle wiring harness side and ground. <ul style="list-style-type: none"> — Terminal A — Terminal B Can continuity be verified? 	Yes	<ul style="list-style-type: none"> Repair for a short to ground in the wiring harness between the push button start and the keyless control module. After repair procedure, go to Step 13.
		No	<ul style="list-style-type: none"> Replace the push button start. (See 09-21-8 PUSH BUTTON START REMOVAL/ INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) After replacement, go to Step 13.
6	<ul style="list-style-type: none"> Monitor the instrument cluster PID SPDMTR using the M-MDS data monitor function. Is the monitor value when the vehicle is stopped 0 km/h? 	Yes	Go to Step 8.
		No	Go to the next step.

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SYMPTOM TROUBLESHOOTING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

Step	Inspection	Action	
7	<ul style="list-style-type: none"> • Monitor the following PIDs concerning the ABS (ABS equipped vehicles) and DSC (DSC equipped vehicle) CM using the M-MDS data monitor function. <ul style="list-style-type: none"> — LF_WSPD — LR_WSPD — RF_WSPD — RR_WSPD • Does the monitor value agree with the vehicle driving conditions? 	Yes	Go to the instrument cluster symptom troubleshooting "Speedometer indication malfunction".
		No	Inspect the ABS wheel-speed sensor. (See 04-15-6 FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See 04-15-7 REAR ABS WHEEL-SPEED SENSOR INSPECTION.) After inspection and repair, go to Step 13.
8	<ul style="list-style-type: none"> • Disconnect the keyless control module connector. • Connect battery positive voltage to the following connector terminals on the keyless control module vehicle wiring harness side. <ul style="list-style-type: none"> — Terminal 3J (ACC) — Terminal 3D (IG1) — Terminal 3G (IG2) • Measure the voltage of the following connector terminals on the keyless control module vehicle wiring harness side. <ul style="list-style-type: none"> — Terminal 2C (ACC) — Terminal 2A (IG1) — Terminal 2E (IG2) • Is the voltage B+? 	Yes	Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) After replacement, go to Step 13.
		No	Go to the next step.
9	<ul style="list-style-type: none"> • Leave the keyless control module connector disconnected. • Disconnect the relay block connector. • Verify the continuity between the following connector terminals on the vehicle wiring harness side: <ul style="list-style-type: none"> — Between keyless control module terminal 3J and relay block terminal E (8-pin) (ACC relay primary power supply). — Between keyless control module terminal 3D and relay block terminal G (8-pin) (IG1 relay primary power supply). — Between keyless control module terminal 3G and relay block terminal A (8-pin) (IG2 relay primary power supply). • Can continuity be verified? 	Yes	Go to the next step.
		No	After repairing for an open circuit in the wiring harness, go to Step 13.
10	<ul style="list-style-type: none"> • Leave the relay block connector disconnected. • Verify the continuity between connector terminal 2C on the relay block vehicle wiring harness side and ground. • Can continuity be verified? 	Yes	Go to the next step.
		No	Repair the open circuit in the wiring harness. Inspect and repair the ground point. After repair procedure, go to Step 13.
11	<ul style="list-style-type: none"> • Leave the relay block connector disconnected. • Measure the voltage of connector terminal 1A (6-pin) and terminal 1E (6-pin) on the relay block vehicle wiring harness side. • Is the voltage B+? 	Yes	Go to the next step.
		No	After repairing for an open circuit in the wiring harness, go to Step 13.
12	<ul style="list-style-type: none"> • Inspect the relay block. (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) • Is the relay block normal? 	Yes	<ul style="list-style-type: none"> • Replace the keyless control module. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) • After replacement, go to the next step.
		No	Replace the relay block, then go to the next step.
13	<ul style="list-style-type: none"> • Is the electronic steering lock operating normally? 	Yes	Troubleshooting completed. Explain the contents of the servicing to the customer.
		No	If the malfunction has not been resolved, repeat the inspection from Step 1.

BODY PANELS

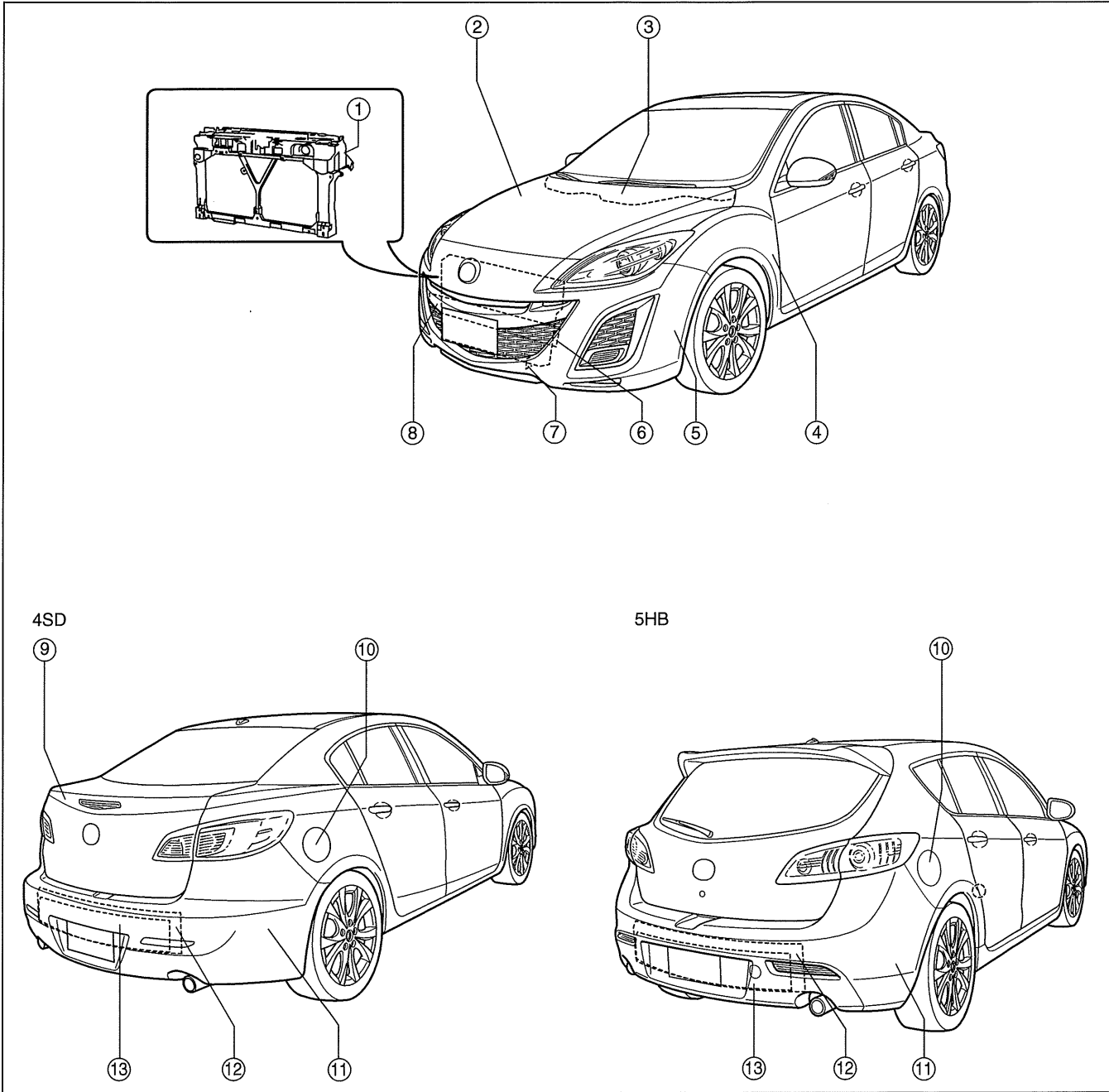
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BODY PANELS

BODY PANELS LOCATION INDEX

id091000802600



am3uuw0000519

1	Shroud panel (See 09-10-41 SHROUD PANEL REMOVAL/INSTALLATION.)
2	Hood (See 09-10-8 HOOD REMOVAL/INSTALLATION.) (See 09-10-10 HOOD DISASSEMBLY/ASSEMBLY.) (See 09-10-12 HOOD ADJUSTMENT.)
3	Cowl panel (See 09-10-45 COWL PANEL REMOVAL/INSTALLATION.)
4	Front fender panel (See 09-10-40 FRONT FENDER PANEL REMOVAL/INSTALLATION.)

5	Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.) (See 09-10-27 FRONT BUMPER DISASSEMBLY/ASSEMBLY.)
6	Front bumper reinforcement (See 09-10-22 FRONT BUMPER REINFORCEMENT REMOVAL/INSTALLATION.)
7	Seal plate (See 09-10-25 SEAL PLATE REMOVAL/INSTALLATION.)
8	Front energy-absorbing form (See 09-10-27 FRONT BUMPER DISASSEMBLY/ASSEMBLY.)

BODY PANELS

9	Trunk lid (See 09-10-3 TRUNK LID REMOVAL/ INSTALLATION.) (See 09-10-6 TRUNK LID ADJUSTMENT.) (See 09-10-7 TRUNK LID STAY DAMPER DISPOSAL.)
10	Fuel-filler lid (See 09-10-8 FUEL-FILLER LID REMOVAL/ INSTALLATION.) (See 09-10-8 FUEL-FILLER LID ADJUSTMENT.)

11	Rear bumper (See 09-10-30 REAR BUMPER REMOVAL/ INSTALLATION.) (See 09-10-38 REAR BUMPER DISASSEMBLY/ ASSEMBLY.)
12	Rear bumper reinforcement (See 09-10-39 REAR BUMPER REINFORCEMENT REMOVAL/INSTALLATION.)
13	Rear energy-absorbing form (See 09-10-24 ENERGY-ABSORBING FORM REMOVAL/INSTALLATION.)

TRUNK LID REMOVAL/INSTALLATION

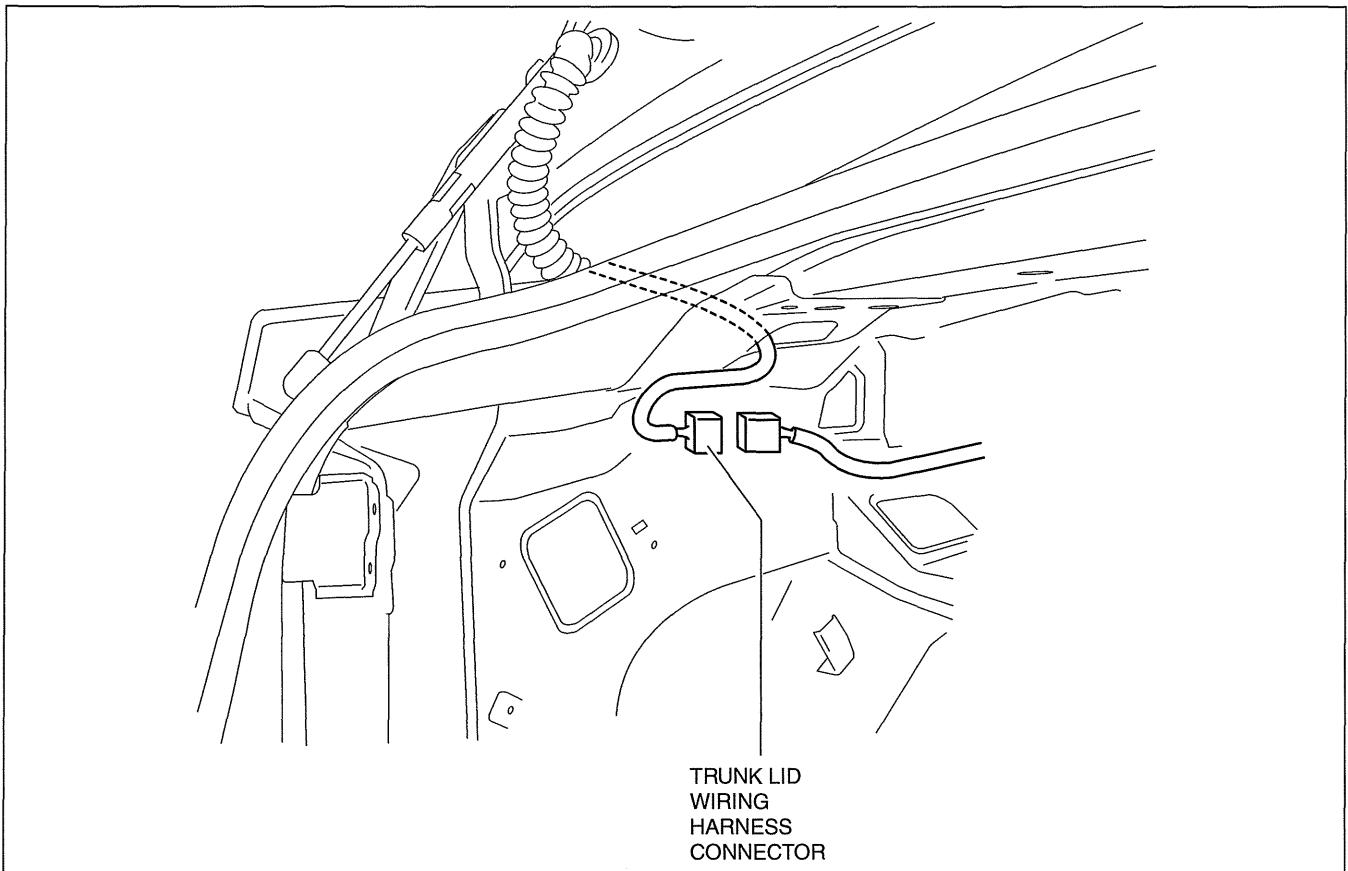
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Warning

- Removing the trunk lid stay damper without supporting the trunk lid can be dangerous. The trunk lid may fall and injure you. Be sure to open the trunk lid completely and support it securely before removing the trunk lid stay damper.

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (3) Trunk mat (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
 - (4) Trunk board (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
 - (5) Trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk side trim (LH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
3. Disconnect the trunk lid wiring harness connector, then take the trunk lid wiring harness out from the vehicle.

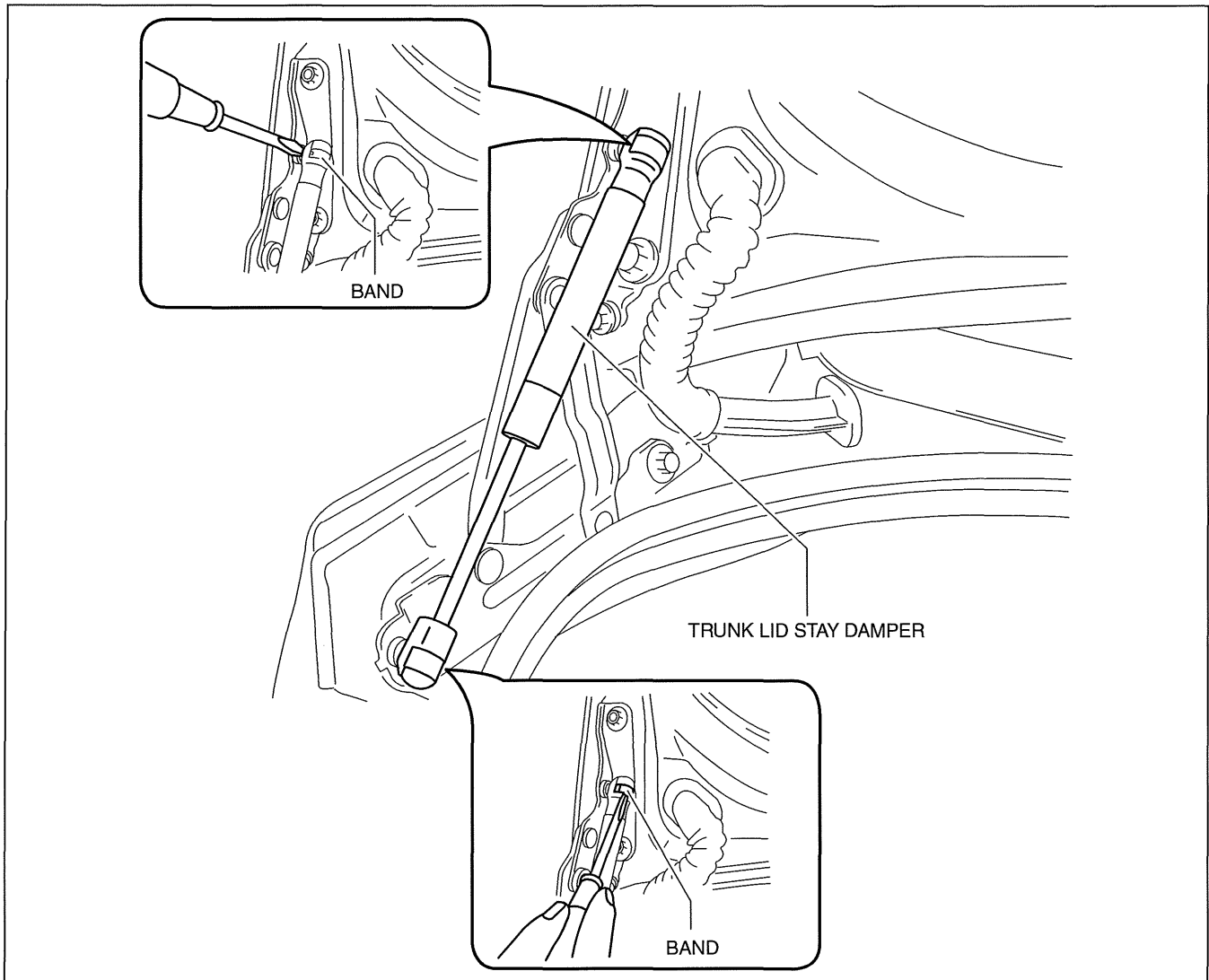
09-10



am3uuw0000331

BODY PANELS

4. Pry off the trunk lid stay damper band using a flathead screwdriver.

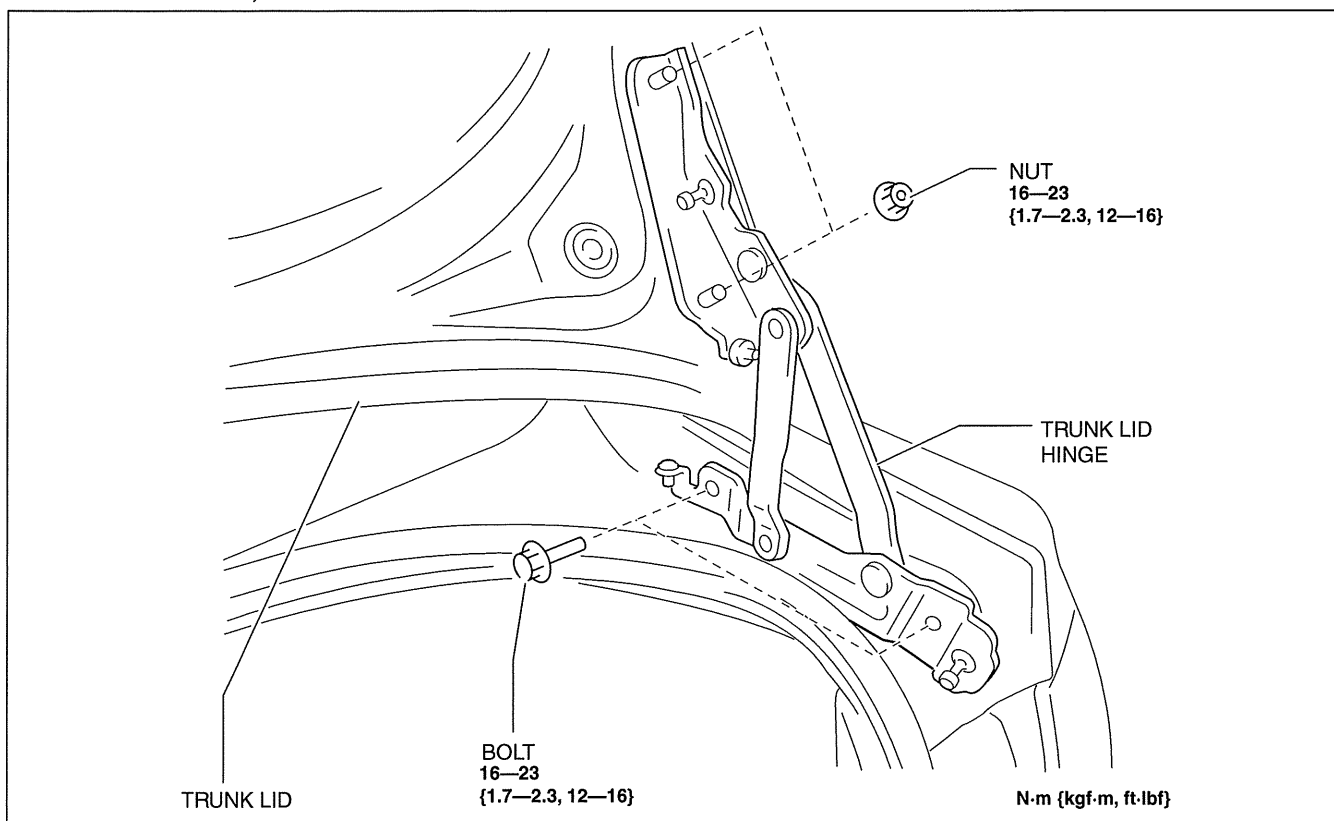


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5. Pry out the connecting parts of the trunk lid stay damper out of the hinge with a flathead screwdriver, then remove the trunk lid stay damper.

BODY PANELS

6. Remove the nuts, then remove the trunk lid.



09-10

7. Remove the bolts, then remove the trunk lid hinge.

8. Install in the reverse order of removal.

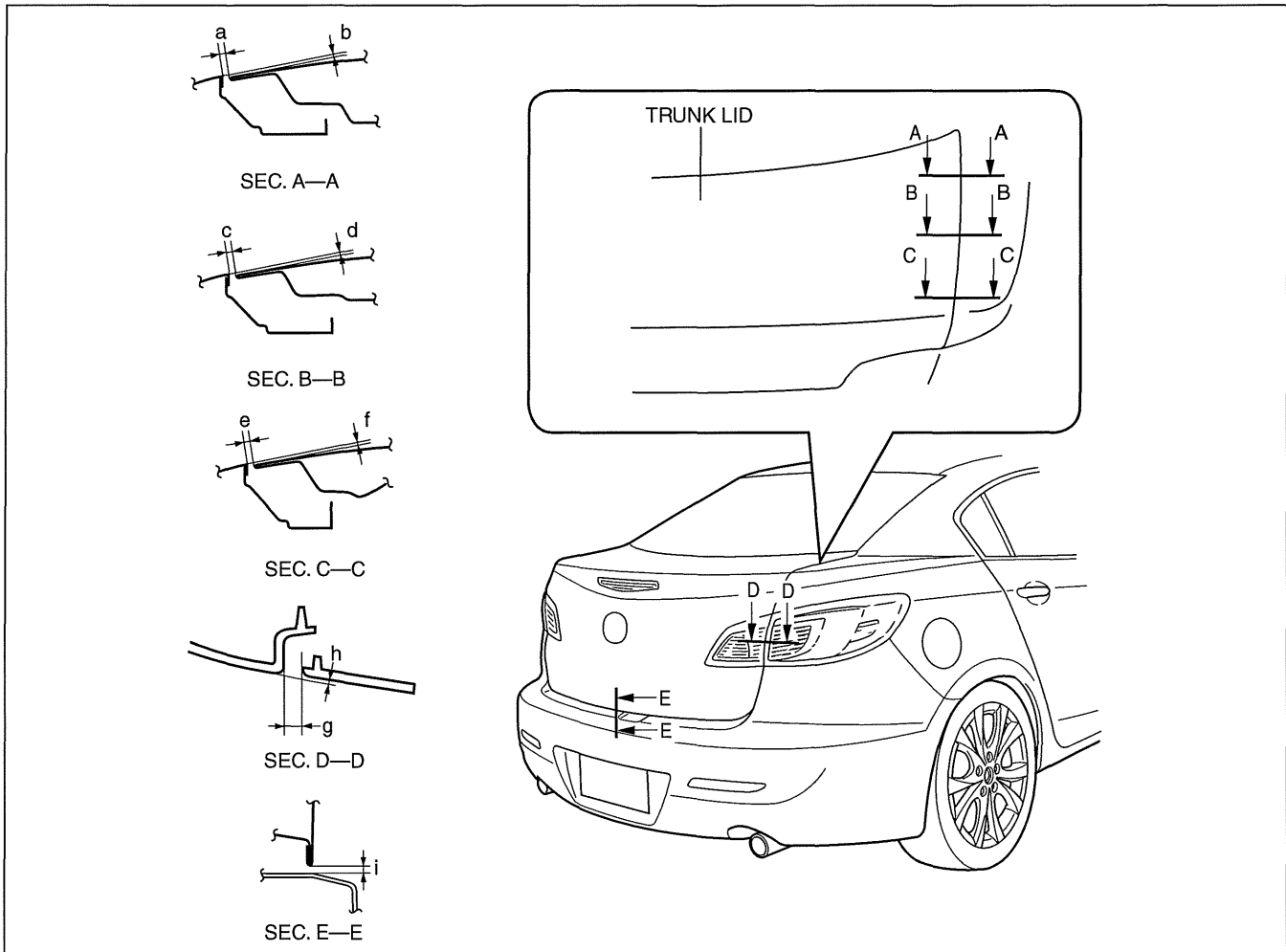
9. Adjust the trunk lid. (See 09-10-6 TRUNK LID ADJUSTMENT.)

BODY PANELS

TRUNK LID ADJUSTMENT

id091000801700

1. Measure the gap and height difference between the trunk lid and the body.



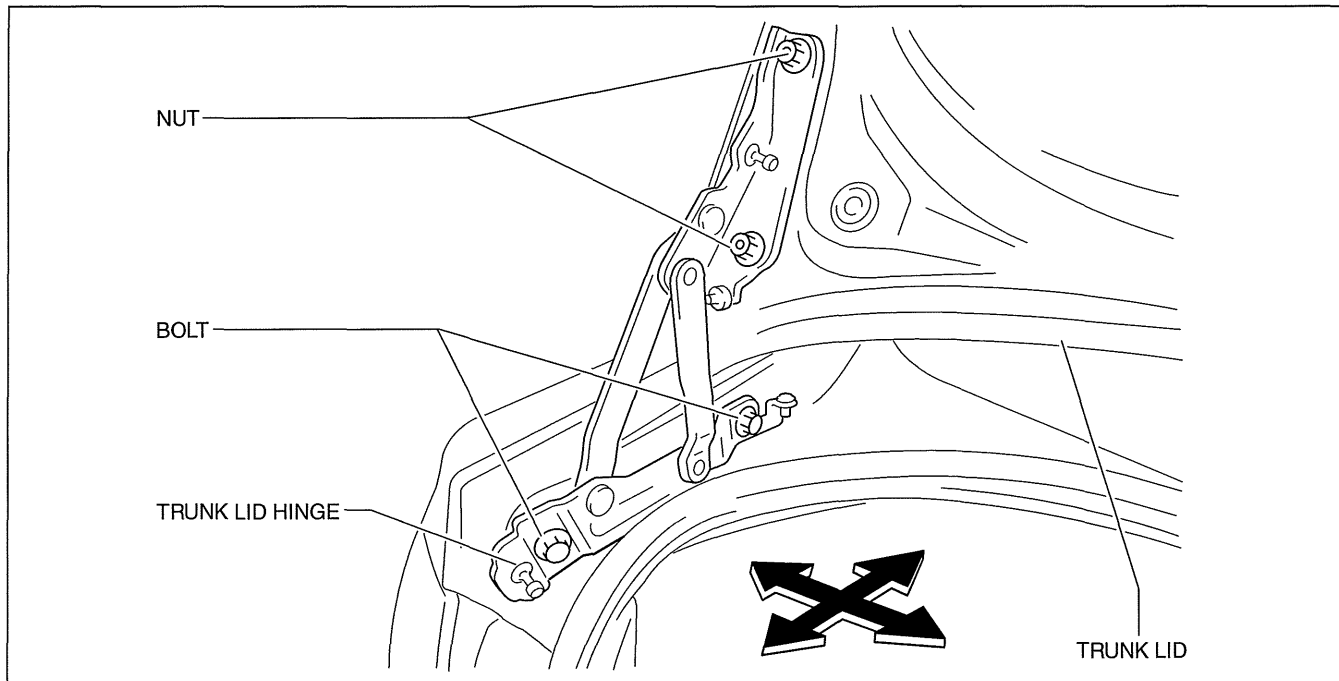
am3uuw0000522

Standard clearance

- a: 2.4—4.4 mm {0.10—0.17 in}
- b: -4.6—-2.6 mm {-0.18—-0.11 in}
- c: 2.5—4.5 mm {0.10—0.17 in}
- d: -1.7—-0.3 mm {-0.06—-0.01 in}
- e: 2.6—4.6 mm {0.11—0.18 in}
- f: -1.8—-0.2 mm {-0.070—0.007 in}
- g: 2.3—6.3 mm {-0.10—0.24 in}
- h: -2.0—-2.0 mm {-0.078—-0.078 in}
- i: 4.0—8.0 mm {0.16—0.31 in}

BODY PANELS

2. Loosen the trunk lid hinge installation bolts or nuts and adjust the trunk lid.
 - If necessary, loosen the trunk lid lock striker installation bolts and adjust the trunk lid. (See 09-14-53 TRUNK LID LOCK STRIKER REMOVAL/INSTALLATION.)



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3. Tighten the bolts or nuts. (See 09-10-3 TRUNK LID REMOVAL/INSTALLATION)

09-10

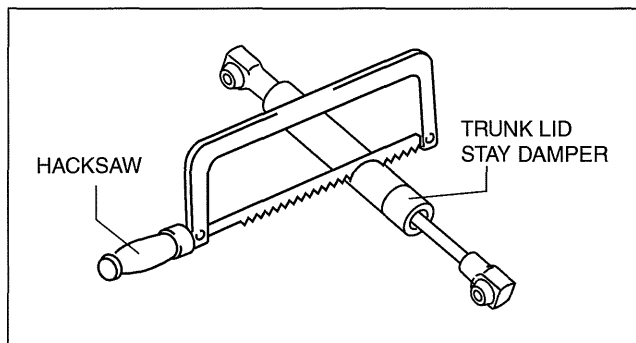
TRUNK LID STAY DAMPER DISPOSAL

id091000802700

Note

- The gas in the trunk lid stay damper is colorless, odorless, and non-toxic.

1. Wear protective eye wear.
2. Lay the trunk lid stay damper flat.
3. Hacksaw **2—3 mm {0.08—0.11 in}** into the trunk lid stay damper using a hacksaw, and allow the gas to escape from the trunk lid stay damper.
4. Verify that the gas has escaped from the trunk lid stay damper.
5. Discard the trunk lid stay damper.



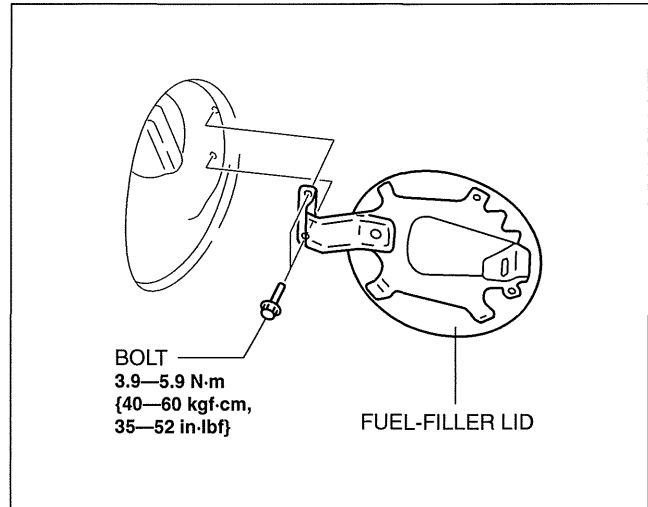
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BODY PANELS

FUEL-FILLER LID REMOVAL/INSTALLATION

id091000800100

1. Remove the bolts.
2. Remove the fuel-filler lid.
3. Install in the reverse order of removal.
4. Adjust the fuel-filler lid. (See 09-10-8 FUEL-FILLER LID ADJUSTMENT.)



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FUEL-FILLER LID ADJUSTMENT

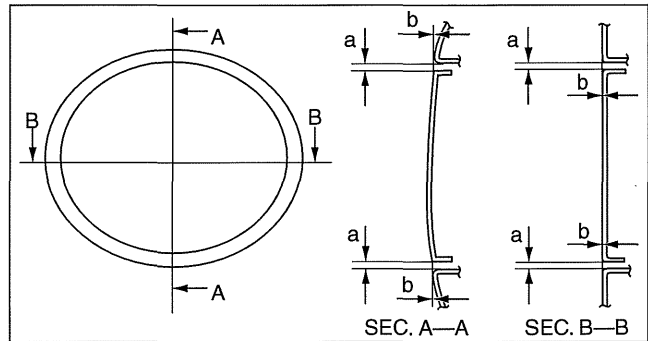
id091000800200

1. Measure the gap and height difference between the fuel-filler lid and the body.
2. Loosen the fuel-filler lid installation bolts, and adjust the fuel-filler lid.

Standard clearance

- a: 1.7—3.7 mm {0.067—0.14 in}
b: -0.5—1.5 mm {-0.019—0.059 in}

3. Tighten the bolts. (See 09-10-8 FUEL-FILLER LID REMOVAL/INSTALLATION)



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HOOD REMOVAL/INSTALLATION

id091000801200

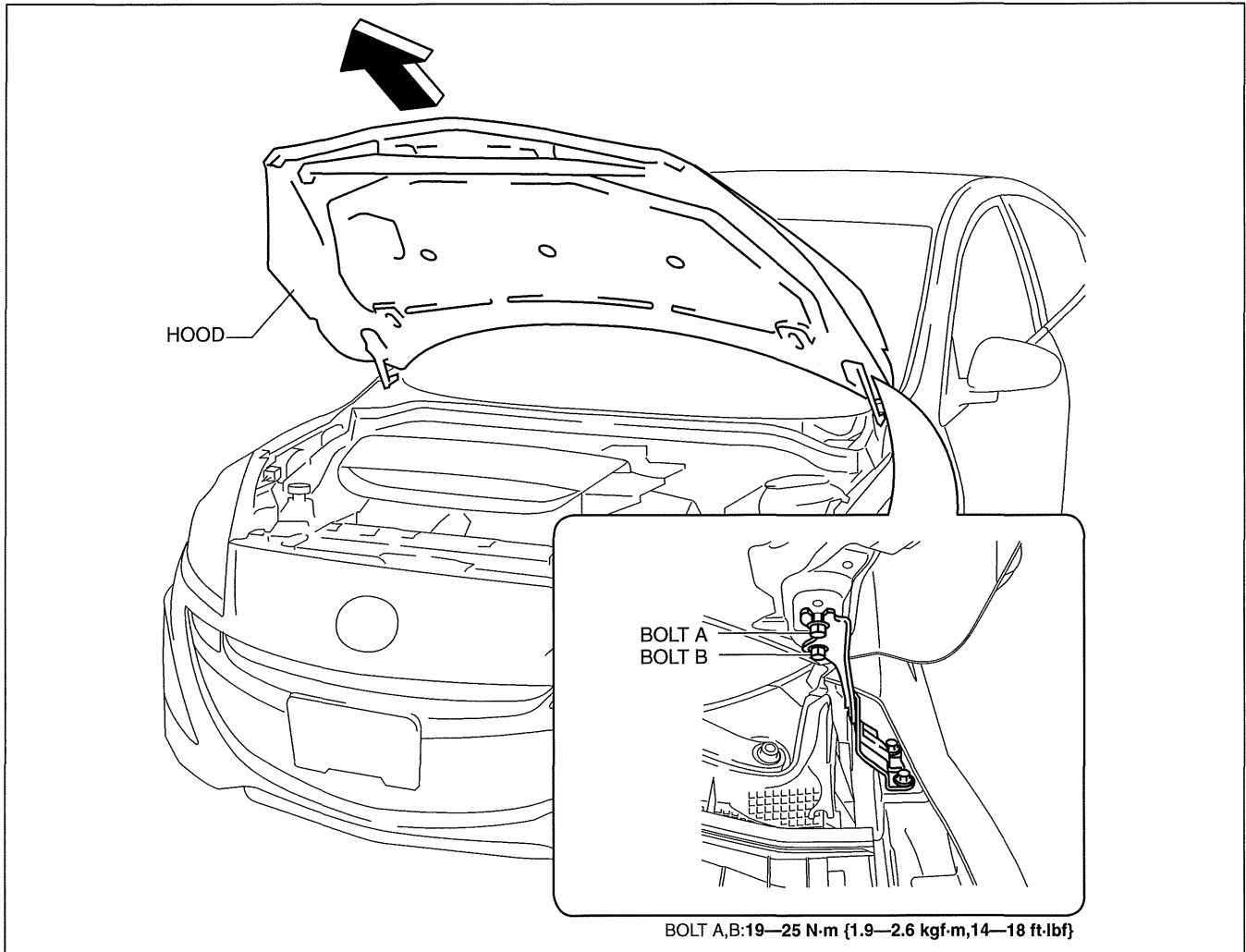
Warning

- Removing the hood without supporting it could cause the hood to fall and cause serious injury. Always perform the procedure with at least another person to prevent the hood from falling.

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
 - (2) Front combination light (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
 - (3) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Side step molding (See 09-16-7 SIDE STEP MOLDING REMOVAL.)
 - (5) Front fender panel (See 09-10-40 FRONT FENDER PANEL REMOVAL/INSTALLATION.)

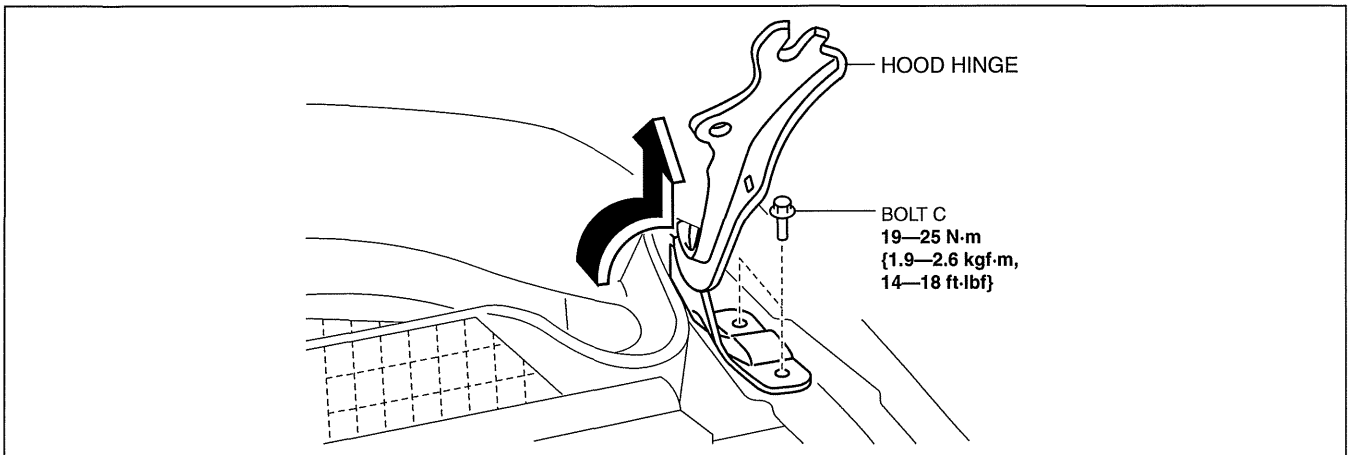
BODY PANELS

3. After loosening bolt A and removing bolt B, remove the hood in the direction of the arrow shown in the figure.



09-10

4. Remove bolt C, and remove the hood hinge in the direction of the arrow shown in the figure.



5. Install in the reverse order of removal.

6. When installing the hood, adjust the hood by moving the hood hinge. (See 09-10-12 HOOD ADJUSTMENT)

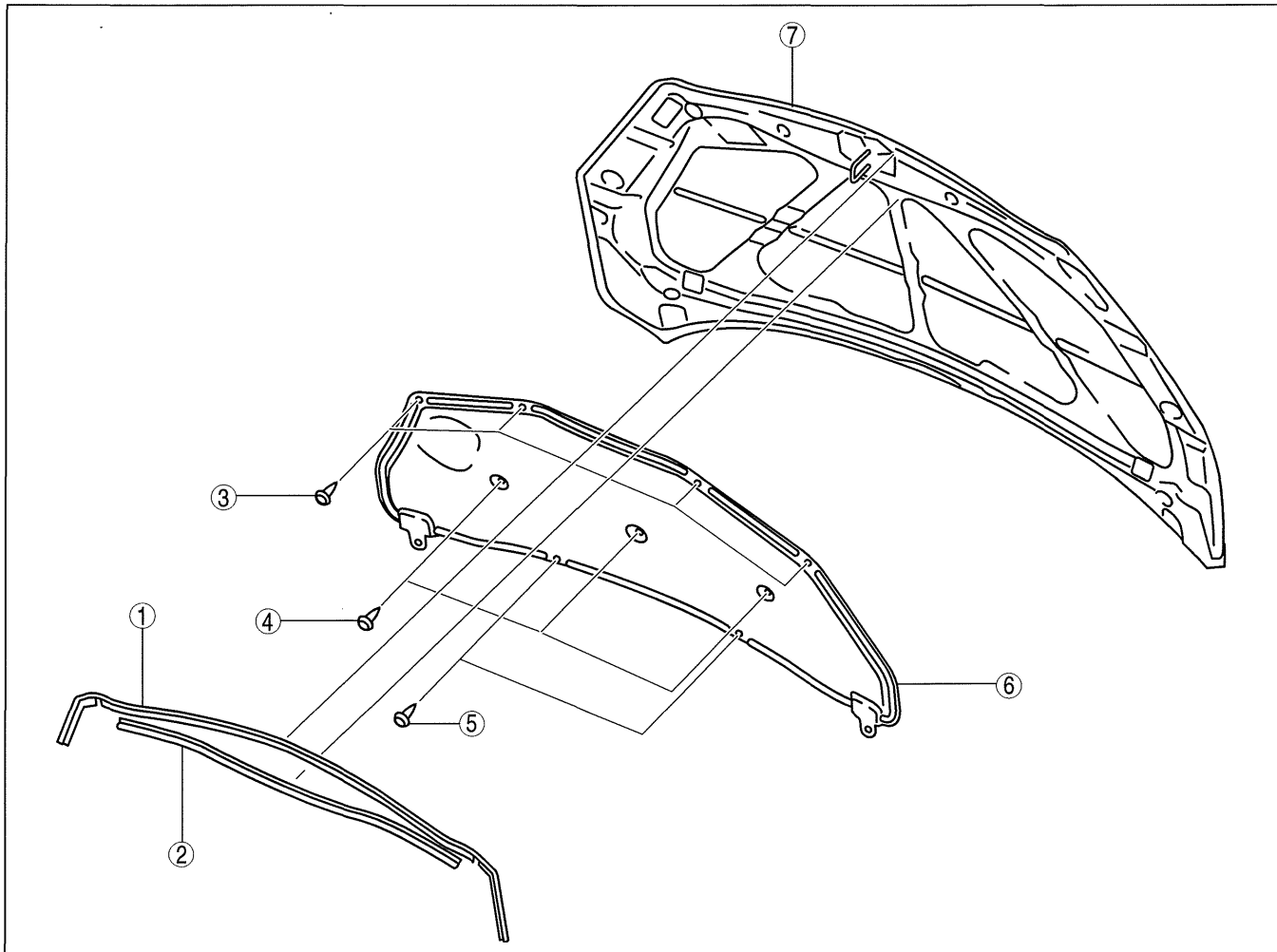
BODY PANELS

HOOD DISASSEMBLY/ASSEMBLY

id091000965300

Except Mazdaspeed 3

1. Disassemble in the order indicated in the table.



am3uuw0000596

1	Weather strip parting seal
2	Weather strip shroud seal
3	Fasteners A
4	Fasteners B

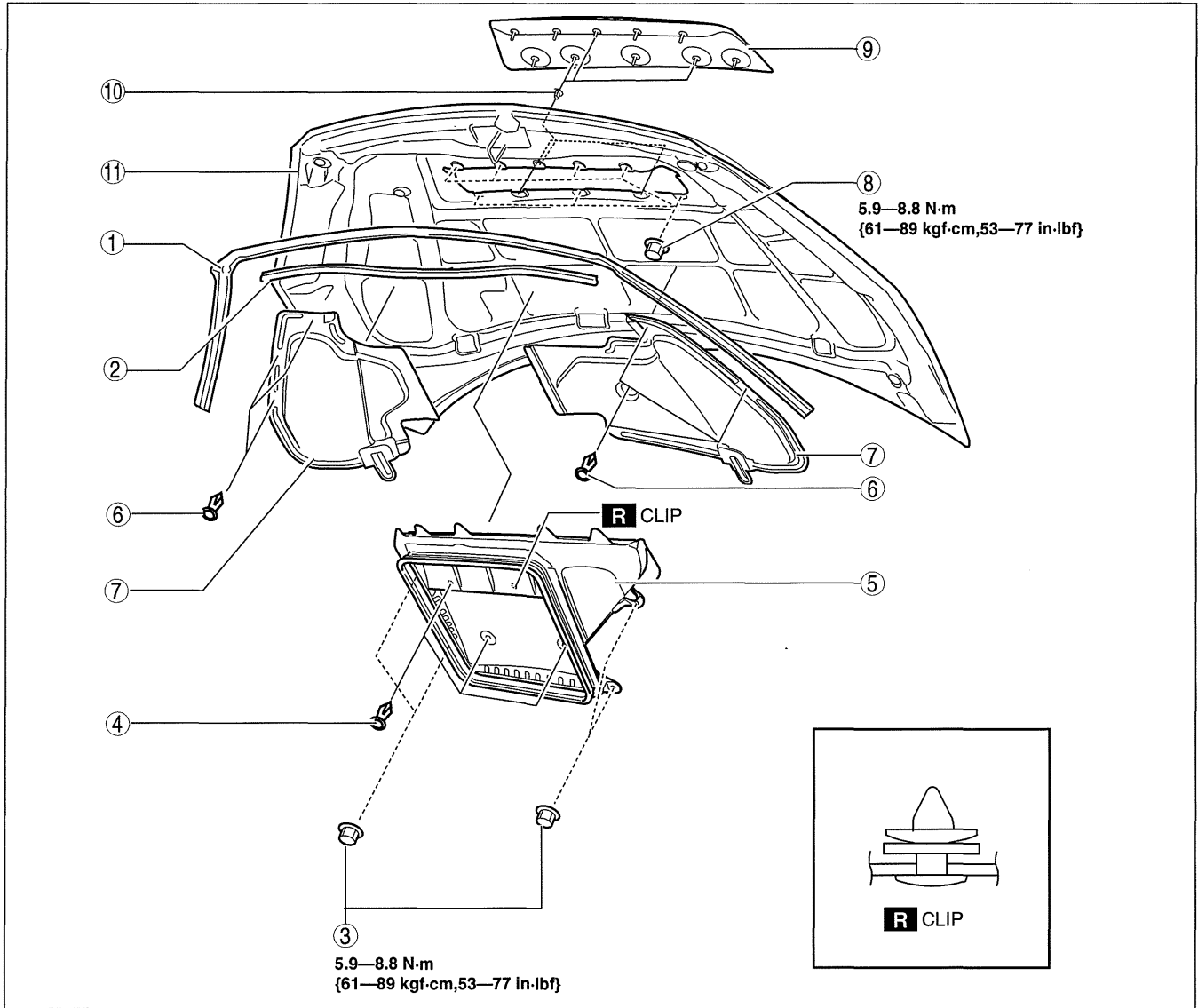
5	Fasteners C
6	Hood insulator
7	Hood component

2. Assemble in the reverse order of disassembly.

BODY PANELS

Mazdaspeed 3

1. Disassemble in the order indicated in the table.



09-10

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1	Weather strip parting seal
2	Weather strip shroud seal
3	Nut A
4	Fasteners B
5	Charge air cooler duct
6	Fasteners C

7	Hood insulator
8	Nut D
9	Charge air cooler duct cover
10	Grommet
11	Hood component

2. Assemble in the reverse order of disassembly.

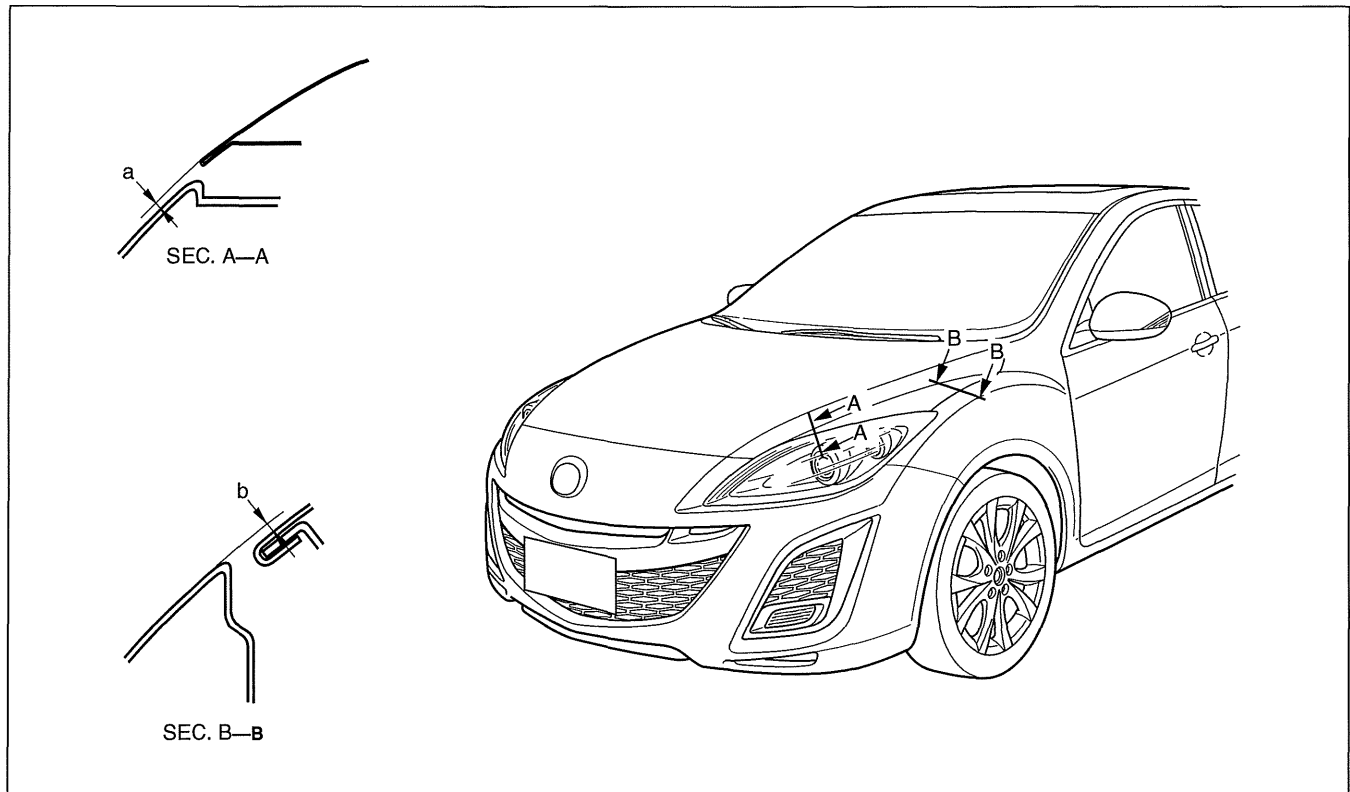
BODY PANELS

HOOD ADJUSTMENT

id091000801400

Gap Adjustment

1. Verify that the gap between the hood and the body is within the specification.



am3uuw0000360

Standard clearance

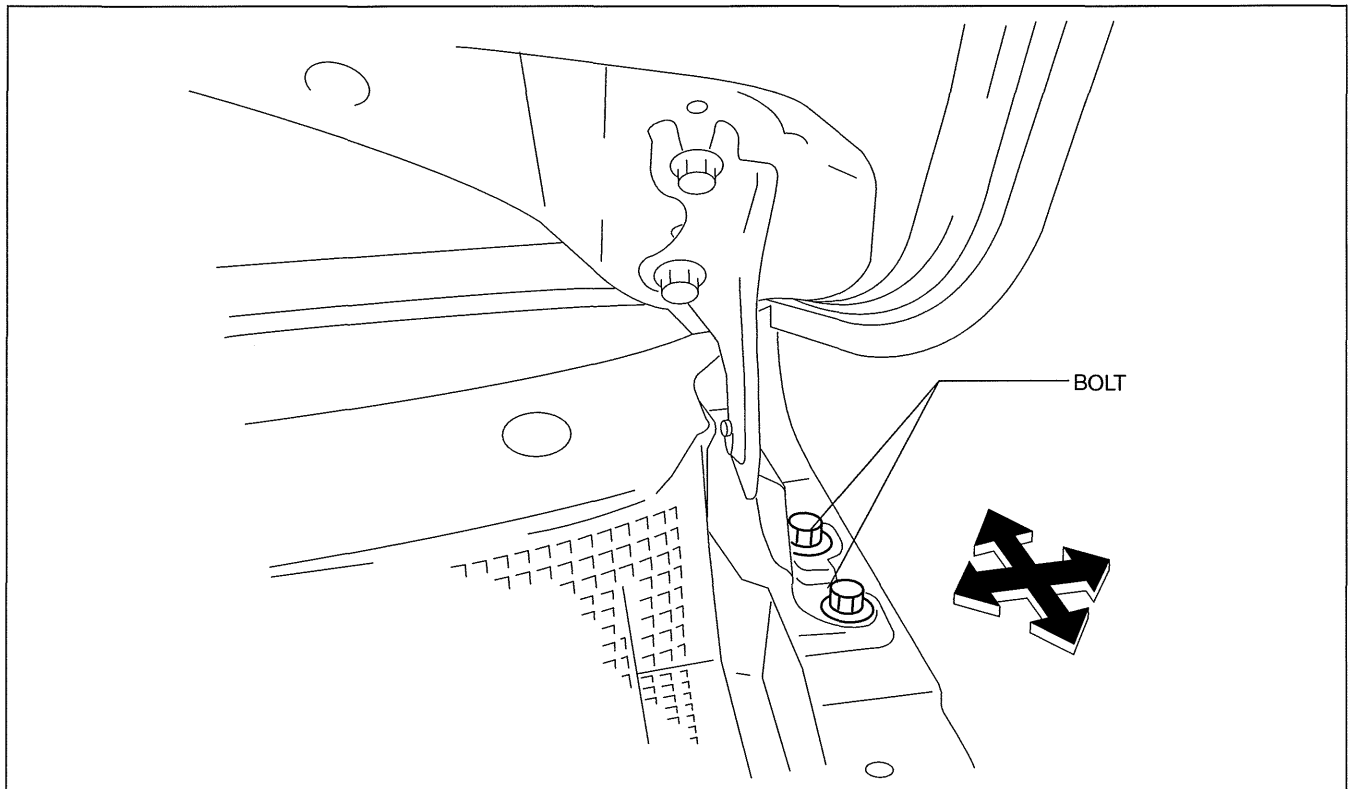
a: -2.8—0.8 mm {-0.11—0.03 in}

b: -1.2—1.2 mm {-0.047—0.047 in}

2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
 - (2) Front combination light (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
 - (3) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Side step molding (See 09-16-7 SIDE STEP MOLDING REMOVAL.)
 - (5) Front fender panel (See 09-10-40 FRONT FENDER PANEL REMOVAL/INSTALLATION.)

BODY PANELS

4. Loosen the hood hinge installation bolts and adjust the hood.



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09-10

5. Tighten the bolts. (See 09-10-8 HOOD REMOVAL/INSTALLATION)

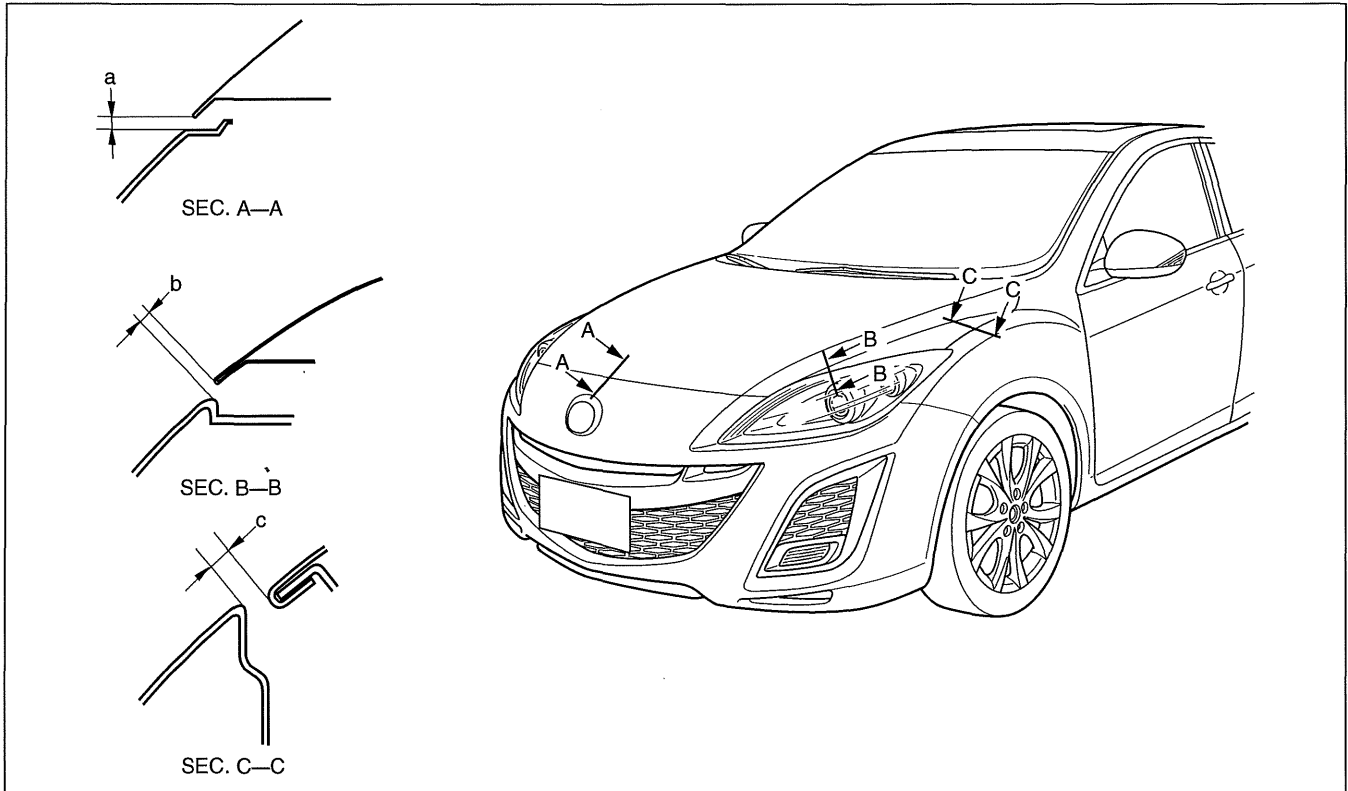
6. Install the following parts:

- (1) Front fender panel (See 09-10-40 FRONT FENDER PANEL REMOVAL/INSTALLATION.)
- (2) Side step molding (See 09-16-7 SIDE STEP MOLDING REMOVAL.)
- (3) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- (4) Front combination light (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
- (5) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)

BODY PANELS

Height Difference Adjustment

1. Verify that the height difference between the hood and the body is within the specification.



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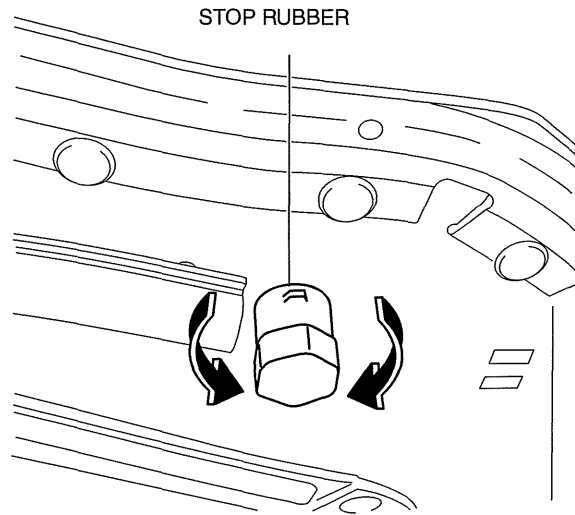
Standard clearance

- a: 3.0—6.0 mm {0.12—0.23 in}
- b: 1.9—5.1 mm {0.8—0.20 in}
- c: 2.5—4.9 mm {0.10—0.19 in}

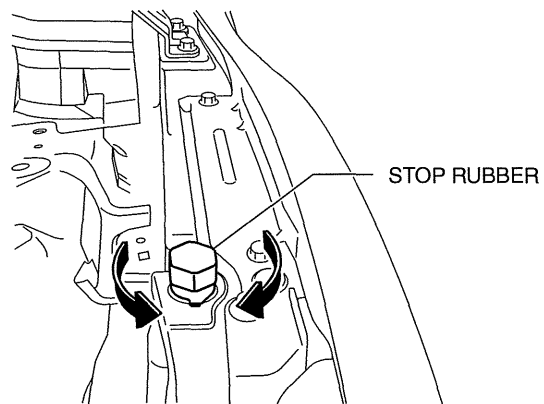
BODY PANELS

2. Turn the stop rubber to adjust the height of the hood.

HOOD SIDE



BODY SIDE



09-10

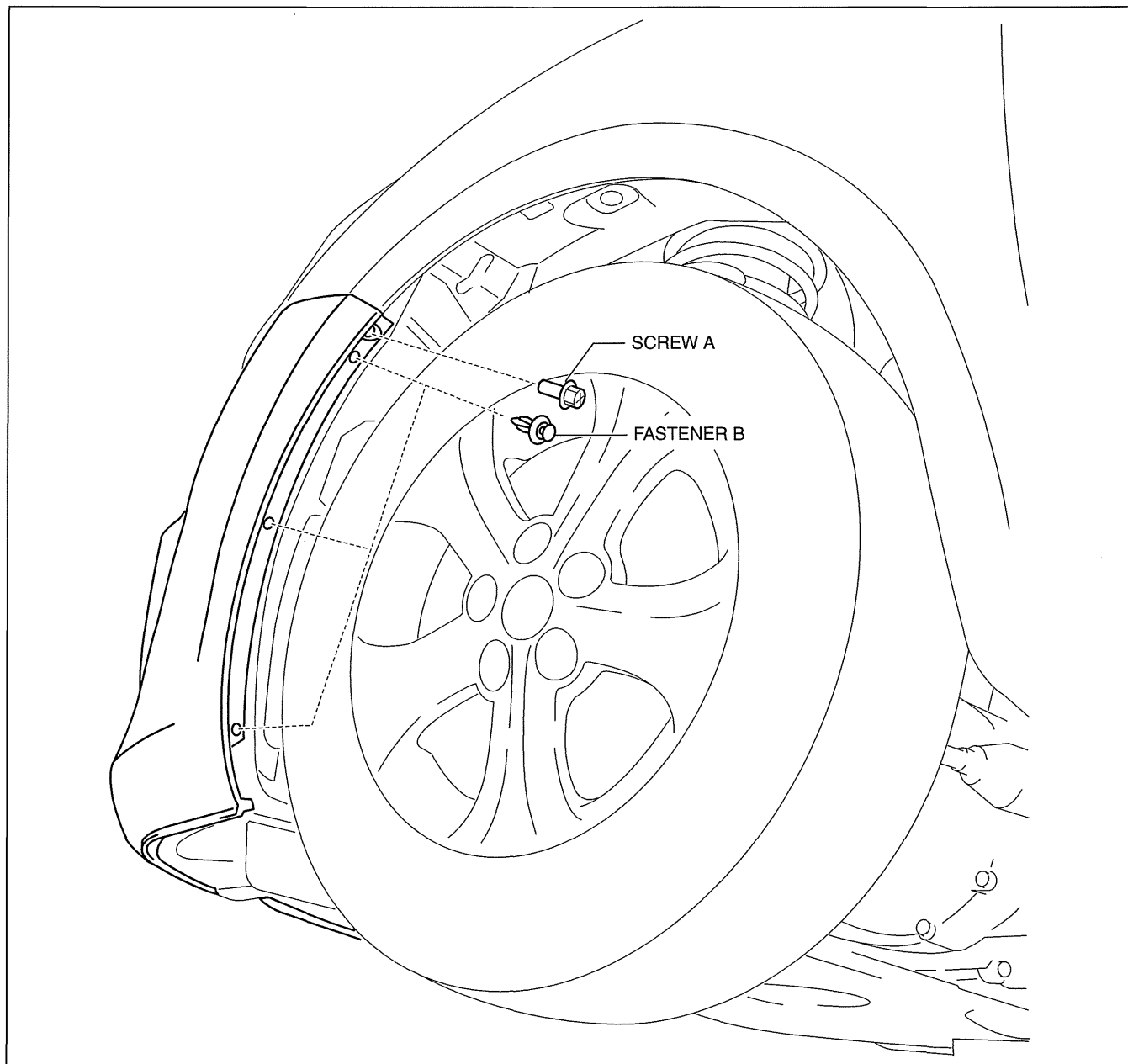
am3uuw0000361

BODY PANELS

FRONT BUMPER REMOVAL/INSTALLATION

id091000800300

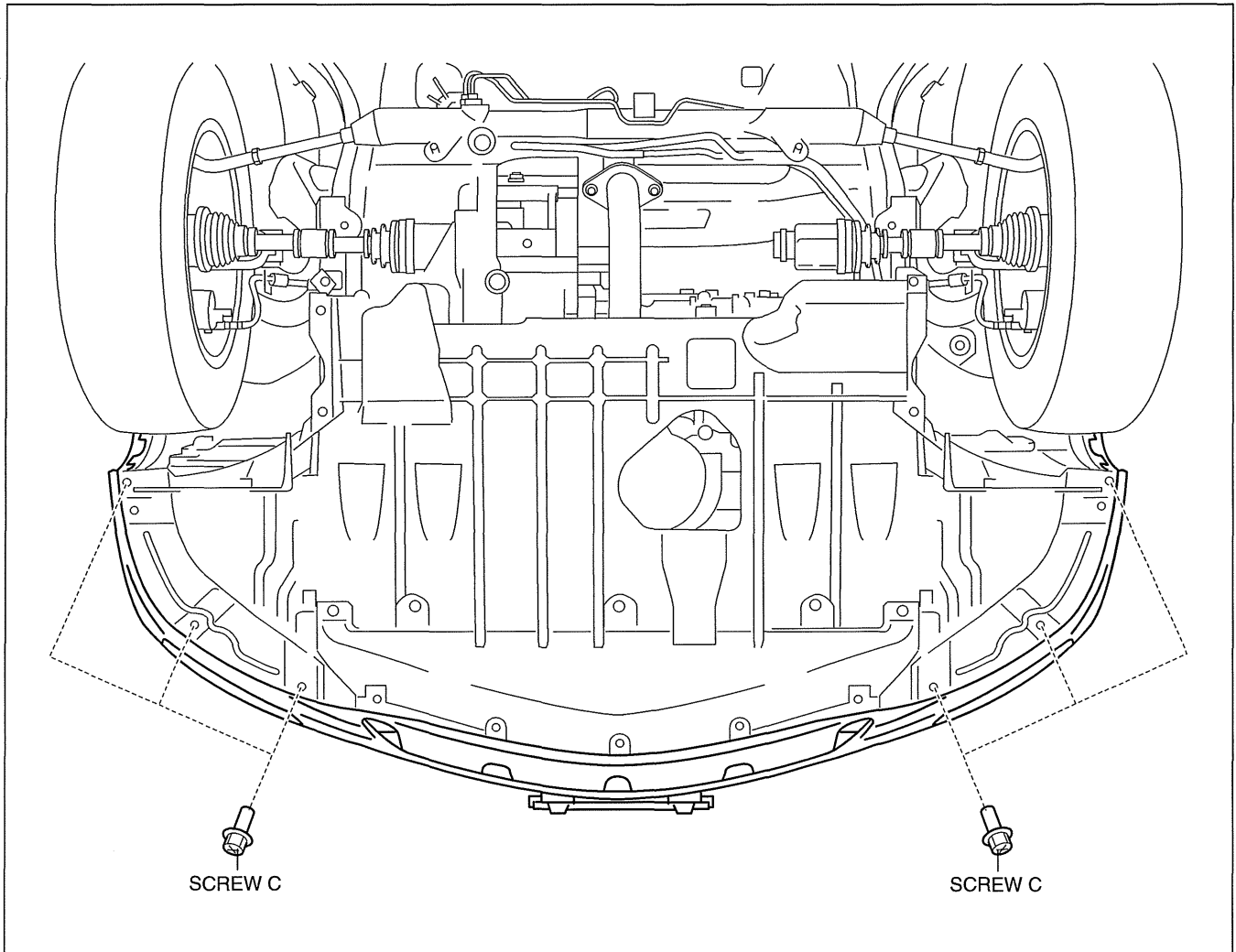
1. Disconnect the negative battery cable.
2. Remove screw A and fasteners B.



am3uuw0000361

BODY PANELS

3. Remove screws C.



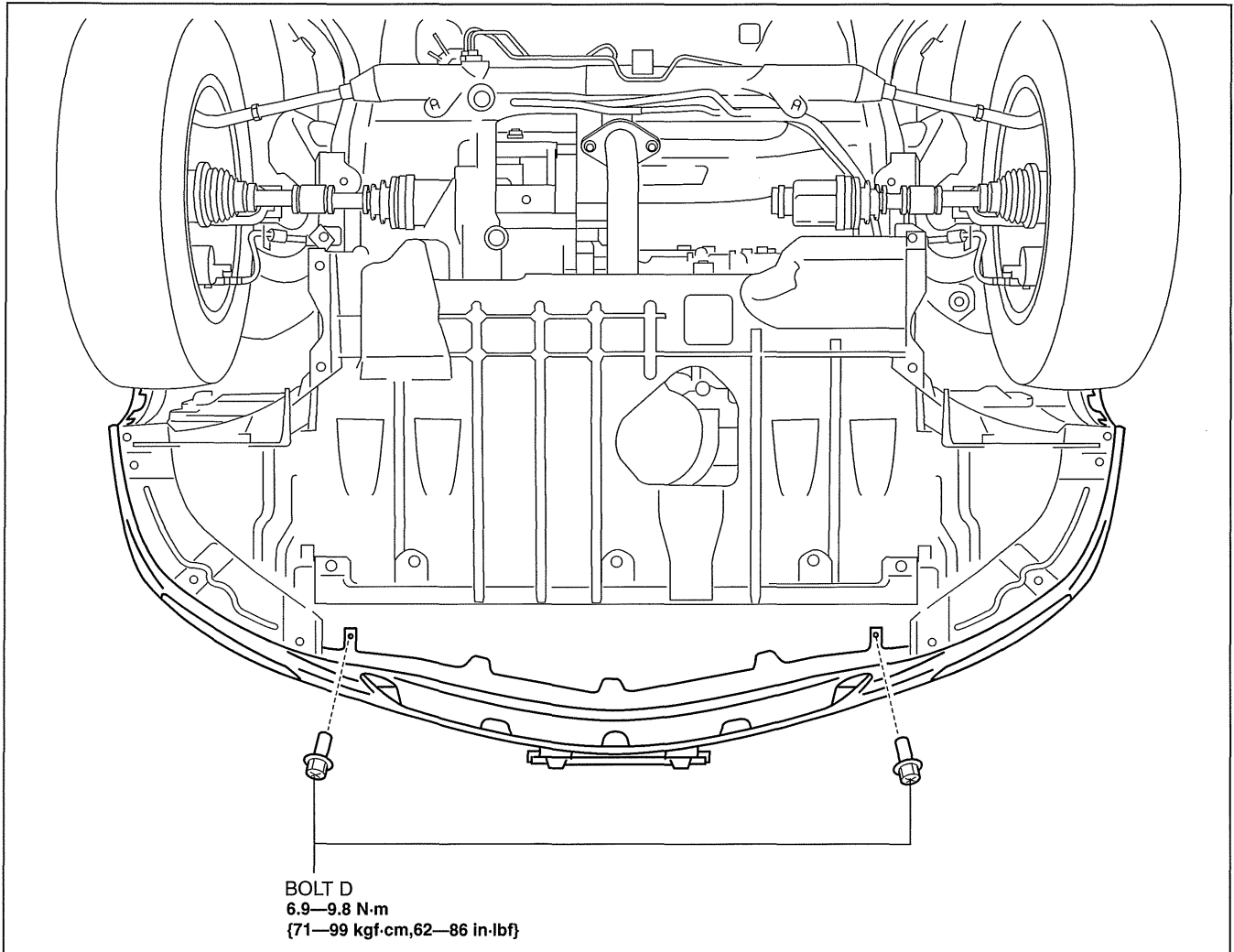
09-10

am3zzw0000610

4. Remove the Aerodynamic under cover No.1 (See 09-16-28 AERODYNAMIC UNDER COVER NO.1 REMOVAL/INSTALLATION)

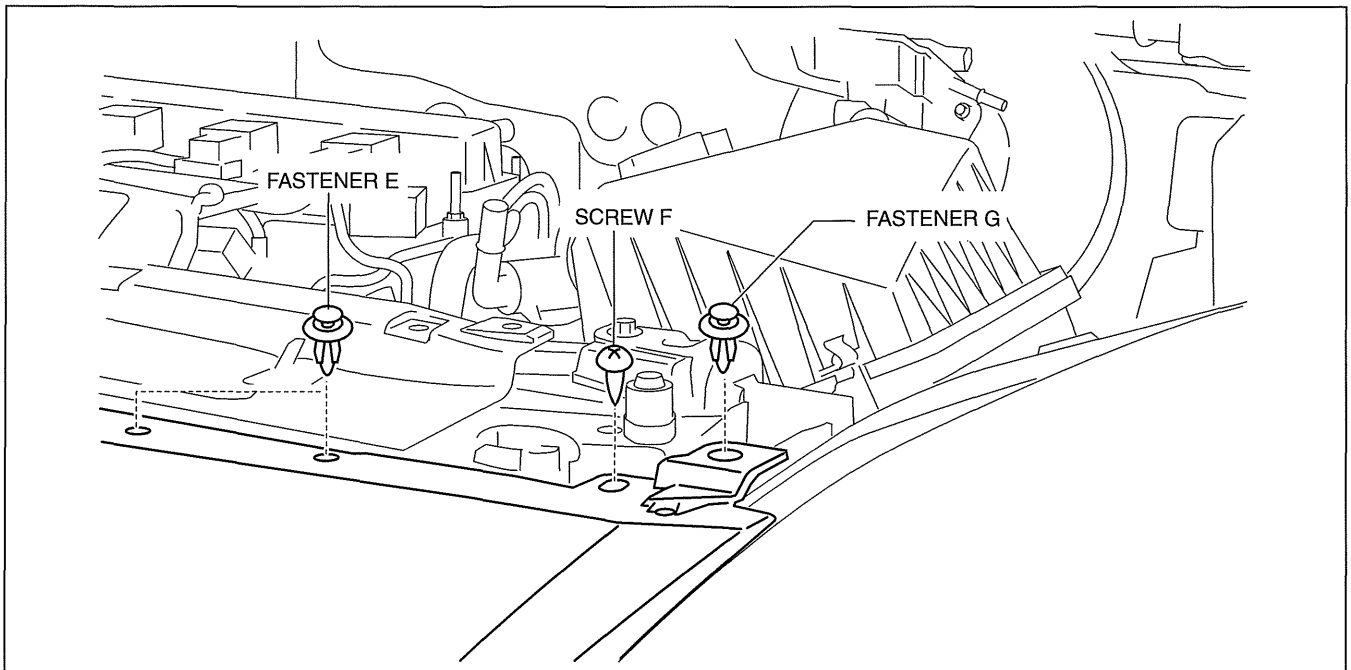
BODY PANELS

5. Remove the bolts D.



am3zzw0000610

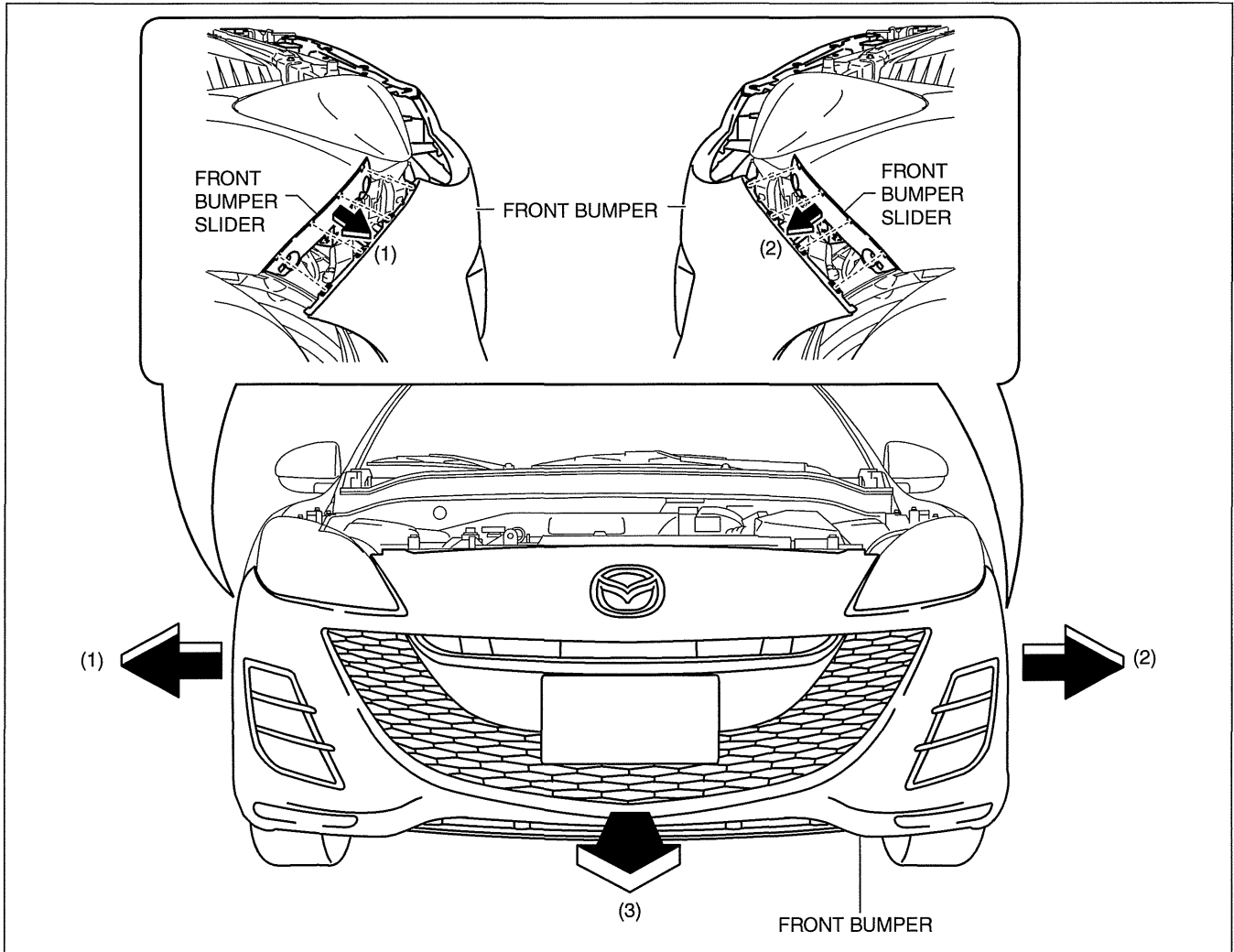
6. Remove the fasteners E, screw F and fastener G



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BODY PANELS

7. Pull the front bumper in the direction of the arrow in the order of (1), (2) and (3), then remove the front bumper. (See 09-10-20 Front Bumper Installation Note.)



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09-10

Caution

- The front bumper and front bumper slider are engaged firmly. If they are disengaged forcibly the bumper could fall and be damaged. Perform the servicing carefully when disengaging the front bumper from the front bumper slider.
- When disengaging the front bumper from the front bumper slider, the front bumper could fall and be damaged. Support the front bumper so that it does not fall.

8. Disconnect the front fog light connector. (Vehicles with front fog lights)

9. Install in the reverse order of removal.

10. Adjust the front fog light aiming for vehicles with front fog lights. (See 09-18-24 FRONT FOG LIGHT AIMING)

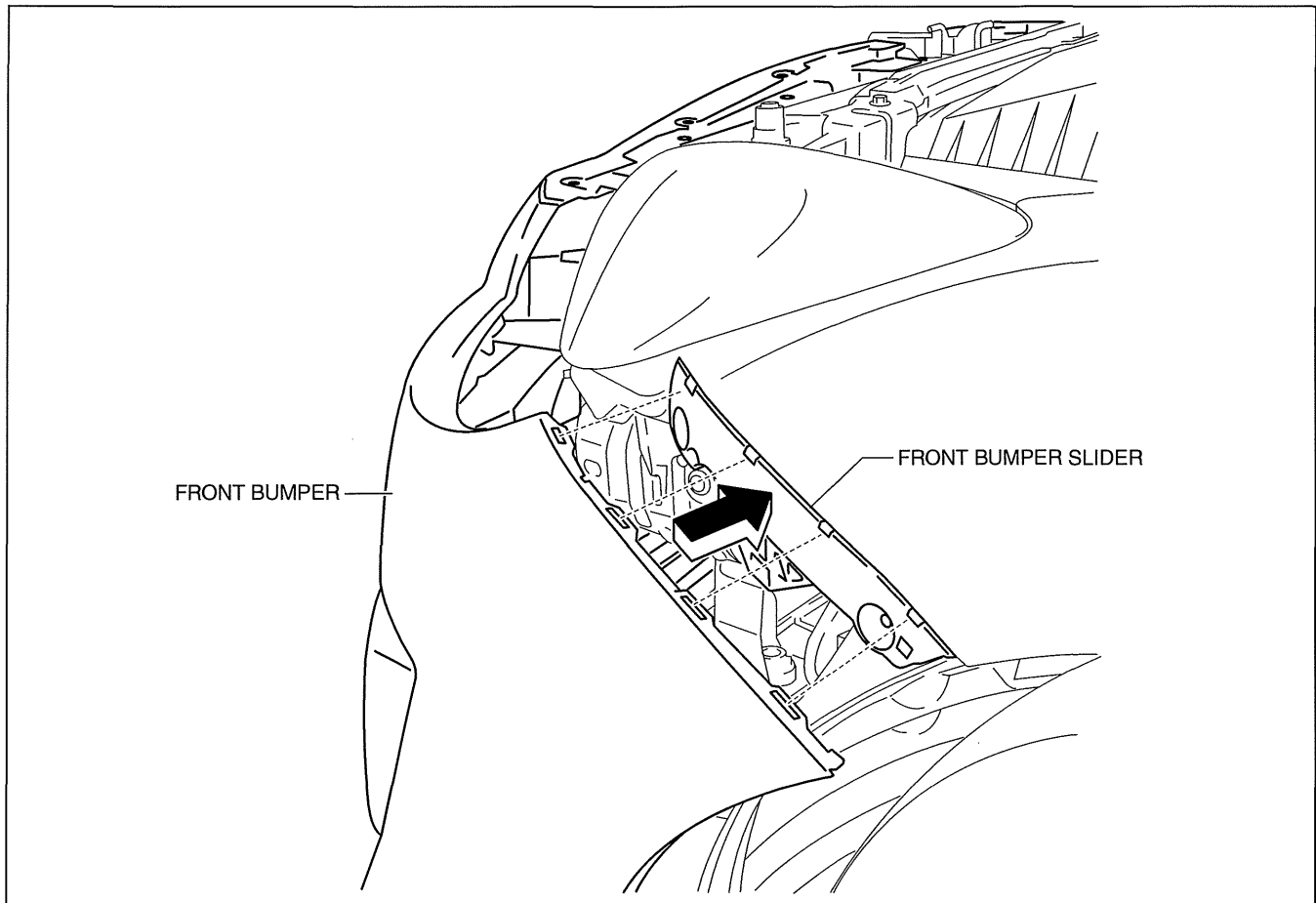
BODY PANELS

Front Bumper Installation Note

1. Spread the front bumper ends apart.

Caution

- The front bumper and front bumper slider are engaged firmly. If they are disengaged forcibly the bumper could fall and be damaged. Perform the servicing carefully when disengaging the front bumper from the front bumper slider.
- When disengaging the front bumper from the front bumper slider, the front bumper could fall and be damaged. Support the front bumper so that it does not fall.



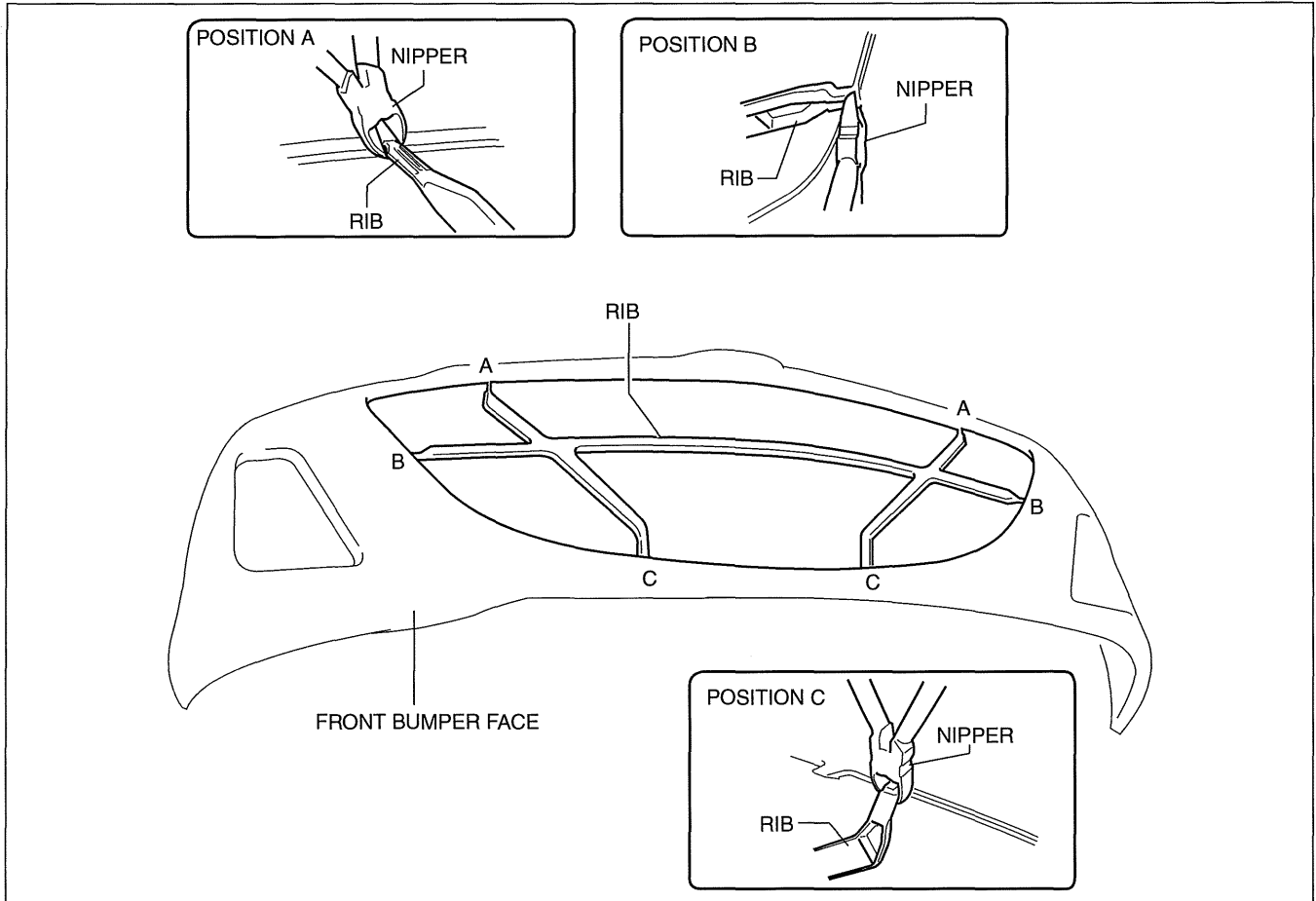
am3uuw0000362

2. Attach the front bumper to the body.
3. Press the front bumper connecting area in the direction of the arrow shown in the figure to engage with the front bumper slider.

BODY PANELS

Front Bumper of New Parts Installation Note

1. Paint the front bumper face.
2. Cut the rib position of A, B, and C from the base with using a nipper.



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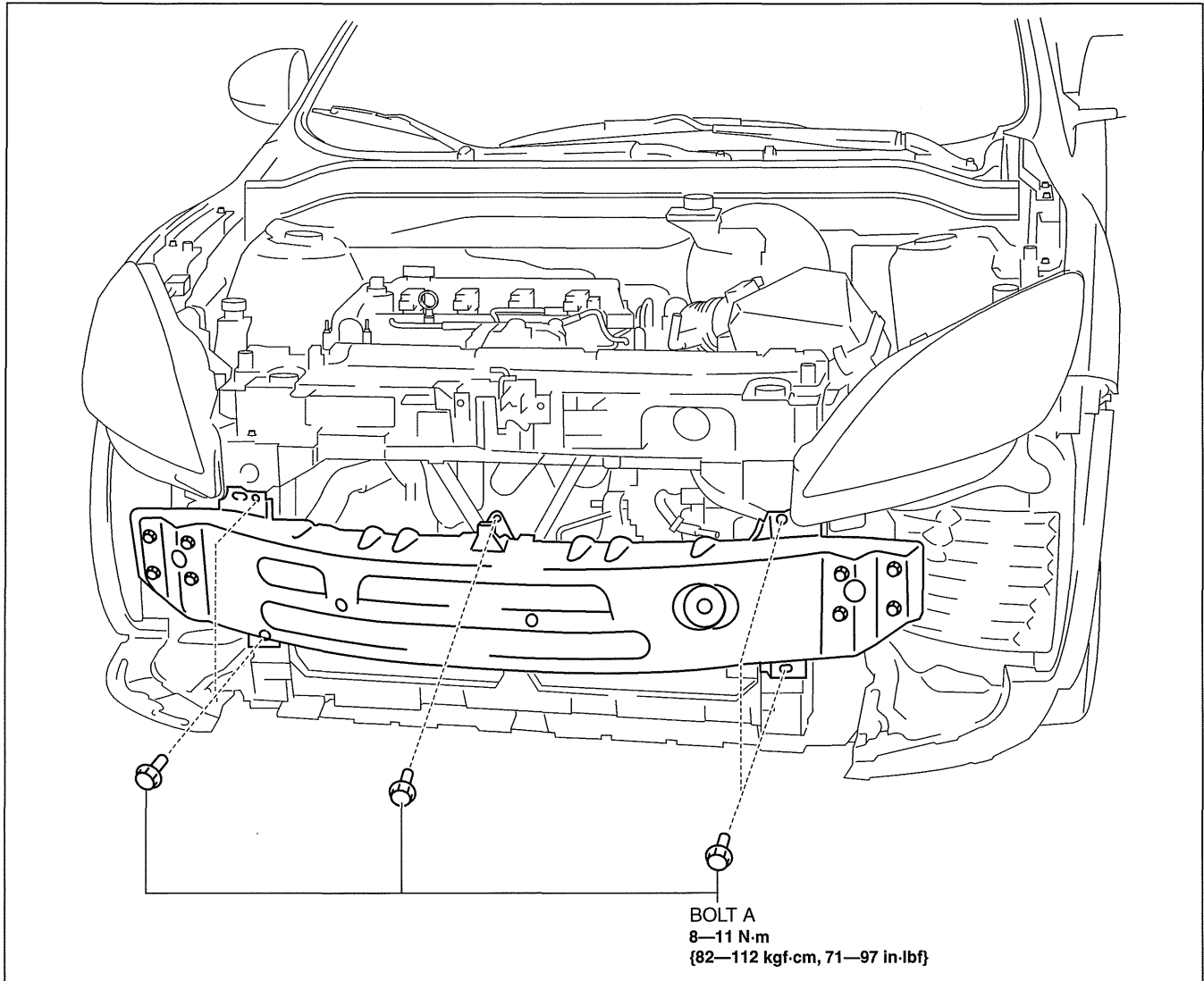
09-10

BODY PANELS

FRONT BUMPER REINFORCEMENT REMOVAL/INSTALLATION

id09100800600

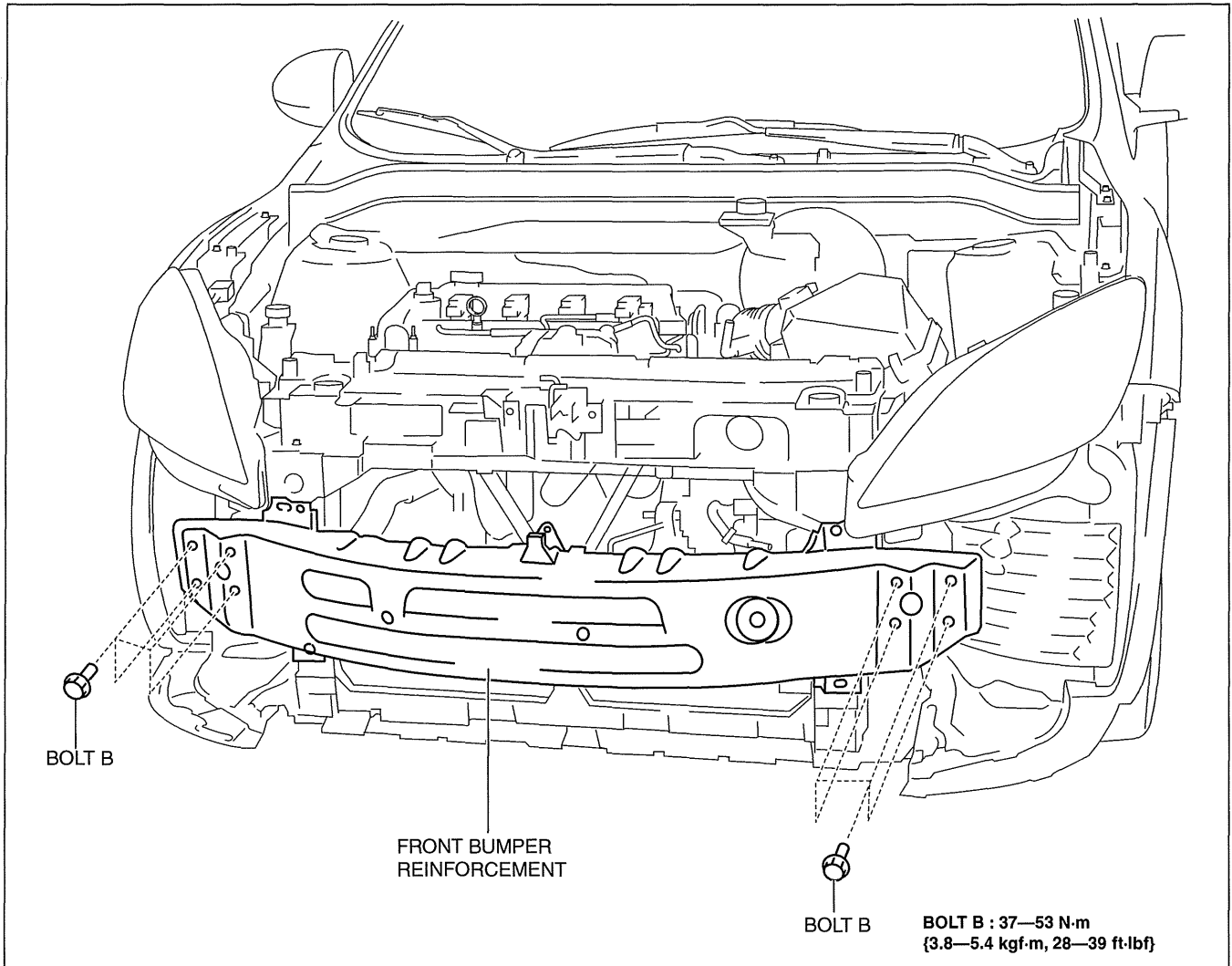
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
 - (2) Seal plate (See 09-10-25 SEAL PLATE REMOVAL/INSTALLATION.)
3. Remove the bolts A.



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BODY PANELS

4. Remove the bolts B.



09-10

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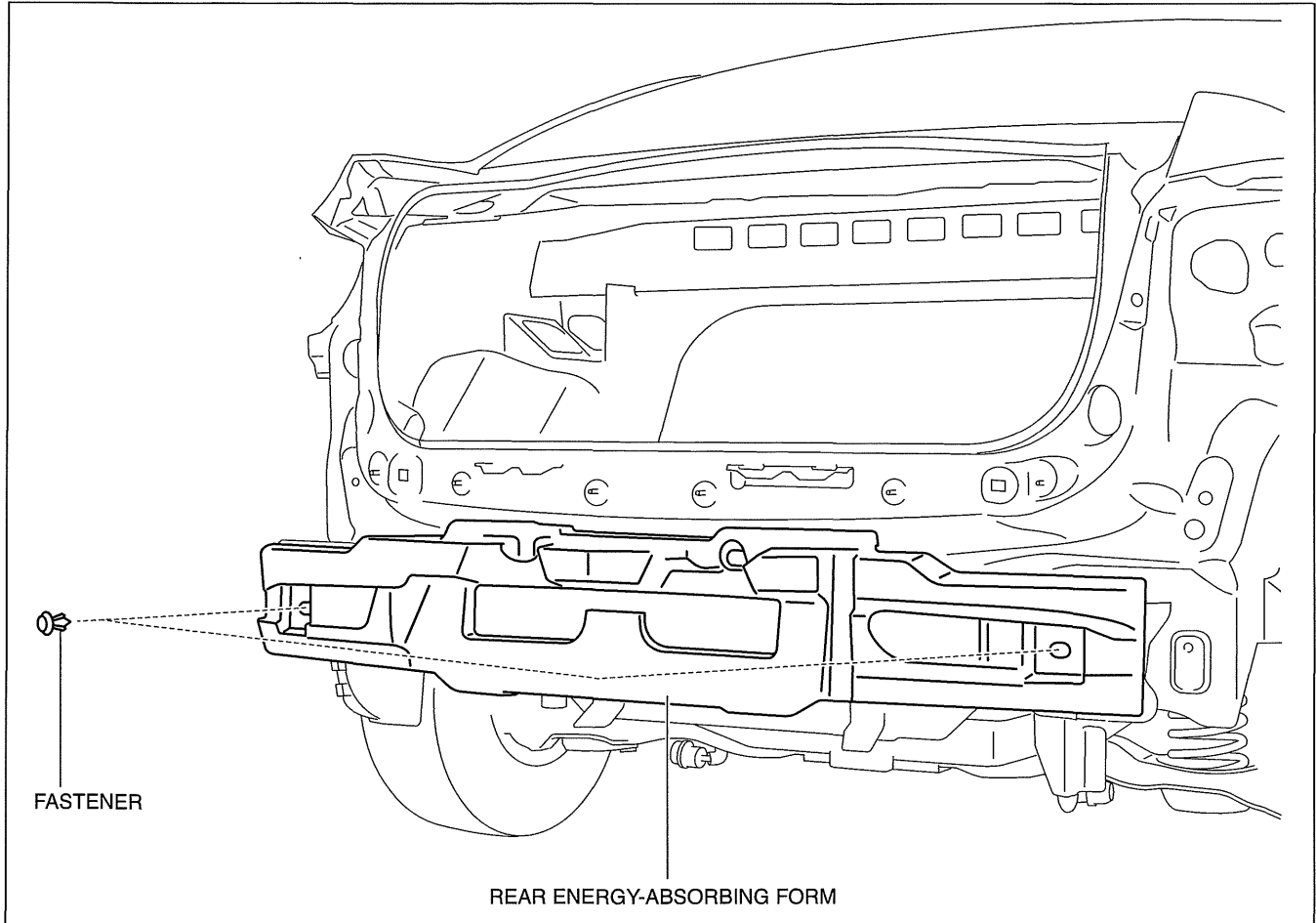
5. Remove the front bumper reinforcement.
6. Install in the reverse order of removal.

BODY PANELS

ENERGY-ABSORBING FORM REMOVAL/INSTALLATION

id09100088800

1. Disconnect the negative battery cable.
2. Remove the rear combination light. (See 09-18-32 REAR COMBINATION LIGHT REMOVAL/INSTALLATION.)
3. Remove the rear bumper. (See 09-10-38 REAR BUMPER DISASSEMBLY/ASSEMBLY.)
4. Remove the fasteners.



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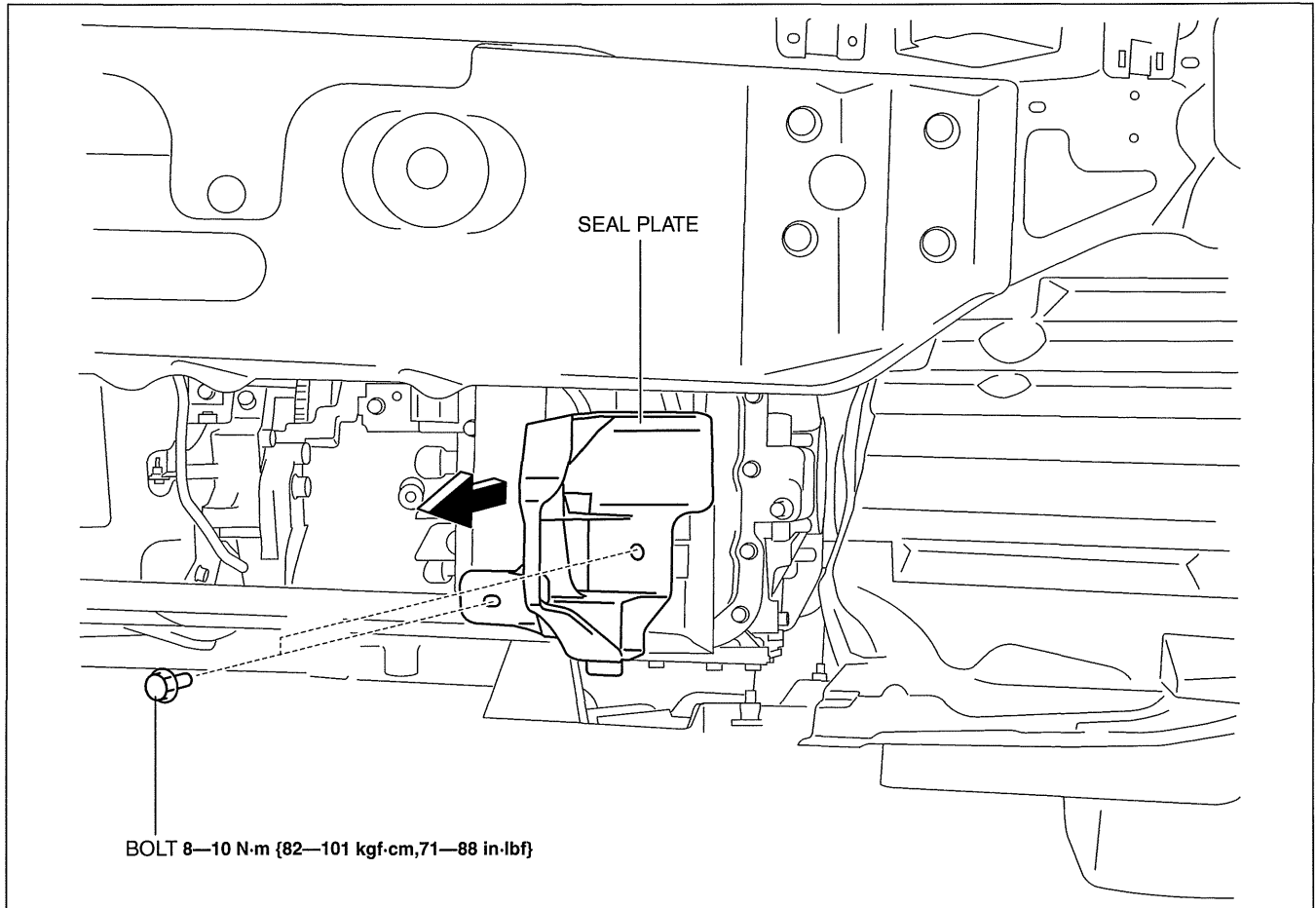
5. Remove the rear energy-absorbing form.
6. Install in the reverse order of removal.

BODY PANELS

SEAL PLATE REMOVAL/INSTALLATION

id091000889000

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION)
3. Remove the bolt.

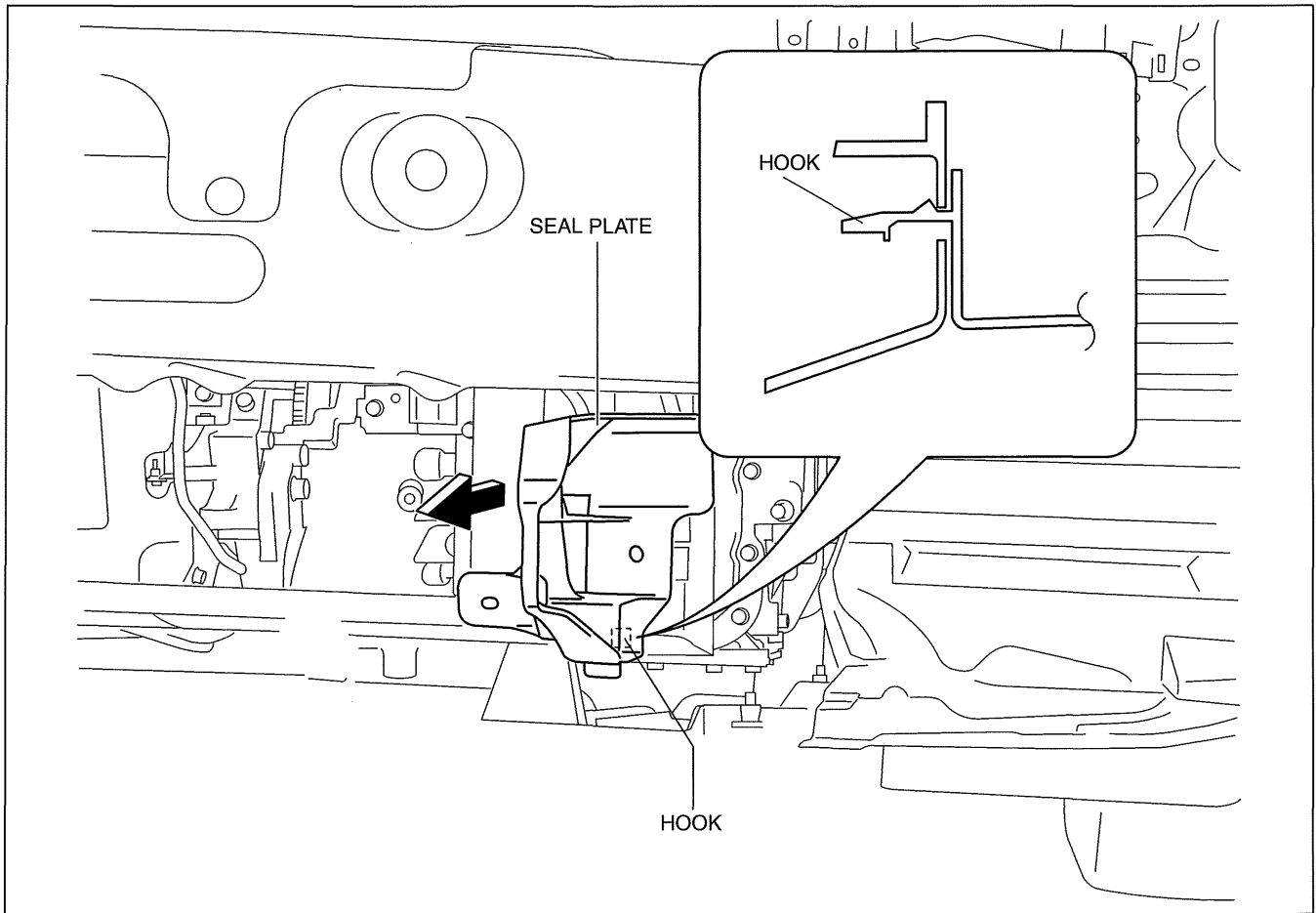


09-10

am3uuw0000545

BODY PANELS

4. Pull the seal plate, then remove the hook.



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5. Install in the reverse order of remove.

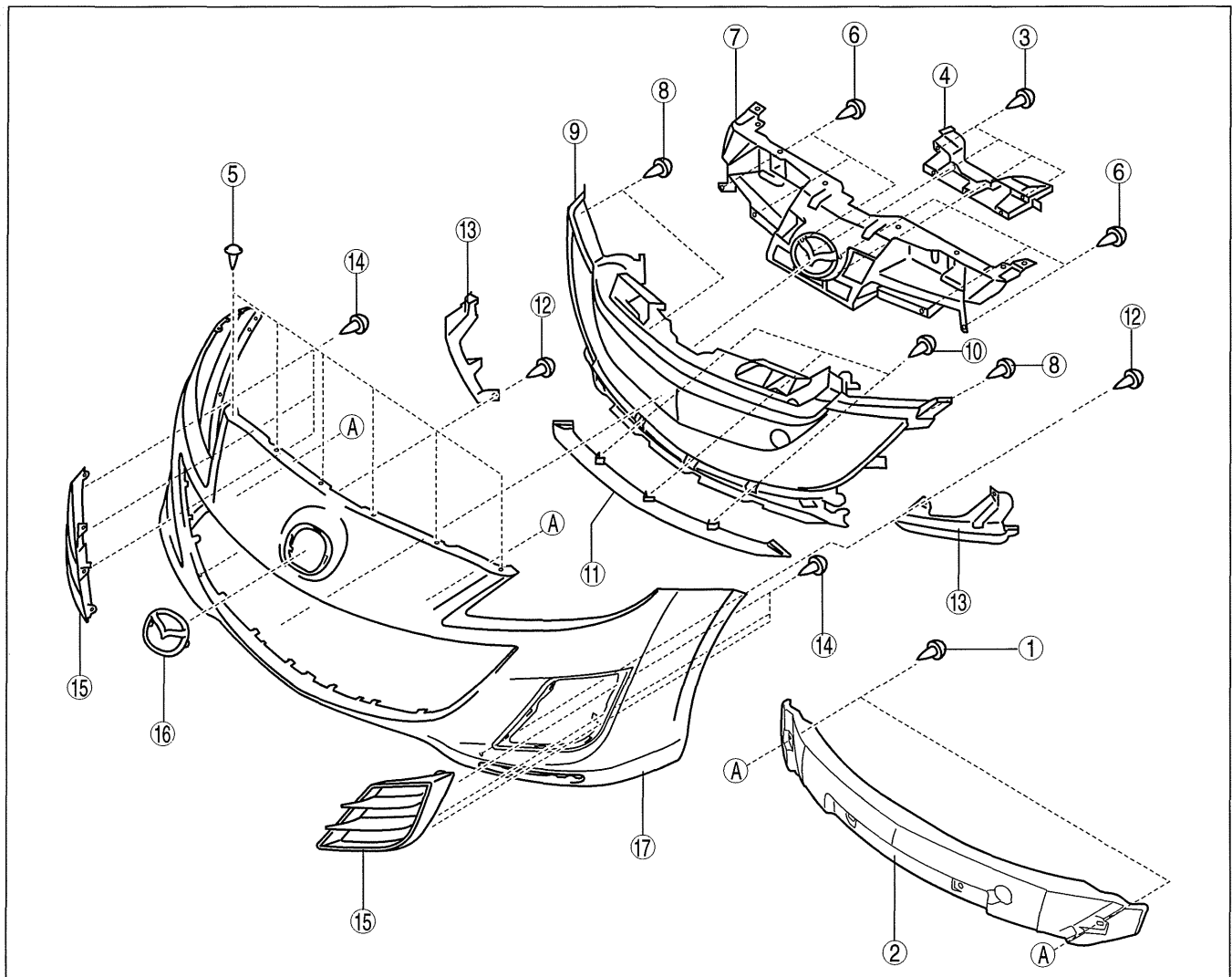
BODY PANELS

FRONT BUMPER DISASSEMBLY/ASSEMBLY

id091000800400

Standard Type

1. Disassemble in the order indicated in the table.



am3zzw0000611

1	Fastener A
2	Front energy-absorbing form
3	Screw B
4	Guard cover
5	Fastener C
6	Screw D
7	Intake air guide
8	Fastener E
9	Front bumper mesh

10	Screw F
11	Airdam skirt
12	Screw G
13	Front bumper cover
14	Screw H
15	Front fog light hole cover
16	Ornament
17	Front bumper facia

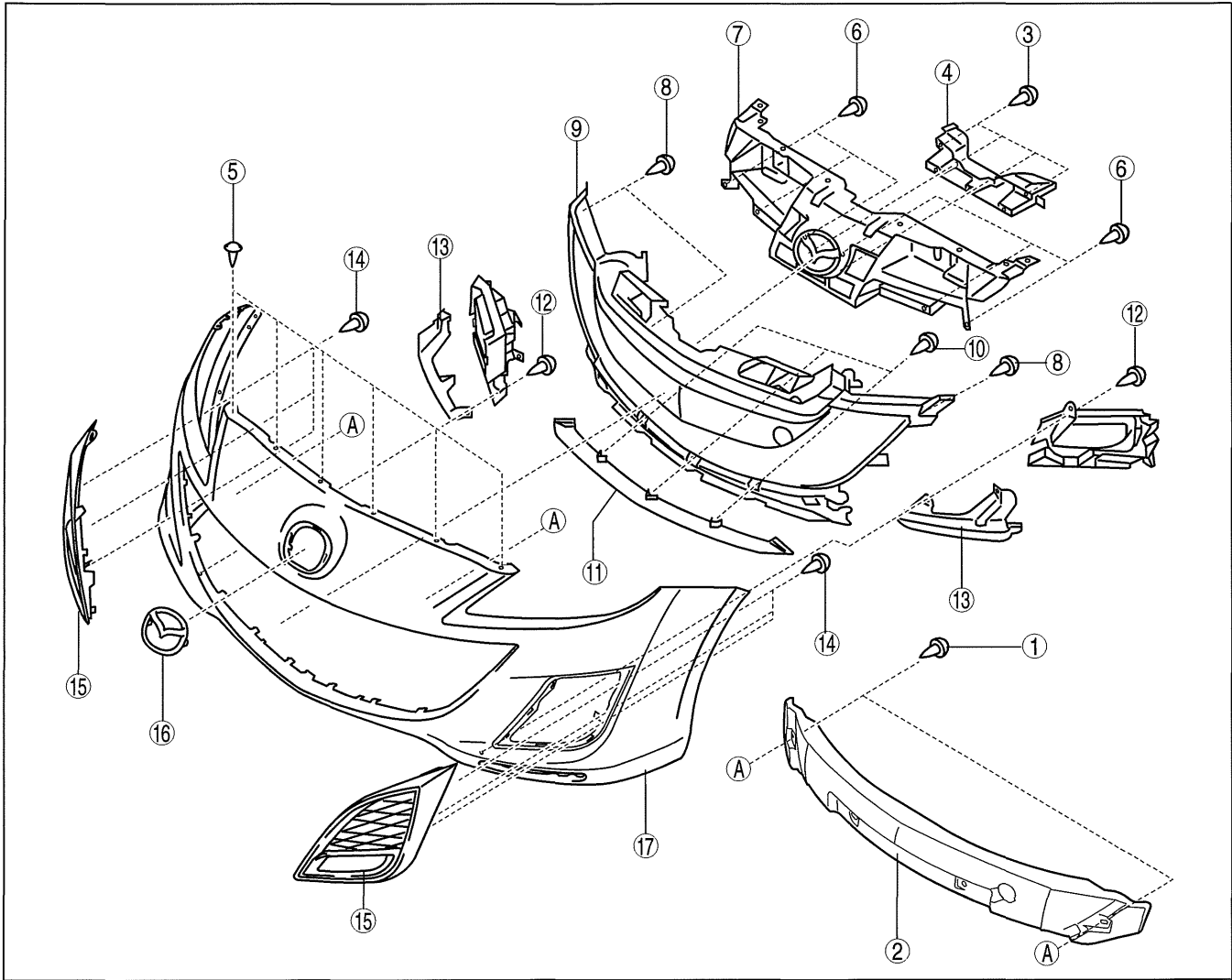
2. Assemble in the reverse order of disassembly.

09-10

BODY PANELS

Sports Type

1. Remove the front fog lights. (Vehicles with the front fog lights) (See 09-18-22 FRONT FOG LIGHT REMOVAL/INSTALLATION)
2. Disassemble in the order indicated in the table.



am3zzw0000611

1	Fastener A
2	Front energy-absorbing form
3	Screw B
4	Guard cover
5	Fastener C
6	Screw D
7	Intake air guide
8	Fastener E
9	Front bumper mesh

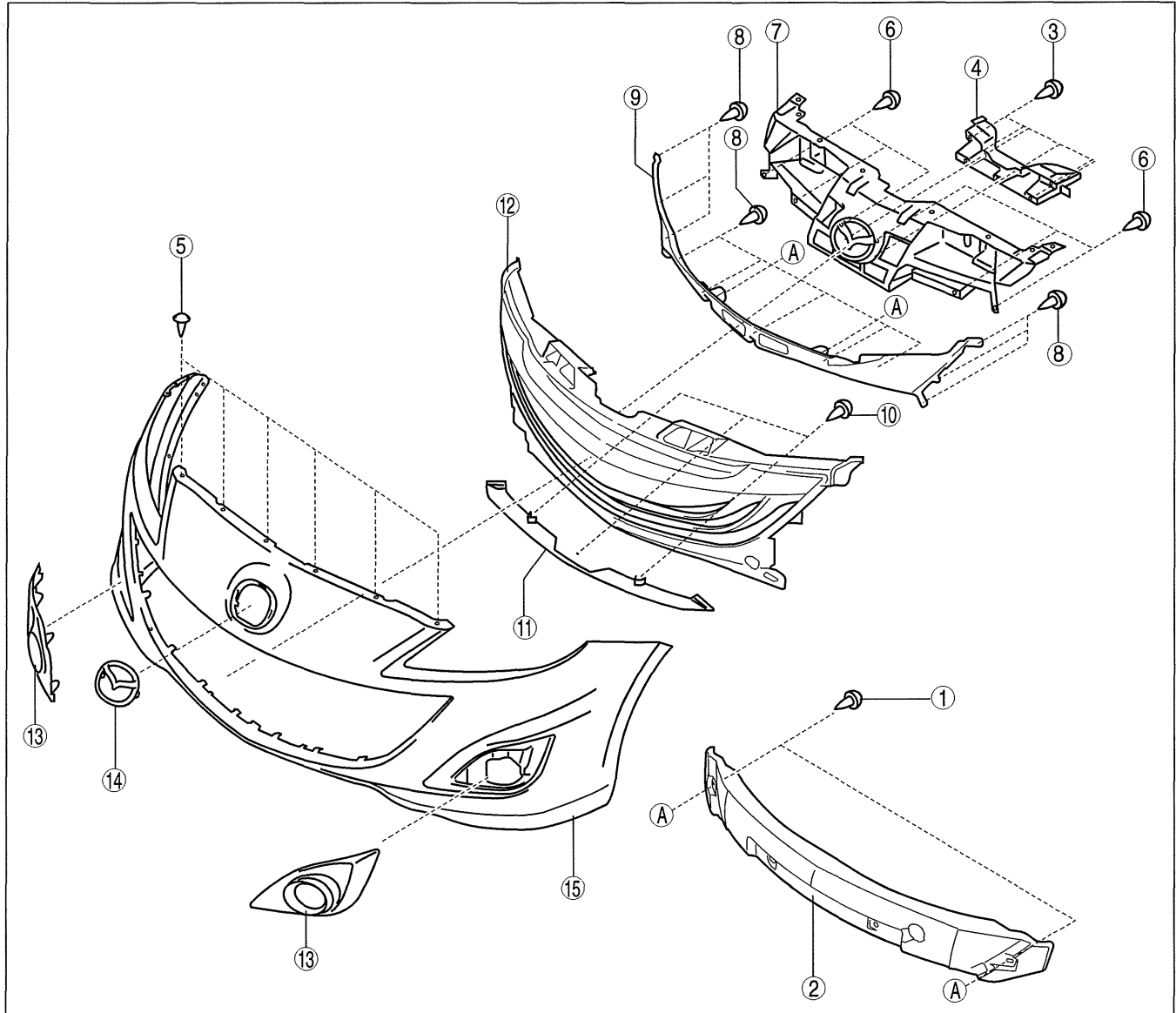
10	Screw F
11	Airdam skirt
12	Screw G
13	Front bumper cover
14	Screw H
15	Front fog light hole cover
16	Ornament
17	Front bumper facia

3. Assemble in the reverse order of disassembly.

BODY PANELS

Mazdaspeed 3 Type

1. Remove the front fog lights. (See 09-18-22 FRONT FOG LIGHT REMOVAL/INSTALLATION)
2. Disassemble in the order indicated in the table.



am3uuw0000597

1	Fastener A
2	Front energy-absorbing form
3	Screw B
4	Guard cover
5	Fastener C
6	Screw D
7	Intake air guide
8	Screw E

9	Front bumper mesh rear
10	Screw F
11	Airdam skirt
12	Front bumper mesh front
13	Front fog light hole cover
14	Ornament
15	Front bumper facia

3. Assemble in the reverse order of disassembly.

09-10

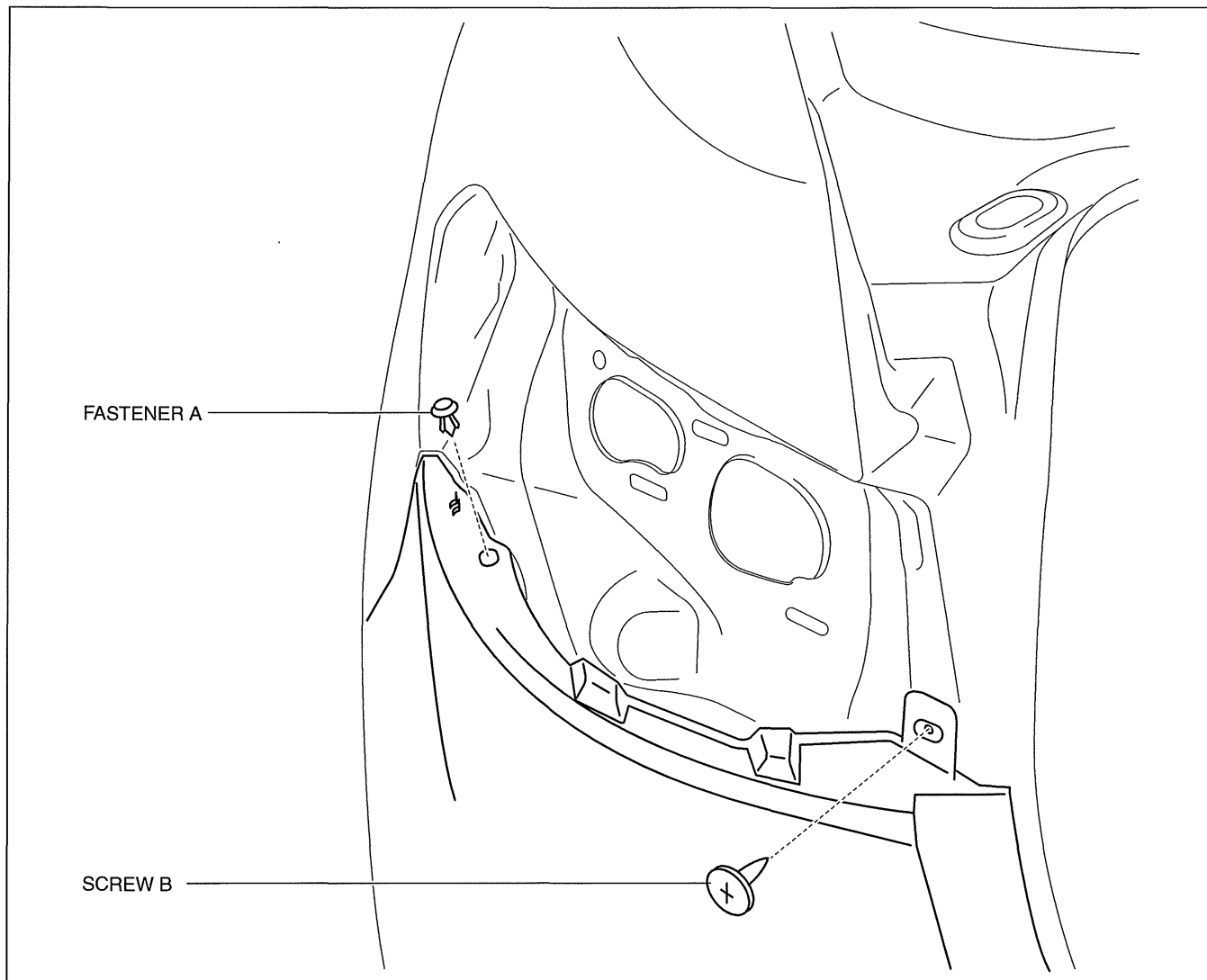
BODY PANELS

REAR BUMPER REMOVAL/INSTALLATION

id091000800700

4SD

1. Disconnect the negative battery cable.
2. Remove the rear combination light. (See 09-18-32 REAR COMBINATION LIGHT REMOVAL/INSTALLATION)
3. Remove the fastener A and screw B.

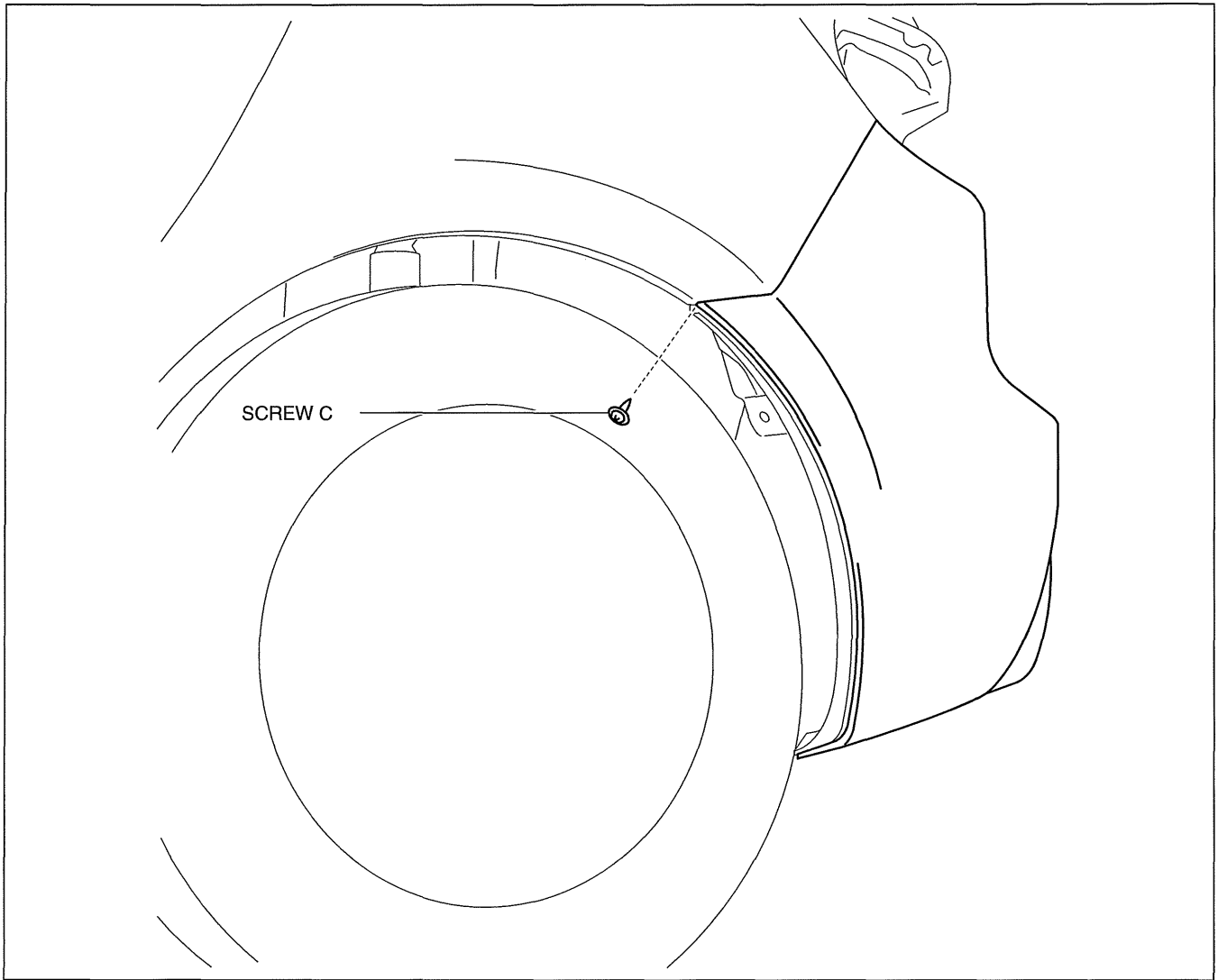


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4. Remove the rear splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION)

BODY PANELS

5. Remove the screws C.

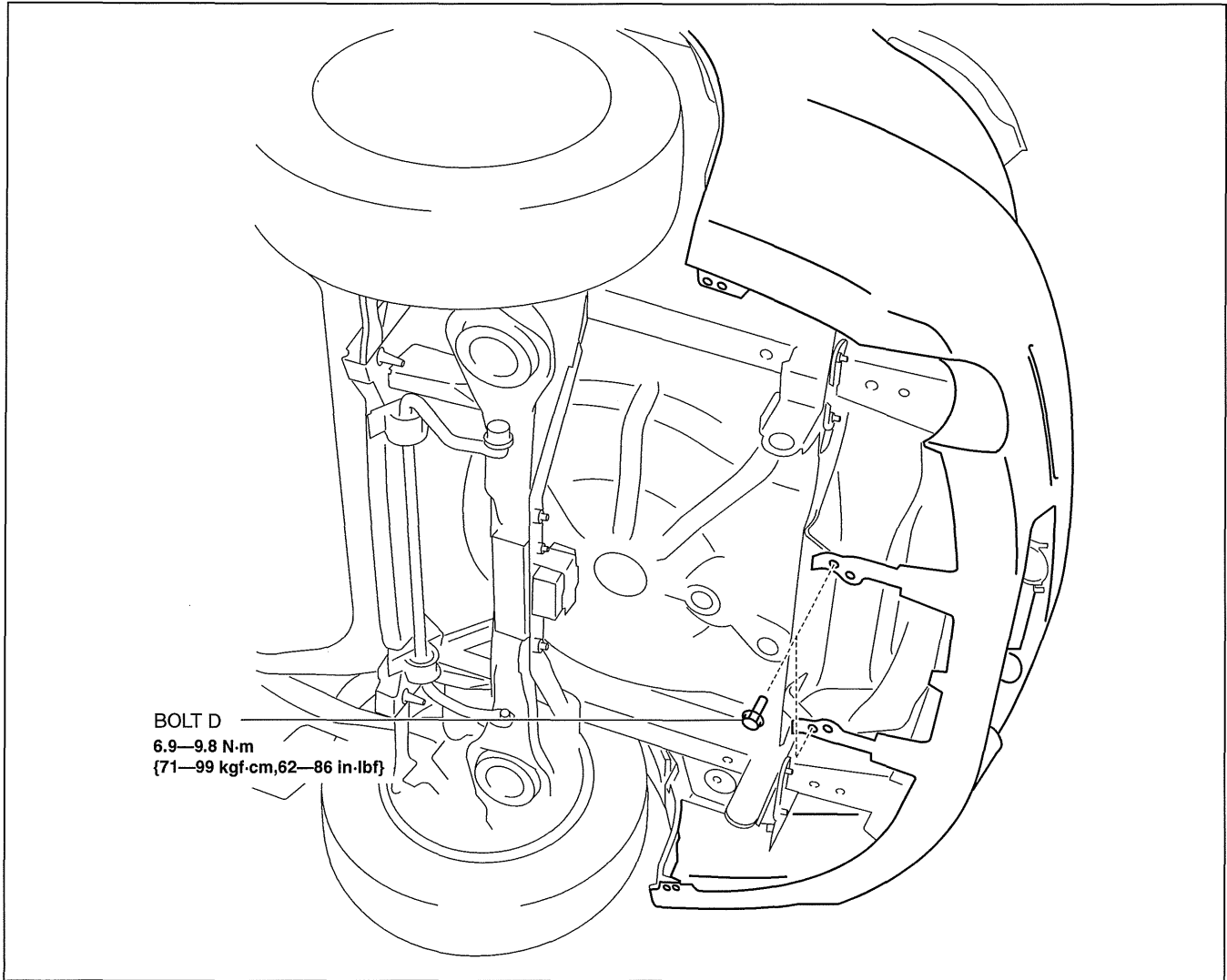


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09-10

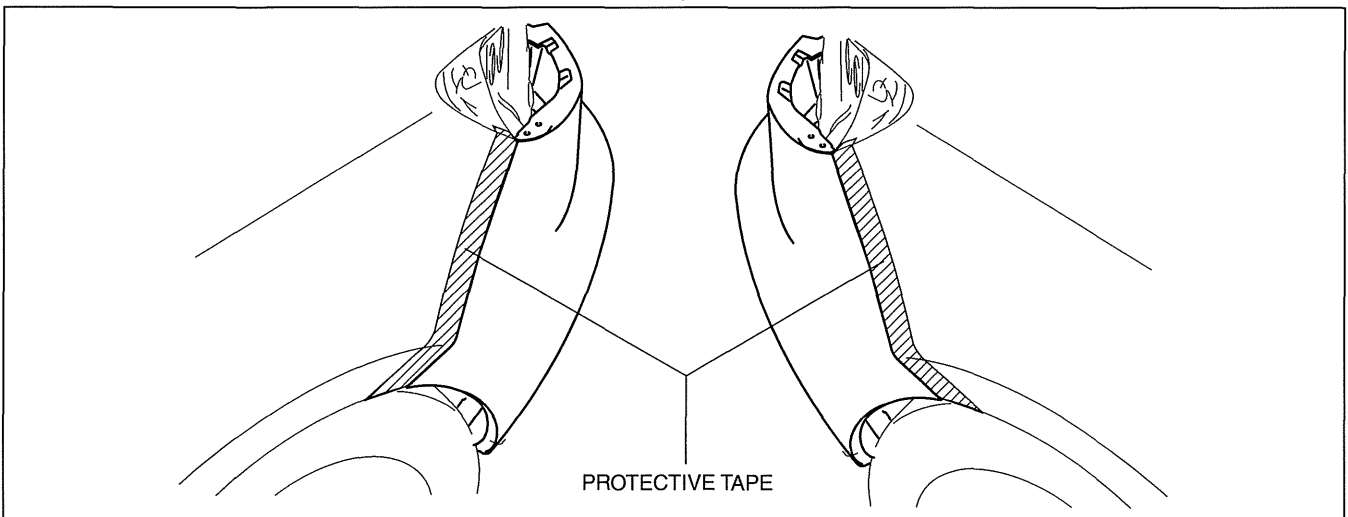
BODY PANELS

6. Remove the bolts D.



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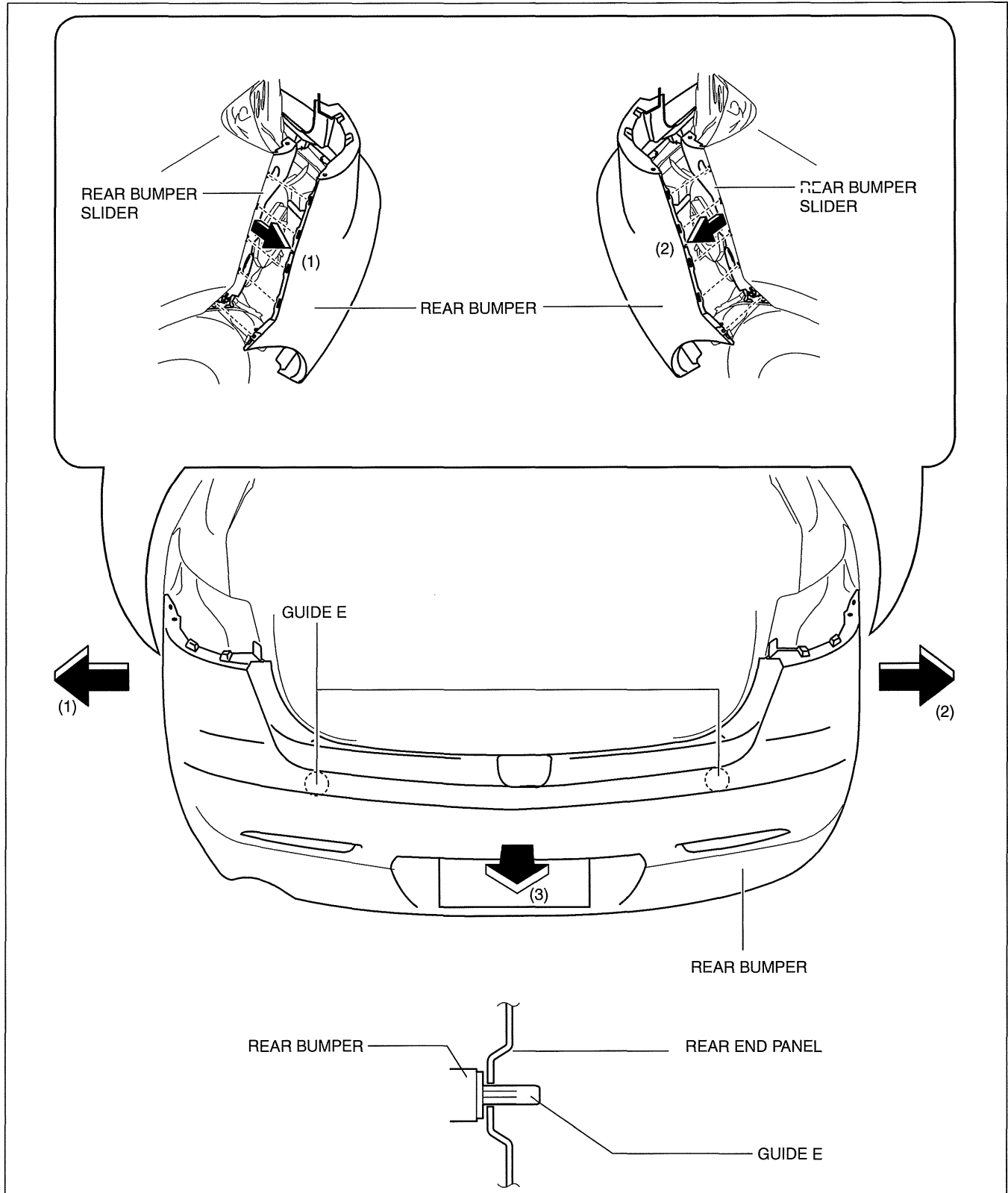
7. Affix the protective tape to the position shown in the figure.



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BODY PANELS

8. Pull the rear bumper in the direction of arrow (1), (2) shown in the figure to disengage the rear bumper from the rear bumper slider.
9. Pull the rear bumper in the direction of arrow (3), then remove the guide E.



09-10

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Caution

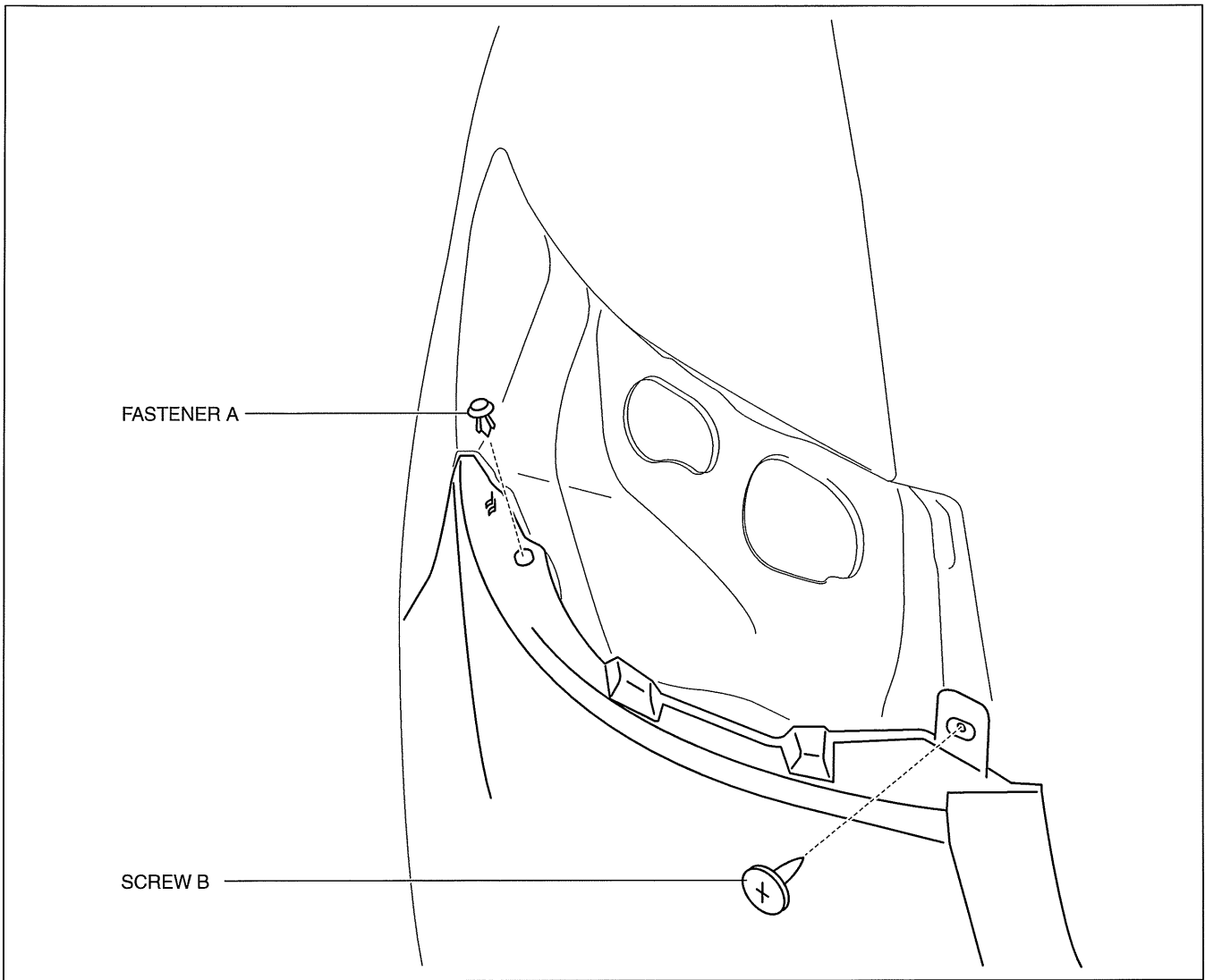
- When disengaging the rear bumper from the rear bumper slider, the rear bumper could fall and be damaged. Support the rear bumper so that it does not fall.

BODY PANELS

10. Disconnect the license plate light connector.
11. Install in the reverse order of removal.

5HB

1. Disconnect the negative battery cable.
2. Remove the rear combination light. (See 09-18-32 REAR COMBINATION LIGHT REMOVAL/INSTALLATION)
3. Remove the fastener A and screw B.

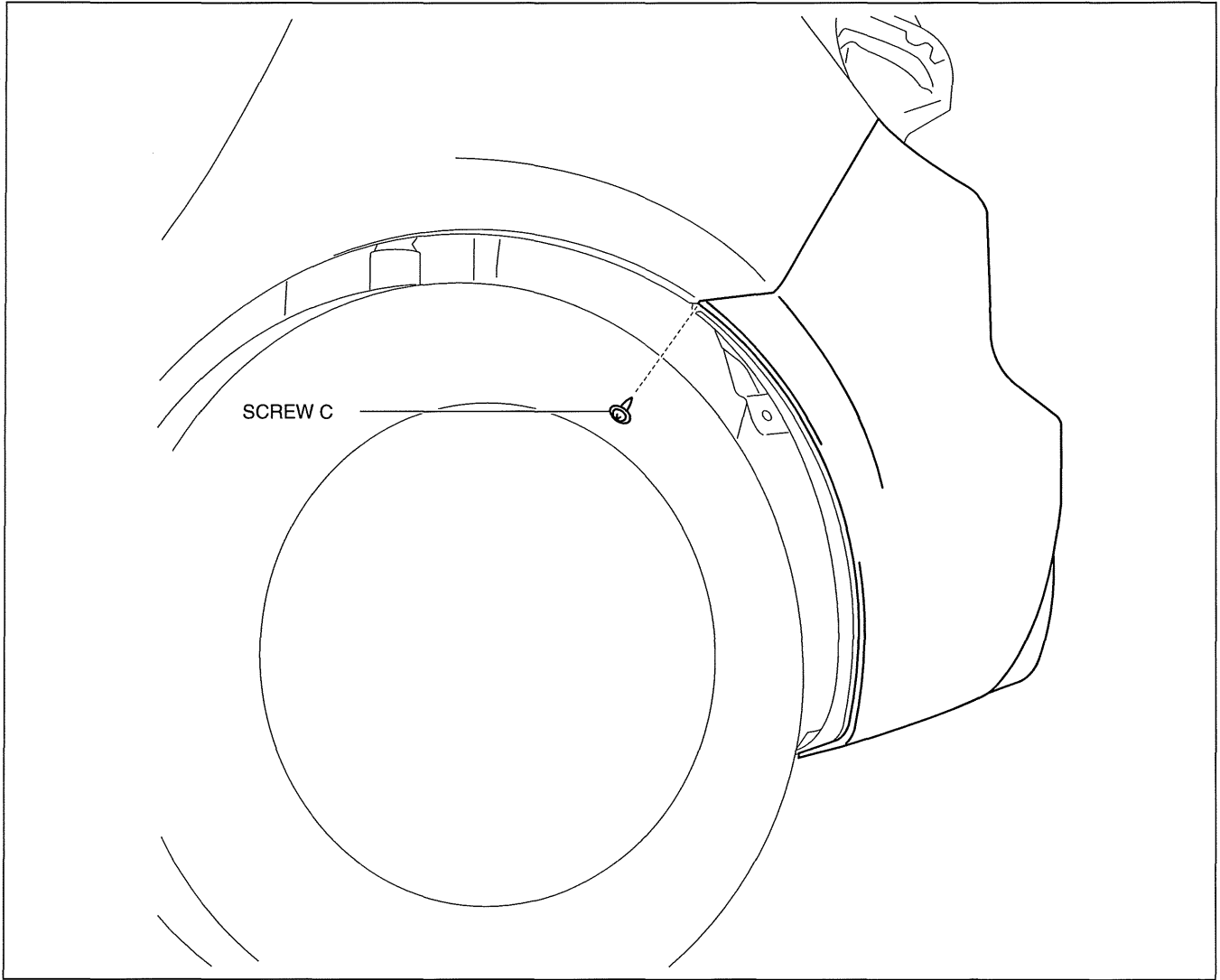


am3uuw0000390

4. Remove the rear splash shield. (See 09-16-30 SPLASH SHIELD REMOVAL/INSTALLATION)

BODY PANELS

5. Remove the screws C.

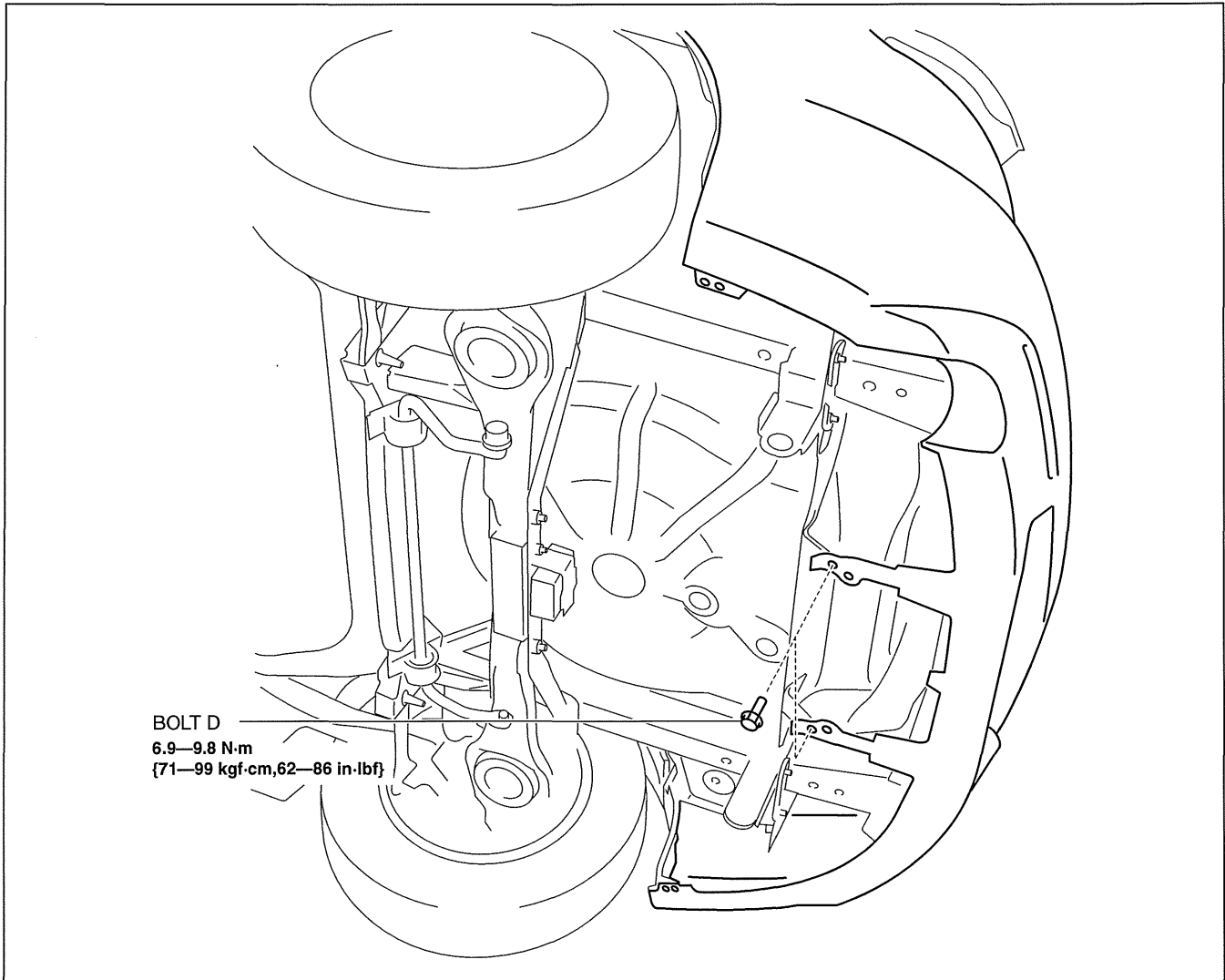


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09-10

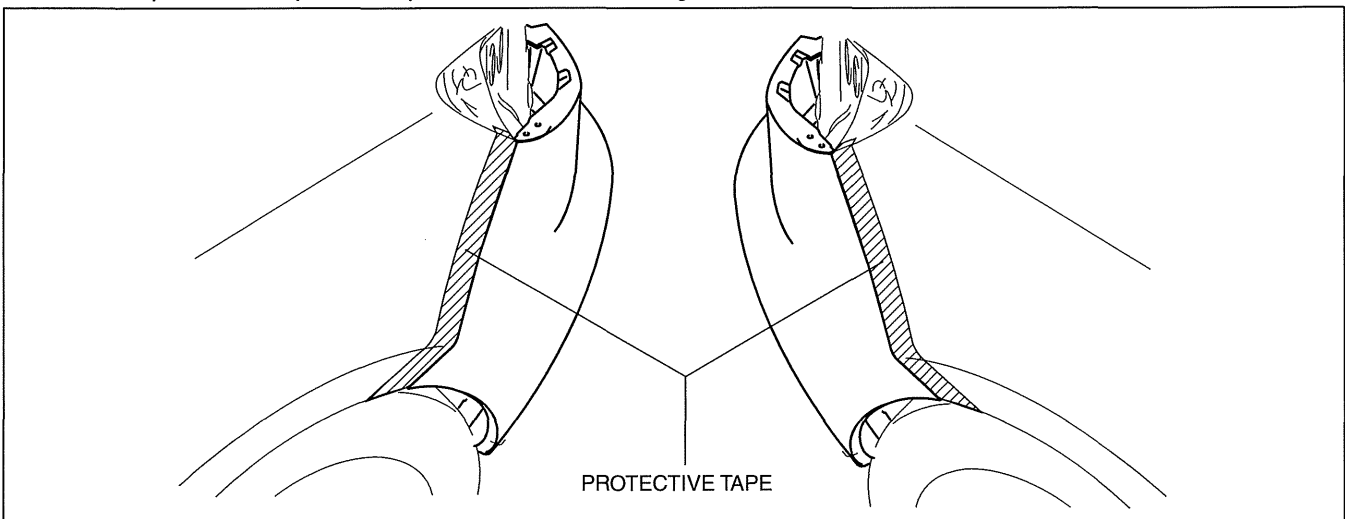
BODY PANELS

6. Remove the bolts D.



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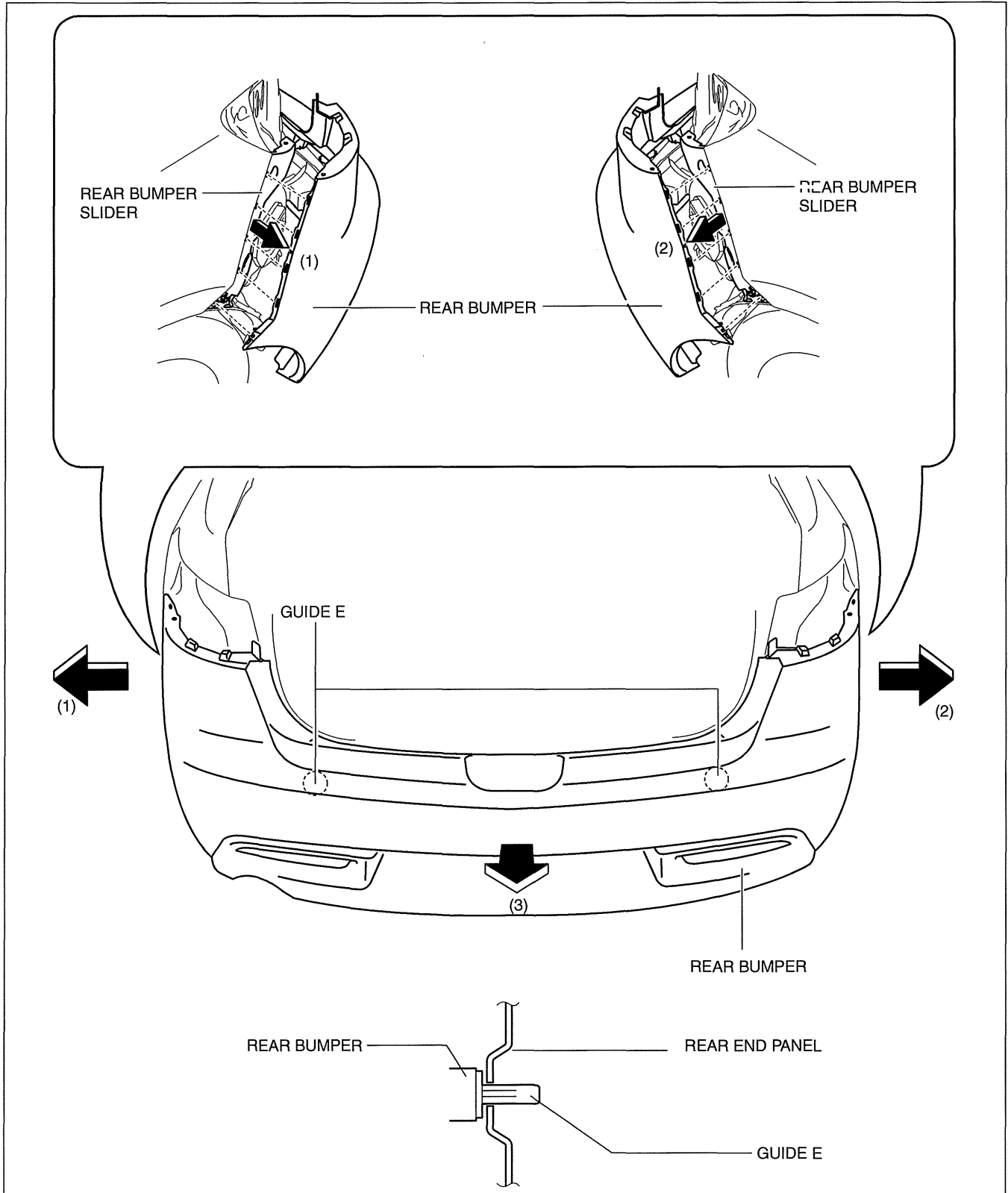
7. Affix the protective tape to the position shown in the figure.



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BODY PANELS

8. Pull the rear bumper in the direction of arrow (1), (2) shown in the figure to disengage the rear bumper from the rear bumper slider.
9. Pull the rear bumper in the direction of arrow (3), then remove the guide E.



09-10

am3uuw0000546

Caution

- When disengaging the rear bumper from the rear bumper slider, the rear bumper could fall and be damaged. Support the rear bumper so that it does not fall.

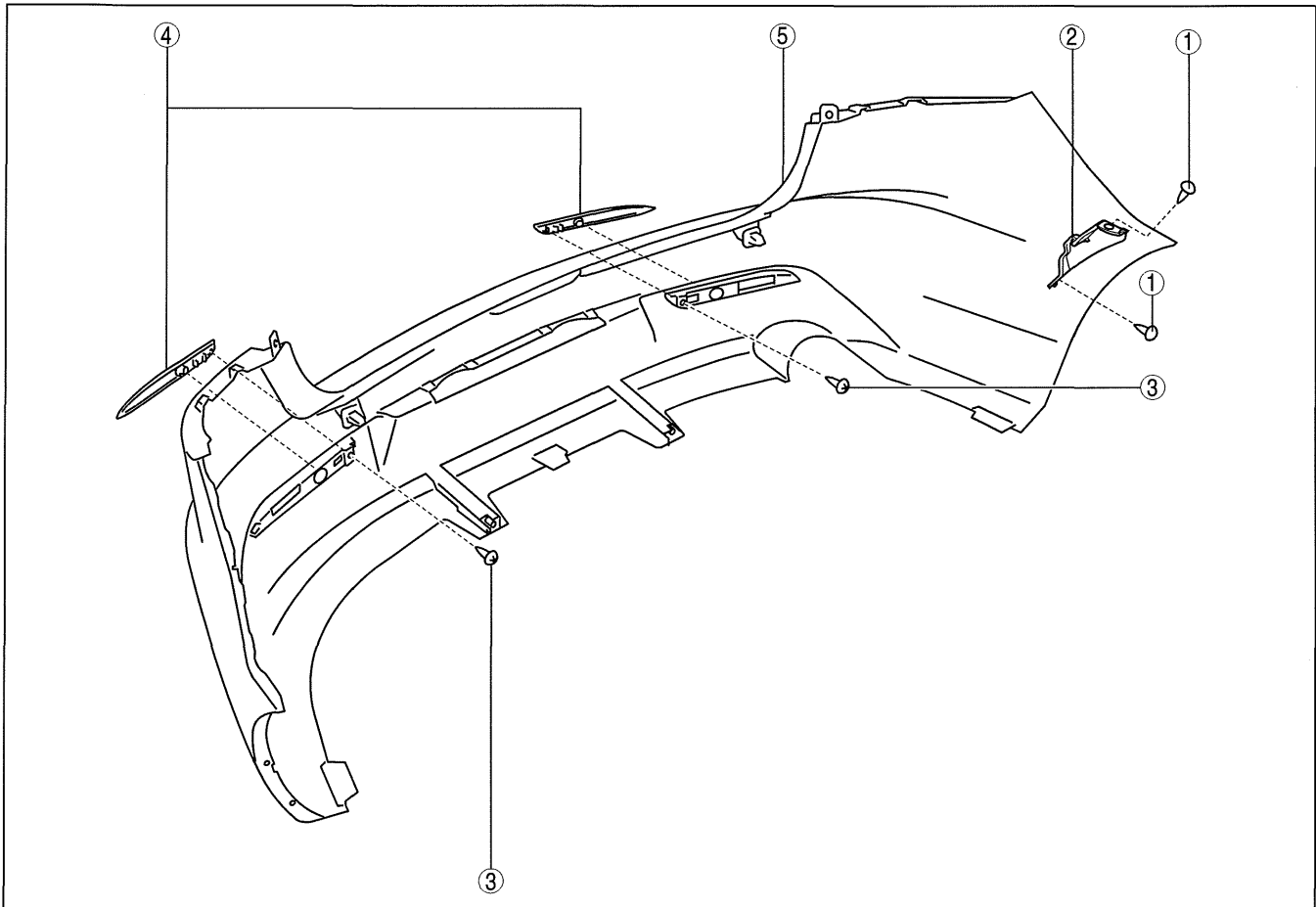
BODY PANELS

10. Disconnect the license plate light connector.
11. Install in the reverse order of removal.

REAR BUMPER DISASSEMBLY/ASSEMBLY

id09100800800

1. Remove the License plate lights. (See 09-18-49 LICENSE PLATE LIGHT REMOVAL/INSTALLATION.)
2. Disassemble in the order indicated in the table.



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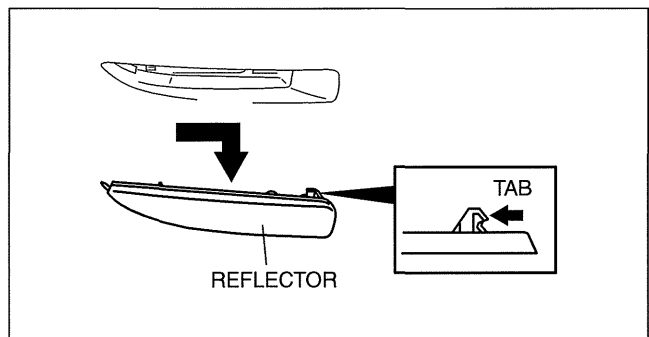
1	Fastener A
2	Bracket
3	Screw B

4	Reflector (See 09-10-38 Reflector Removal Note)
5	Rear bumper fascia

3. Assemble in the reverse order of disassembly.

Reflector Removal Note

1. Remove the screws.
2. Lift the reflector up in the direction of the arrow, then unhook it from the rear bumper.



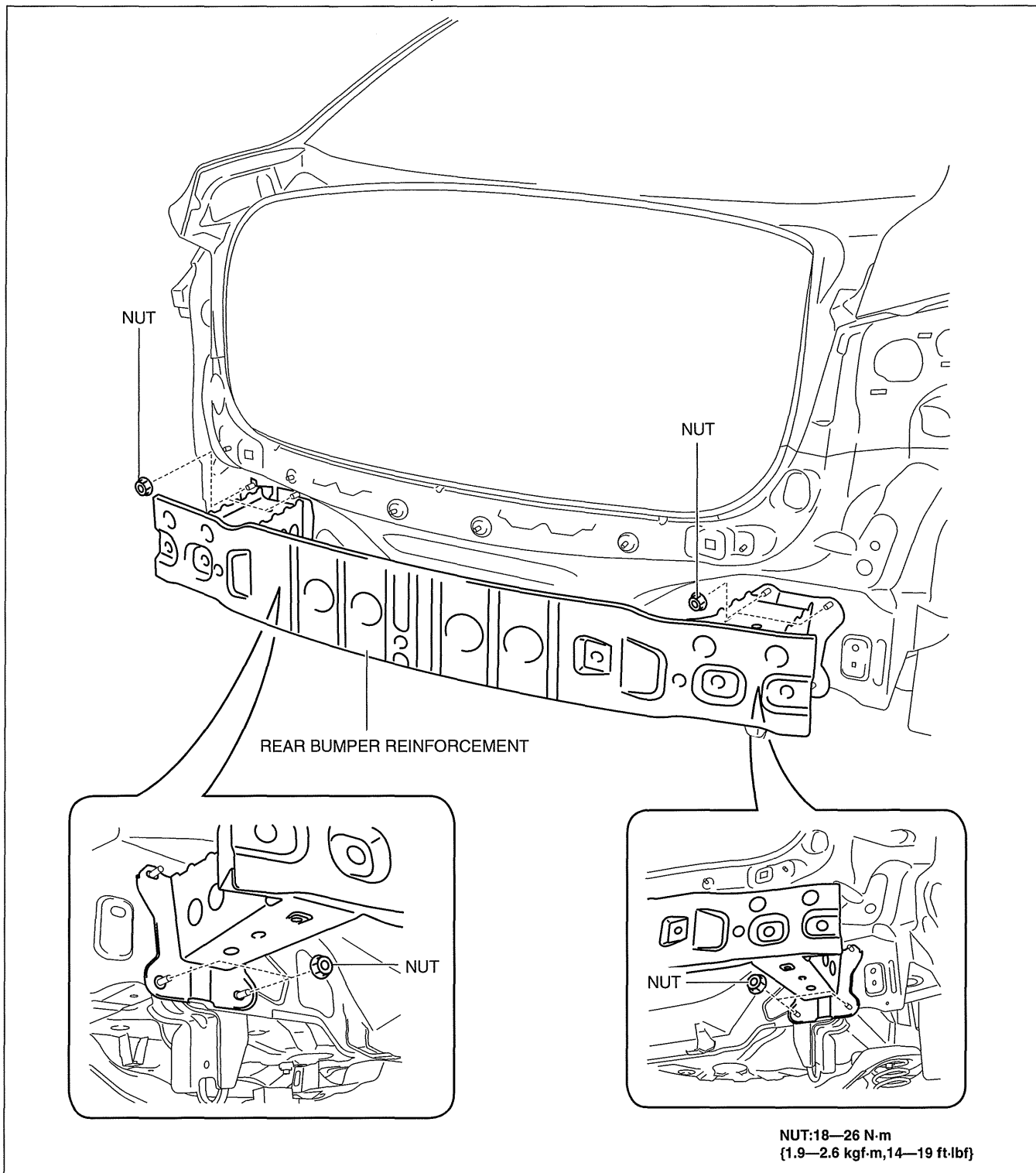
am3uuw0000523

BODY PANELS

REAR BUMPER REINFORCEMENT REMOVAL/INSTALLATION

id091000800900

1. Disconnect the negative battery cable.
2. Remove the rear combination light. (See 09-18-32 REAR COMBINATION LIGHT REMOVAL/INSTALLATION)
3. Remove the rear bumper. (See 09-10-38 REAR BUMPER DISASSEMBLY/ASSEMBLY)
4. Remove the nuts and remove the rear bumper reinforcement.



09-10

5. Install in the reverse order of removal.

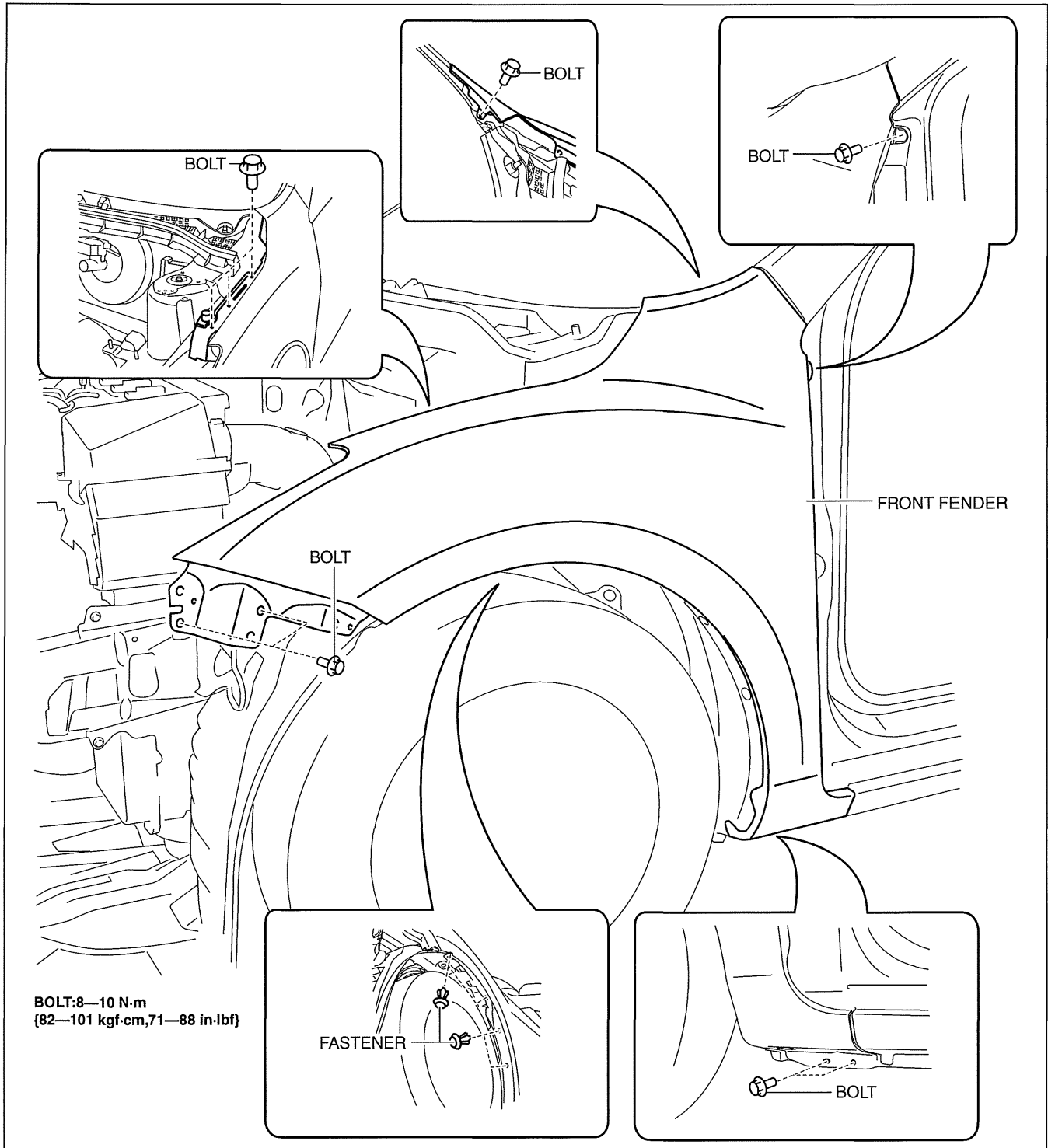
am3uuw0000390

BODY PANELS

FRONT FENDER PANEL REMOVAL/INSTALLATION

id091000801000

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
 - (2) Front combination light (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
 - (3) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Side step molding (See 09-16-7 SIDE STEP MOLDING REMOVAL.)
3. Remove fasteners and bolts, then remove the front fender panel in the direction of the arrow shown in the figure.



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4. Install in the reverse order of removal.
5. Adjust the headlight aiming. (See 09-18-11 HEADLIGHT AIMING)

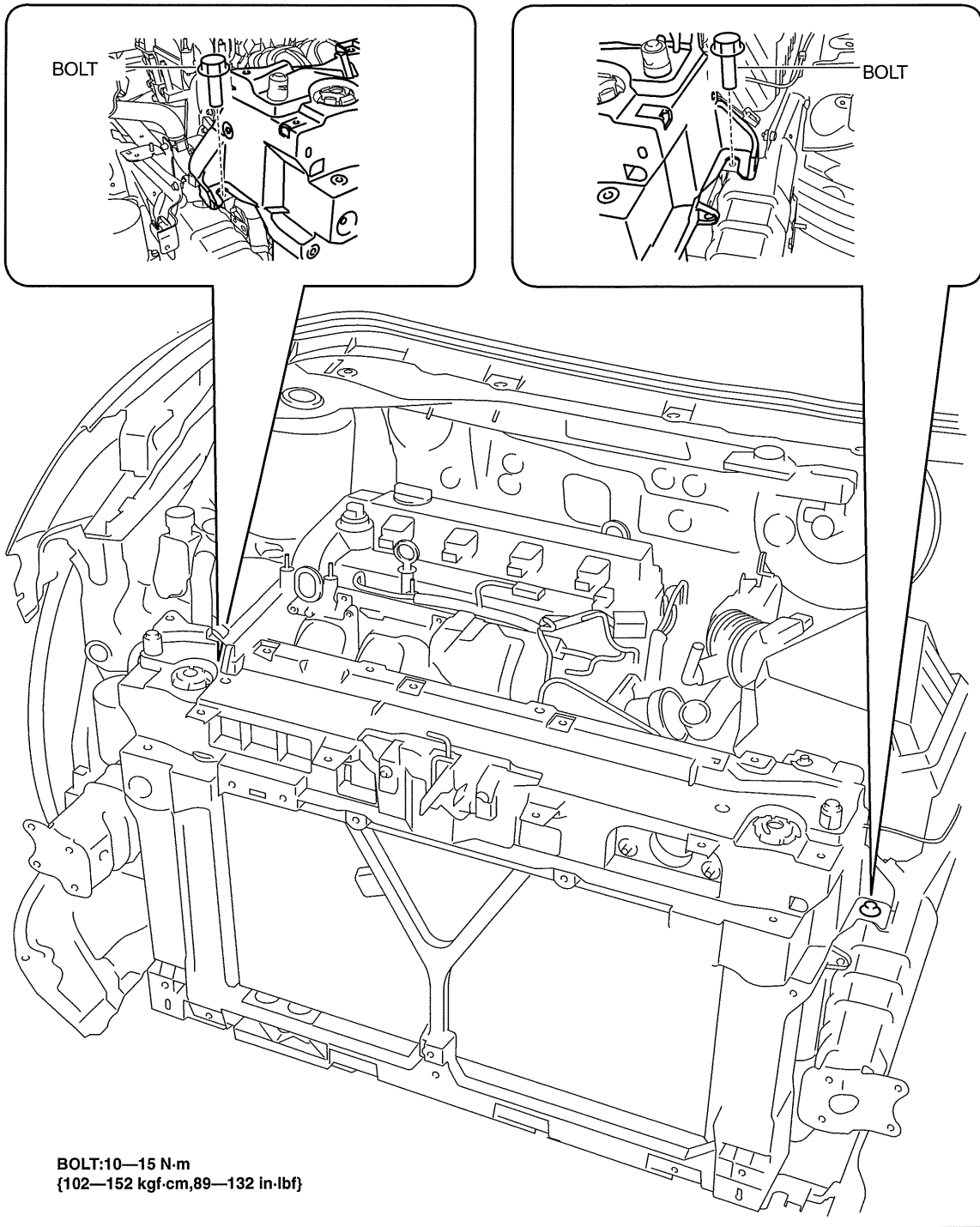
Caution

- **Because the shroud panel is installed to the bumper reinforcement, support the shroud panel using a jack before removing the bumper reinforcement so as not to apply excessive force to the shroud panel.**
- **Since the servicing is performed with the hood open, secure the hood using a piece of wood to prevent it from falling.**

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
 - (2) Front combination lights (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.) (See 09-18-11 HEADLIGHT AIMING.)
 - (3) Seal plate (See 09-10-25 SEAL PLATE REMOVAL/INSTALLATION.)
 - (4) Front bumper reinforcement (See 09-10-22 FRONT BUMPER REINFORCEMENT REMOVAL/INSTALLATION.)
3. Disconnect the hood latch cable. (See 09-14-18 HOOD RELEASE CABLE REMOVAL/INSTALLATION)

BODY PANELS

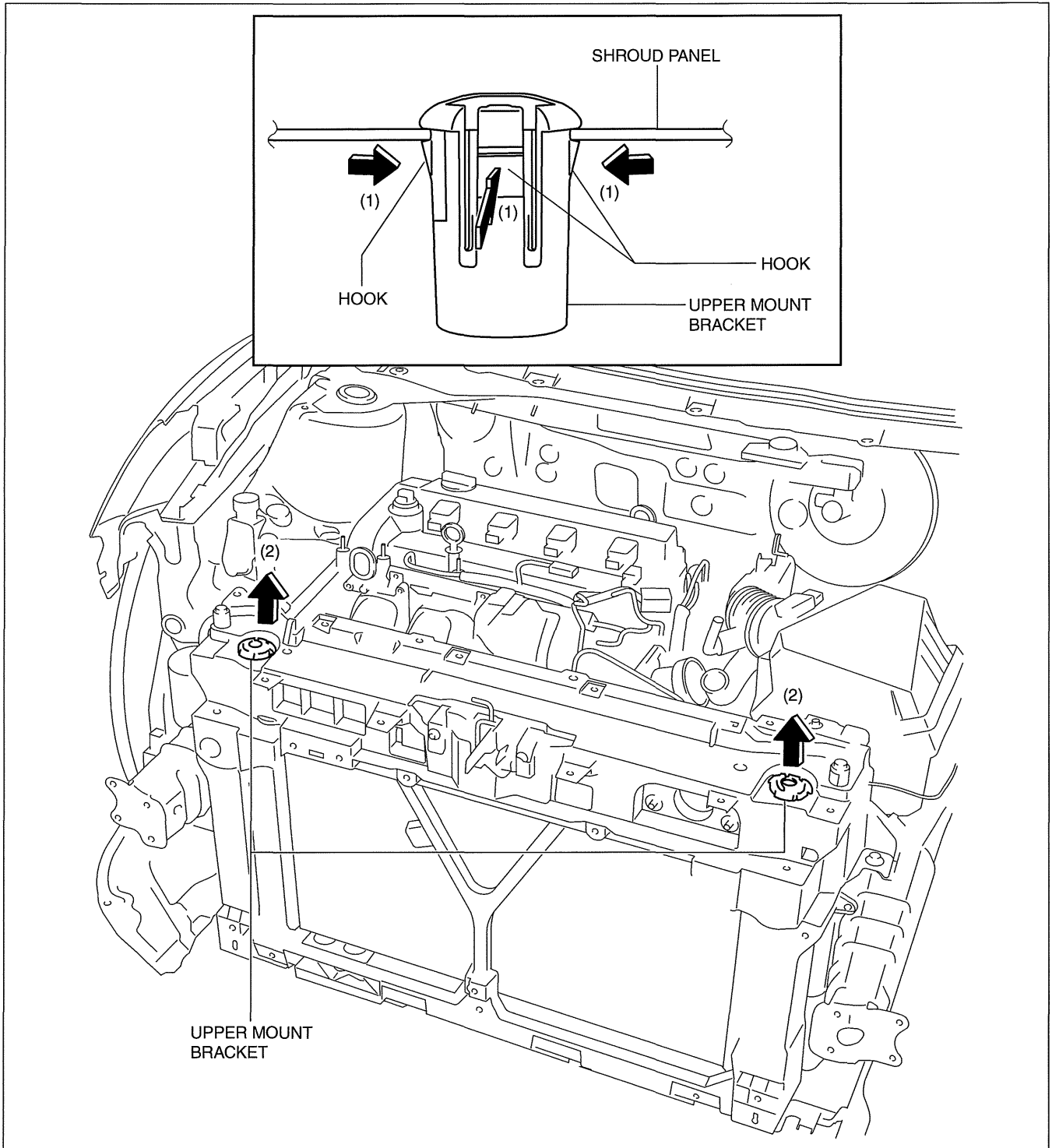
4. Remove the bolts.



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BODY PANELS

5. Push the hooks in the direction of arrow (1), and remove the upper mount bracket in the direction of the arrow (2.)

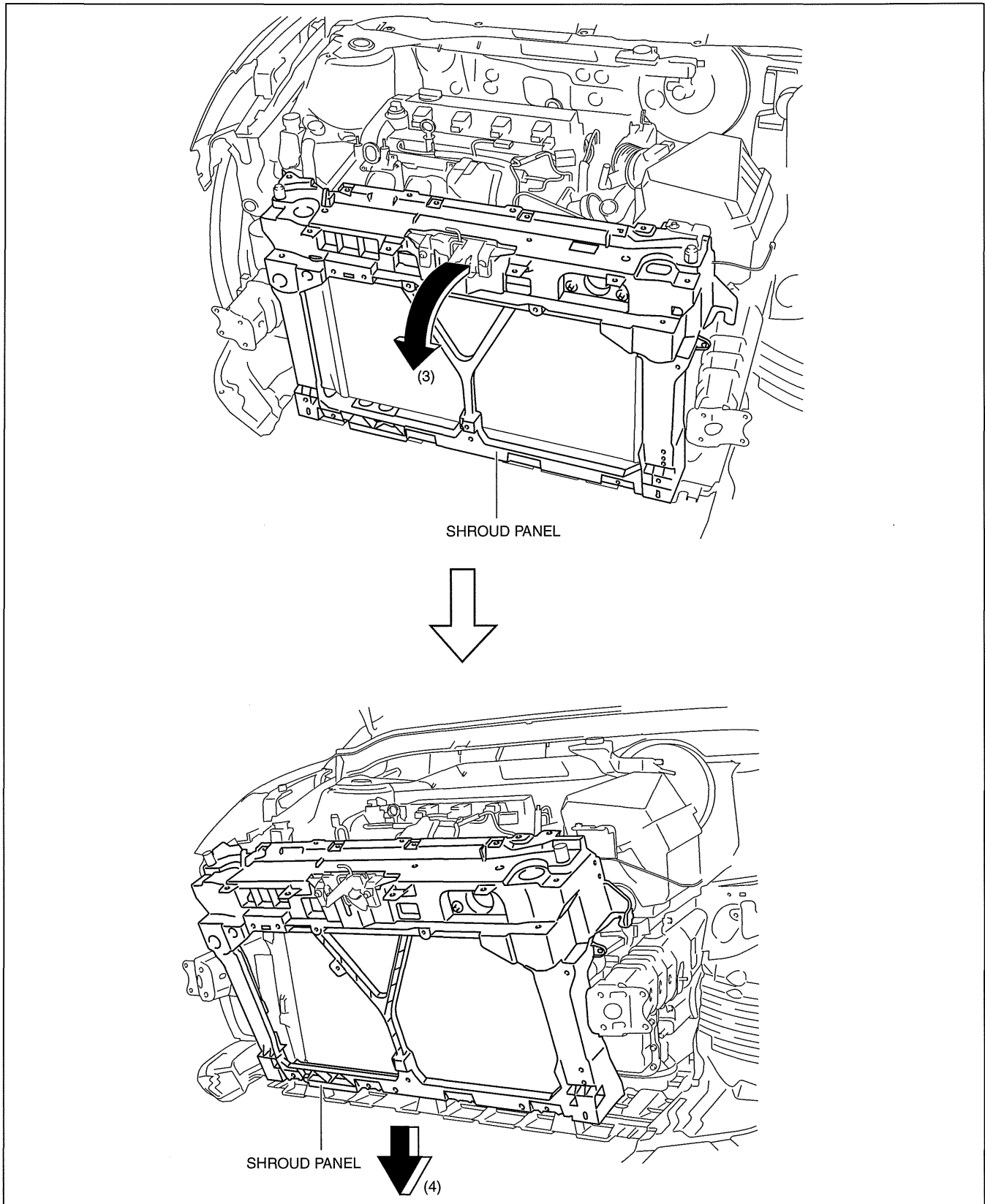


09-10

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BODY PANELS

6. Pull the shroud panel in the direction of arrow (3) in the figure, and remove it in the direction of arrow (4).



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Caution

- Support the lower surface of the radiator with a floor jack to prevent the radiator from falling off after the shroud panel is removed.

7. Install in the reverse order of removal.

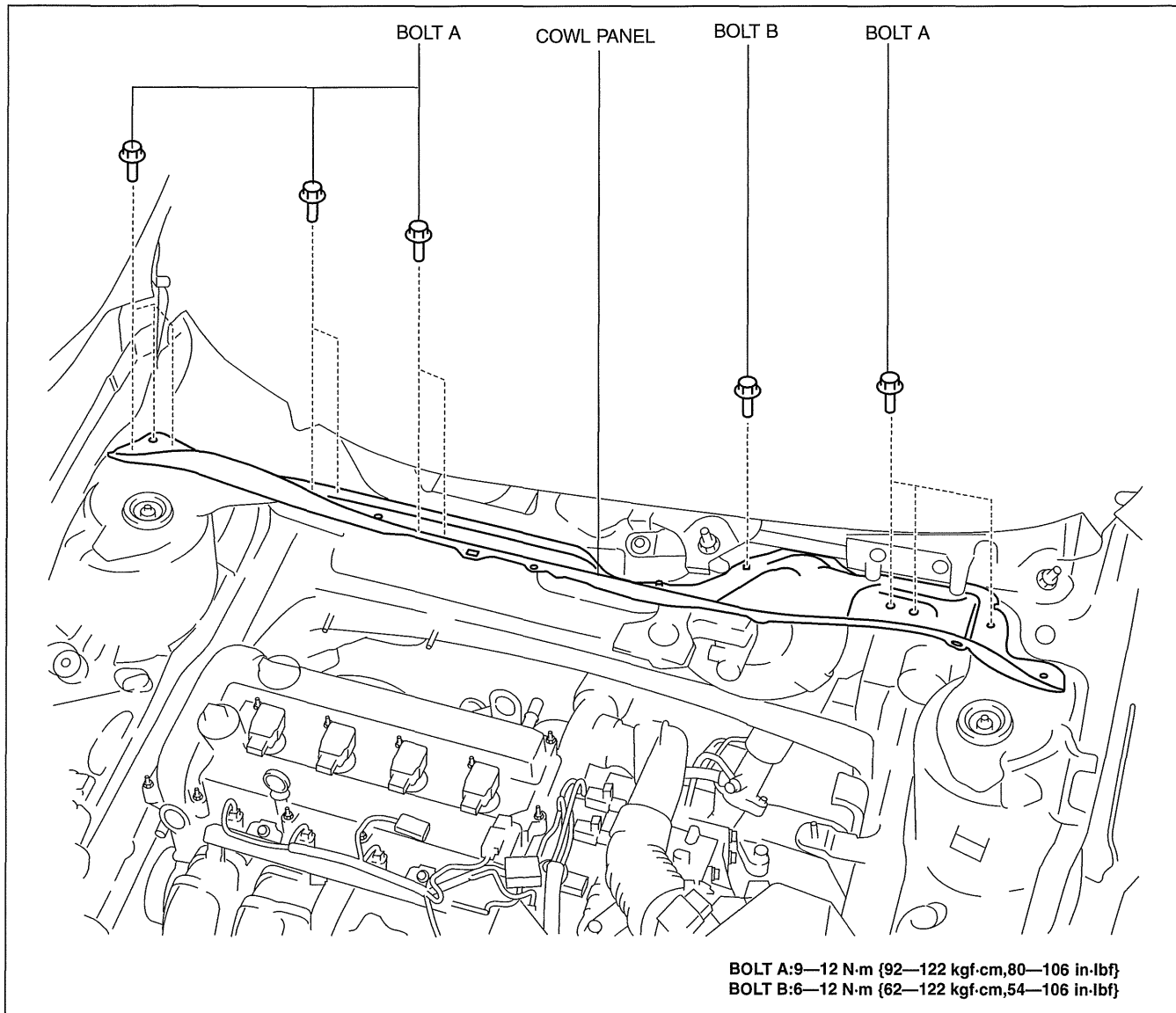
09-10-44

BODY PANELS

COWL PANEL REMOVAL/INSTALLATION

id091000802000

1. Remove the windshield wiper arm and blade. (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION)
2. Remove the front fender molding. (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION)
3. Remove the cowl grille. (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION)
4. Remove the washer hose grommet from the cowl panel and disconnect the front washer hose.
5. Remove the windshield wiper motor. (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION)
6. Remove the bolts A and bolt B.

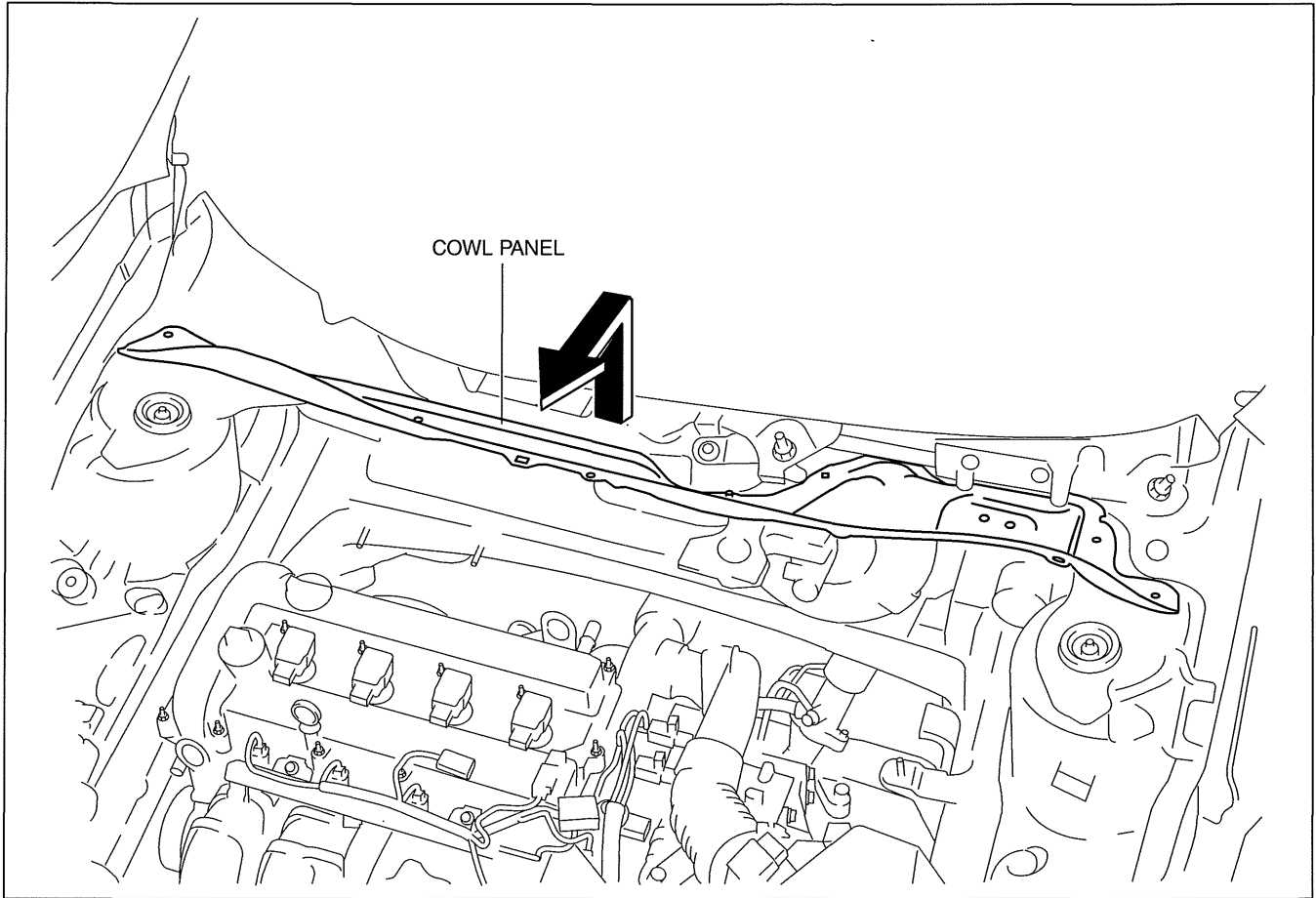


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09-10

BODY PANELS

7. Remove the cowl panel in the direction of the arrow shown in the figure.



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8. Install in the reverse order of removal.

DOORS AND LIFTGATE

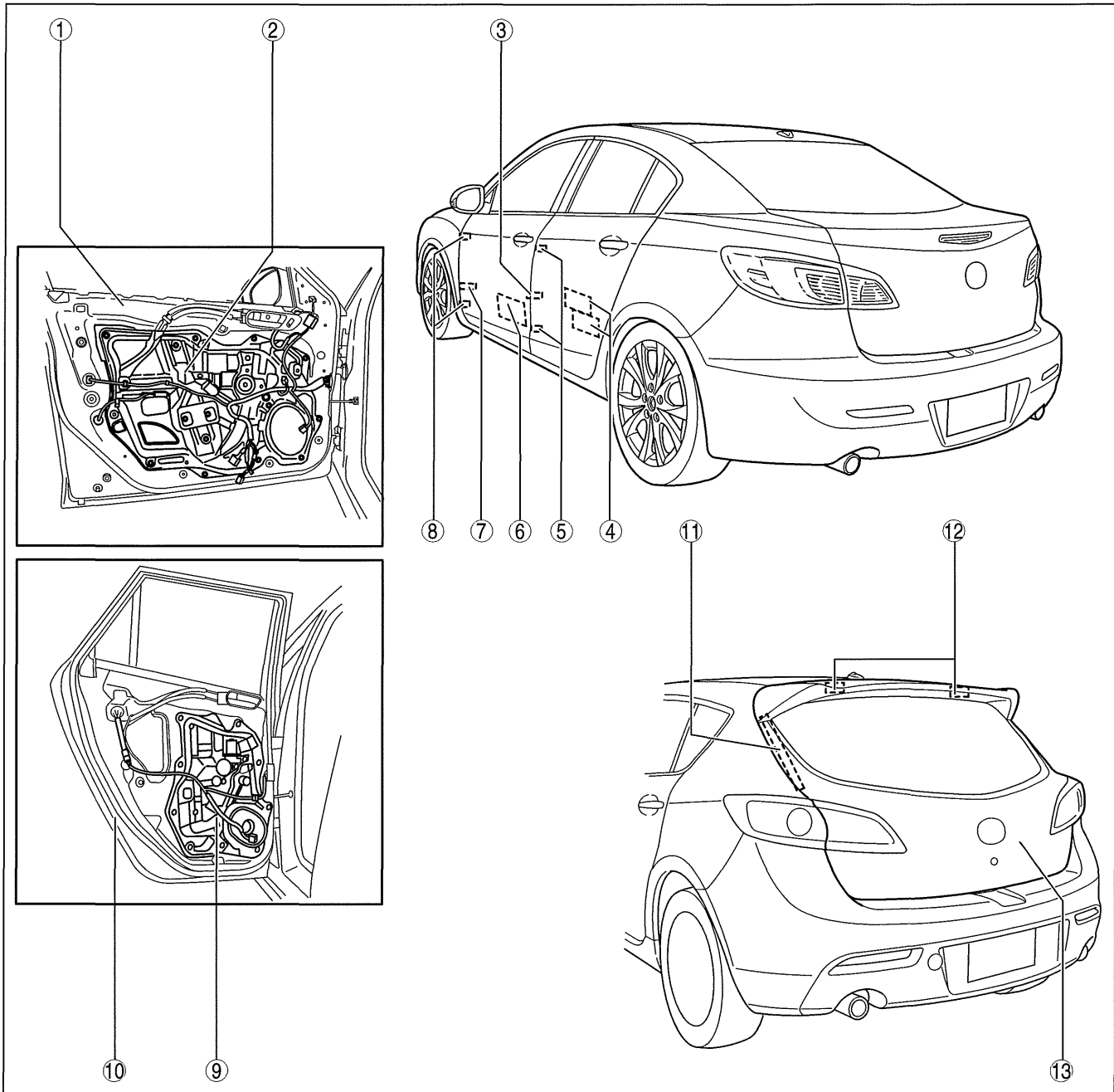
09-11 DOORS AND LIFTGATE

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DOORS AND LIFTGATE

DOOR AND LIFTGATE LOCATION INDEX

id091100520000



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1	Front door (See 09-11-3 FRONT DOOR REMOVAL/ INSTALLATION.)
2	Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
3	Rear door checker (See 09-11-12 REAR DOOR CHECKER REMOVAL/ INSTALLATION.)
4	Rear door pad (See 09-11-11 REAR DOOR PAD REMOVAL/ INSTALLATION.)
5	Rear door hinge (See 09-11-13 REAR DOOR HINGE REMOVAL/ INSTALLATION.)

6	Front door pad (See 09-11-6 FRONT DOOR PAD REMOVAL/ INSTALLATION.)
7	Front door checker (See 09-11-7 FRONT DOOR CHECKER REMOVAL/ INSTALLATION.)
8	Front door hinge (See 09-11-8 FRONT DOOR HINGE REMOVAL/ INSTALLATION.)
9	Rear door module panel (See 09-11-10 REAR DOOR MODULE PANEL REMOVAL/INSTALLATION.)
10	Rear door (See 09-11-9 REAR DOOR REMOVAL/ INSTALLATION.)

DOORS AND LIFTGATE

11	Stay damper (5HB) (See 09-11-18 STAY DAMPER DISPOSAL.)
12	Liftgate hinge (5HB) (See 09-11-16 LIFTGATE HINGE REMOVAL/ INSTALLATION.)

13	Liftgate (5HB) (See 09-11-13 LIFTGATE REMOVAL/ INSTALLATION.)
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FRONT DOOR REMOVAL/INSTALLATION

id091100520100

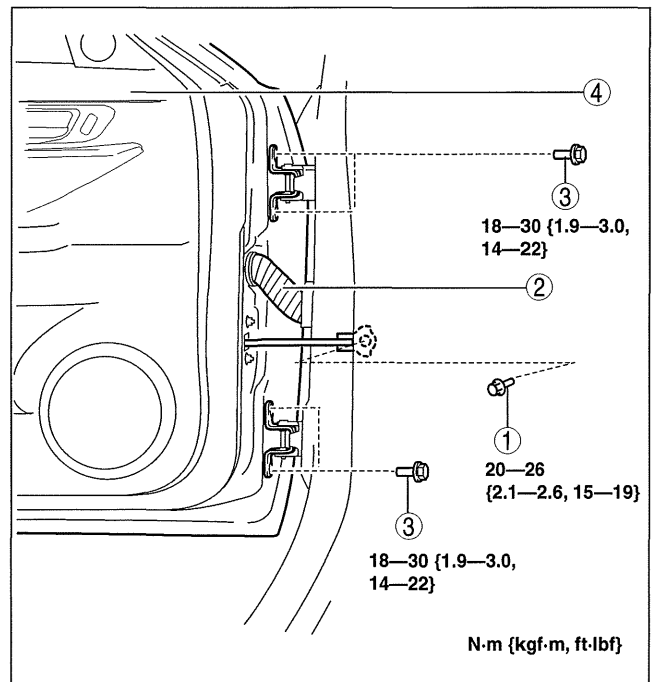
Warning

- Removing the front door without supporting it could cause the front door to fall and cause serious injury. Always perform the procedure with at least another person to prevent the front door from falling.

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.

1	Bolt A
2	Connector (See 09-11-3 Connector Removal Note.)
3	Bolt B
4	Front door

3. Install in the reverse order of removal.
4. Adjust the front door. (See 09-11-19 DOOR ADJUSTMENT.)

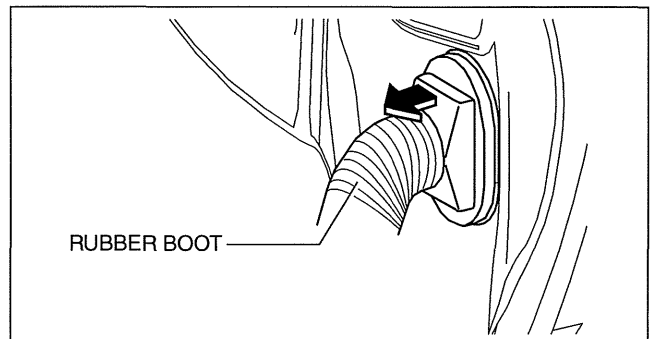


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09-11

Connector Removal Note

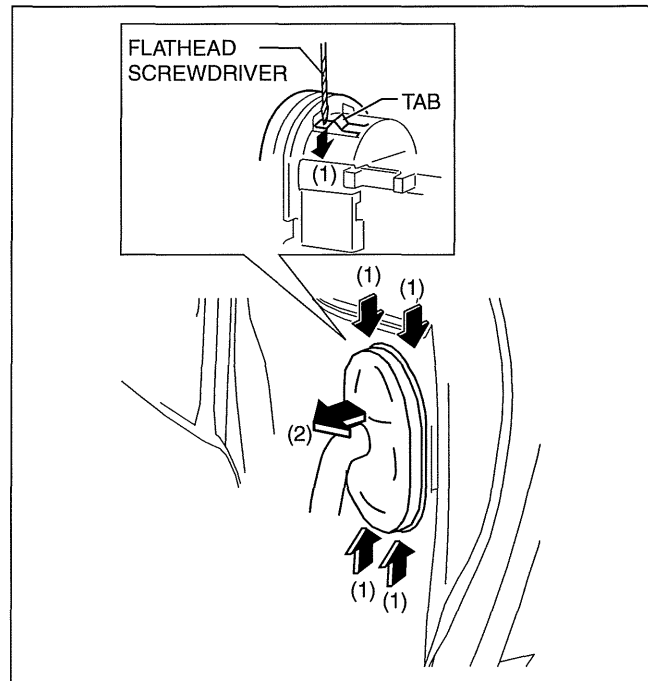
1. Pull the rubber boot outward.



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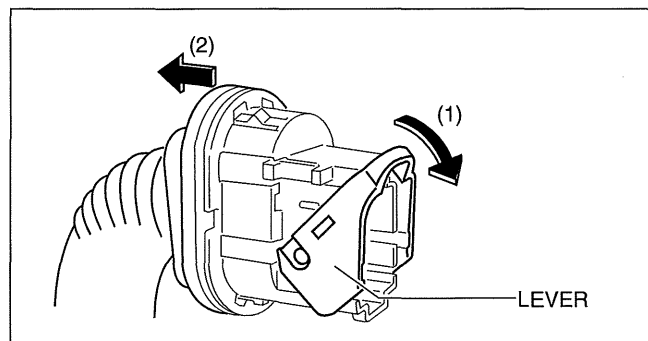
DOORS AND LIFTGATE

2. Press the tab in the direction of arrow (1) shown in the figure using a tape-wrapped flathead screwdriver, and remove the connector from the body in the direction of arrow (2) shown in the figure.



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3. Lower the lever in the direction of arrow (1), and disconnect the connector in the direction of arrow (2).

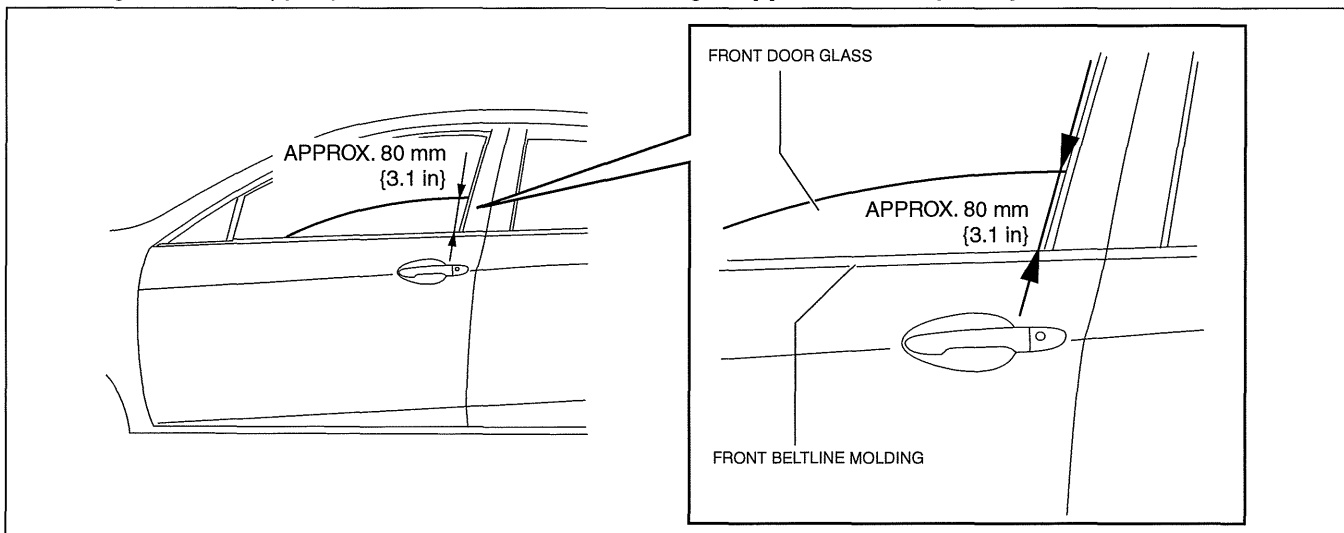


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FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION

id091100520200

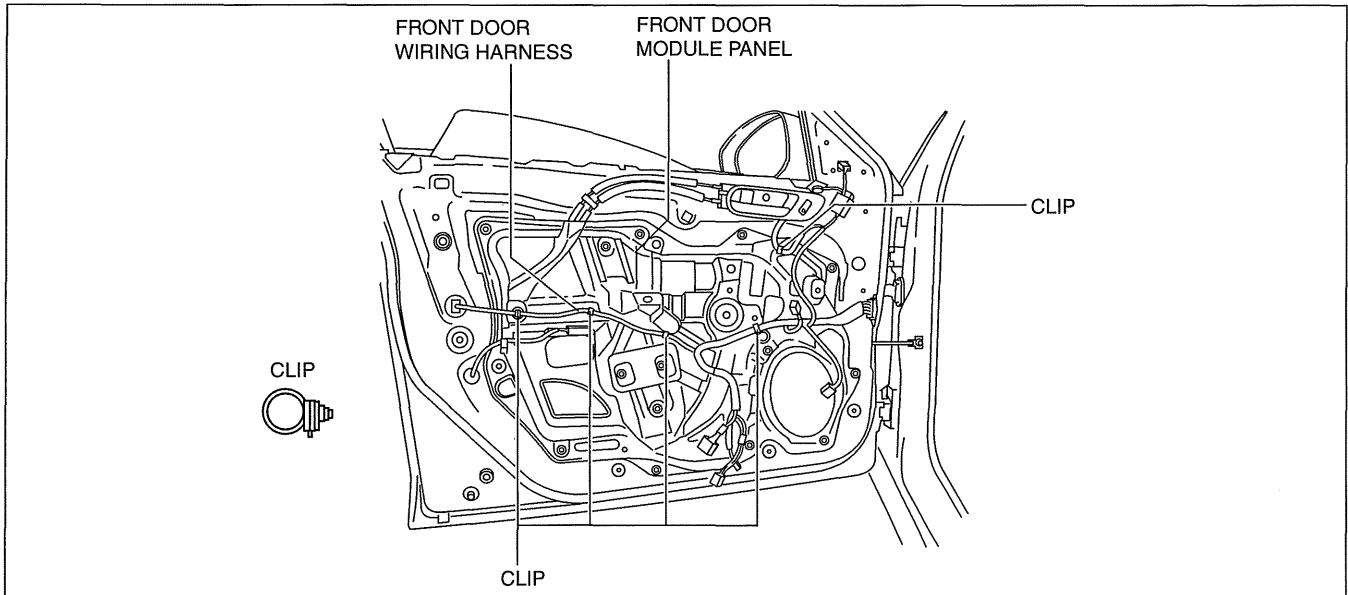
1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**



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DOORS AND LIFTGATE

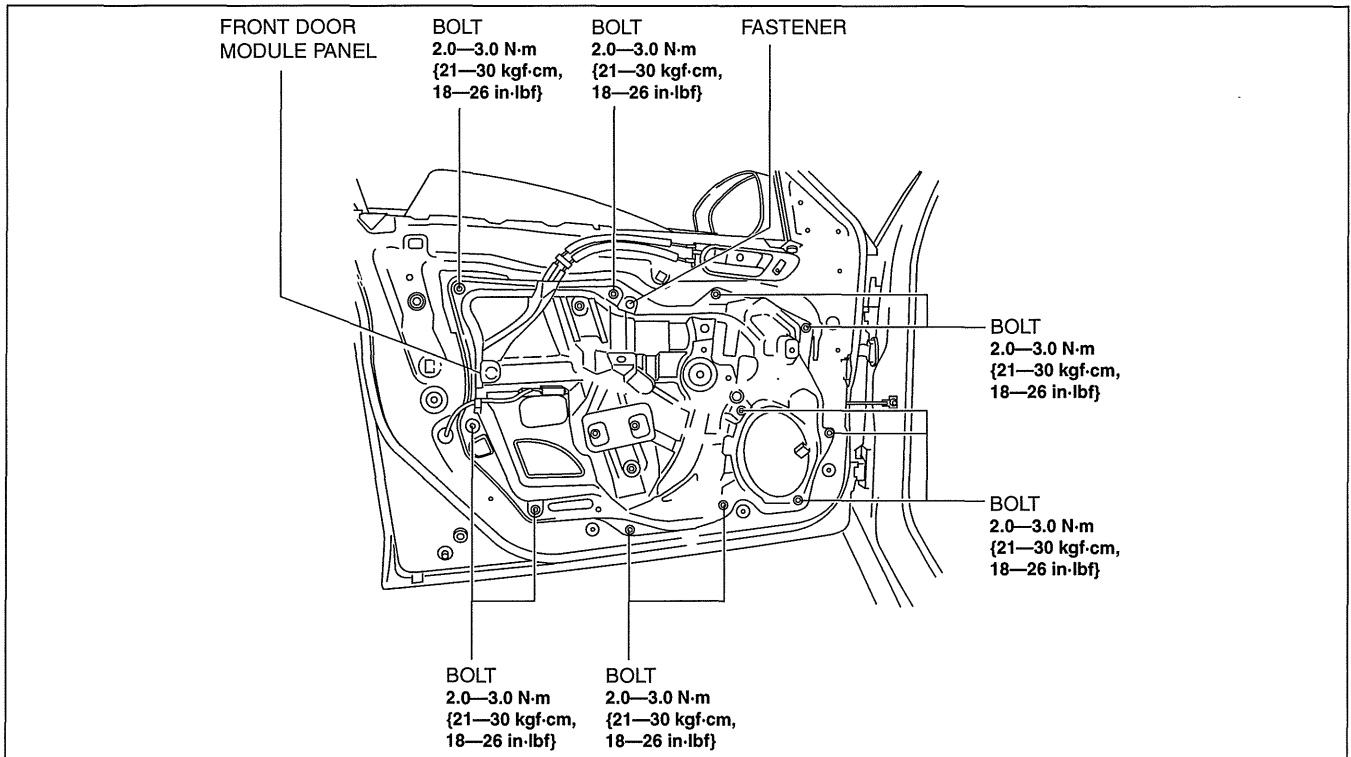
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
4. Remove the clips securing the front door wiring harness from the front door module panel.



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5. Remove the bolts.



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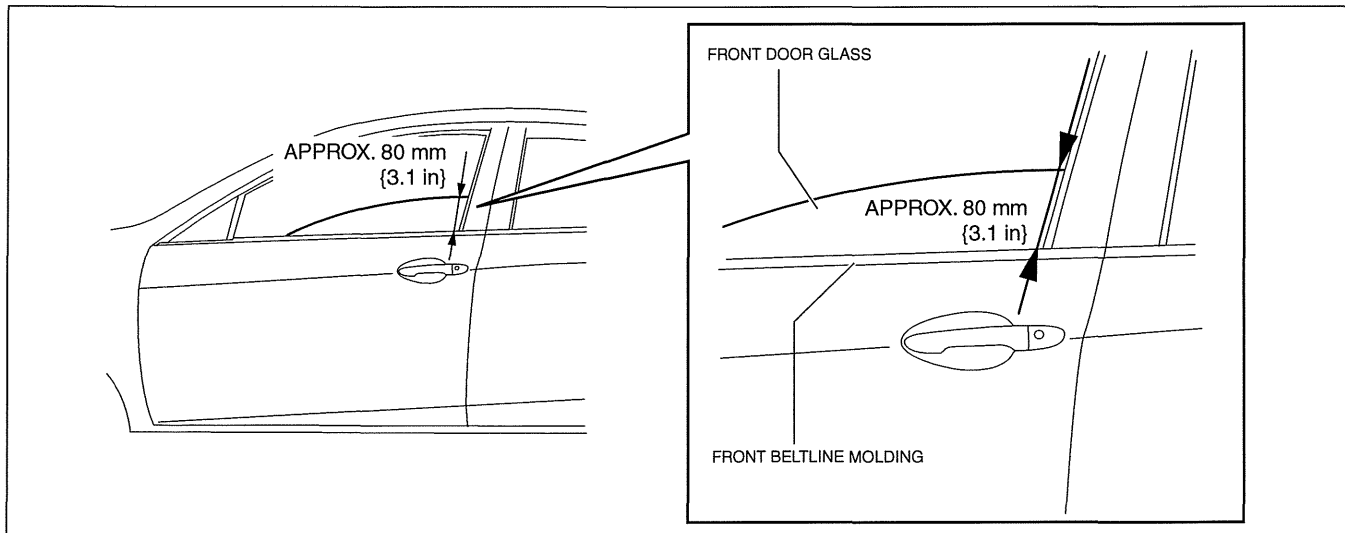
6. Remove the fastener.
7. Remove the front door module panel.
8. Remove the front power window motor. (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
9. Remove the front power window regulator. (See 09-12-8 FRONT POWER WINDOW REGULATOR REMOVAL/INSTALLATION.)
10. Install in the reverse order of removal.

DOORS AND LIFTGATE

FRONT DOOR PAD REMOVAL/INSTALLATION

id091100520300

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in}**.



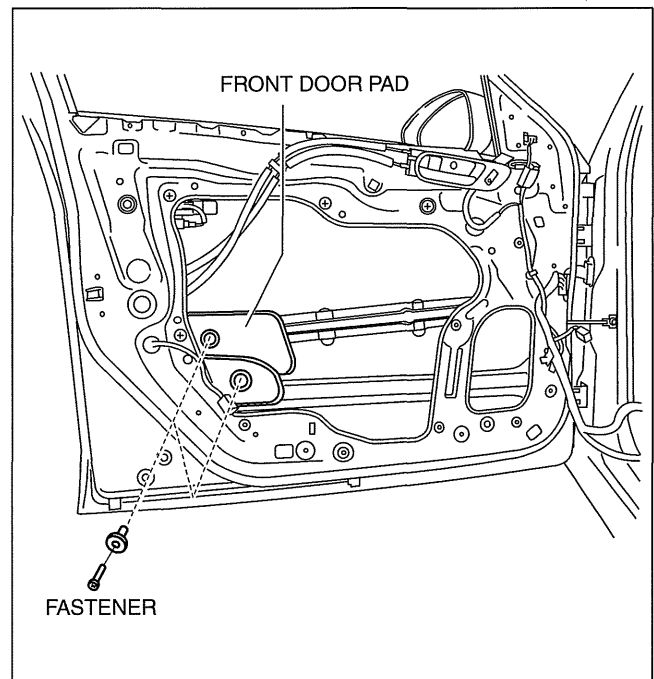
am3uuw0000315

2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
4. Remove the fasteners.
5. Remove the front door pad.
6. Remove the double-sided adhesive tape on the front door pad and body using a utility knife.

Warning

- Using a utility knife with bare hands can cause injury. Always wear gloves when using a razor.

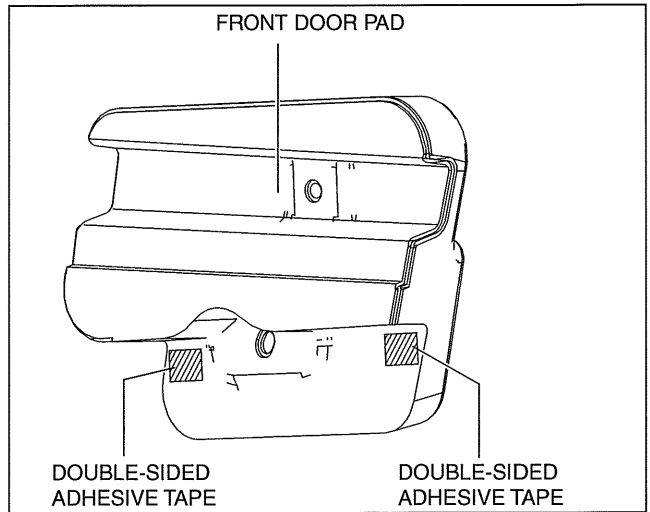
7. Install in the reverse order of removal.



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DOORS AND LIFTGATE

- (1) When reusing the front door pad, affix double-sided adhesive tape to the front door pad as shown in the figure.

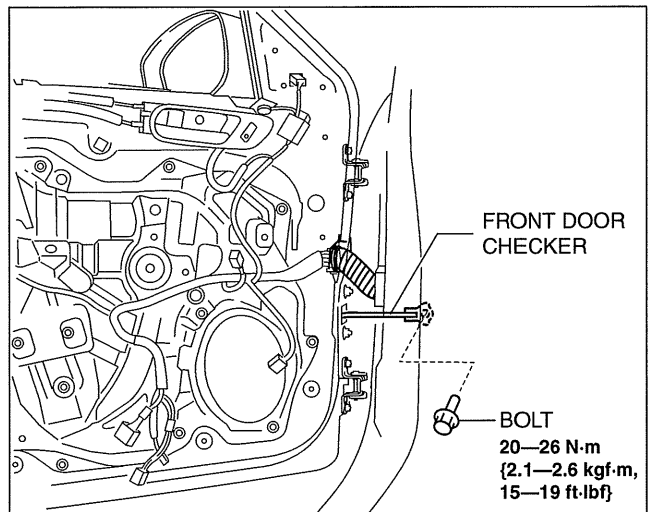


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FRONT DOOR CHECKER REMOVAL/INSTALLATION

id091100520400

1. Fully close the front door glass.
2. Disconnect the negative battery cable.
3. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
4. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
5. Remove the front door speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
6. Remove the bolt.

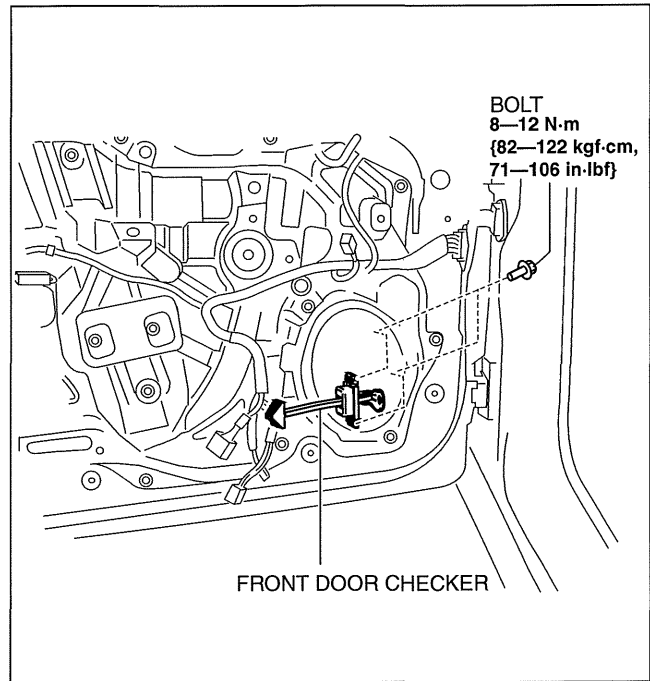


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09-11

DOORS AND LIFTGATE

7. Remove the bolt.
8. Pull out the front door checker from the front speaker installation hole.
9. Install in the reverse order of removal.



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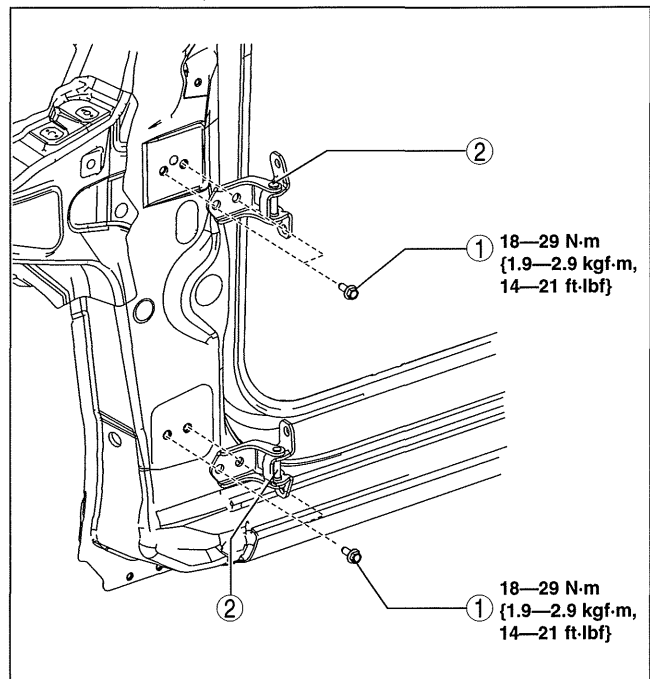
FRONT DOOR HINGE REMOVAL/INSTALLATION

id091100520500

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front bumper (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
 - (2) Front combination light (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
 - (3) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Side step molding (See 09-16-7 SIDE STEP MOLDING REMOVAL.)
 - (5) Front fender panel (See 09-10-40 FRONT FENDER PANEL REMOVAL/INSTALLATION.)
 - (6) Front door (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Bolt
2	Front door hinge

4. Install in the reverse order of removal.



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DOORS AND LIFTGATE

REAR DOOR REMOVAL/INSTALLATION

id091100520600

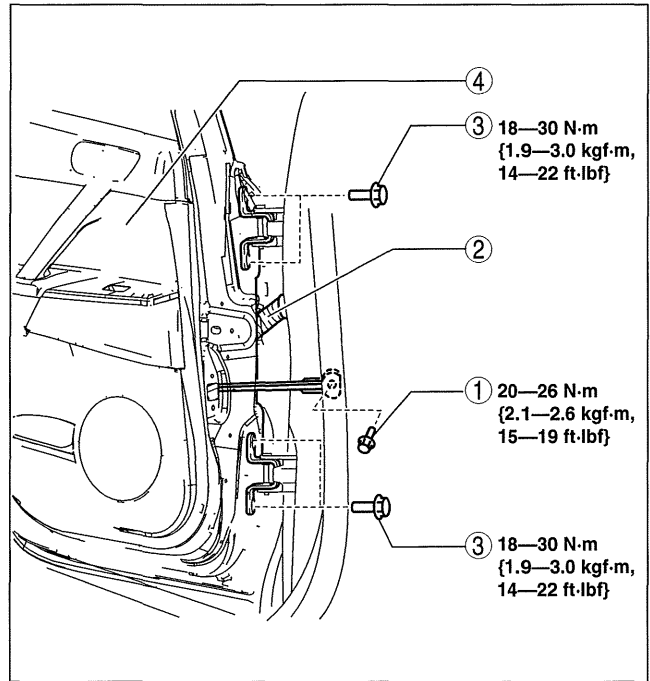
Warning

- Removing the rear door without supporting it could cause the rear door to fall and cause serious injury. Always perform the procedure with at least another person to prevent the rear door from falling.

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.

1	Bolt A
2	Connector (See 09-11-9 Connector Removal Note.)
3	Bolt B
4	Rear door

3. Install in the reverse order of removal.
4. Adjust the rear door. (See 09-11-19 DOOR ADJUSTMENT.)

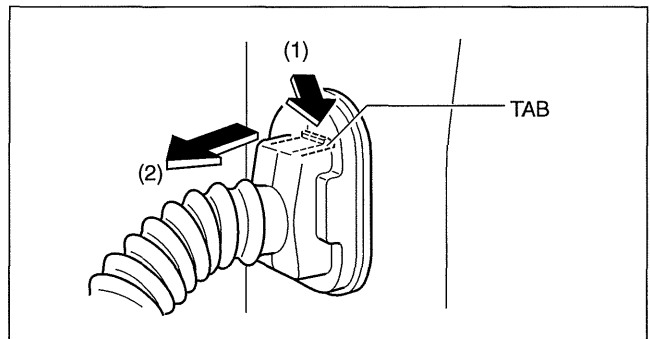


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09-11

Connector Removal Note

1. While pressing the tab in the direction of arrow (1), disconnect the connector in the direction of arrow (2).



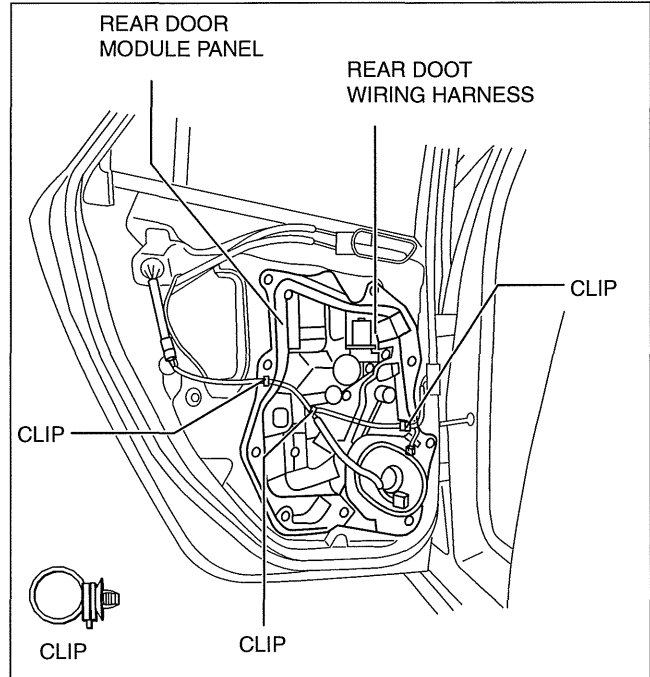
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DOORS AND LIFTGATE

REAR DOOR MODULE PANEL REMOVAL/INSTALLATION

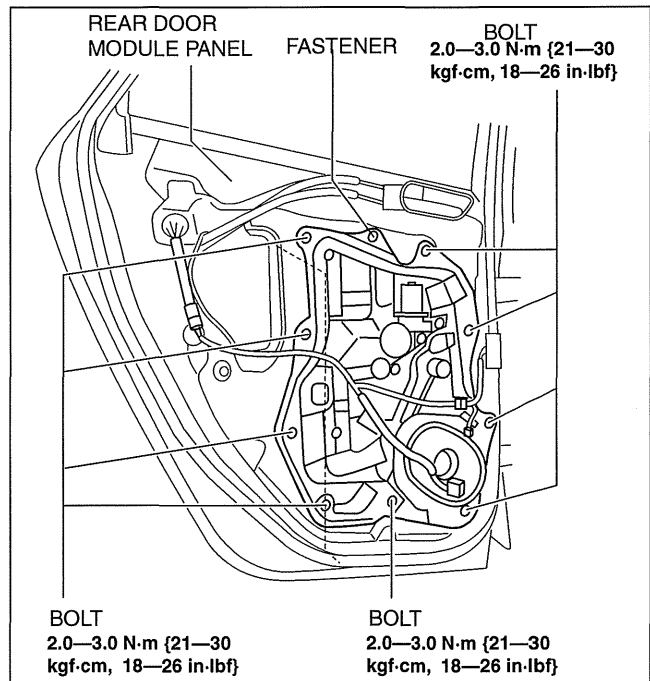
id091100520900

1. Fully open the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (3) Rear door quarter glass (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)
 - (4) Rear door glass (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)
4. Remove the clips securing the rear door wiring harness from the rear door module panel.



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5. Remove the bolts.
6. Remove the fastener.
7. Remove the rear door module panel.
8. Remove the rear power window motor. (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
9. Remove the rear power window regulator. (See 09-12-9 REAR POWER WINDOW REGULATOR REMOVAL/INSTALLATION.)
10. Install in the reverse order of removal.



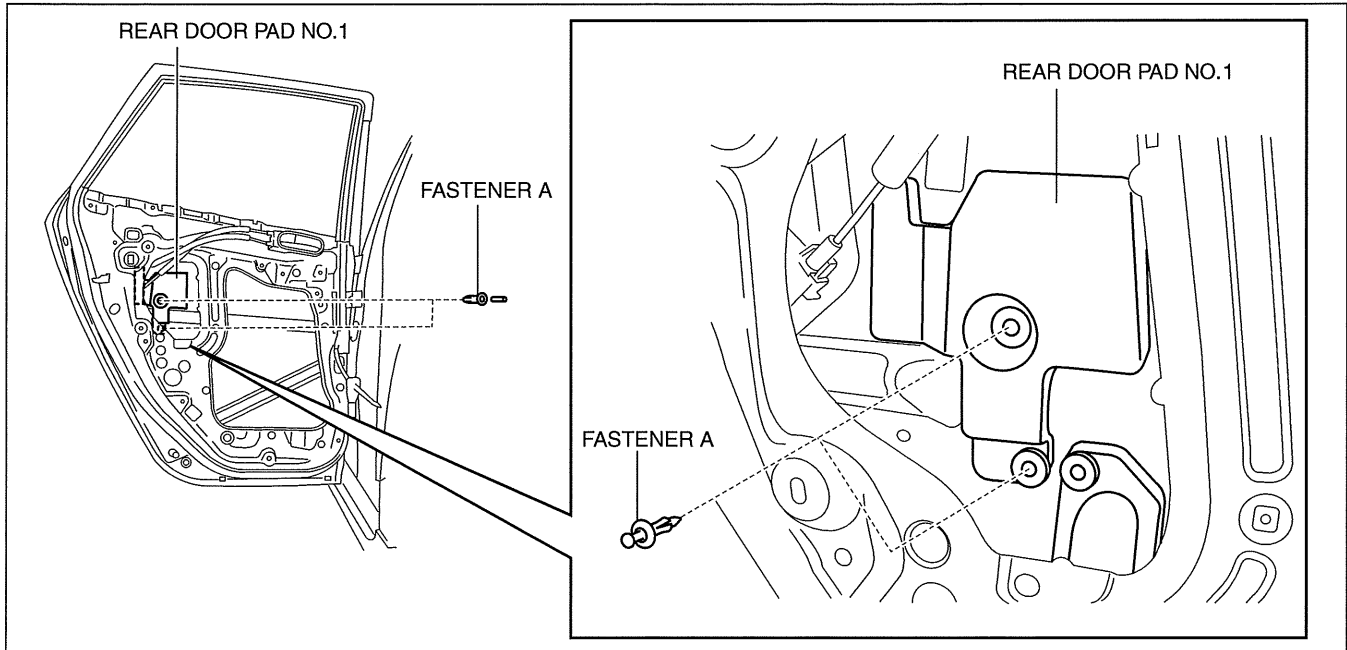
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DOORS AND LIFTGATE

REAR DOOR PAD REMOVAL/INSTALLATION

id091100609100

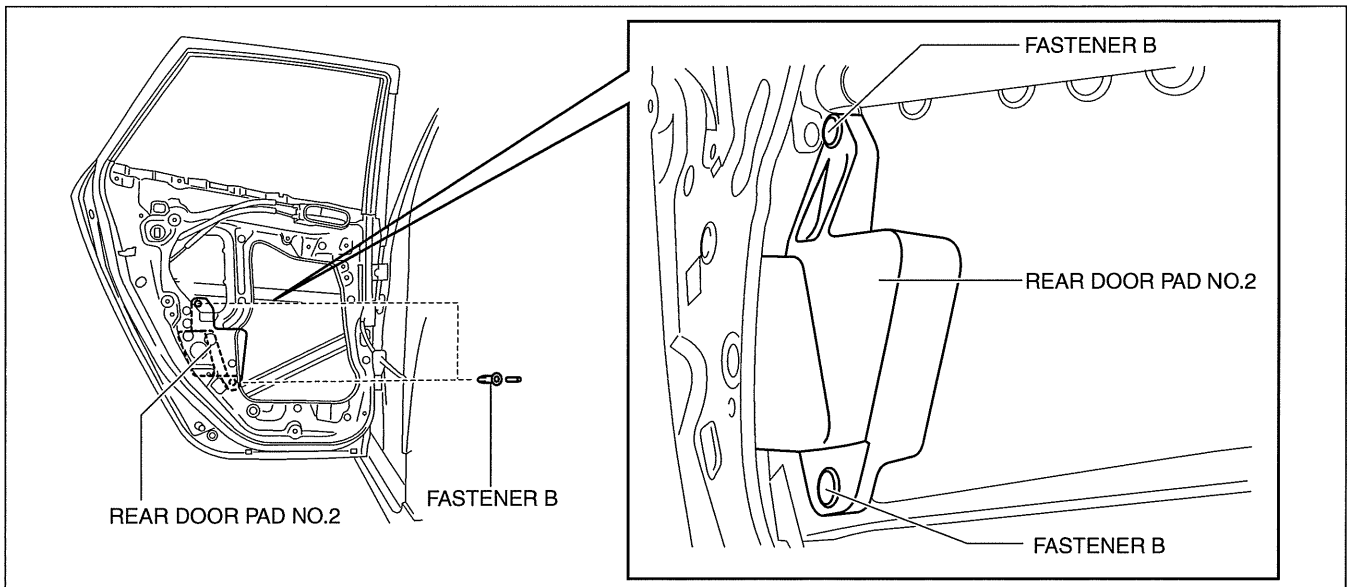
1. Fully open the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (3) Rear door glass (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)
 - (4) Rear door module panel (See 09-11-10 REAR DOOR MODULE PANEL REMOVAL/INSTALLATION.)
4. Remove the fasteners A.



09-11

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5. Remove the rear door pad No.1.
6. Remove the fasteners B.



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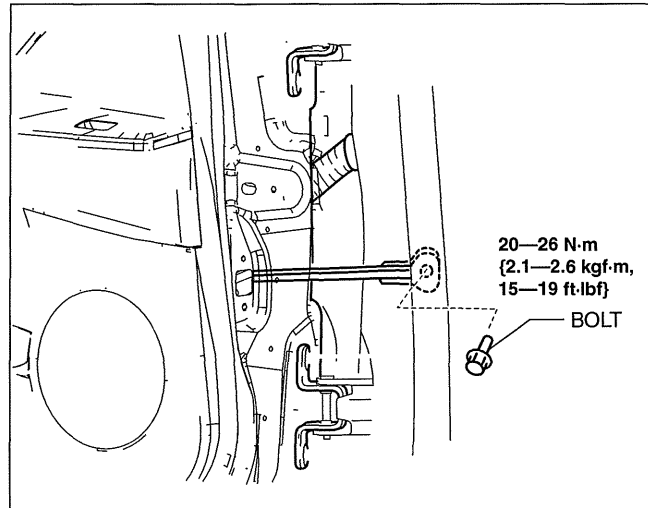
7. Remove the rear door pad No.2.
8. Install in the reverse order of removal.

DOORS AND LIFTGATE

REAR DOOR CHECKER REMOVAL/INSTALLATION

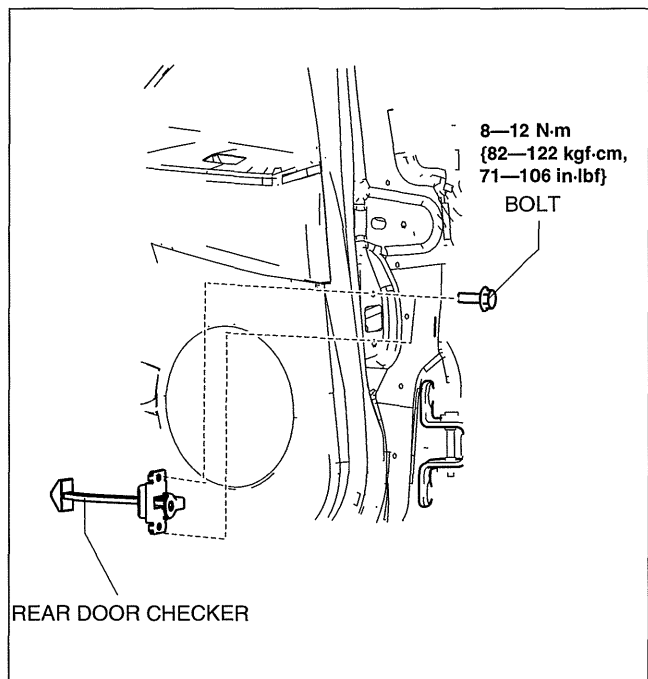
id091100520700

1. Fully close the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the rear door speaker. (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
5. Remove the bolt.



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6. Remove the bolt.
7. Pull out the rear door checker from the rear door speaker installation hole.
8. Install in the reverse order of removal.



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DOORS AND LIFTGATE

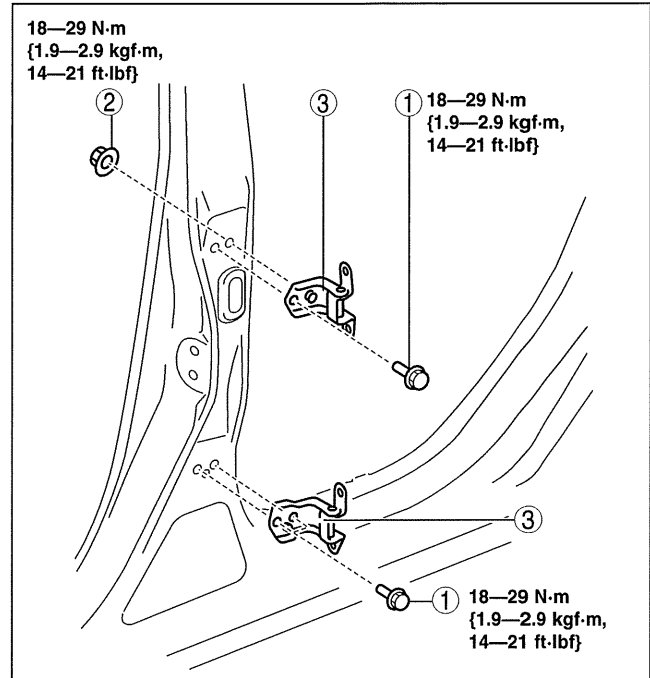
REAR DOOR HINGE REMOVAL/INSTALLATION

id091100520800

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear door (See 09-11-9 REAR DOOR REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Bolt
2	Nut
3	Rear door hinge

4. Install in the reverse order of removal.



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LIFTGATE REMOVAL/INSTALLATION

id091100521200

Warning

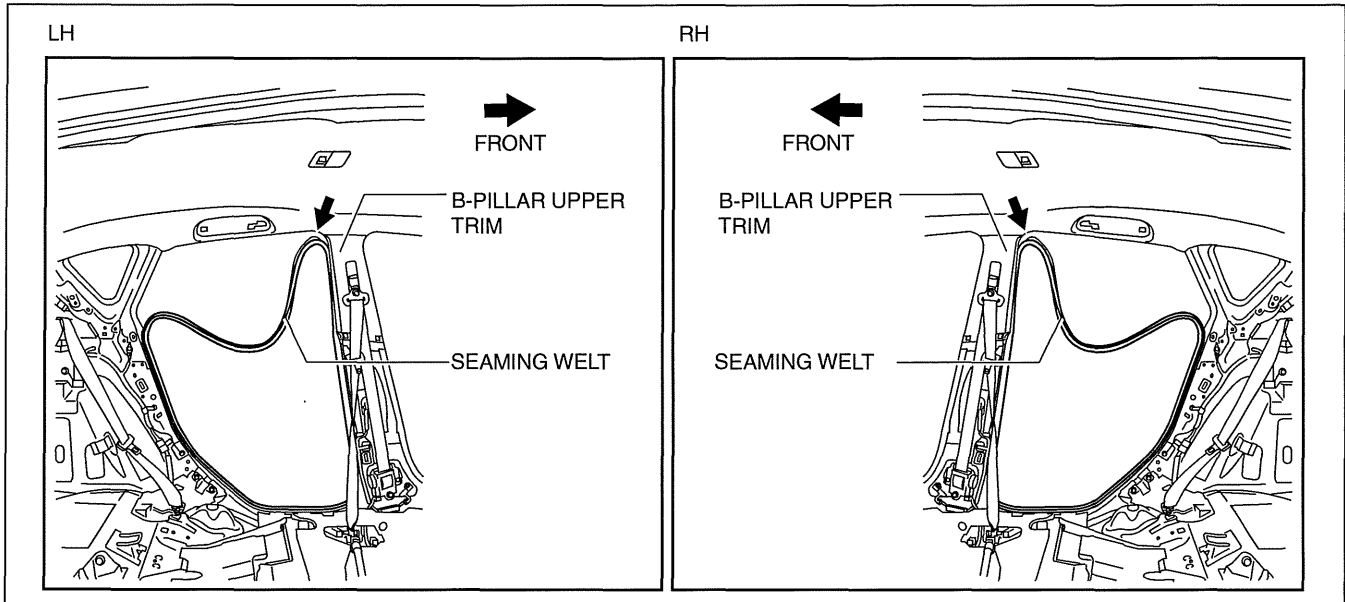
- When removing the stay damper, serious injury may occur if the stay damper is removed without supporting the liftgate. Always perform the procedure with at least another person.

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (3) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (4) Lower anchor installation bolts on the rear seat belt (See 08-11-6 REAR SEAT BELT REMOVAL/INSTALLATION.)
 - (5) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (7) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (8) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (9) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (10) Rear assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)

09-11

DOORS AND LIFTGATE

3. Peel back the seaming welt to the point indicated by the arrow in the figure.

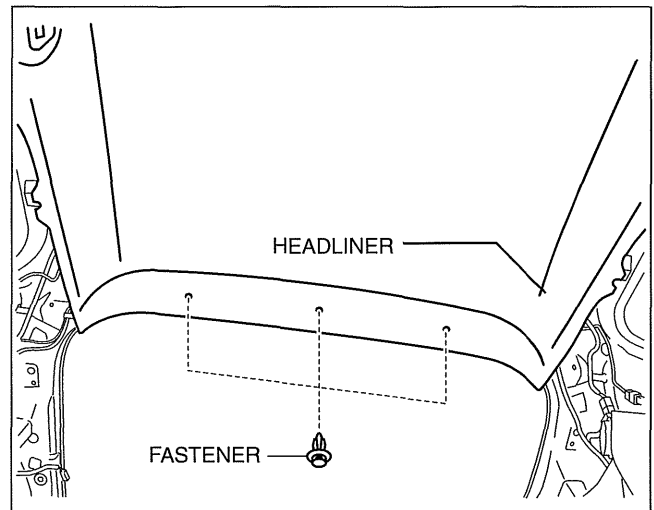


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4. Remove the fasteners.
5. Disconnect the connector while partially peeling back the headliner.

Note

- Be careful not to leave a fold-seam.

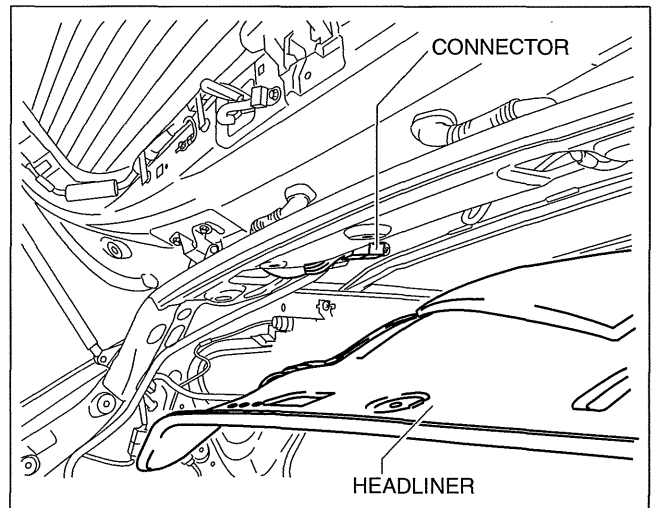


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6. Disconnect the rear washer hose while partially peeling back the headliner.

Note

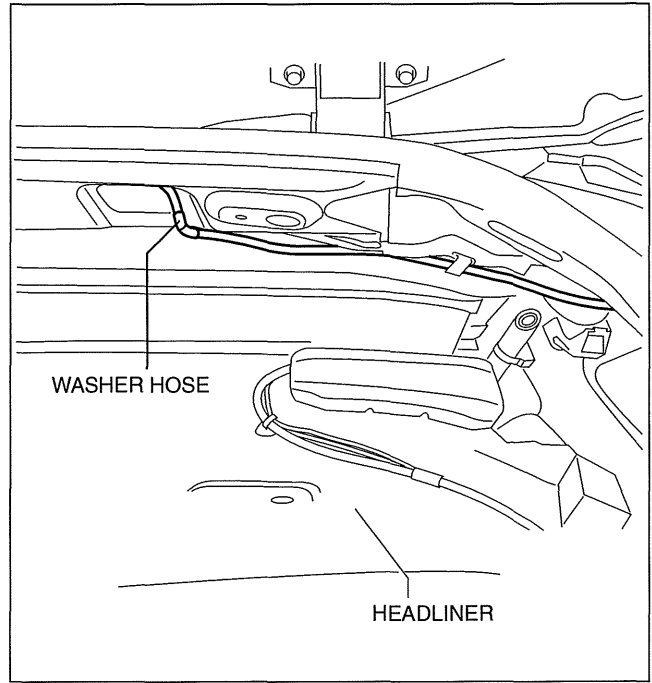
- Be careful not to leave a fold-seam.



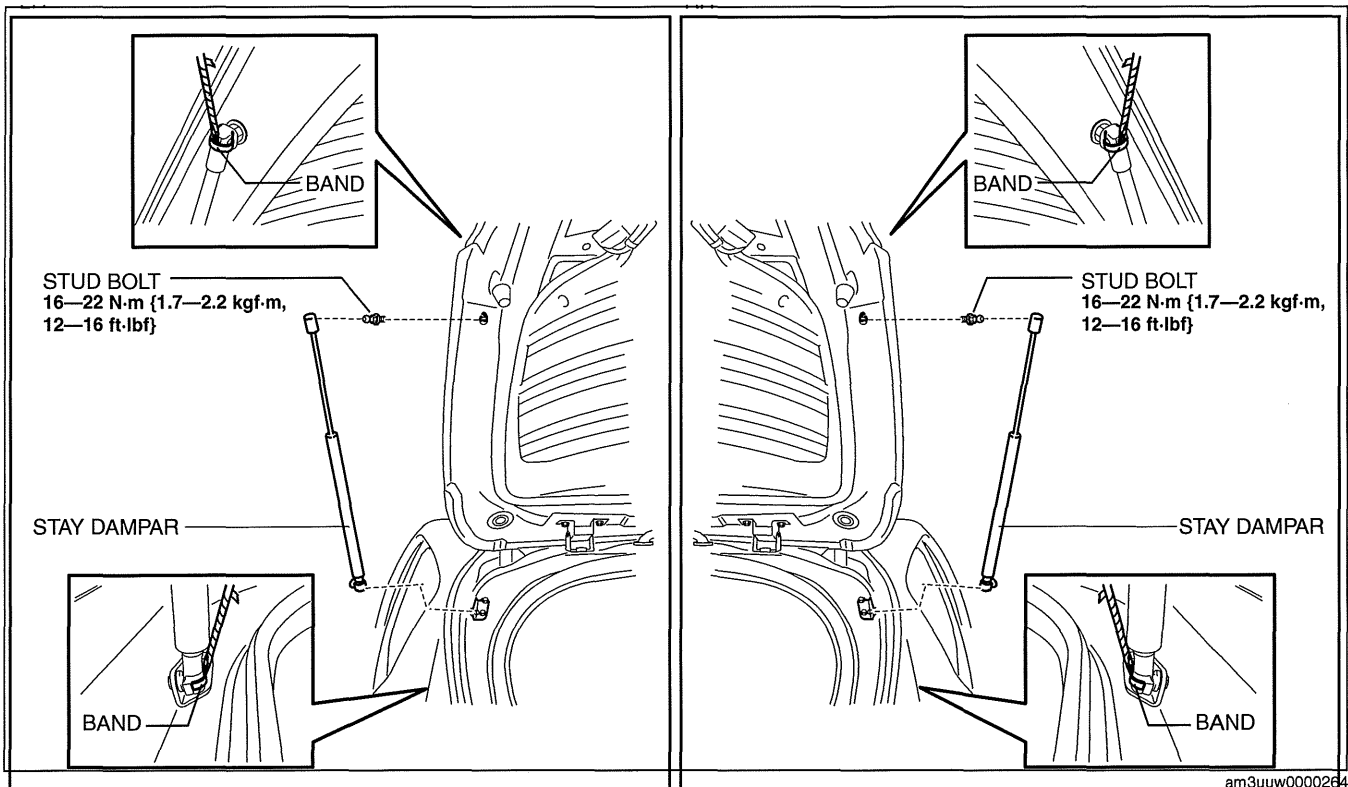
am3uuw0000264

DOORS AND LIFTGATE

7. Remove the stay damper band using a tape-wrapped flathead screwdriver.



am3uuw0000391



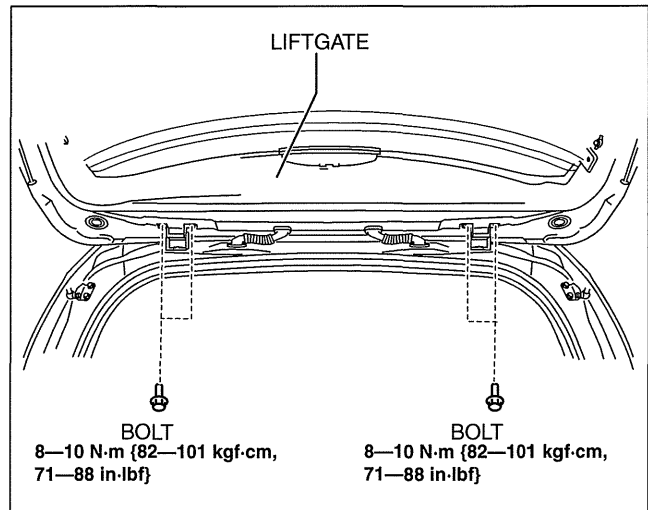
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8. Remove the stay damper.
9. Remove the stud bolts.

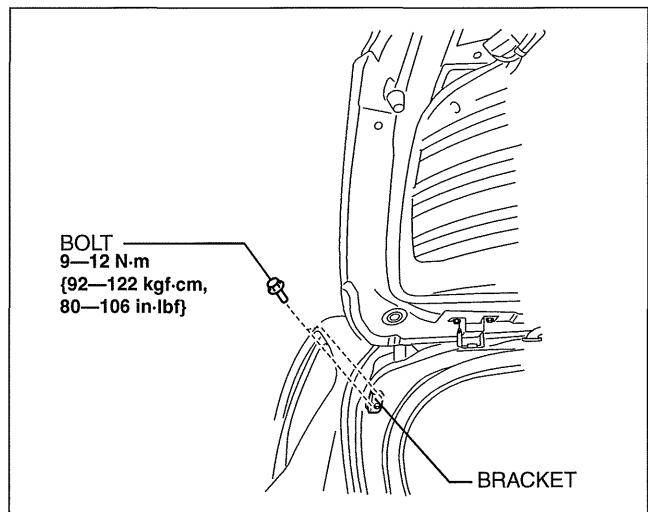
09-11

DOORS AND LIFTGATE

10. Remove the bolts.
11. Remove the liftgate.



12. Remove the bolts.
13. Remove the bracket.
14. Install in the reverse order of removal.
15. Adjust the liftgate. (See 09-11-20 LIFTGATE ADJUSTMENT.)



LIFTGATE HINGE REMOVAL/INSTALLATION

id091100521300

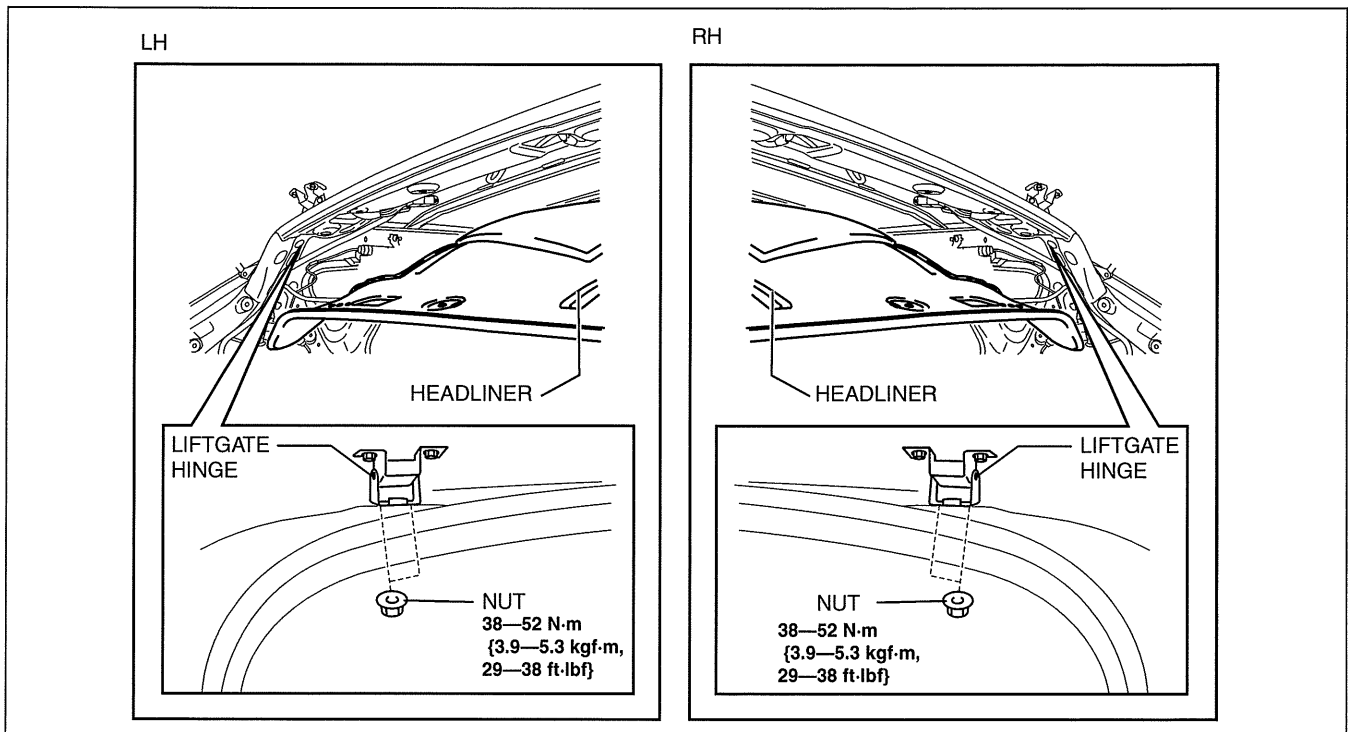
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (3) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (4) Lower anchor installation bolts on the rear seat belt (See 08-11-6 REAR SEAT BELT REMOVAL/INSTALLATION.)
 - (5) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (7) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (8) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (9) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (10) Rear assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (11) Liftgate (See 09-11-13 LIFTGATE REMOVAL/INSTALLATION.)

DOORS AND LIFTGATE

3. Remove the nut while partially peeling back the headliner.

Note

- Be careful not to leave a fold-seam.



am3uuw0000264

4. Remove the liftgate hinge.

5. Install in the reverse order of removal.

09-11

DOORS AND LIFTGATE

STAY DAMPER DISPOSAL

id091100521000

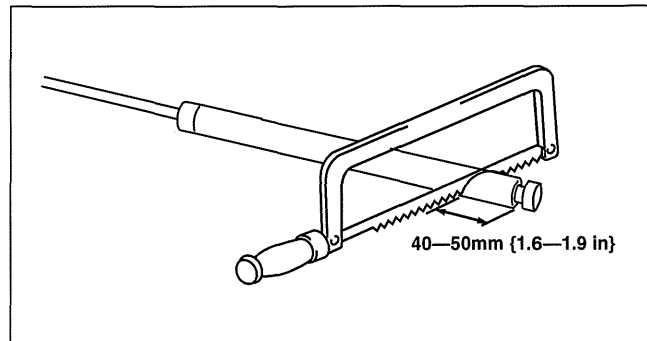
Note

- The stay damper contains colorless, odorless, nontoxic gas.

1. Wear protective eye wear.
2. Position the stay damper horizontally.
3. Drain gas and oil by cutting the position indicated in the figure to a **2—3 mm** {0.08—0.11 in} depth using a metal saw.

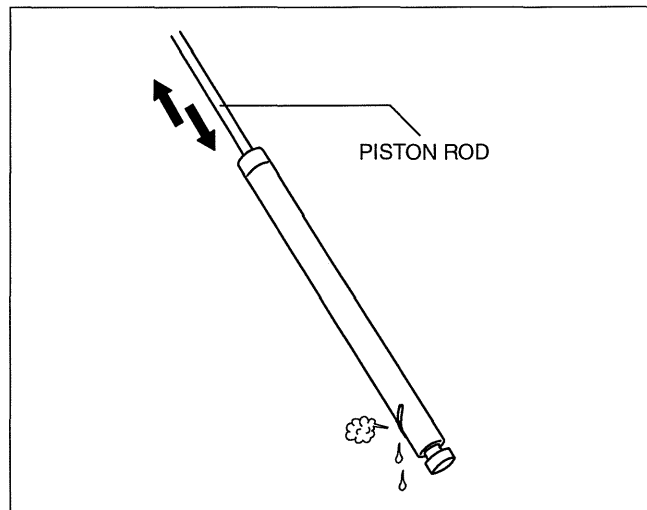
Caution

- **Be careful. The gas and oil may spray out with force.**



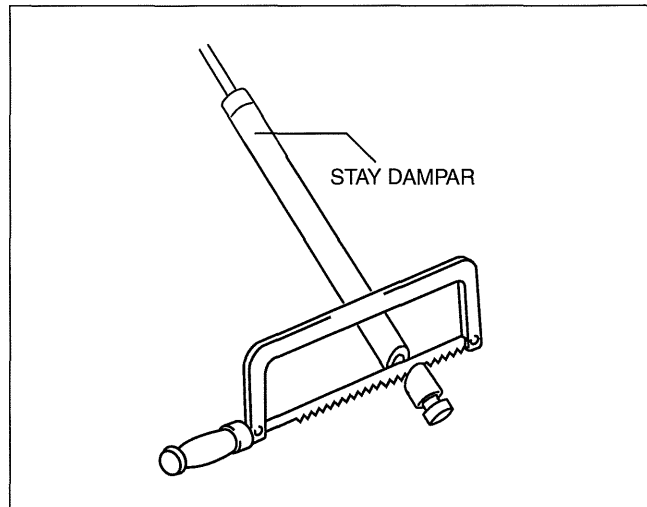
am2zzw0000043

4. Verify that the gas and oil is drained completely by pulling and pushing the piston rod several times with the cut position facing downward.



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5. Cut off the bottom of the stay damper.
6. Dispose of the stay damper.



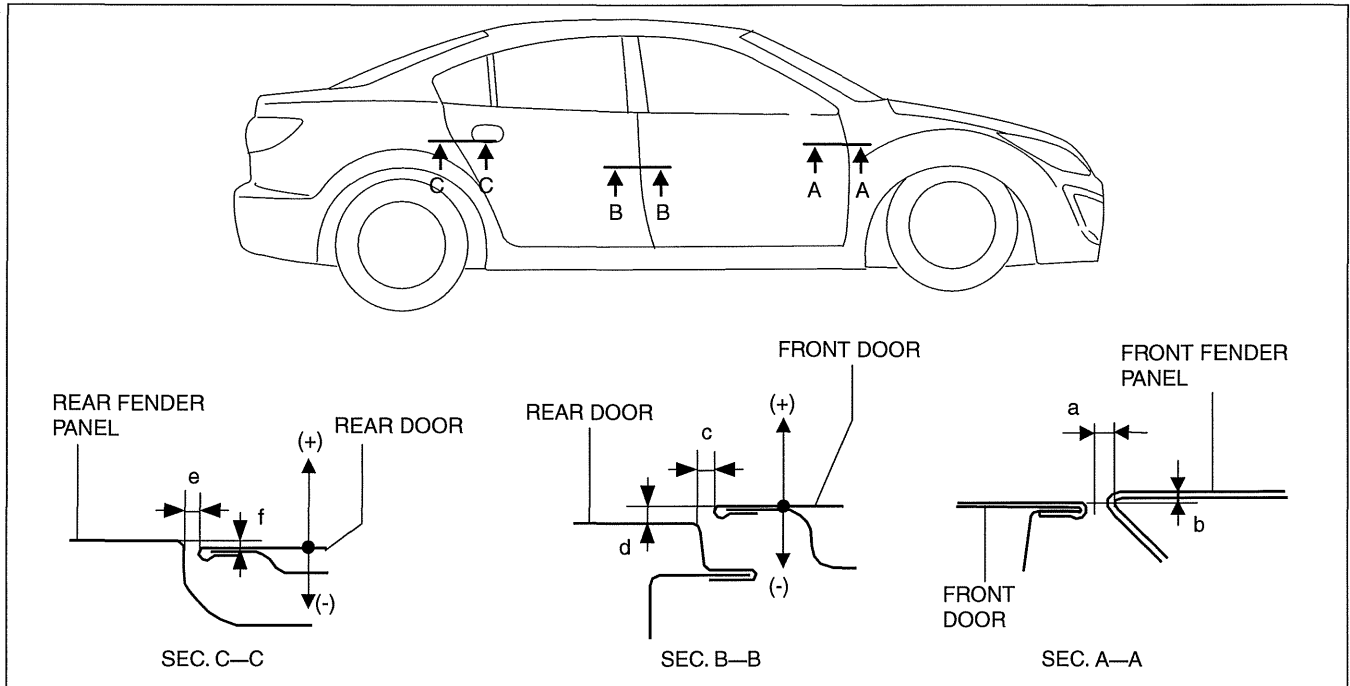
am2zzw0000043

DOORS AND LIFTGATE

DOOR ADJUSTMENT

id091100521100

1. Loosen the door hinge installation bolts.
2. Adjust the gap and height difference to the standard range by moving the door back and forth, left and right.



am3uuw0000253

09-11

Standard range

- a: 2.5—4.5 mm {-0.10—0.17 in}
- b: -1.0—1.0 mm {-0.039—0.039 in}
- c: 2.5—4.5 mm {-0.10—0.17 in}
- d: -1.0—1.0 mm {-0.039—0.039 in}
- e: 2.5—4.5 mm {-0.10—0.17 in}
- f: -1.0—1.0 mm {-0.039—0.039 in}

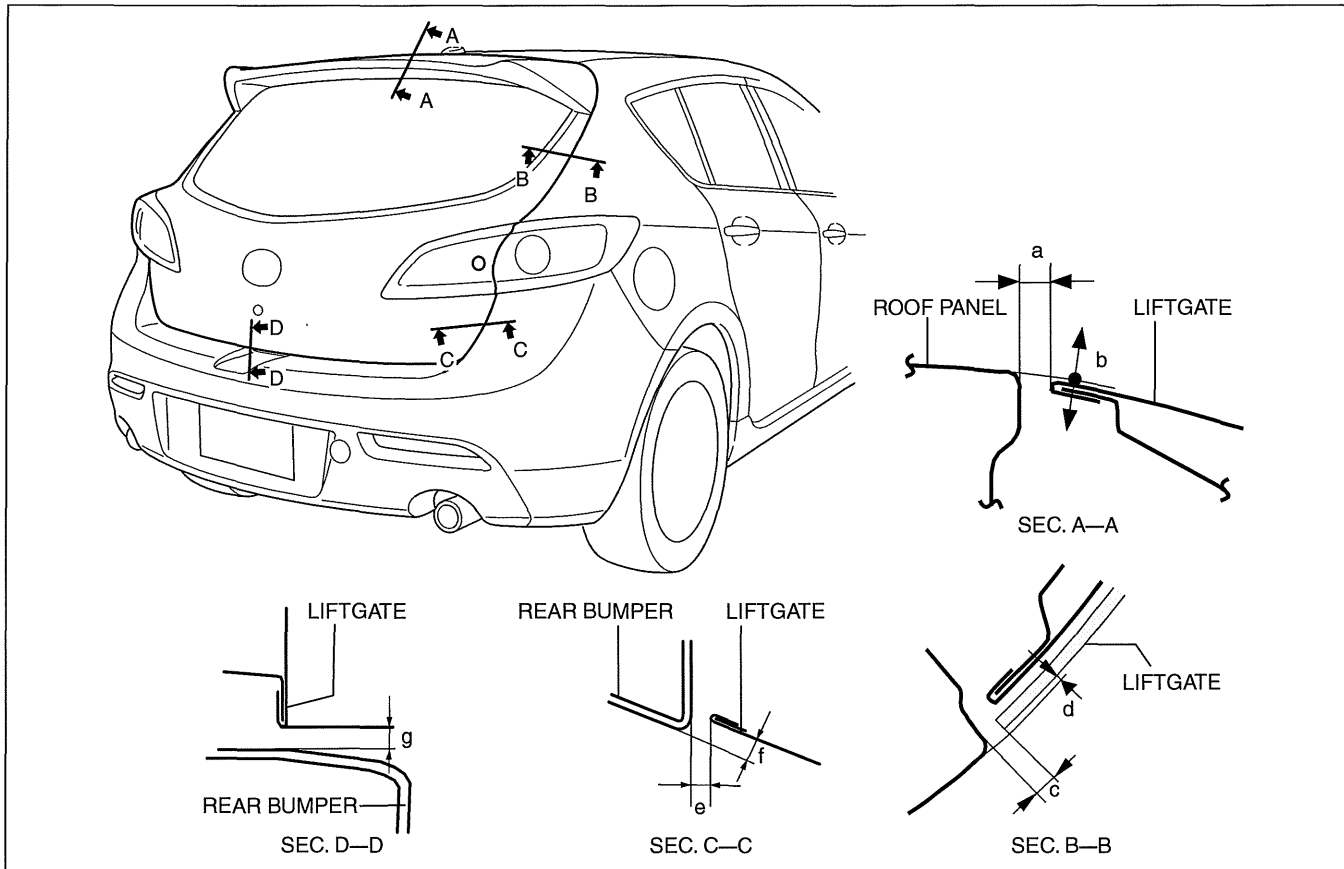
3. Tighten the bolts.
4. If the door does not open/close smoothly, adjust it by loosening the door lock striker installation screw.

DOORS AND LIFTGATE

LIFTGATE ADJUSTMENT

id091100521400

1. Measure the gap and height difference between the liftgate and the body.
2. Loosen the liftgate hinge installation bolts and adjust the gap by moving the liftgate.



am3uuw0000253

Standard clearance

- a: 5.0—7.0 mm {0.20—0.27 in}
- b: -2.0—0 mm {0.079—0 in}
- c: 3.0—6.0 mm {0.12—0.24 in}
- d: -1.4—1.6 mm {0.055—0.062 in}
- e: 2.5—6.5 mm {0.10—0.25 in}
- f: -2.8—1.2 mm {-0.11—0.04 in}
- g: 4.0—8.0 mm {0.16—0.31 in}

3. Tighten the bolts.

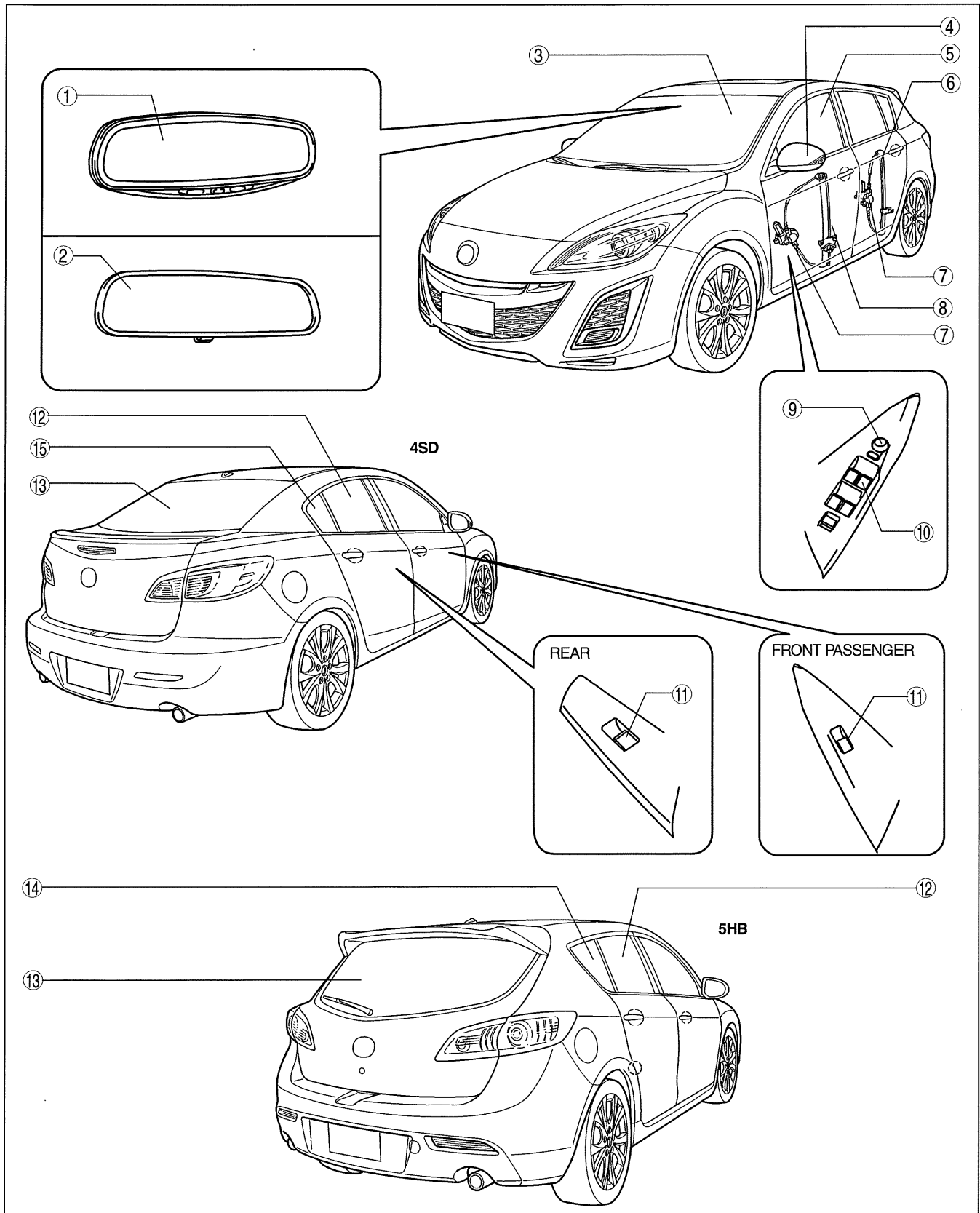
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GLASS/WINDOWS/MIRRORS

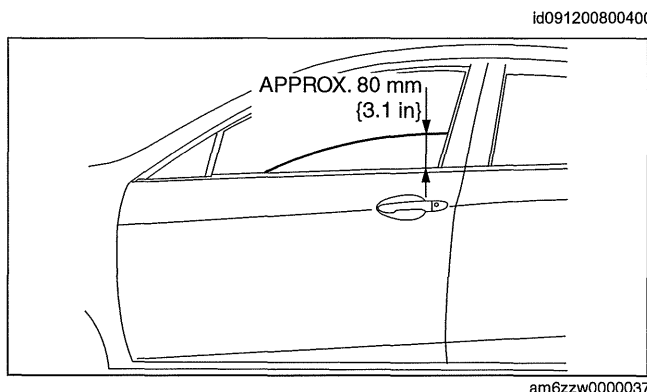
1	Auto-dimming mirror (See 09-12-44 AUTO-DIMMING MIRROR REMOVAL.) (See 09-12-46 AUTO-DIMMING MIRROR INSTALLATION.) (See 09-12-46 AUTO-DIMMING MIRROR INSPECTION.)
2	Rearview mirror (See 09-12-47 REARVIEW MIRROR REMOVAL.) (See 09-12-49 REARVIEW MIRROR INSTALLATION.) (See 09-12-49 BASE REMOVAL.) (See 09-12-50 BASE INSTALLATION.)
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9	Power outer mirror switch (See 09-12-40 POWER OUTER MIRROR SWITCH REMOVAL/INSTALLATION.) (See 09-12-40 POWER OUTER MIRROR SWITCH INSPECTION.)
10	Power window main switch (See 09-12-13 POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION.) (See 09-12-14 POWER WINDOW MAIN SWITCH INSPECTION.) (See 09-12-17 POWER WINDOW INITIALIZATION PROCEDURE.)
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15	Rear door quarter glass (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)

09-12

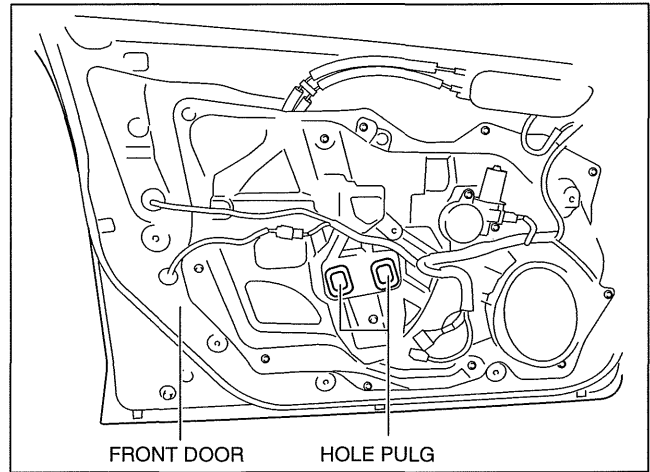
FRONT DOOR GLASS REMOVAL/INSTALLATION

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in}**.
2. Disconnect the negative battery cable.
3. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
4. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
5. Remove the front door speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)



GLASS/WINDOWS/MIRRORS

6. Remove the hole plug.

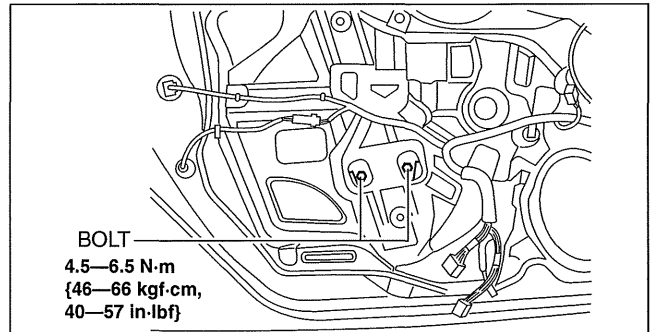


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7. Remove the bolts.

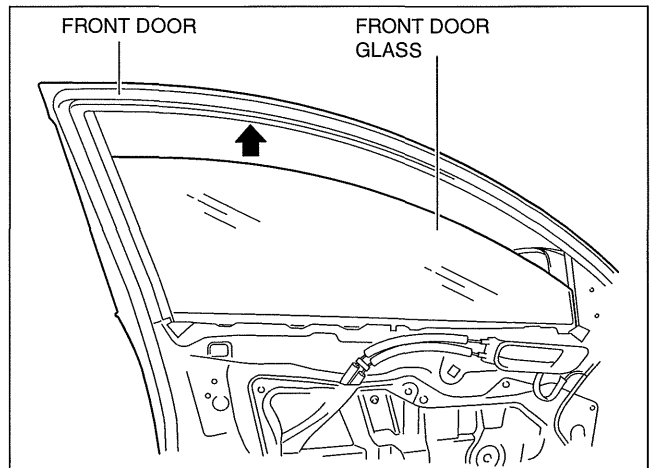
Caution

- If the bolts are removed without supporting the front door glass, the front door glass may fall off and be damaged. Remove the bolts while inserting your hand into the front door speaker installation hole to support the front door glass.

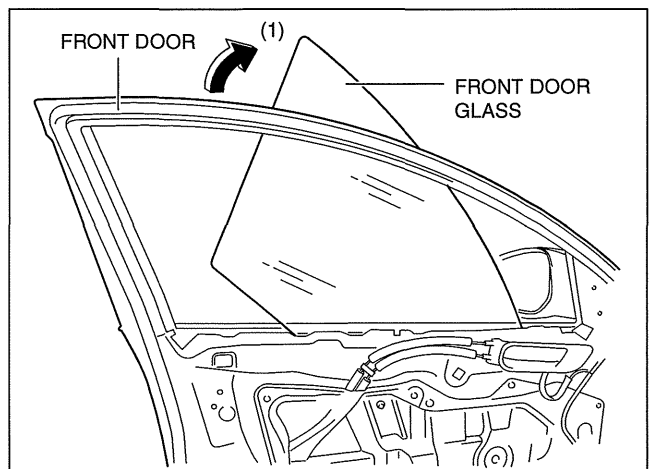


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8. Lift up the front door glass, tilt it in the direction of arrow (1) shown in the figure, then remove it in the direction of arrow (2).



am3uuw00002937



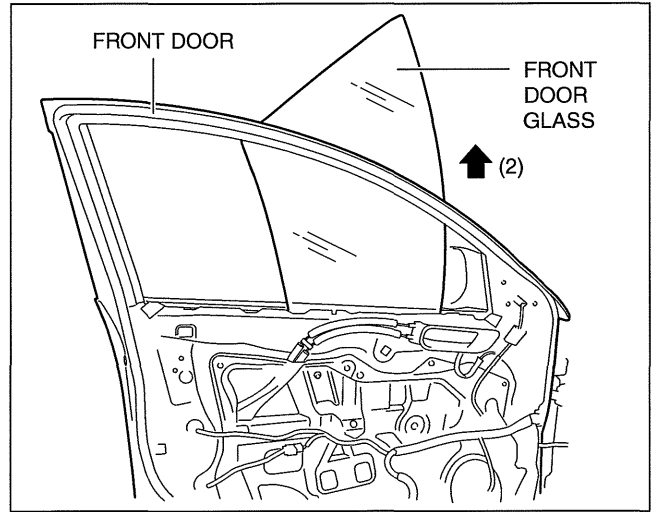
am3uuw00004988

GLASS/WINDOWS/MIRRORS

9. Install in the reverse order of removal.

Caution

- If the bolts are installed without supporting the front door glass, the front door glass may fall off and be damaged. When installing the front door glass, align the glass edge with the front door glass guide by hand through the speaker installation hole, and then install the bolts.

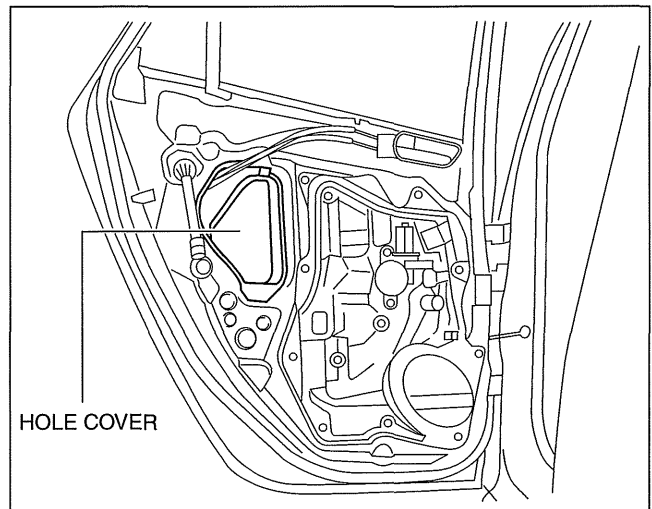


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REAR DOOR GLASS REMOVAL/INSTALLATION

id091200800500

1. Fully lower the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the rear door speaker. (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
5. Remove the rear power window motor. (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
6. Remove the hole cover.
7. Remove the rear door glass guide. (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)
8. Remove the rear door quarter glass. (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)

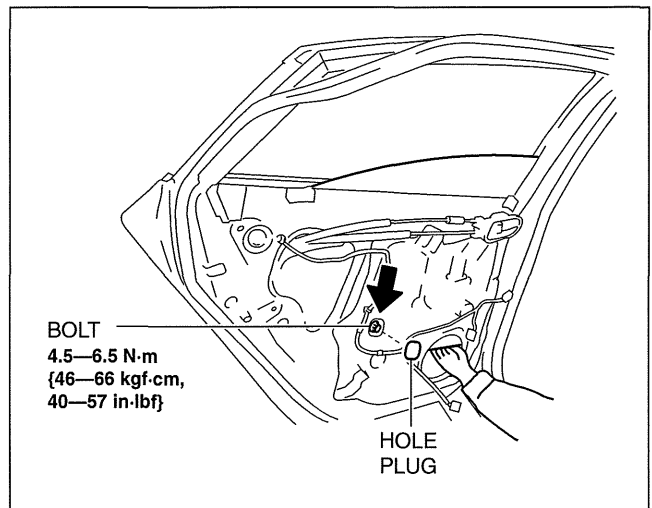


am3uuw000289

9. Remove the hole plug and bolt.

Caution

- If the bolts are removed without supporting the rear door glass, the rear door glass may fall off and be damaged. Remove the bolts while inserting your hand into the rear door speaker installation hole to support the rear door glass.



am3uuw0000513

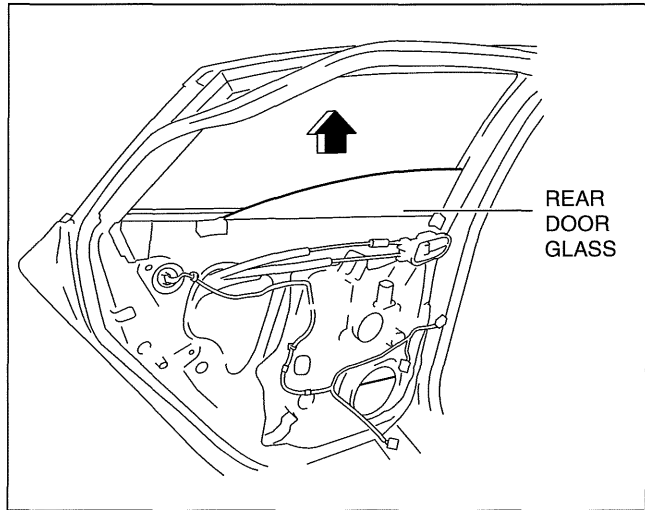
09-12

GLASS/WINDOWS/MIRRORS

10. Lift the rear door glass up and remove while tilting it.
11. Install in the reverse order of removal.

Caution

- If the bolts are installed without supporting the rear door glass, the rear door glass may fall off and be damaged. When installing the rear door glass, align the glass edge with the rear door glass guide by hand through the speaker installation hole, and then install the bolts.

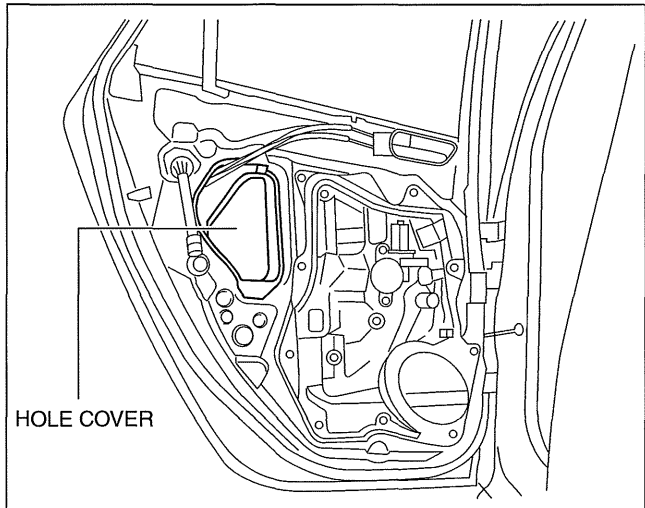


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REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION

id091200807200

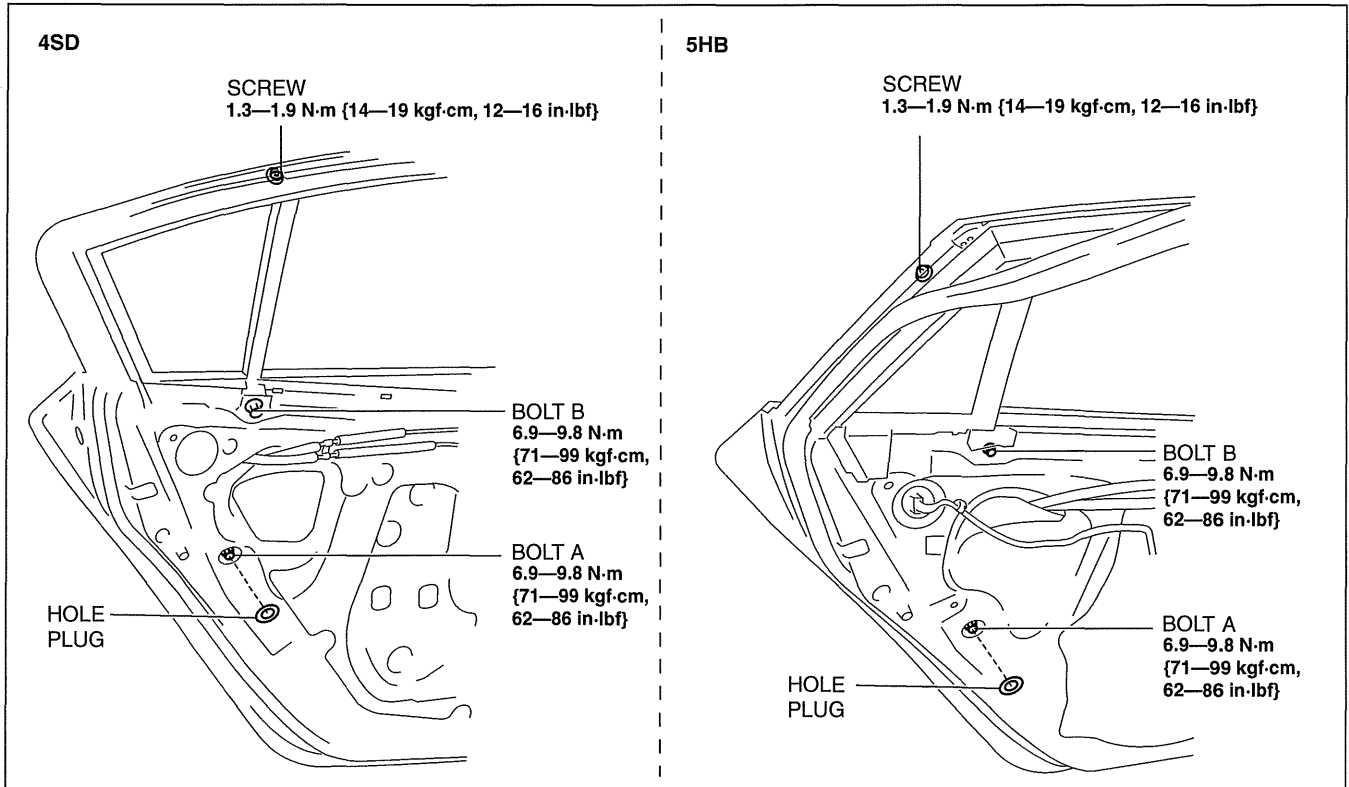
1. Fully lower the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the hole cover.



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GLASS/WINDOWS/MIRRORS

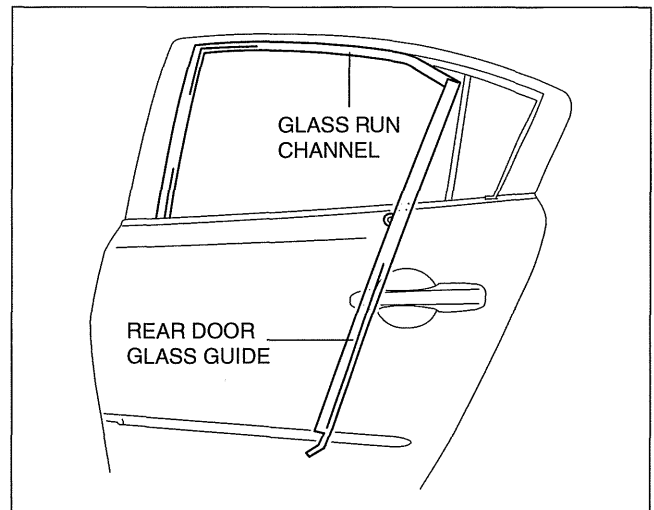
5. Remove the hole plug.



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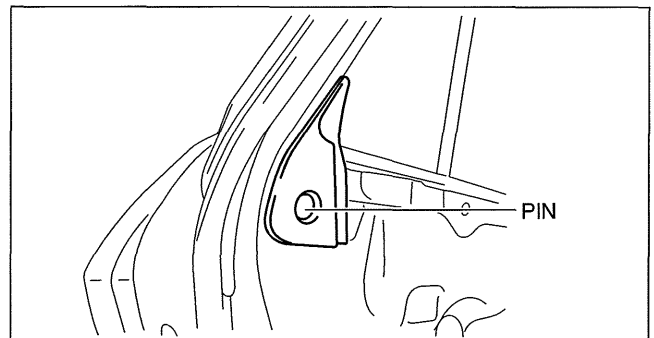
09-12

6. Remove the screw.
7. Remove the bolt A and B.
8. Remove the rear door glass guide.



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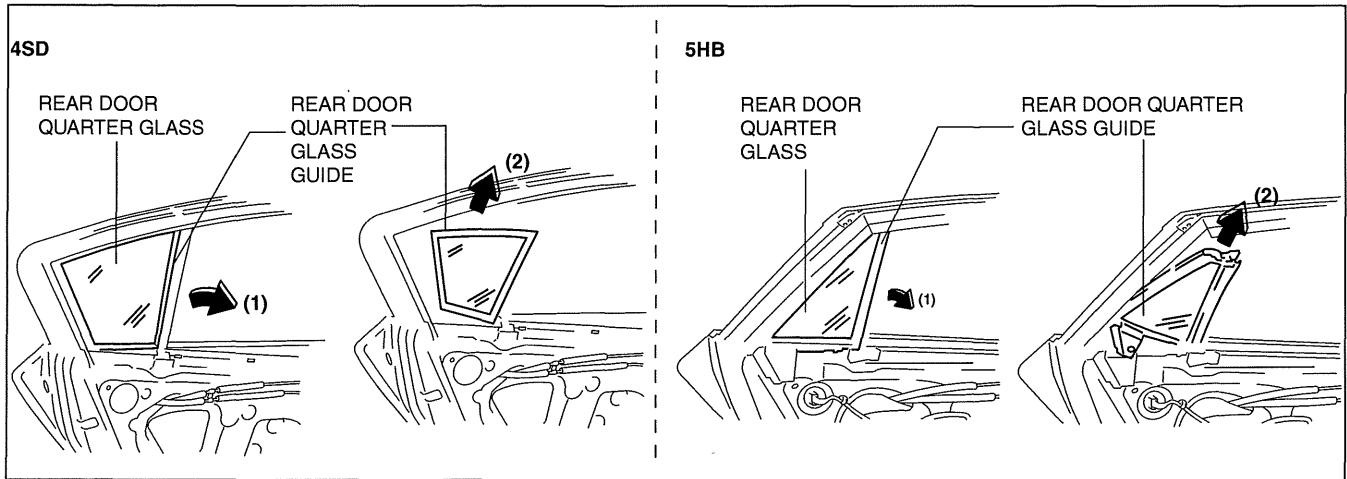
9. Remove the pin. (5HB)



am3uuw0000294

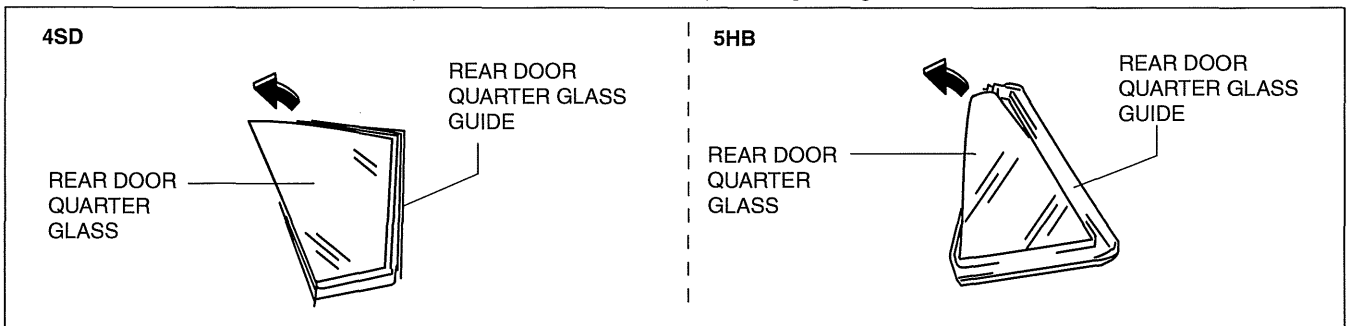
GLASS/WINDOWS/MIRRORS

10. Slide the rear door quarter glass in the direction of the arrow (1) shown in the figure.



11. Remove the rear door quarter glass and rear door quarter glass guide as a single unit in the direction of the arrow (2) shown in the figure.

12. Remove the rear door quarter glass from the rear door quarter glass guide.



13. Install in the reverse order of removal.

FRONT POWER WINDOW REGULATOR REMOVAL/INSTALLATION

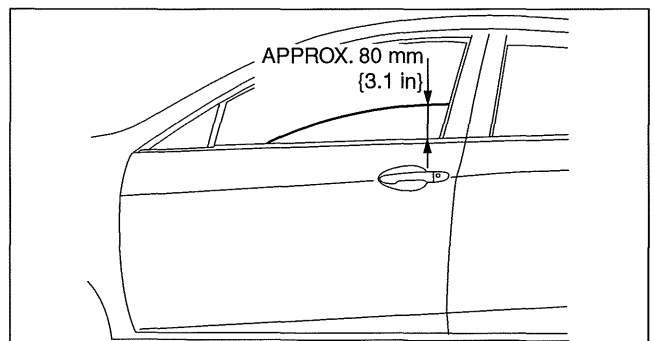
id091200800200

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**

2. Disconnect the negative battery cable.

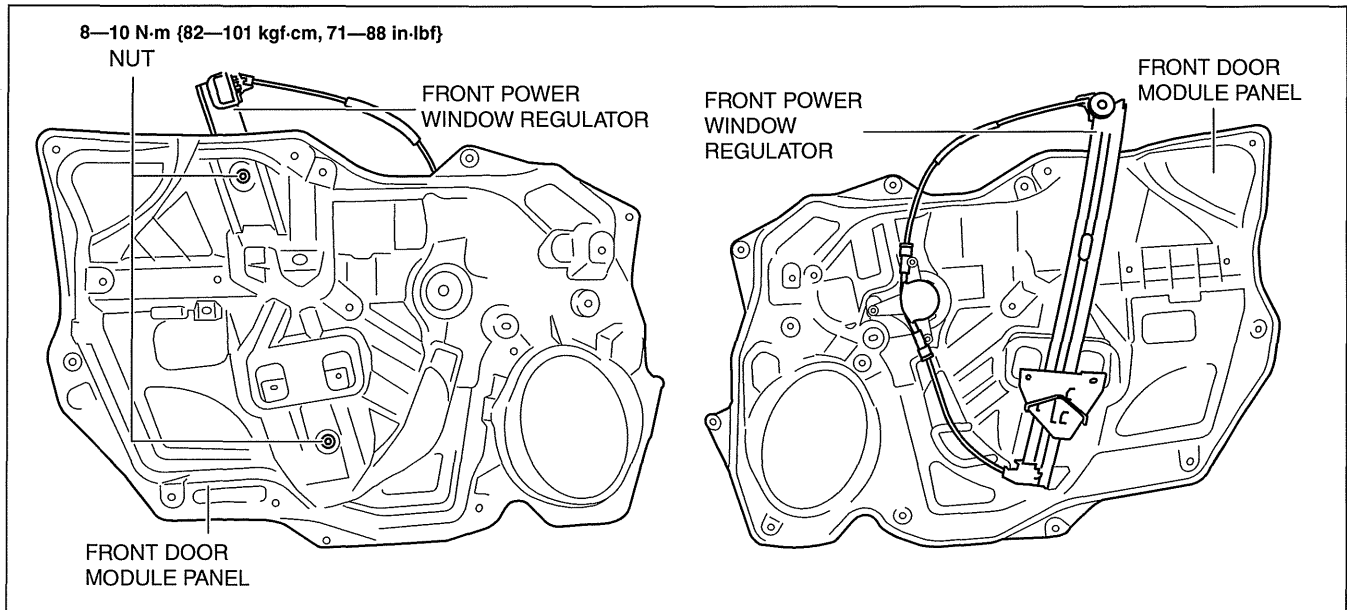
3. Remove the following parts:

- (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
- (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
- (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
- (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
- (5) Front power window motor (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)



GLASS/WINDOWS/MIRRORS

4. Remove the nuts.



am3uuw0000513

5. Install in the reverse order of removal.

Caution

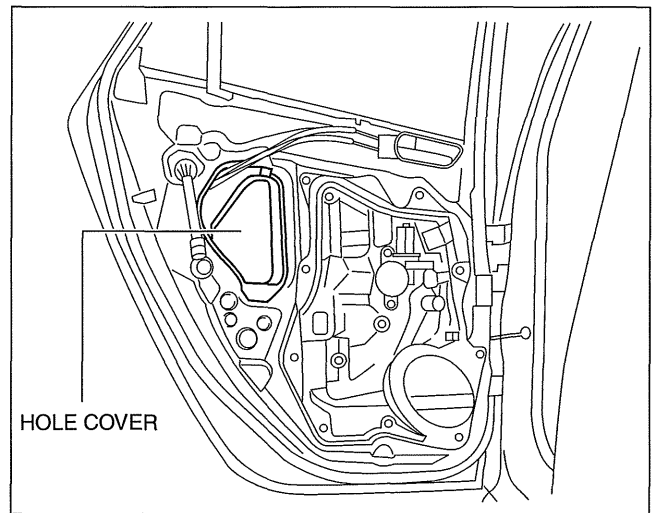
- When installing, do not allow the cable to come out from the drum housing.

09-12

REAR POWER WINDOW REGULATOR REMOVAL/INSTALLATION

id091200800300

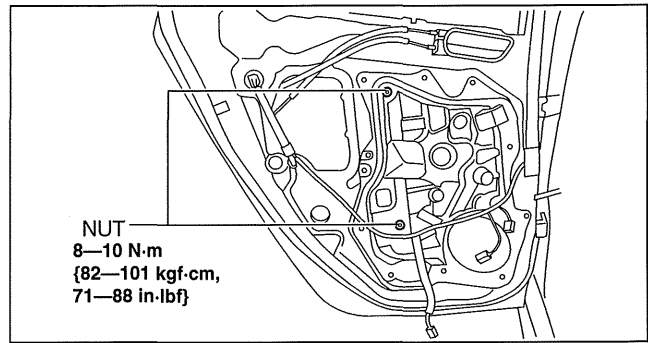
1. Fully lower the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the service hole cover.
5. Remove the rear door speaker. (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
6. Remove the glass guide. (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)
7. Remove the rear power window motor. (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
8. Remove the rear door glass. (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)



am3uuw0000289

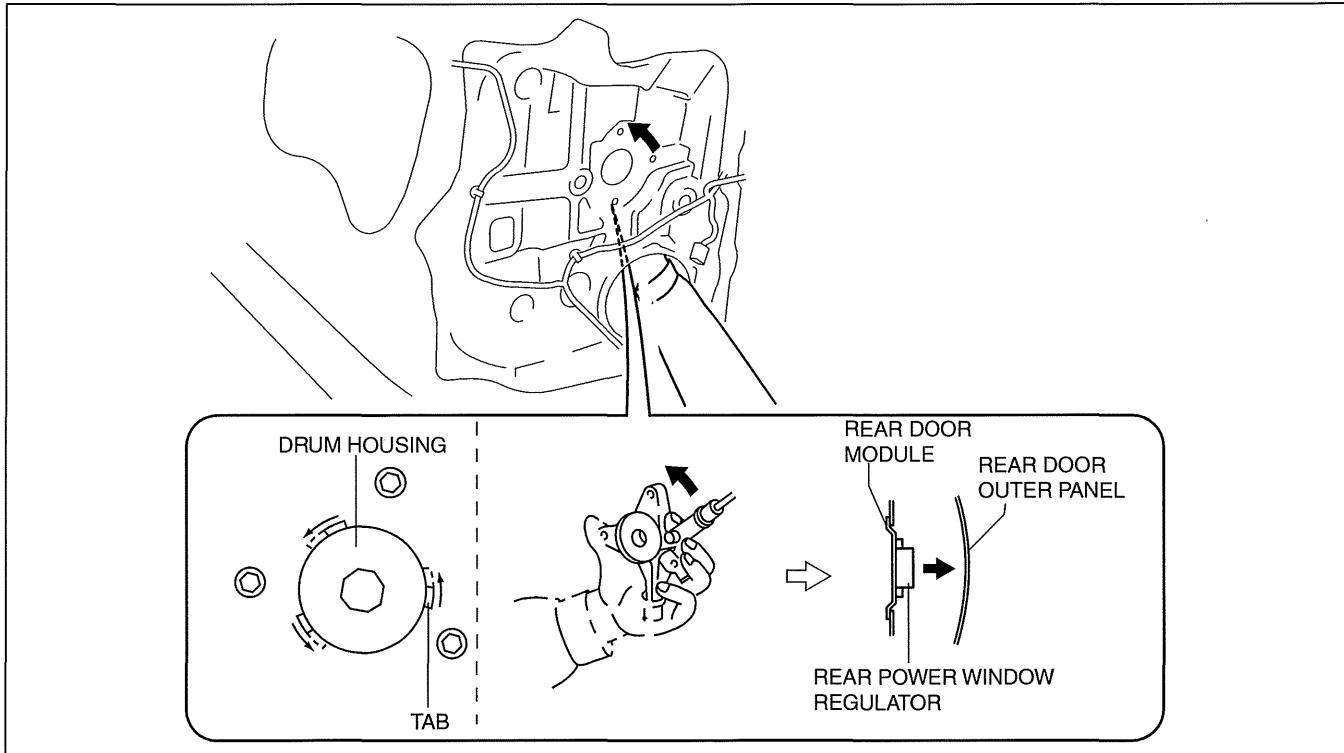
GLASS/WINDOWS/MIRRORS

9. Remove the nuts.



am3uuw0000513

10. Insert a hand through the speaker installation hole, rotate the drum housing in the direction shown in the figure to detach the tabs from the rear door module.

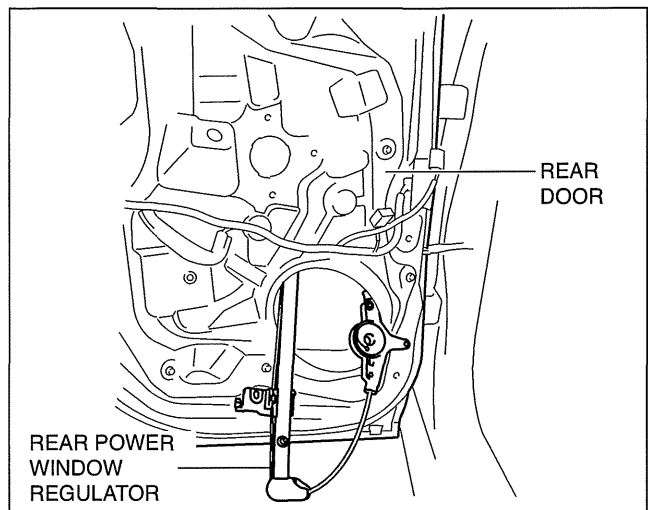


am3uuw0000513

11. Remove the rear power window regulator through the speaker installation hole.
12. Install in the reverse order of removal.

Caution

- Make sure the cable does not unspool from the drum housing when installing.



am3uuw0000294

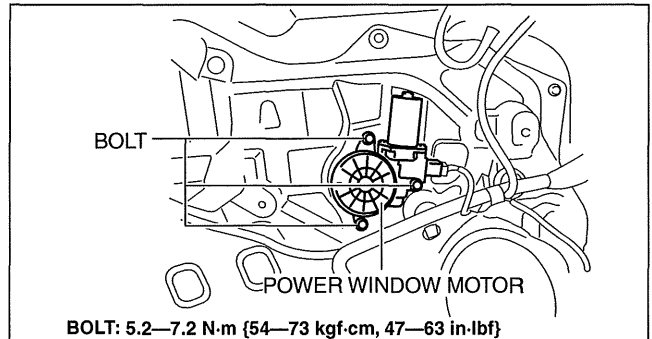
GLASS/WINDOWS/MIRRORS

POWER WINDOW MOTOR REMOVAL/INSTALLATION

id091200803700

Front Power Window Motor

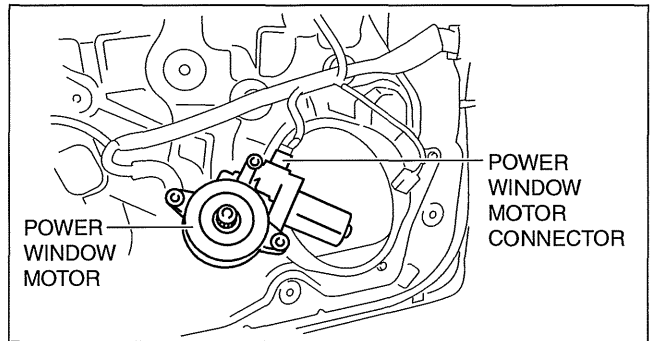
1. Fully lower the front door glass.
2. Disconnect the negative battery cable.
3. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
4. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
5. Remove the front door speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
6. Remove the bolts.



7. Disconnect the front power window motor connector.
8. Install in the reverse order of removal.

Note

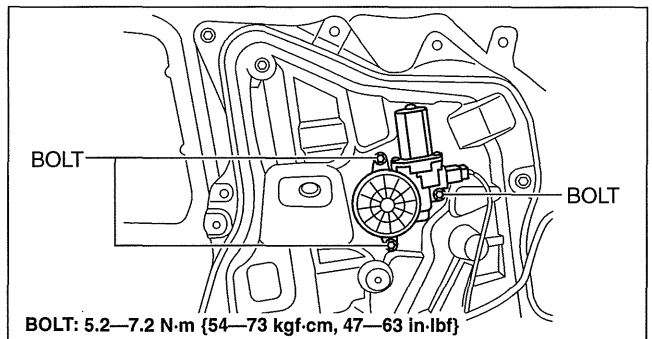
- When installing the front power window motor to the front power window regulator drum, the drum housing hooks may detach from the door module. If this happens, remove the front door speaker, insert your hand in the speaker installation hole, connect the drum housing hooks, and while supporting the drum housing, install the front power window motor to the drum.



09-12

Rear Power Window Motor

1. Fully lower the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the rear door speaker. (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
5. Remove the bolts.



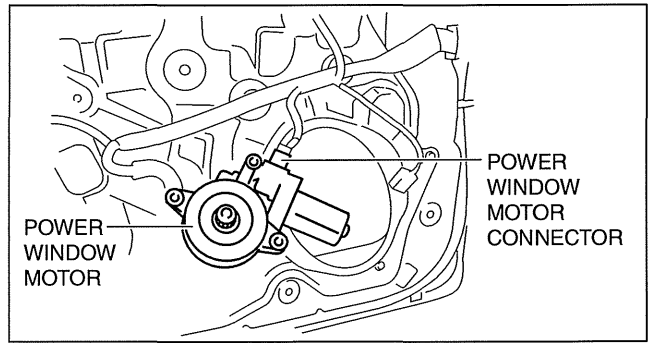
am3uuw0000513

GLASS/WINDOWS/MIRRORS

- Disconnect the front power window motor connector.
- Install in the reverse order of removal.

Note

- When installing the rear power window motor to the rear power window regulator drum, the drum housing hooks may detach from the door module. If this happens, remove the door speaker, insert your hand in the speaker installation hole, connect the drum housing hooks, and while supporting the drum housing, install the rear power window motor to the drum.



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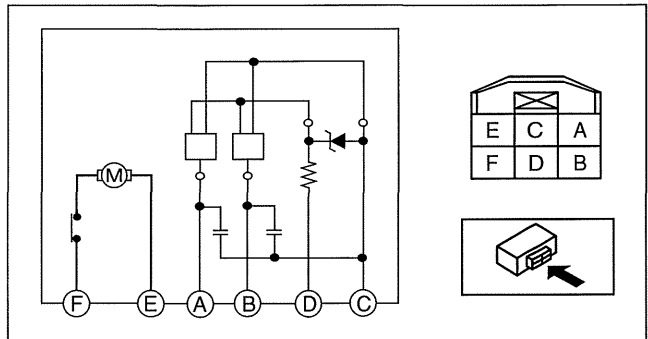
POWER WINDOW MOTOR INSPECTION

id091200417000

Front Driver Side

- Disconnect the negative battery cable.
- Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
- Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
- Disconnect the power window motor connector.
- Apply battery positive voltage and connect the ground to power window motor terminals E and F, and then inspect the power window motor operation.
 - If the power window motor does not operate as indicated in the table, replace the power window motor.

Operation	Terminal	
	E	F
Open	Ground	B+
Close	B+	Ground



adejiw00002583

- Connect the battery positive voltage to power window motor terminal D and connect terminal C to ground.
- Operate the power window motor and measure the voltage at terminals A and B.
 - If there is any malfunction, replace the power window motor.

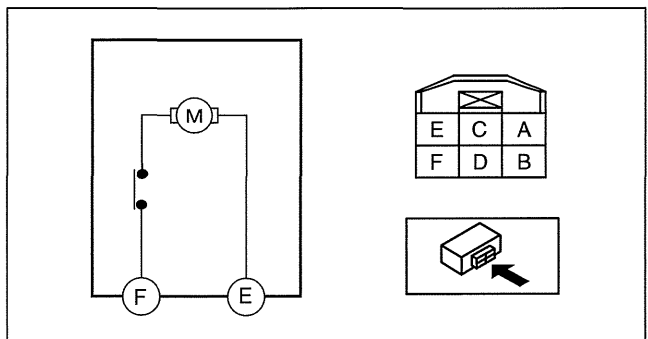
Voltage

Pulse: max. 5 V/min. 0 V

Front Passenger Side

- Disconnect the negative battery cable.
- Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
- Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
- Disconnect the power window motor connector.
- Apply battery positive voltage and connect the ground to power window motor terminals E and F, and then inspect the power window motor operation.
 - If the power window motor does not operate as indicated in the table, replace the power window motor.

Operation	Terminal	
	E	F
Open	Ground	B+
Close	B+	Ground



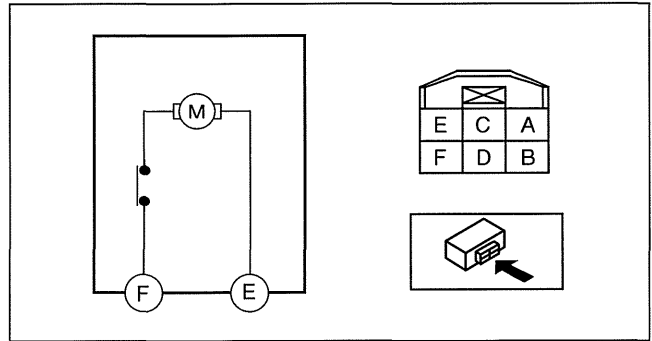
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GLASS/WINDOWS/MIRRORS

Rear

1. Disconnect the negative battery cable.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Disconnect the power window motor connector.
4. Apply battery positive voltage and connect the ground to power window motor terminals E and F, and then inspect the power window motor operation.
 - If the power window motor does not operate as indicated in the table, replace the power window motor.

Operation	Terminal	
	E	F
Open	Ground	B+
Close	B+	Ground



am3uuw0000513

POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION

id091200801900

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (driver's side) (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (driver's side) (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the power window main switch. (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
5. Install in the reverse order of removal.

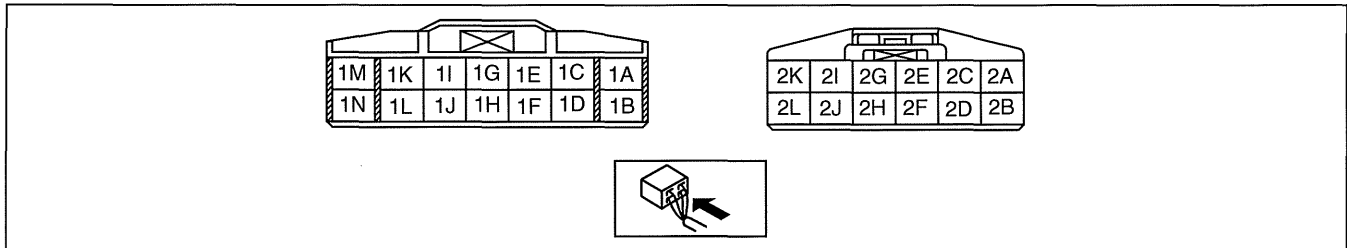
GLASS/WINDOWS/MIRRORS

POWER WINDOW MAIN SWITCH INSPECTION

id091200802000

1. Switch the ignition to ON.
2. Verify that the door glass (driver's side) can be operated for **approx. 43 s** after the ignition is switched off.
 - If the door glass (driver's side) cannot be operated for **approx. 43 s** after the ignition is switched off, or if the door glass (driver's side) can still be operated after **approx. 43 s**, replace the power window main switch.
3. Disconnect the negative battery cable.
4. Remove the inner garnish. (driver's side) (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
5. Remove the front door trim. (driver's side) (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
6. Remove the main switch panel. (driver's side) (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
7. Connect the power window main switch connector.
8. Connect the negative battery cable.
9. Measure the voltage at each terminal.
 - If the voltage is not as specified in the terminal voltage table, inspect the parts under Inspection item (s) and related wiring harnesses.
 - If the system does not work normally even though the inspection items or related wiring harnesses do not have any malfunction, replace the power window main switch.

Terminal Voltage Table (Reference)



am3uuw0000389

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
1A	Sensor ground	Power window motor (driver's side)	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Power window motor (driver's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) • Related wiring harness
1B	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness
1C	Rear right side window close signal	Power window motor (rear right side)	Door glass (rear right side) closing	B+	<ul style="list-style-type: none"> • Power window motor (rear right side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) • Related wiring harness
			Other	1.0 or less	
1D	Pulse 1	Power window motor (driver's side)	Door glass (driver's side) operating	5 or less	<ul style="list-style-type: none"> • Power window motor (driver's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) • Related wiring harness
1E	Rear right side window open signal	Power window motor (rear right side)	Door glass (rear right side) opening	B+	<ul style="list-style-type: none"> • Power window motor (rear right side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) • Related wiring harness
			Other	1.0 or less	
1F	Sensor power supply	Power window motor (driver's side)	Switch the ignition to ON	5	<ul style="list-style-type: none"> • Power window motor (driver's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) • Related wiring harness
			Switch the ignition to Off	1.0 or less	

GLASS/WINDOWS/MIRRORS

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
1G	Rear left side window open signal	Power window motor (rear left side)	Door glass (rear left side) opening	B+	<ul style="list-style-type: none"> Power window motor (rear left side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
			Other	1.0 or less	
1H	Pulse 2	Power window motor (driver's side)	Door glass (driver's side) operating	5 or less	<ul style="list-style-type: none"> Power window motor (driver's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
1I	Rear left side window close signal	Power window motor (rear left side)	Door glass (rear left side) closing	B+	<ul style="list-style-type: none"> Power window motor (rear left side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
			Other	1.0 or less	
1J	Driver's side window close signal	Power window motor (driver's side)	Door glass (driver's side) closing	B+	<ul style="list-style-type: none"> Power window motor (driver's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
			Other	1.0 or less	
1K	Door open/close signal	BCM	Any door is open	1.0 or less	<ul style="list-style-type: none"> BCM Related wiring harness
			All door is close	B+	
1L	Driver's side window open signal	Power window motor (driver's side)	Door glass (driver's side) opening	B+	<ul style="list-style-type: none"> Power window motor (driver's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
			Other	1.0 or less	
1M	IG1	<ul style="list-style-type: none"> Ignition switch Power window relay P.WIND 30 A fuse 	Switch the ignition to ON	B+	<ul style="list-style-type: none"> Ignition switch Power window relay P.WIND 30 A fuse Related wiring harness
			Switch the ignition to Off	1.0 or less	
1N	Power supply	P.WIND 25 A fuse	Under any condition	B+	<ul style="list-style-type: none"> P.WIND 25 A fuse Related wiring harness
2A	Power outer mirror (RH) up/down/left/right signal	Power outer mirror (RH)	Inspect the power outer mirror switch. (See 09-12-40 POWER OUTER MIRROR SWITCH INSPECTION.)		
2B	Power outer mirror (LH) left/right signal	Power outer mirror (LH)	Inspect the power outer mirror switch. (See 09-12-40 POWER OUTER MIRROR SWITCH INSPECTION.)		
2C	<ul style="list-style-type: none"> Power outer mirror (LH) up/down signal Power outer mirror (RH) up/down signal 	<ul style="list-style-type: none"> Power outer mirror (LH) Power outer mirror (RH) 	Inspect the power outer mirror switch. (See 09-12-40 POWER OUTER MIRROR SWITCH INSPECTION.)		
2D	Power outer mirror (LH) up/down/left/right signal	Power outer mirror (LH)	Inspect the power outer mirror switch. (See 09-12-40 POWER OUTER MIRROR SWITCH INSPECTION.)		
2E	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
2F	ACC	<ul style="list-style-type: none"> Ignition switch ACC relay MIRROR 10 A fuse 	Switch the ignition to ACC	B+	<ul style="list-style-type: none"> Ignition switch ACC relay MIRROR 10 A fuse Related wiring harness
			Switch the ignition to Off	1.0 or less	

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GLASS/WINDOWS/MIRRORS

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
2G	—	—	—	—	—
2H	Power outer mirror (RH) left/right signal	Power outer mirror (RH)	Inspect the power outer mirror switch. (See 09-12-40 POWER OUTER MIRROR SWITCH INSPECTION.)		
2I	—	—	—	—	—
2J	—	—	—	—	—
2K	Passenger's side window open signal	Power window motor (passenger's side)	Door glass (passenger's side) opening	B+	<ul style="list-style-type: none"> Power window motor (passenger's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
			Other	1.0 or less	
2L	Passenger's side window close signal	Power window motor (passenger's side)	Door glass (passenger's side) closing	B+	<ul style="list-style-type: none"> Power window motor (passenger's side) (See 09-12-12 POWER WINDOW MOTOR INSPECTION.) Related wiring harness
			Other	1.0 or less	

POWER WINDOW SUBSWITCH REMOVAL/INSTALLATION

id091200419100

Passenger's Side

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the power window subswitch. (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
5. Install in the reverse order of removal.

Rear

1. Disconnect the negative battery cable.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Remove the power window subswitch. (See 09-17-71 REAR DOOR TRIM DISASSEMBLY/ASSEMBLY.)
4. Install in the reverse order of removal.

POWER WINDOW SUBSWITCH INSPECTION

id091200419200

Passenger's Side

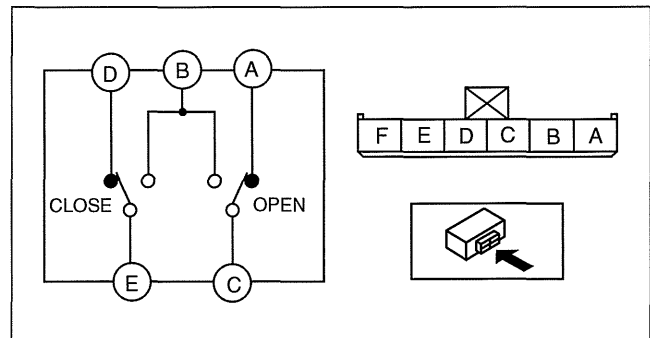
1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the power window subswitch. (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
5. Verify that the continuity is as indicated in the table using a tester.

- If not as indicated in the table, replace the power window subswitch.

○—○: Continuity

Switch position	Terminal				
	A	B	C	D	E
CLOSE	○—○	○—○			○—○
OFF	○—○		○—○	○—○	○—○
OPEN		○—○		○—○	○—○

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GLASS/WINDOWS/MIRRORS

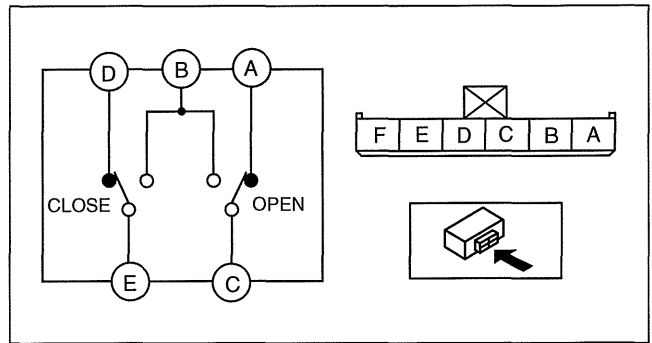
Rear

1. Disconnect the negative battery cable.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Remove the power window subswitch. (See 09-17-71 REAR DOOR TRIM DISASSEMBLY/ASSEMBLY.)
4. Verify that the continuity is as indicated in the table using a tester.
 - If not as indicated in the table, replace the power window subswitch.

○—○ : Continuity

Switch position	Terminal				
	A	B	C	D	E
CLOSE	○	○	○		○
OFF	○		○	○	○
OPEN		○	○	○	○

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POWER WINDOW INITIALIZATION PROCEDURE

id091200413800

Note

- If the following operations have been performed, initial setting is reset, and auto up/down and two-step down operation are disabled. Therefore, performing initial setting is necessary.
 - Negative battery cable is disconnected.
 - Power window main switch connector is disconnected.
 - Power window system power supply fuse is removed.

09-12

1. Turn the ignition switch to the ON position.
2. Press the driver's seat switch to fully open the door glass.
3. Pull up the driver's seat switch to the manual-up position to fully close the door glass and keep holding the switch up at the position for **approx. 2 s**.

WINDSHIELD REMOVAL

id091200417800

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (3) Rain sensor (Vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
 - (4) Auto-dimming mirror (Vehicles with auto-dimming mirror) (See 09-12-44 AUTO-DIMMING MIRROR REMOVAL.)
 - (5) Rear view mirror (Vehicles without auto-dimming mirror) (See 09-12-47 REARVIEW MIRROR REMOVAL.)
 - (6) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (7) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (8) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
3. Set the headliner out of the way.
4. Apply protective tape along the edge of the body.

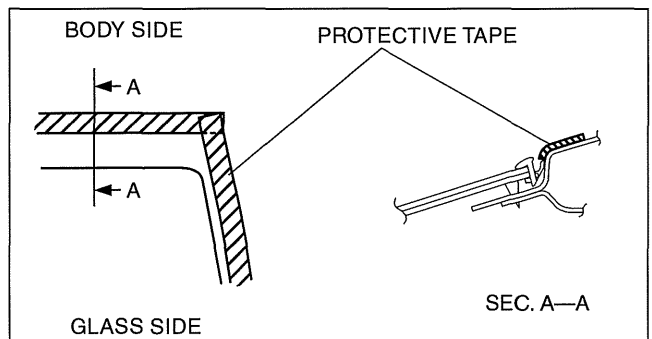
Note

- Overlap and adhere the protective tape to the corners to prevent damage.

5. Remove the windshield molding by pulling it outward.

Note

- If the windshield molding is difficult to remove, warm the windshield molding using a hot air blower.
- The windshield molding is a replacement part.



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GLASS/WINDOWS/MIRRORS

Not Reusing Windshield

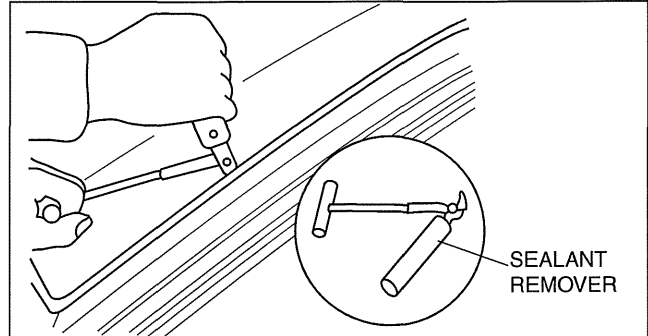
Note

- If it is difficult to cut sealant, use piano wire and follow the procedure under “Reusing Windshield”.

Warning

- **Using piano wire with bare hands can cause injury. Always wear gloves when using piano wire.**

1. Cut out the sealant all around the glass using a sealant remover.
2. Remove the windshield.



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Reusing Windshield

Warning

- **Using piano wire with bare hands can cause injury. Always wear gloves when using piano wire.**

Caution

- **Because the lens for rainfall/illumination level detection is integrated with the windshield, the auto wiper/auto light systems may not operate correctly if the lens is damaged. When removing the windshield, be careful not to damage the lens. If the lens is damaged, replace the windshield.**

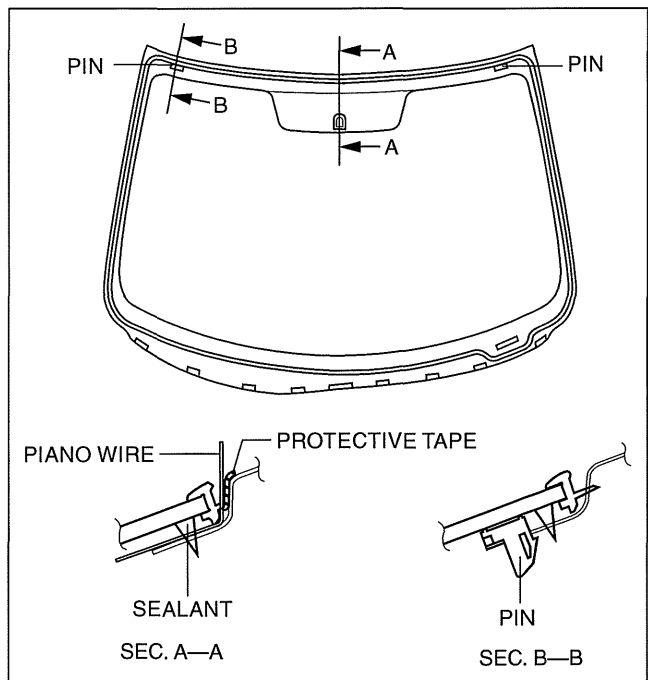
Note

- Before removing the windshield from the body, mark the position of the windshield by affixing tape to the windshield and body panel.

1. Avoiding the pin on the inside of the vehicle, insert piano wire which has been cut to sufficient length.
2. Wind each end of piano wire around a bar.

Note

- Use a long sawing action to spread the work over the whole length of piano wire to prevent it from breaking due to localized heating.



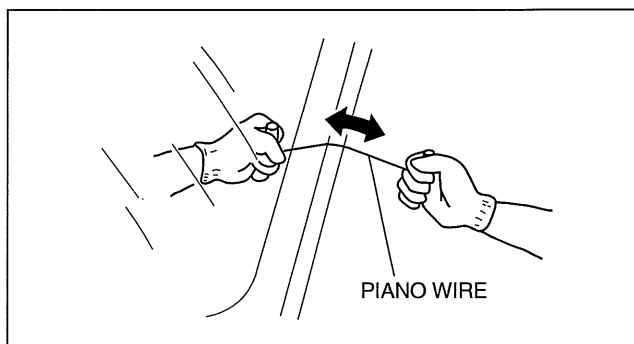
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GLASS/WINDOWS/MIRRORS

3. Secure one end of piano wire, and while pulling the other end, cut the sealant around the windshield.
4. Pinch the pin from the inside of the vehicle and detach it.
5. Remove the windshield.
6. If the pin is damaged, remove the pin.

Note

- Before removing the pin from the windshield glass, place an alignment mark on the windshield.



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WINDSHIELD INSTALLATION

id091200417900

Warning

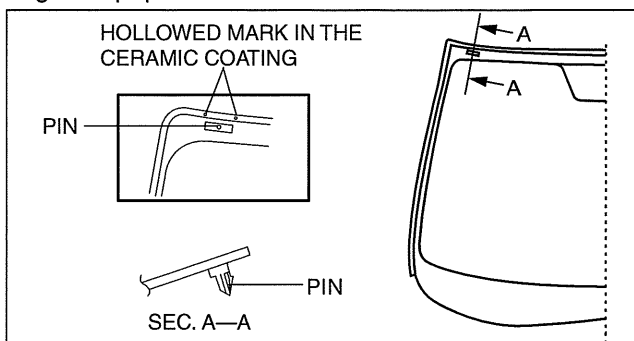
- Using a utility knife with bare hands can cause injury. Always wear gloves when using a utility knife.

Caution

- If a door is opened or closed when all the window glass is closed, the resulting change in air pressure could cause the sealant to crack preventing the proper installation of the windshield. Keep the door glass opened until the windshield installation is completed.
- If the rain sensor is replaced with a new one, the reflection rate when the switch the ignition to on the first time is memorized as a condition that no rainfall is on the windshield. Therefore, remove water and dirt from the windshield before switch the ignition to on. Perform the rain sensor reinitial setting in the following cases: (See 09-19-28 RAIN SENSOR REINITIALIZATION SETTING.)
 - The windshield is replaced and the rain sensor is reused.
 - The auto wiper system does not operate correctly after the windshield is installed.

09-12

1. Remove the sealant along the perimeter of the glass using a utility knife. (When reusing the glass)
2. Clean and degrease an **approx. 50 mm {2.0 in}** wide strip along the perimeter of the windshield.
3. Inspect the glass for cracks. If it is cracked, chamfer it using sandpaper.
4. Align the alignment marks made before removal and install the pin to the windshield referring to the figure. (Reusing glass, pin removed)

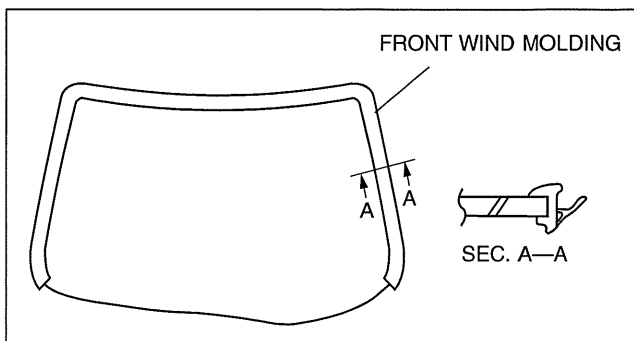


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5. Install the windshield molding.
6. Apply glass primer on the glass as shown in the figure, then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.

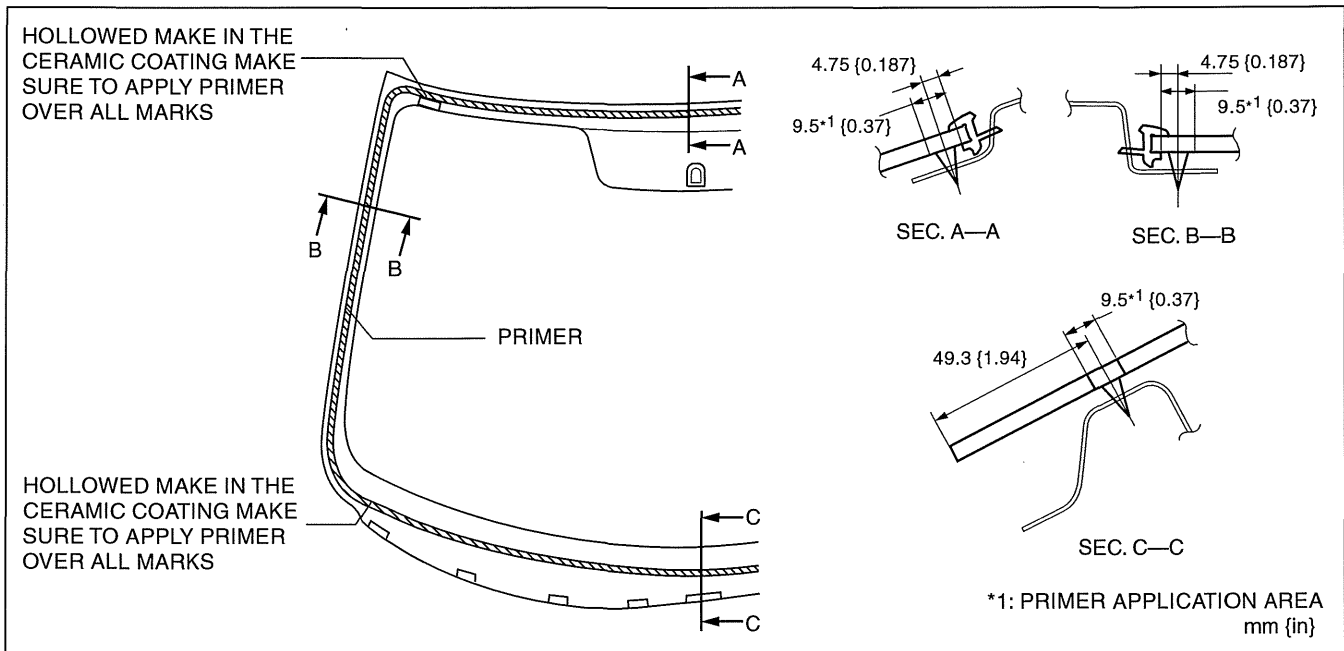


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GLASS/WINDOWS/MIRRORS

Note

- Apply primer to the hollowed marks in the ceramic coating.

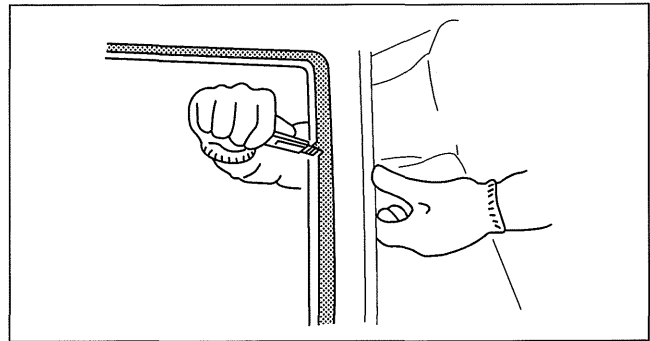


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- Cut away the old sealant using a utility knife so that **1—2 mm {0.04—0.07 in}** thickness of sealant remains along the perimeter of the frame.
- If the sealant has come off completely in any one place, apply some primer after degreasing, and allow it **approx. 30 min** to dry. Then apply **2 mm {0.08 in}** thickness of new sealant.

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.



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- Clean and degrease along the perimeter of the bonding area on the body.

GLASS/WINDOWS/MIRRORS

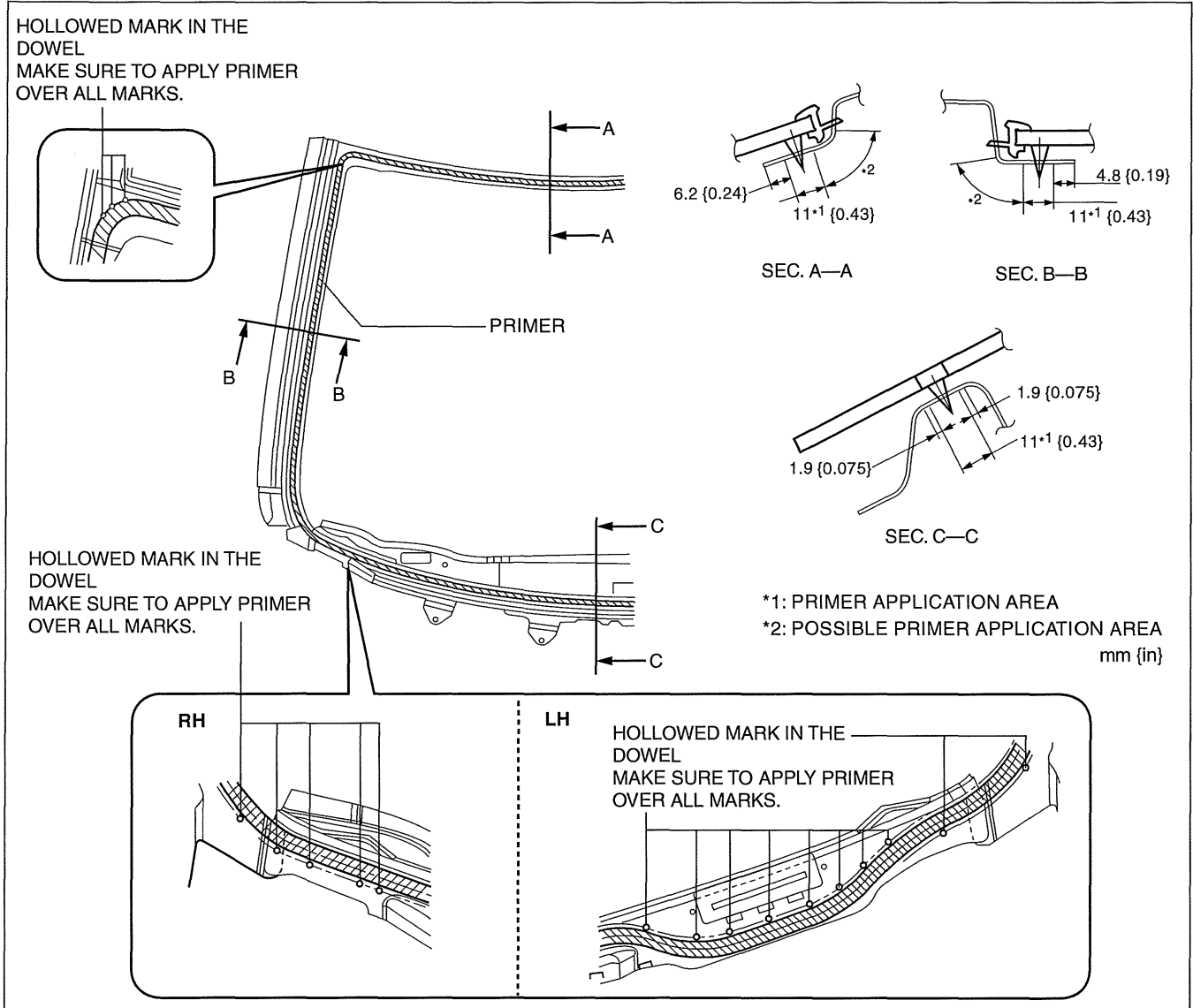
10. Apply body primer on the body as shown in the figure, then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.

Note

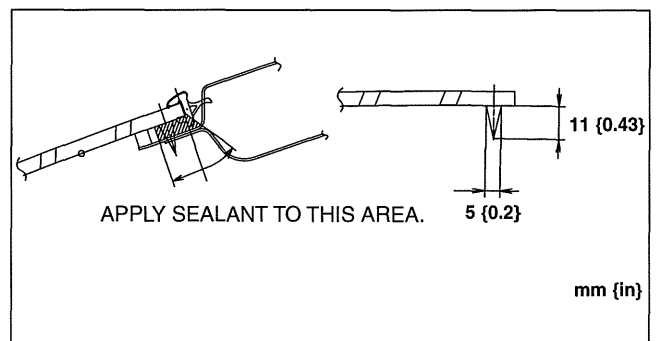
- Apply primer to the hollowed marks in the ceramic coating.



09-12

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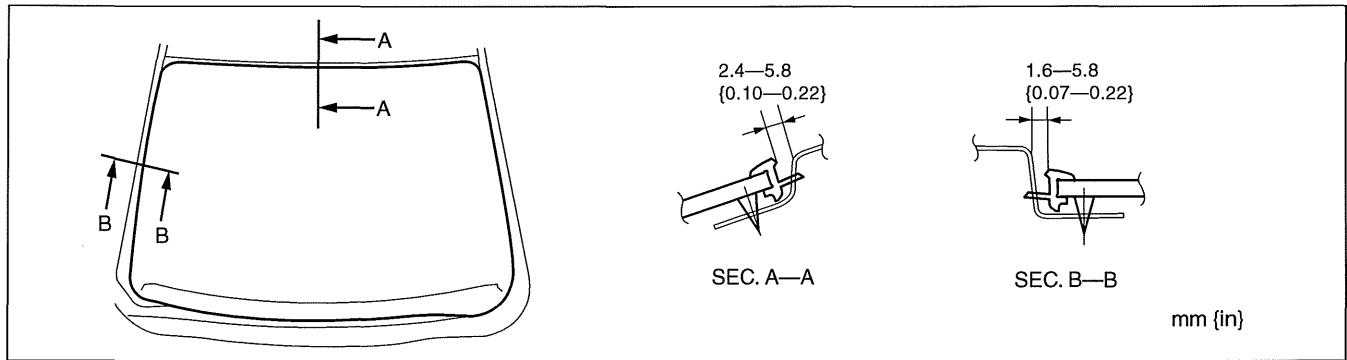
11. Apply sealant to the area of the glass surface as shown in the figure.
12. Insert the positioning pins to the body and install the windshield.



am2zzw0000247

GLASS/WINDOWS/MIRRORS

13. Verify that the clearance between the A-pillar and the roof is within the range shown in the figure, and press along the perimeter of the glass.



14. Install the headliner.

15. Install the following parts:

- (1) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
- (2) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
- (3) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (4) Rear view mirror (Vehicles without auto-dimming mirror) (See 09-12-49 REARVIEW MIRROR INSTALLATION.)
- (5) Auto-dimming mirror (Vehicles with auto-dimming mirror) (See 09-12-46 AUTO-DIMMING MIRROR INSTALLATION.)
- (6) Rain sensor (Vehicles with auto light / wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
- (7) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- (8) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)

16. Allow the sealant to harden completely.

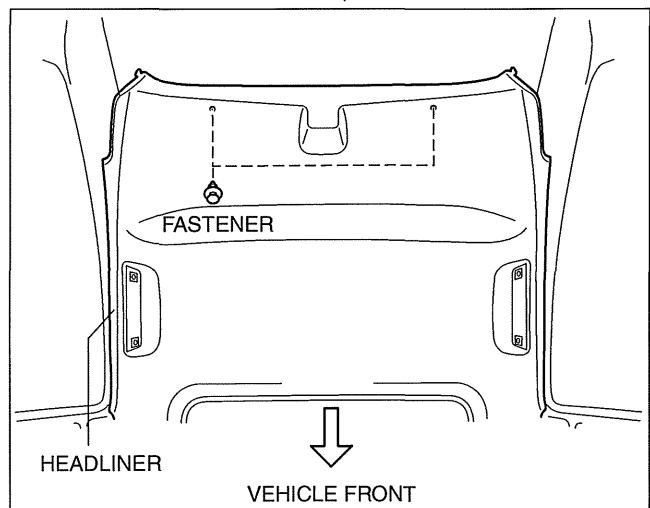
Sealant hardening time: 24 h

REAR WINDOW GLASS REMOVAL

id091200418000

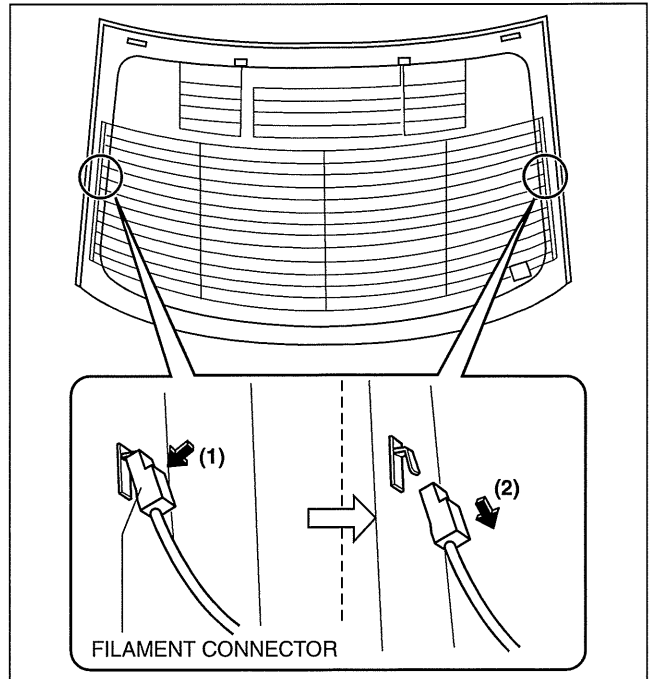
4SD

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Rear side seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (4) C-pillar trims (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (5) Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
 - (6) Tire house trims (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
3. Remove the fasteners.
4. Set the headliner out of the way.



GLASS/WINDOWS/MIRRORS

5. Disconnect the filament connector.

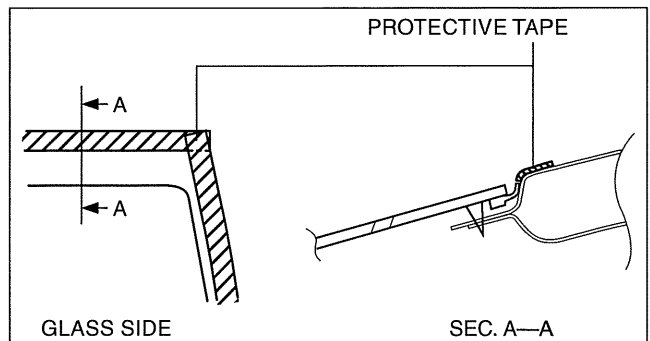


am3uuw0000489

6. Apply protective tape along the edge of the body.

Note

- Overlap and adhere the protective tape to the corners to prevent damage.



am3uuw0000489

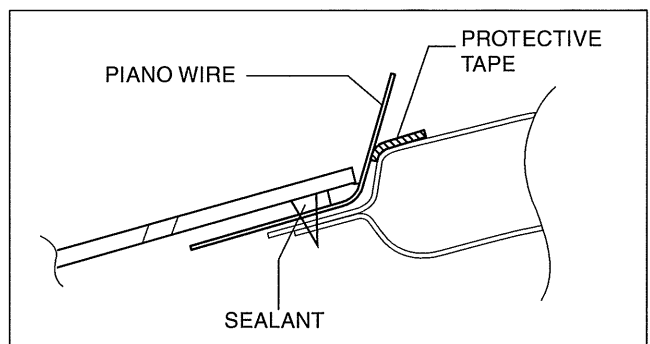
7. Avoiding the pin on the inside of the vehicle, insert piano wire which has been cut to sufficient length.

Warning

- **Using piano wire with bare hands can cause injury. Always wear gloves when using piano wire.**

Note

- Before removing the rear window glass from the body, mark the position of the glass by affixing tape to the glass and body panel.



am3uuw0000337

8. Wind each end of piano wire around a bar.

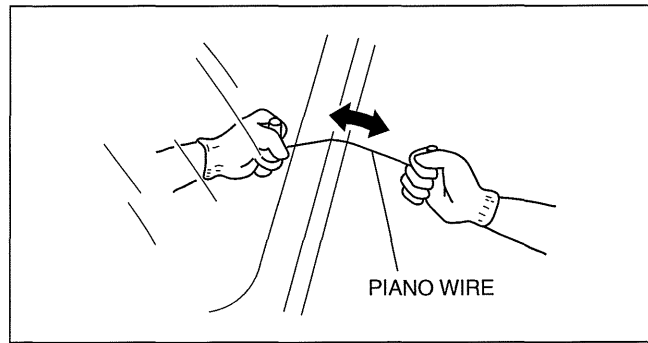
Note

- Use a long sawing action to spread the work over the whole length of piano wire to prevent it from breaking due to localized heating.

09-12

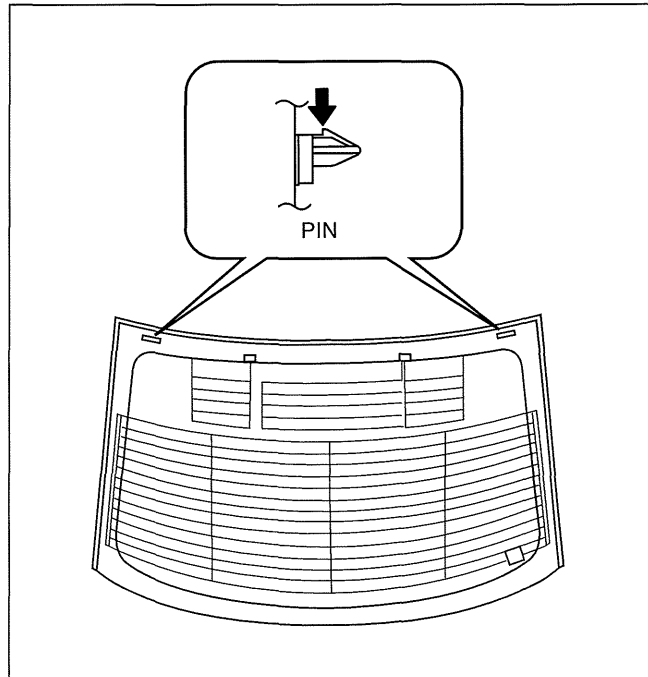
GLASS/WINDOWS/MIRRORS

- Secure one end of piano wire, and while pulling the other end, cut the sealant around the rear window glass.



am2zzw0000210

- Pinch the pin from the inside of the vehicle and detach it.
- Remove the rear window glass.



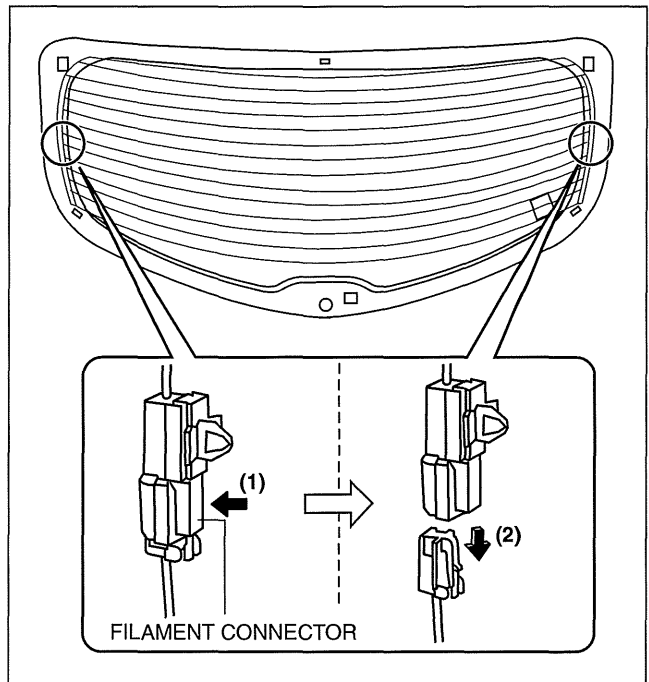
am3uuw0000489

5HB

- Disconnect the negative battery cable.
- Remove the following parts:
 - Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - High-mount brake light (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
 - Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
 - Rear spoiler (See 09-16-21 REAR SPOILER REMOVAL/INSTALLATION.)
 - Rear wiper arm and blade (See 09-19-15 REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION.)

GLASS/WINDOWS/MIRRORS

3. Disconnect the filament connector.

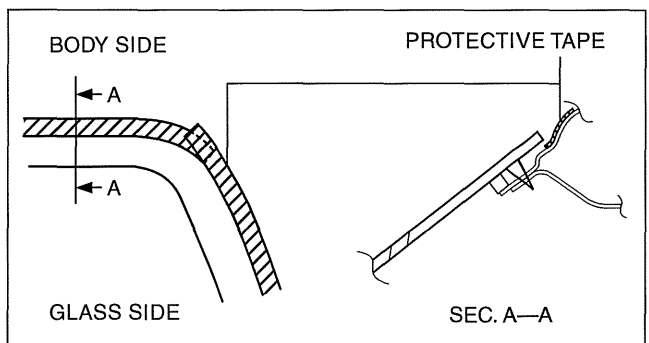


am3uuw0000489

4. Apply protective tape along the edge of the body.

Note

- Overlap and adhere the protective tape to the corners to prevent damage.



am3uuw0000489

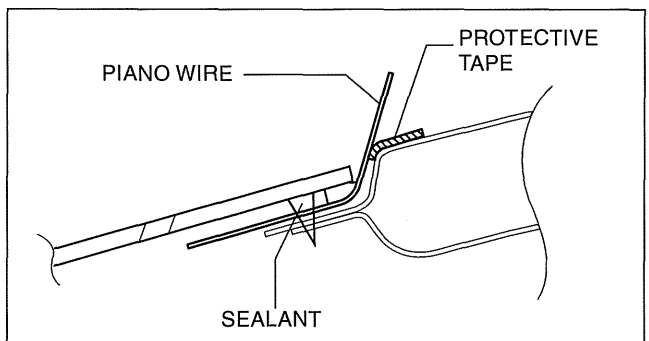
5. Avoiding the pin on the inside of the vehicle, insert piano wire which has been cut to sufficient length.

Warning

- Using piano wire with bare hands can cause injury. Always wear gloves when using piano wire.

Note

- Before removing the rear window glass from the body, mark the position of the glass by affixing tape to the glass and body panel.



am3uuw0000337

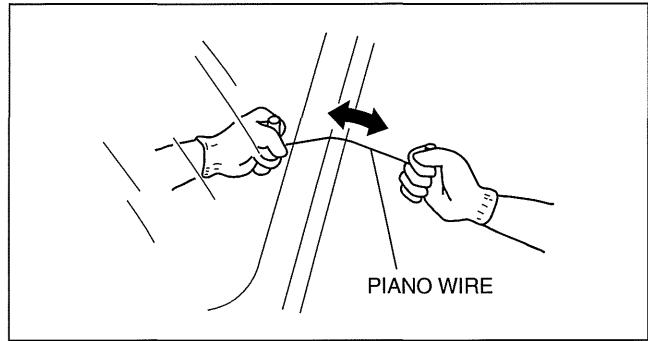
6. Wind each end of piano wire around a bar.

Note

- Use a long sawing action to spread the work over the whole length of piano wire to prevent it from breaking due to localized heating.

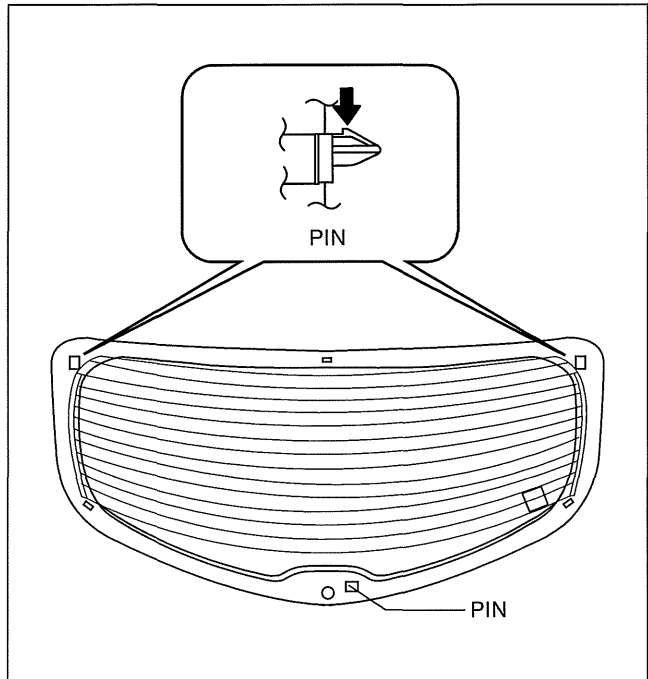
GLASS/WINDOWS/MIRRORS

7. Secure one end of piano wire, and while pulling the other end, cut the sealant around the rear window glass.



am2zzw0000210

8. Pinch the pin from the inside of the vehicle and detach it.
9. Remove the rear window glass.



am3uuw0000489

GLASS/WINDOWS/MIRRORS

REAR WINDOW GLASS INSTALLATION

id091200418100

Warning

- Using a utility knife with bare hands can cause injury. Always wear gloves when using a utility knife.

Caution

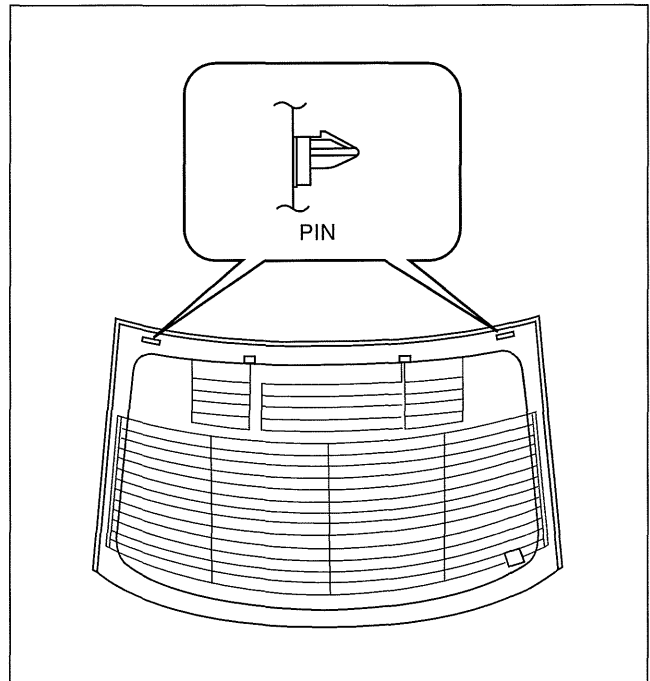
- Proper installation of the glass may be difficult if sealant is cracked or the glass is pushed out by air pressure when a door is opened/closed with all the window glass closed. Keep the door glass open until the rear window glass installation is completed.

4SD

1. Remove sealant along the perimeter of the glass using a utility knife or scraper. (When reusing the glass)
2. Clean and degrease an **approx. 50 mm {2.0 in}** wide strip along the perimeter of the glass.
3. Inspect the glass for cracks. If it is cracked, chamfer it using sandpaper.
4. Install the spacer and pins to the glass as shown in the figure.

Note

- When reusing the glass, align it with the alignment mark placed before the glass was removed.



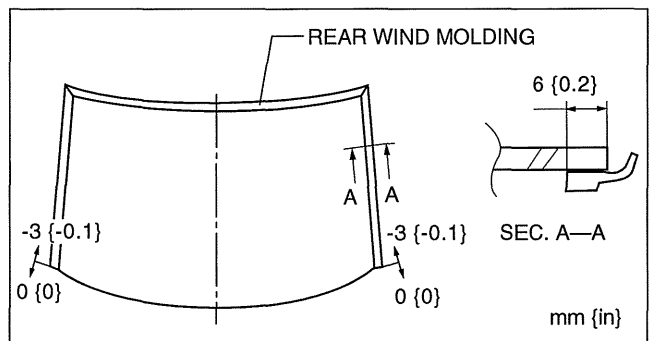
am3uuw0000544

09-12

5. Install the rear window glass molding.
6. Apply glass primer on the glass as shown in the figure then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.

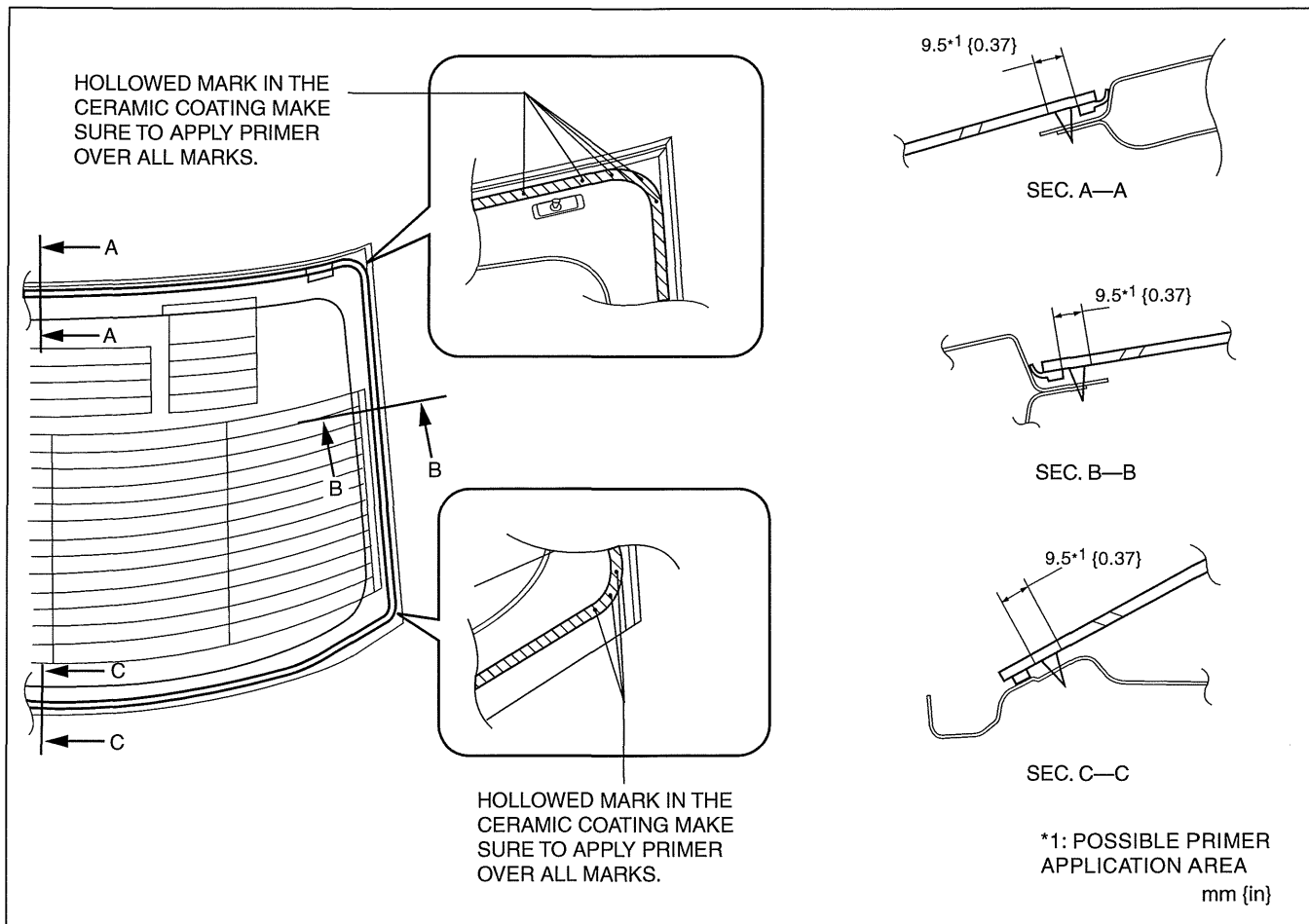


am3uuw0000349

GLASS/WINDOWS/MIRRORS

Note

- Apply primer to the hollowed marks in the ceramic coating.

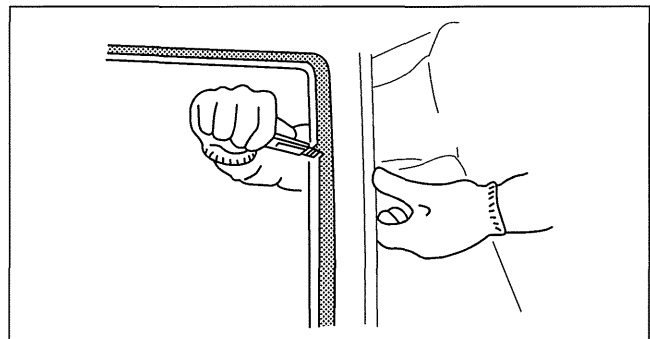


am3uuw0000338

7. Cut away the old sealant using a utility knife or scraper so that **1—2 mm {0.04—0.07 in}** thickness of sealant remains along the perimeter of the frame.
8. Clean and degrease along the perimeter of the bonding area on the body.
9. If the sealant has come off completely in any one place, apply some primer, and allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.



avejjw00000994

GLASS/WINDOWS/MIRRORS

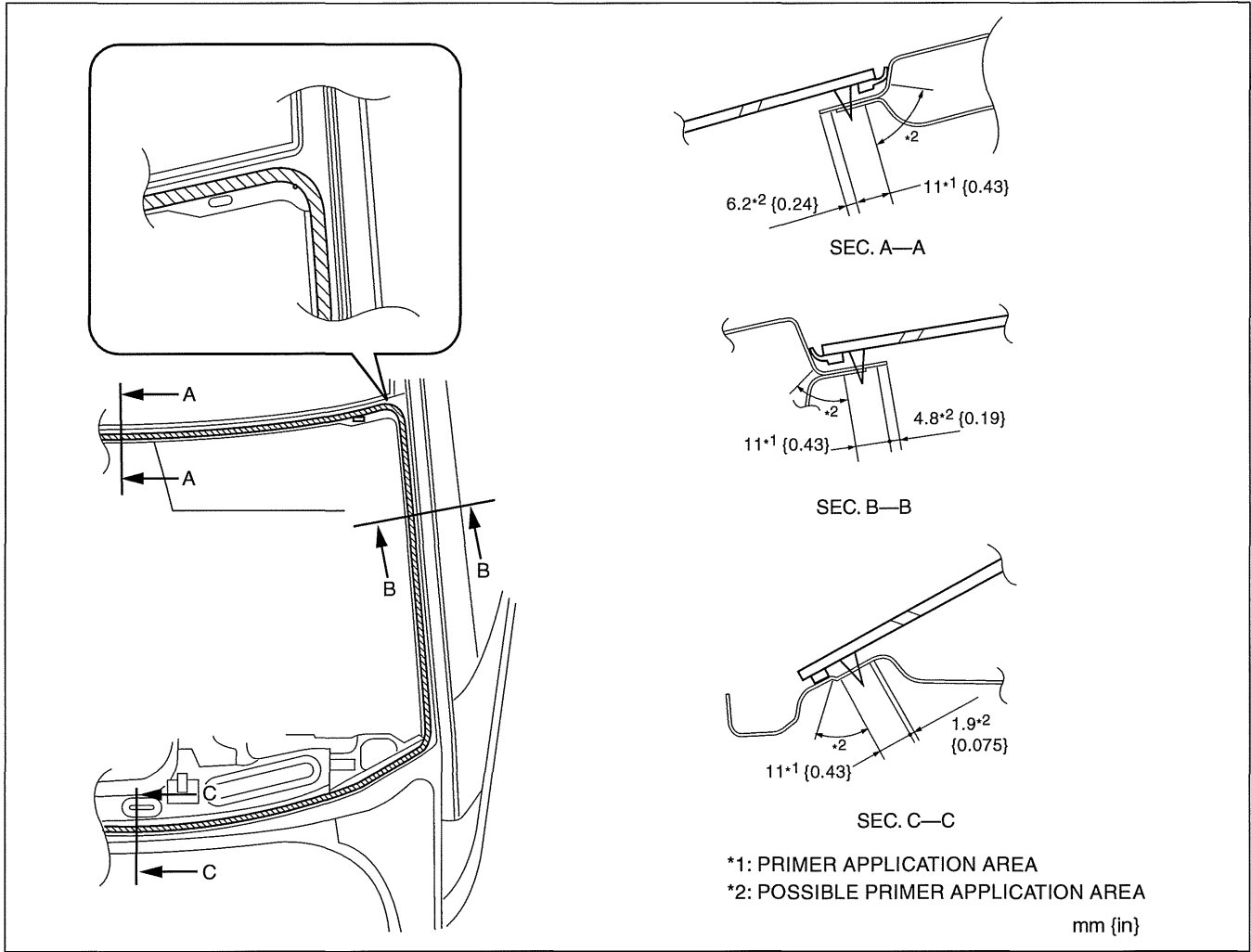
10. Apply body primer on the body as shown in the figure, then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.

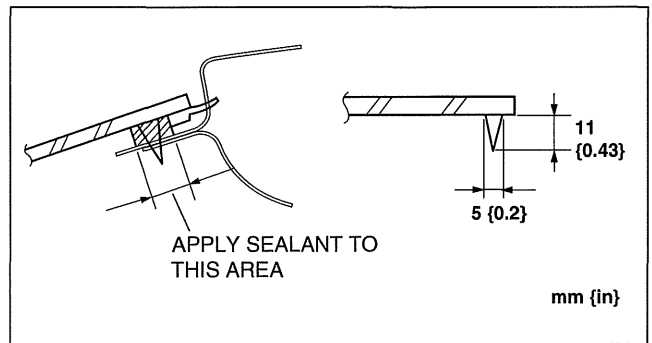
Note

- Apply primer to the hollowed marks in the ceramic coating.



am3uuw000544

11. Apply sealant to the area of the glass surface as shown in the figure.
12. Install the rear window glass.

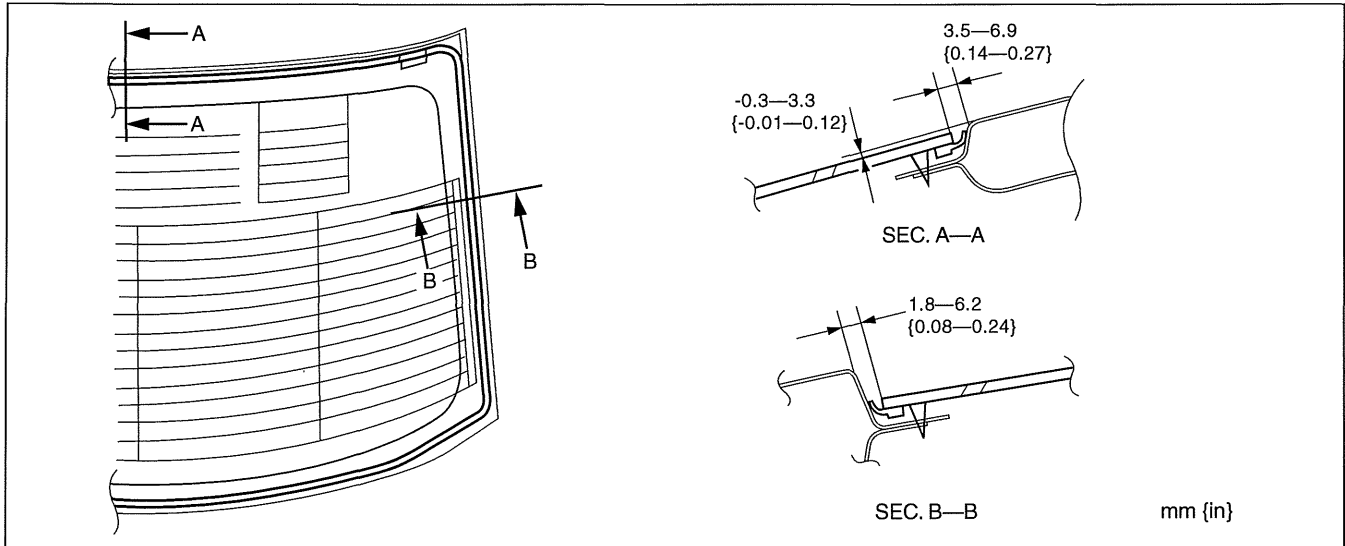


am3uuw000349

09-12

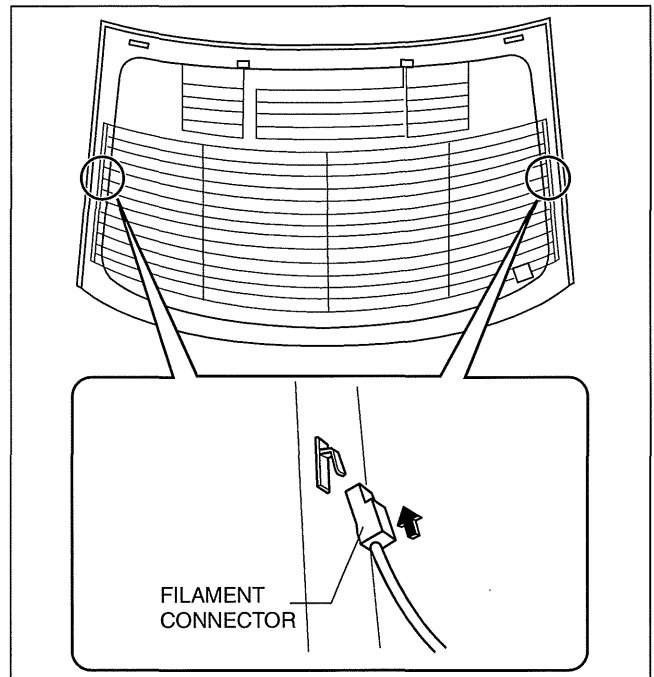
GLASS/WINDOWS/MIRRORS

13. Verify that the gap at the upper and lower parts of the glass is within the specification shown in the figure, then press along the perimeter of the glass.



am3uuw0000544

14. Connect the filament connector.

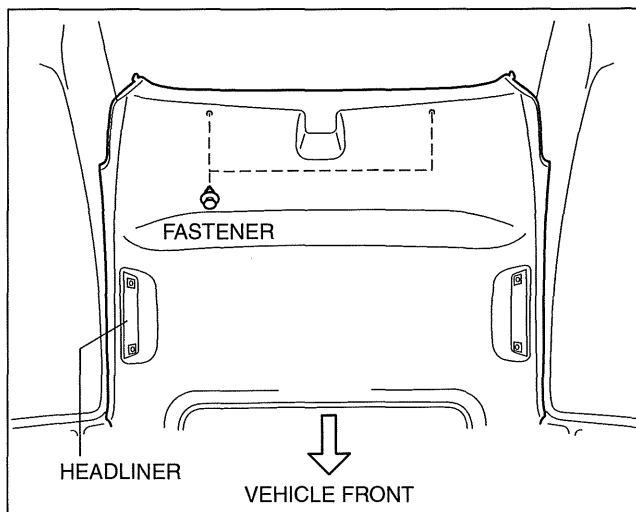


am3uuw0000544

GLASS/WINDOWS/MIRRORS

15. Install the fasteners.
16. Install the following parts:
 - (1) Tire house trims (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (2) Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
 - (3) C-pillar trims (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (4) Rear side seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (5) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (6) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
17. Allow the sealant to harden completely.

Sealant hardening time: 24 h



am3uuw0000489

5HB

1. Remove sealant along the perimeter of the glass using a utility knife or scraper. (When reusing the glass)
2. Clean and degrease an **approx. 50 mm {2.0 in}** wide strip along the perimeter of the glass.
3. Inspect the glass for cracks. If it is cracked, chamfer it using sandpaper.
4. Install the spacers, and pins to the glass as shown in the figure.

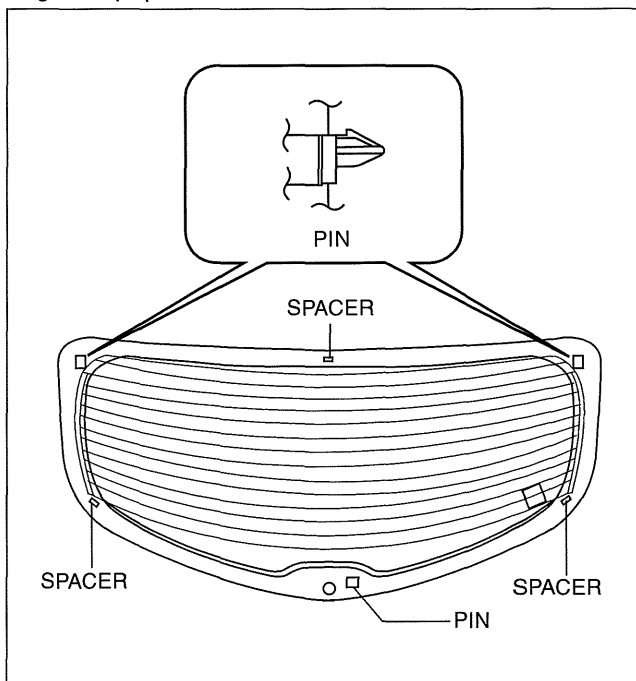
Note

- When reusing the glass, align it with the alignment mark placed before the glass was removed.

5. Apply glass primer on the glass as shown in the figure then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.



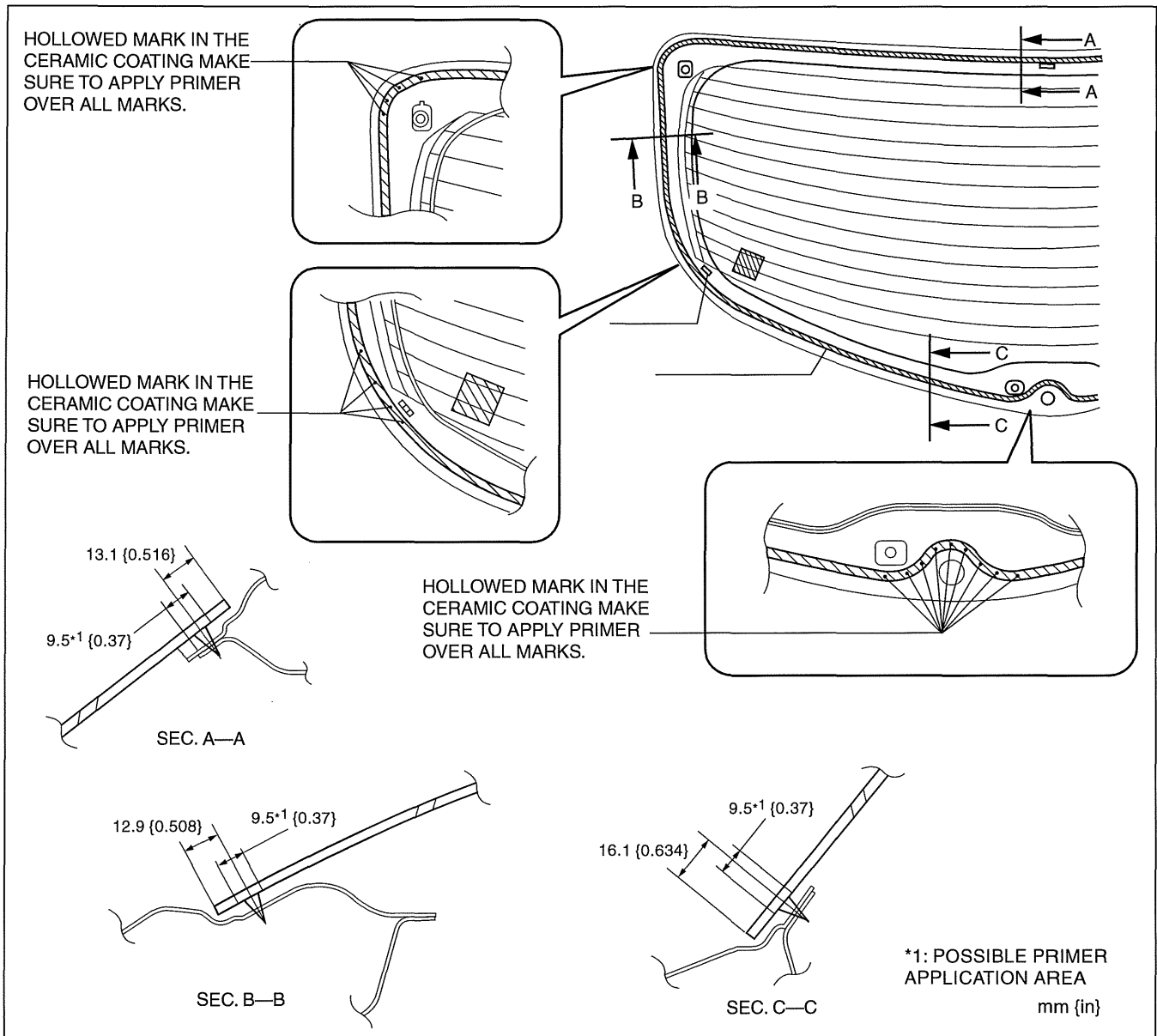
am3uuw0000544

09-12

GLASS/WINDOWS/MIRRORS

Note

- Apply primer to the hollowed marks in the ceramic coating.

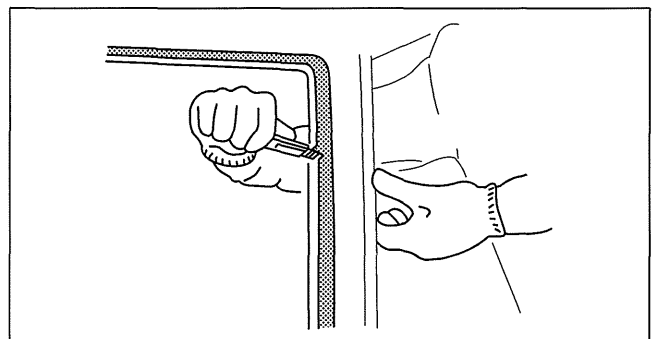


am3uuw0000349

6. Cut away the old sealant using a utility knife or scraper so that **1—2 mm {0.04—0.07 in}** thickness of sealant remains along the perimeter of the frame.
7. Clean and degrease along the perimeter of the bonding area on the body.
8. If the sealant has come off completely in any one place, apply some primer, and allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.



avejjw00000994

GLASS/WINDOWS/MIRRORS

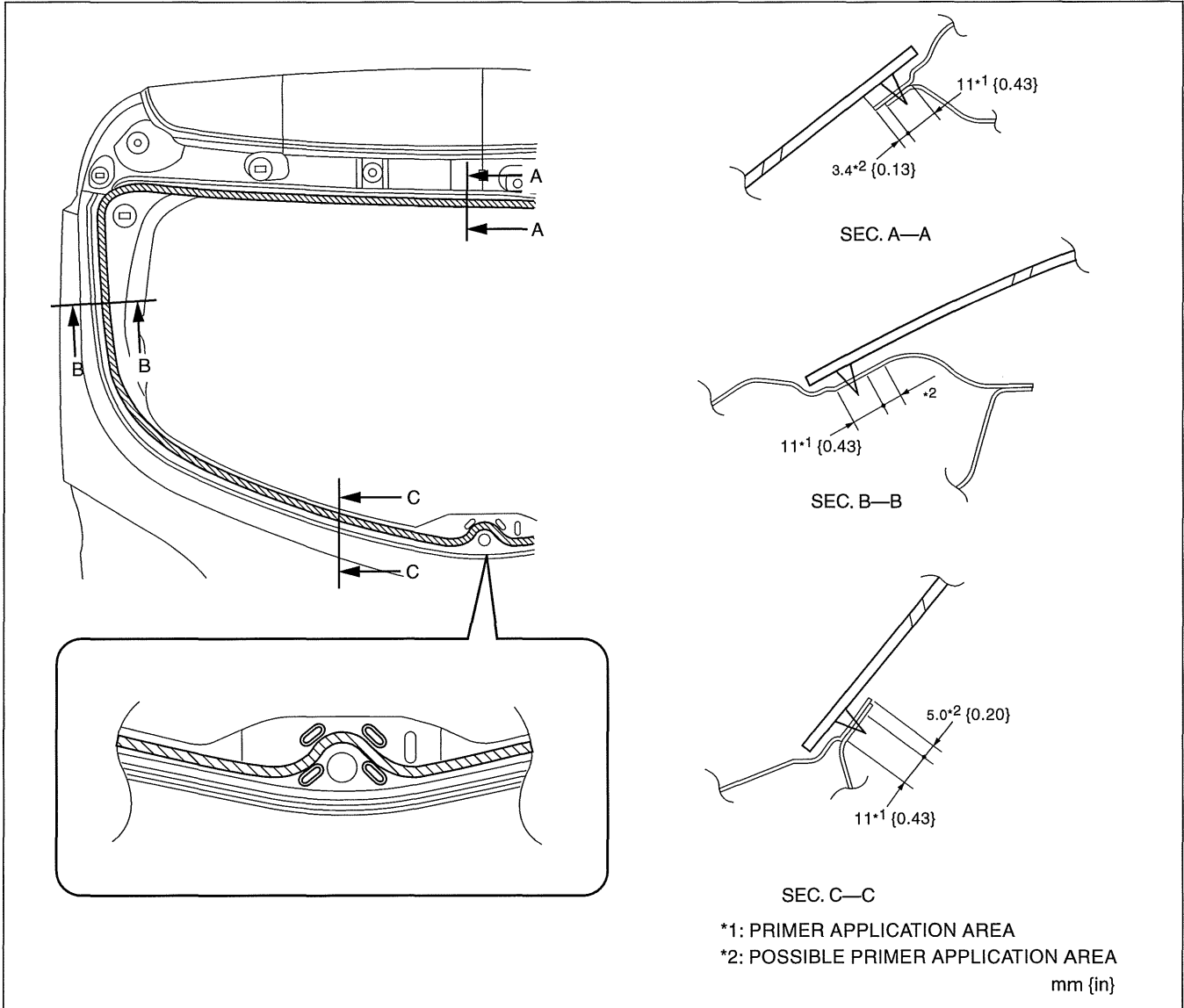
9. Apply body primer on the body as shown in the figure, then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.

Note

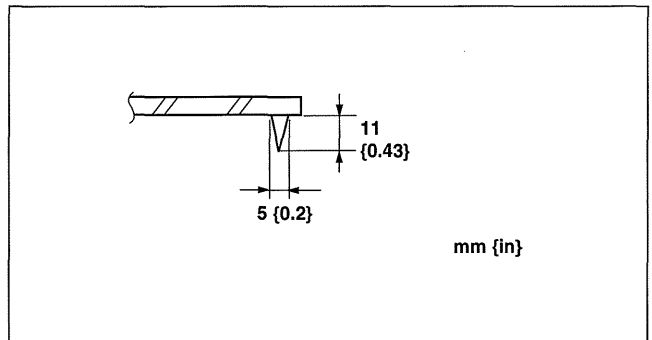
- Apply primer to the hollowed marks in the ceramic coating.



09-12

am3uuw0000349

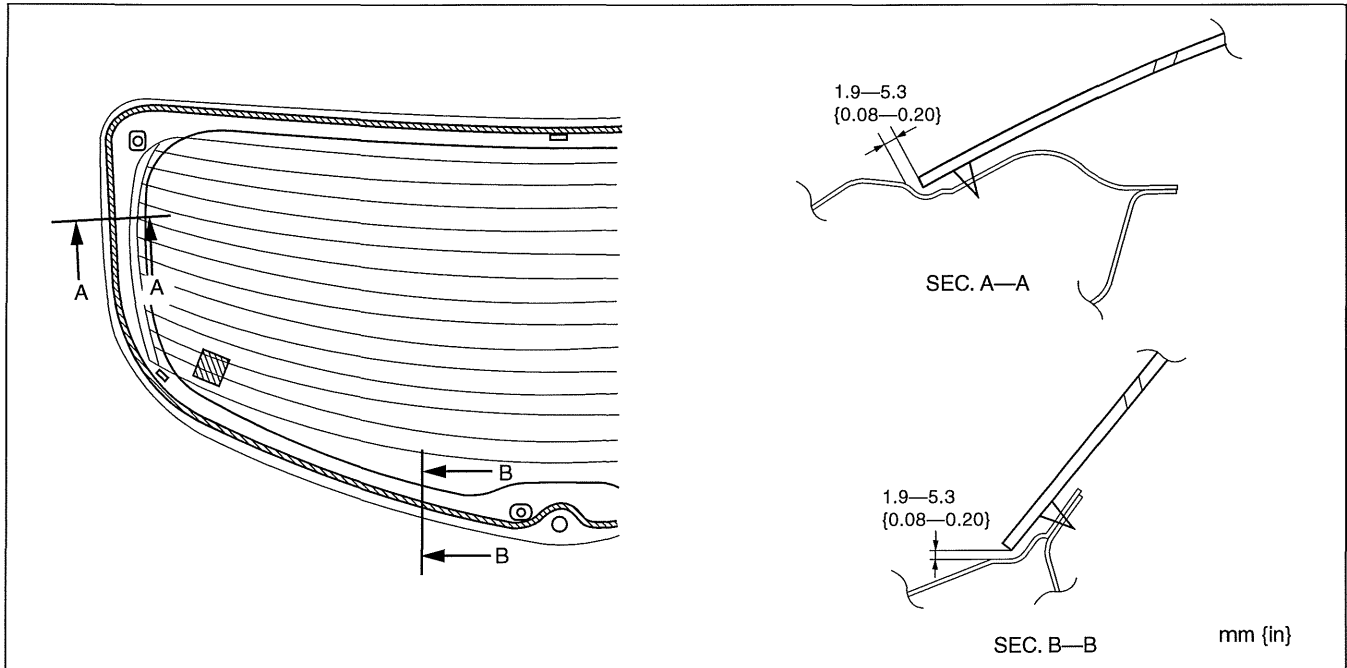
10. Apply sealant to the area of the glass surface as shown in the figure.
11. Install the rear window glass.



am3uuw0000350

GLASS/WINDOWS/MIRRORS

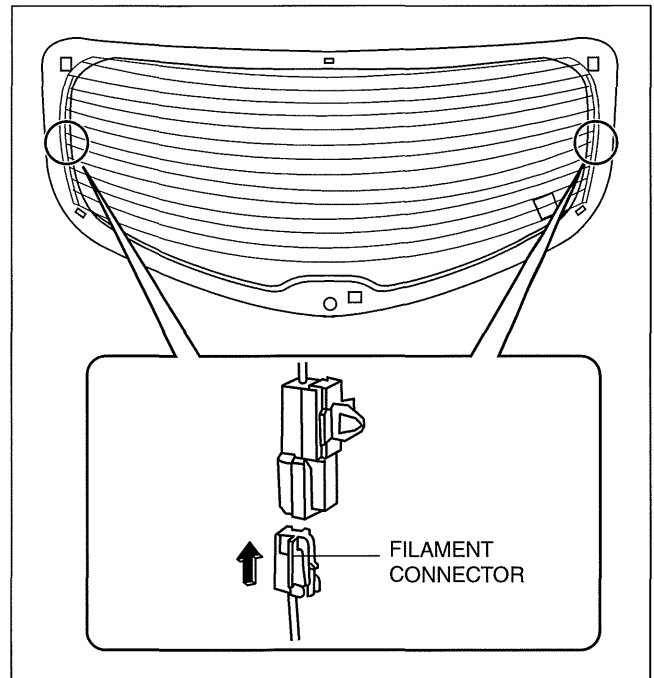
12. Verify that the gap at the upper and lower parts of the glass is within the specification shown in the figure, then press along the perimeter of the glass.



am3uuw0000544

13. Connect the filament connector.
14. Install the following parts:
- (1) Rear wiper arm and blade (See 09-19-15 REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Rear spoiler (See 09-16-21 REAR SPOILER REMOVAL/INSTALLATION.)
 - (3) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (5) High-mount brake light (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
 - (6) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
15. Allow the sealant to harden completely.

Sealant hardening time: 24 h



am3uuw0000544

GLASS/WINDOWS/MIRRORS

QUARTER WINDOW GLASS REMOVAL

id091200801700

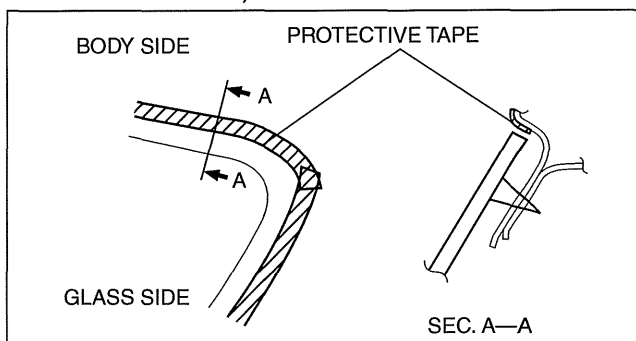
1. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (5) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
2. Apply protective tape along the edge of the body and the quarter window glass.

Note

- For the areas of the sealant that are difficult to cut, use the piano wire and follow the procedure under "Reusing Windshield".

Warning

- **Using the piano wire with bare hands can cause injury. Always wear gloves when using the piano wire.**

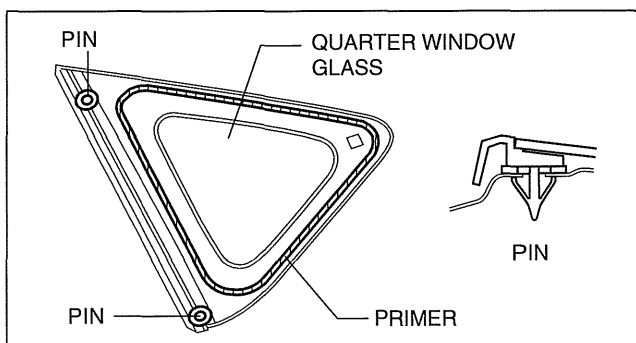


am3uuw0000350

3. Avoiding the pin on the inside of the vehicle, insert the piano wire which has been cut to sufficient length.
4. Wind each end of the piano wire around a bar.

Note

- Use a long sawing action to spread the work over the whole length of the piano wire to prevent it from breaking due to localized heating.



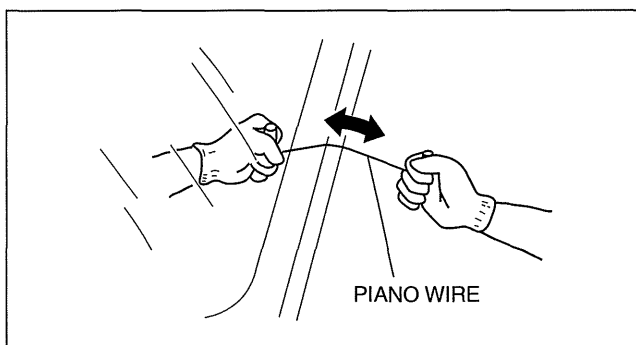
am3uuw0000351

09-12

5. Secure one end of the piano wire, and while pulling the other end, cut the sealant around the quarter window glass.
6. Pull the quarter window glass outward and detach the pins from the body.
7. If a pin or fastener is damaged, remove it.

Note

- Before removing the pins or spacers from the quarter window glass, place alignment marks on the quarter window glass.



acxuuw00001578

GLASS/WINDOWS/MIRRORS

QUARTER WINDOW GLASS INSTALLATION

id091200801800

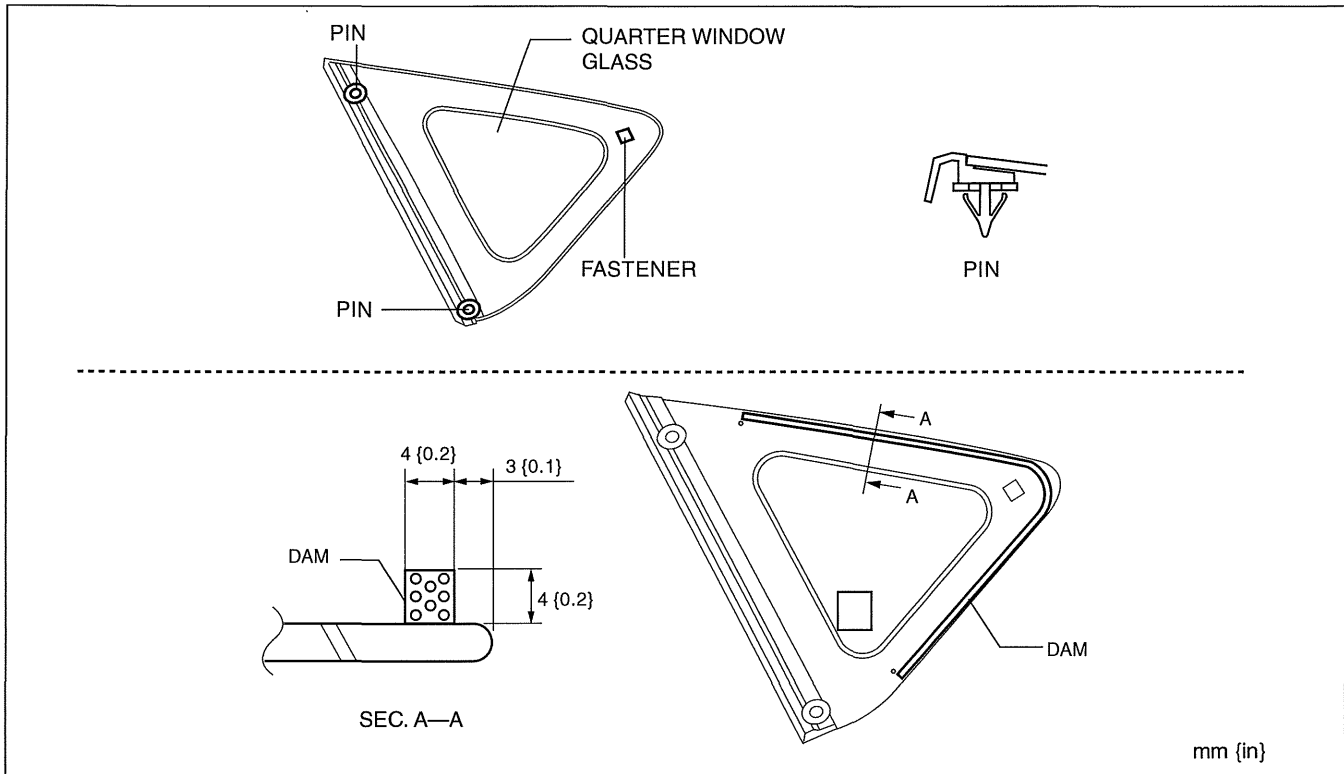
Warning

- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

Caution

- If a door is opened or closed when all the window glass is closed, the resulting change in air pressure could cause the sealant to crack preventing the proper installation of the glass. Keep the door glass open until the quarter window glass installation is completed.

1. Remove sealant along the perimeter of the glass using a razor or scraper. (when reusing the glass)
2. Clean and degrease the ceramic part along the perimeter of the glass.
3. Inspect the glass for cracks. If it is cracked, chamfer it using sandpaper.
4. If the glass is reused, attach the pins to the glass as shown in the figure.



am3uuw0000544

Note

- Align with the alignment marks marked before removing the glass.

GLASS/WINDOWS/MIRRORS

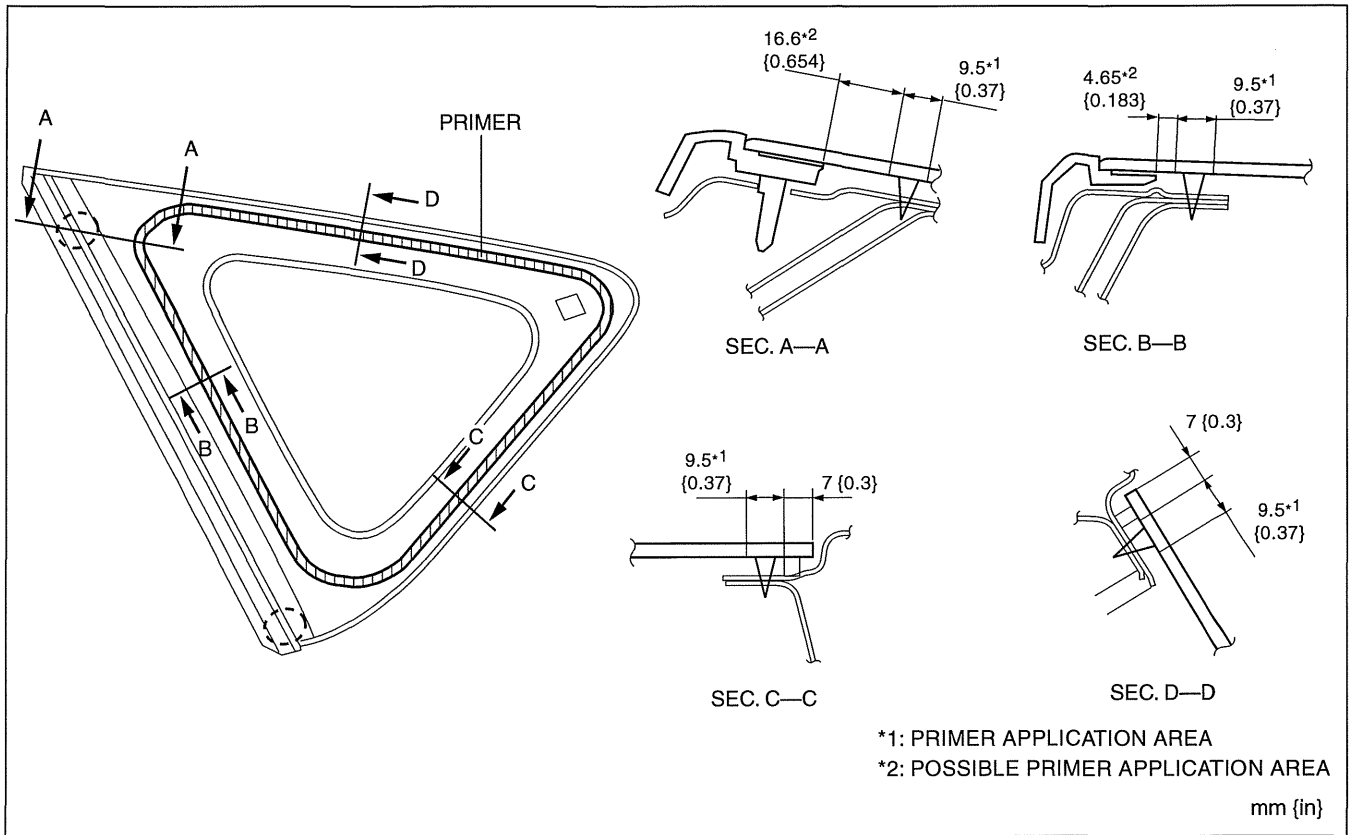
5. Apply glass primer along the hollowed marks in the ceramic coating on the new glass, along the sealant tracks on the reused glass, then allow it to dry for **approx. 30 min.**

Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.

Note

- Apply primer to the hollowed marks in the ceramic coating.



am3uuw0000359

6. Cut away the old sealant using a razor or scraper so that **1—2 mm {0.04—0.079 in}** thickness of sealant remains along the perimeter of the frame.
7. If the sealant has come off completely in any one place, apply some primer after degreasing, and allow it **approx. 30 min** to dry. Then apply **2 mm {0.079 in}** thickness of new sealant.
8. Clean and degrease the bonding surface along the perimeter of the body.

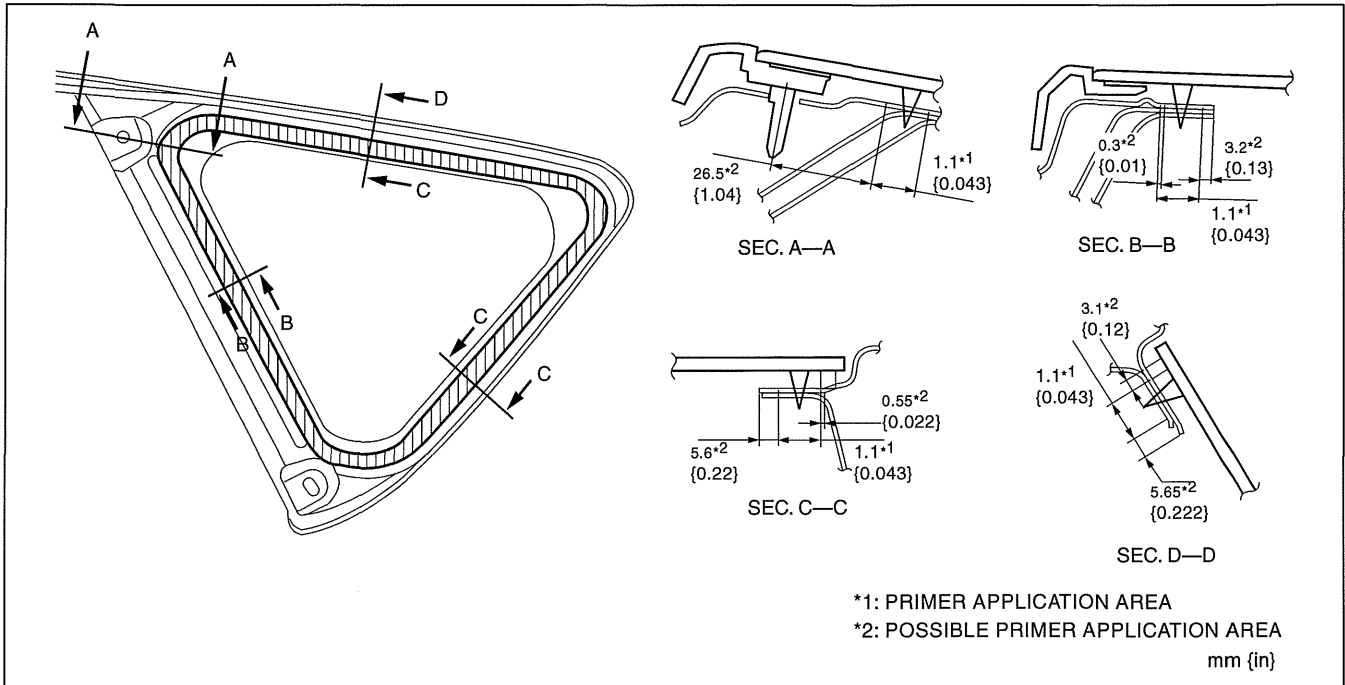
09-12

GLASS/WINDOWS/MIRRORS

9. Apply body primer on the body as shown in the figure, then allow it to dry for **approx. 30 min.**

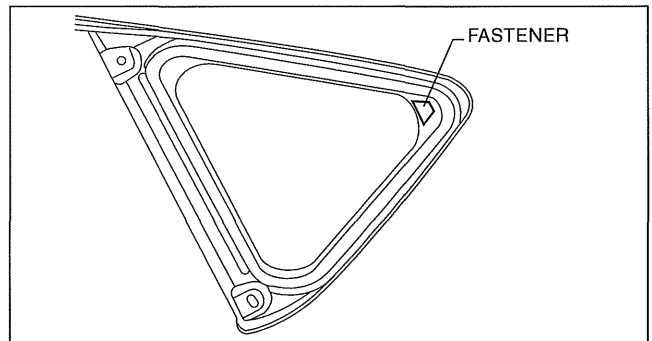
Caution

- To prevent weakening of the primer adhesion, keep the bonding surface free of dirt, moisture, and grease. Do not touch the surface with your hand.



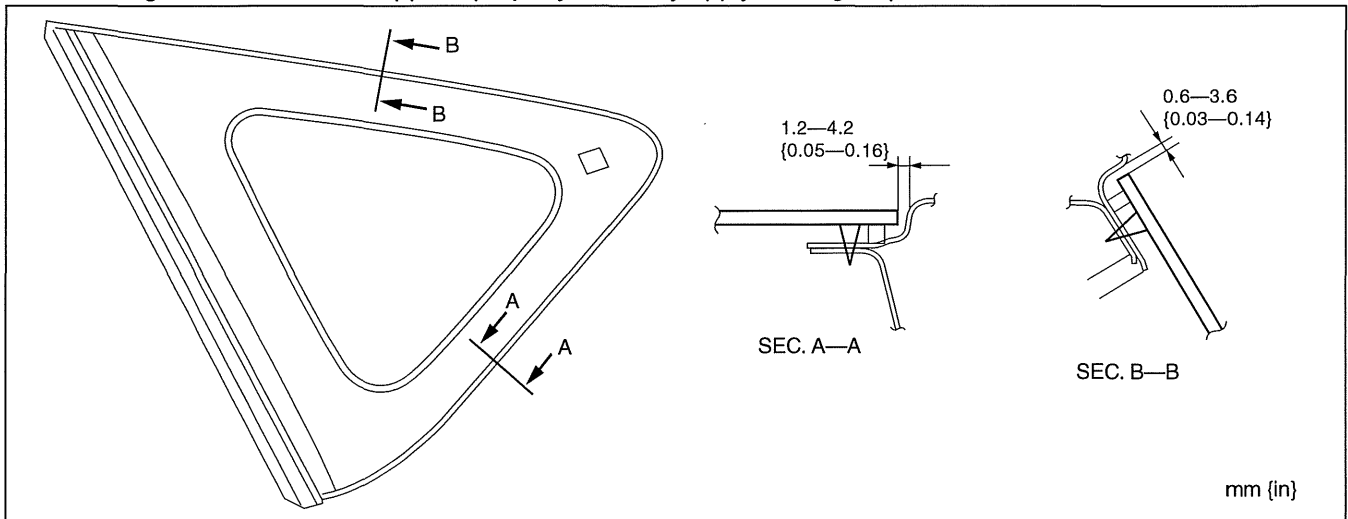
am3uuw0000359

10. Install the fastener to the bead on the body side.



am3uuw0000359

11. After the primer has dried, apply **11 mm {0.43 in}** in thickness, **5 mm {0.20 in}** in width of sealant using a sealant gun. Where it is not applied properly, correctly apply it using a spatula.



am3uuw0000359

GLASS/WINDOWS/MIRRORS

12. Insert the positioning pins to the body and install the quarter window glass.
13. Install the following parts:
 - (1) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (2) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
14. Allow the sealant to harden completely.

Sealant hardening time: 24 h

FILAMENT INSPECTION

id091200801000

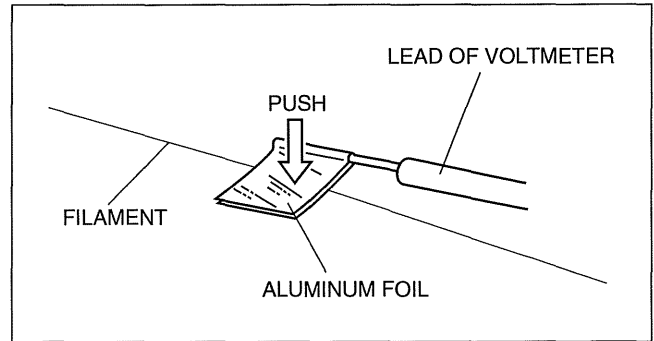
1. Turn the ignition switch to the ON position.
2. Turn the rear window defroster switch on.

Caution

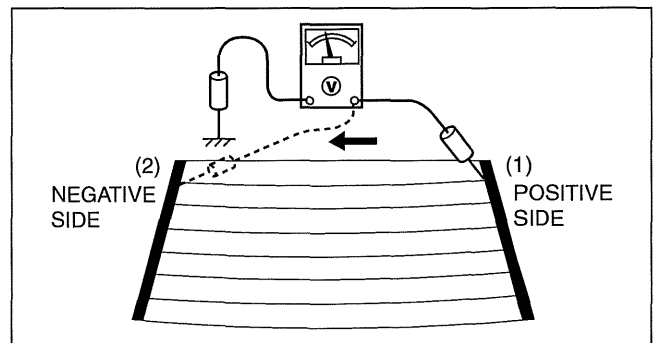
- **Directly touching the rear window defroster filament with the lead of the tester could damage it. Wrap aluminum foil around the end of the lead and inspect the filament by touching it with the foil.**

3. Connect the positive lead of the tester to the positive side of each filament and the negative lead to ground.
4. Gradually slide the positive lead from the positive side to the negative side and verify that the voltage decreases accordingly.
 - If the voltage changes rapidly, the filament has a malfunction. Repair the filament.

Measured part	Voltage (Reference)
(1) to (2)	Approx. 11 V to 0 V



acxuuw00001514



acxuuw00001515

09-12

FILAMENT REPAIR

id091200801100

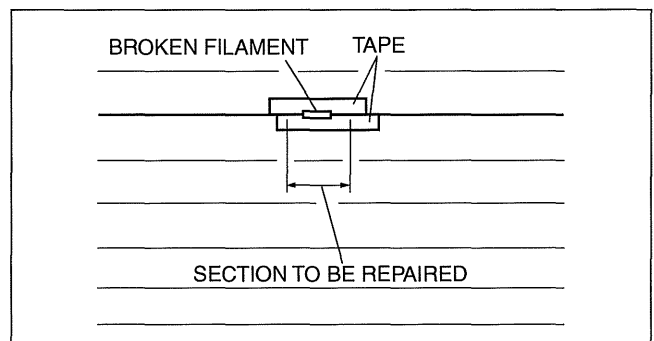
1. Clean the filament using isopropyl alcohol.
2. Attach tape to both sides of the filament.
3. Using a small brush or marking pen, apply silver paint.
4. After **2—3 min**, carefully remove the tape without damaging the applied area.

Caution

- **Do not operate the rear window defroster until the paint is completely dry. It may cause other malfunctions if it is used before the paint is dry.**

5. Dry the repaired part according to the following procedure.

- When the room temperature is **25 °C {77 °F}**, leave it as it is for **24 h**.
- When a hot air blower is used, dry with the **150 °C {302 °F}** air for **30 min**.



am3uuw0000289

GLASS/WINDOWS/MIRRORS

POWER OUTER MIRROR SWITCH REMOVAL/INSTALLATION

id091200420400

Note

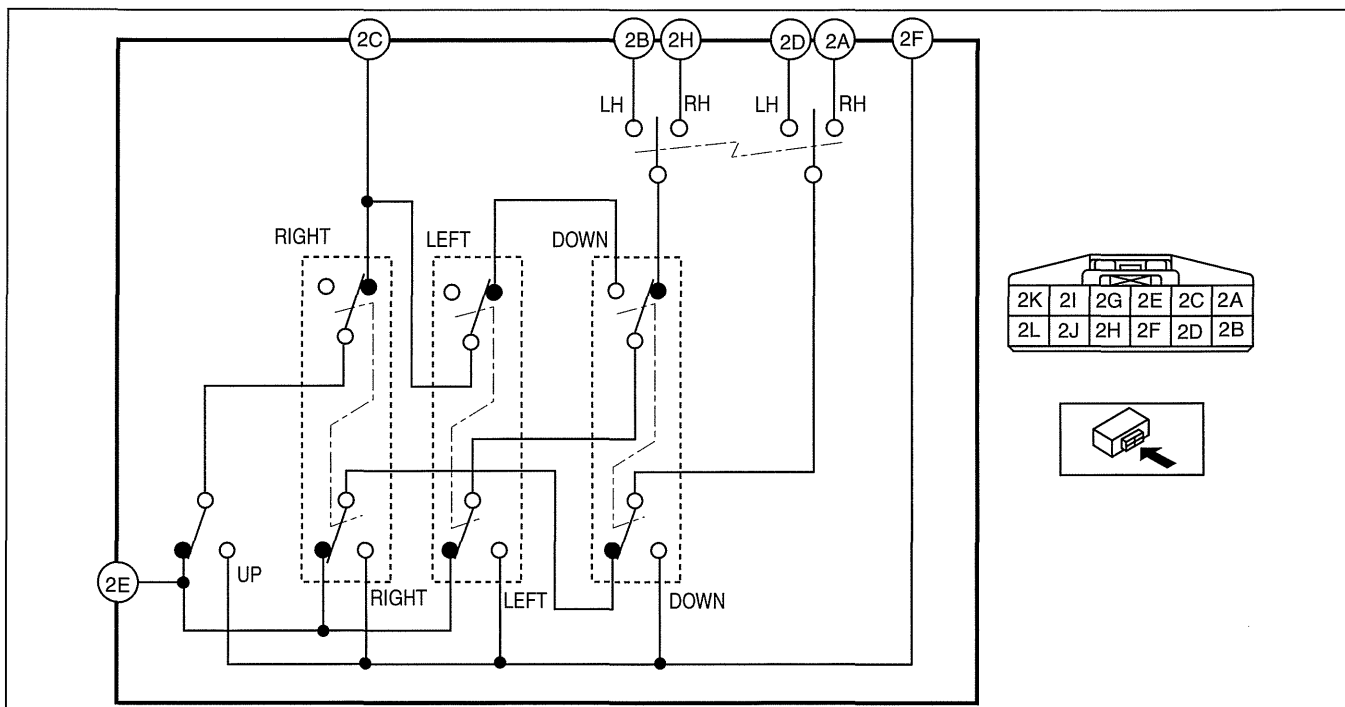
- The power outer mirror switch is integrated with the power window main switch.

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (driver's side) (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (driver's side) (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the power outer mirror switch. (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
5. Install in the reverse order of removal.

POWER OUTER MIRROR SWITCH INSPECTION

id091200420500

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Switch panel (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
3. Verify that the continuity between the power outer mirror switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the power outer mirror switch.



am3zzw00007838

GLASS/WINDOWS/MIRRORS

○—○ : Continuity

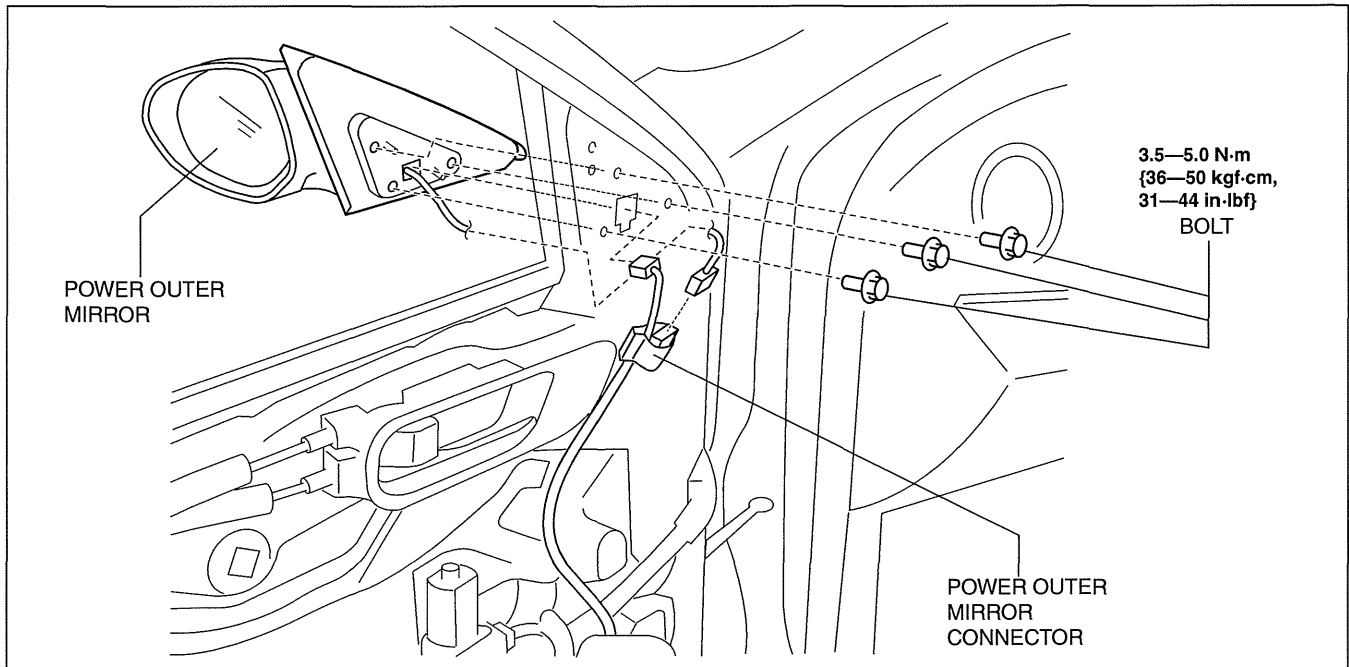
Operation		2A	2B	2C	2D	2E	2F	2H
LH	UP			○	○—○		○	
	DOWN			○	○—○		○	
	LEFT		○		○—○		○	
	RIGHT		○		○—○		○	
RH	UP	○		○		○	○	
	DOWN	○		○		○	○	
	LEFT	○				○	○—○	
	RIGHT	○				○	○—○	

am3uuw00003626

POWER OUTER MIRROR REMOVAL/INSTALLATION

id091200802500

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Disconnect the power outer mirror connector.



09-12

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5. Remove the bolts.
6. Remove the power outer mirror.
7. Install in the reverse order of removal.

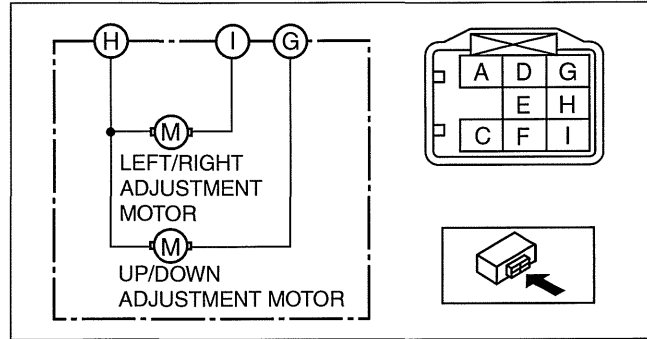
GLASS/WINDOWS/MIRRORS

POWER OUTER MIRROR INSPECTION

id091200420900

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Disconnect the power outer mirror connector.
4. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
5. Apply battery positive voltage and connect the ground to the power outer mirror terminals and inspect the power outer mirror operation.
 - If the power outer mirror does not operate as indicated in the table, replace it.

Mirror operation direction	Terminal	
	B+	Ground
Up	G	H
Down	H	G
Left	I	H
Right	H	I



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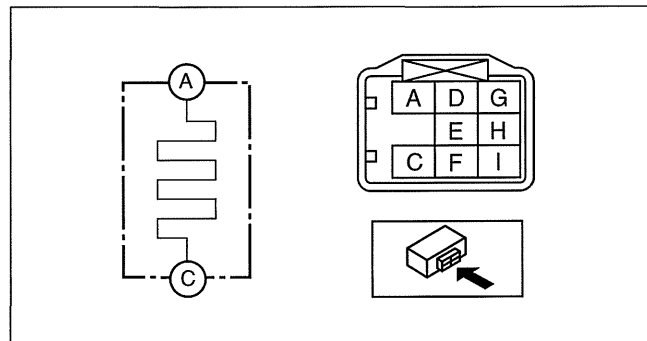
6. Apply battery voltage to power outer mirror connector terminal A, and connect terminal C to ground.
 - If not as indicated in the table, or if the resistance is not within the specification, replace the power outer mirror.

○—W—○ : Resistance

Mirror operation	Terminal	
	A	C
Heater	○—W—○	○—W—○

Resistance : 9—15 ohm

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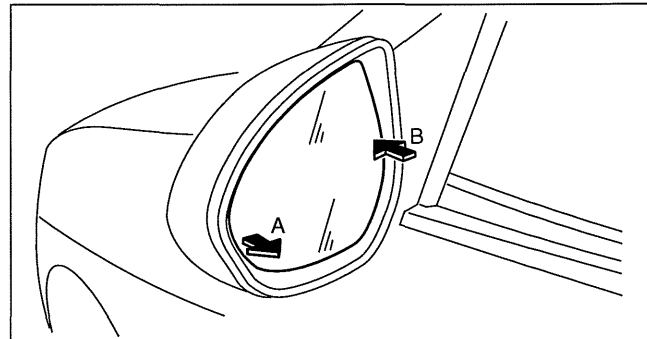


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OUTER MIRROR GLASS REMOVAL

id091200802600

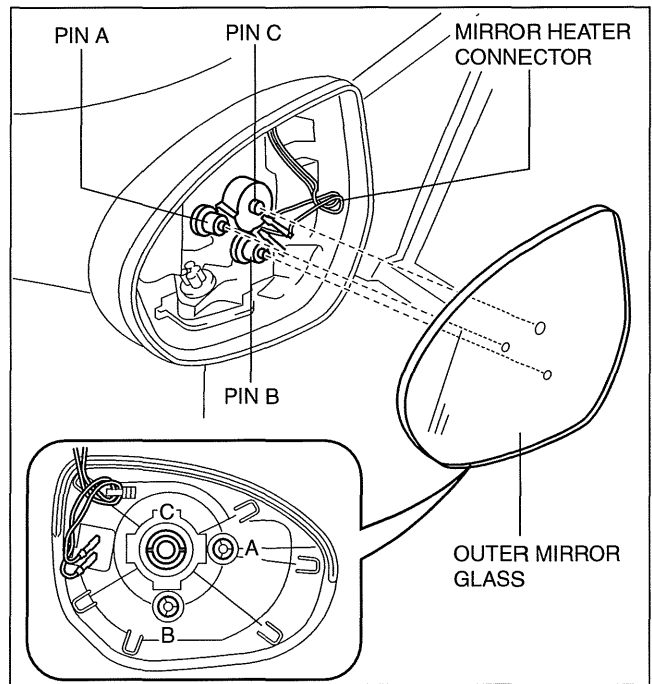
1. Press area B of the mirror glass so that area A moves outward.



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GLASS/WINDOWS/MIRRORS

2. Detach pin B while lifting up the inside of the mirror glass holder.
3. Pull the mirror glass holder and remove pins A and C.
4. Disconnect the mirror heater connectors. (vehicles with heated outer mirrors)
5. Remove the mirror glass holder and the outer mirror glass as a single unit.

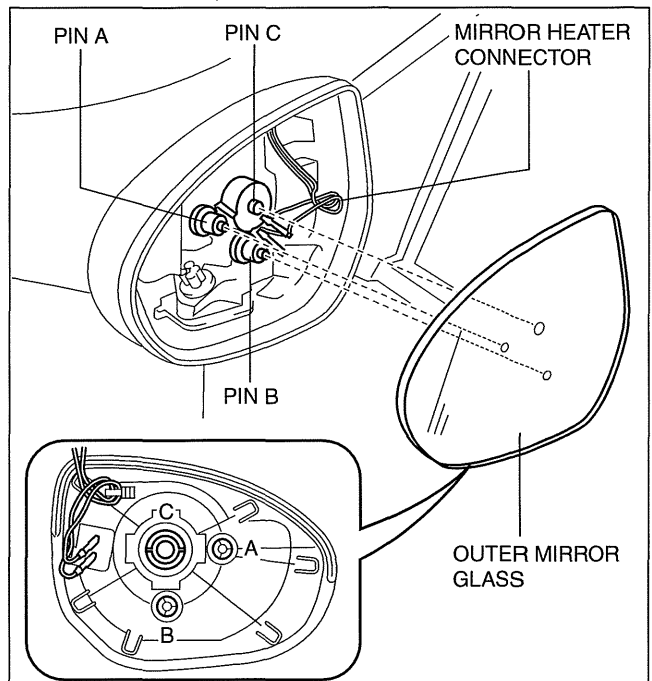


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OUTER MIRROR GLASS INSTALLATION

id091200802700

1. Connect the mirror heater connectors. (vehicles with heated outer mirrors)
2. Press part C on the outer mirror glass and install pin C.
3. Press part A on the outer mirror glass and install pins A.
4. Press part B on the outer mirror glass and install pin B.



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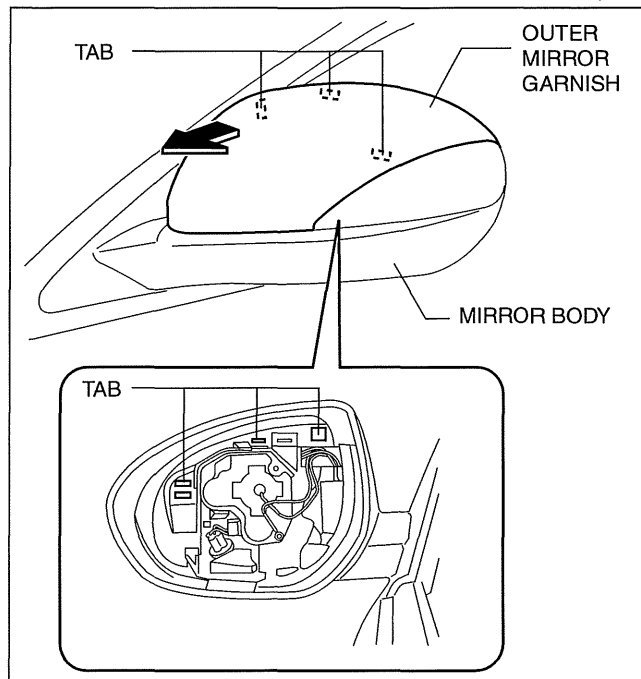
09-12

GLASS/WINDOWS/MIRRORS

OUTER MIRROR GARNISH REMOVAL/INSTALLATION

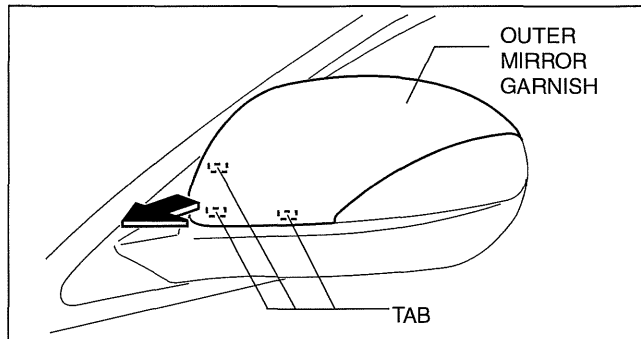
id091200811100

1. Remove the outer mirror glass from the outer mirror. (See 09-12-42 OUTER MIRROR GLASS REMOVAL.)
2. Pinch the end of the tab which is visible, and release the tab by pressing it toward the vehicle front (3 locations).



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3. Grasp the upper side of the outer mirror garnish and remove it by pulling it in the direction of the arrow.
4. Install in the reverse order of removal.

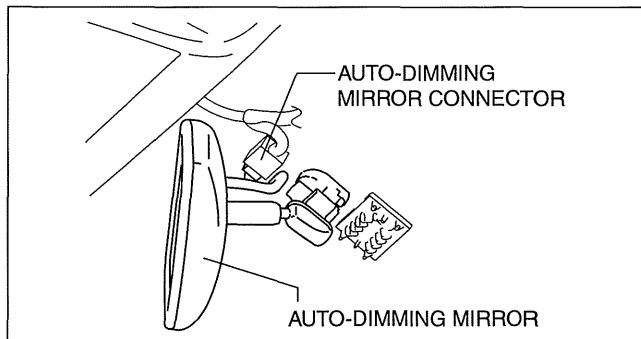


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AUTO-DIMMING MIRROR REMOVAL

id091200850100

1. Remove the rain sensor cover. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
2. Remove the rain sensor. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
3. Disconnect the auto-dimming mirror connector.



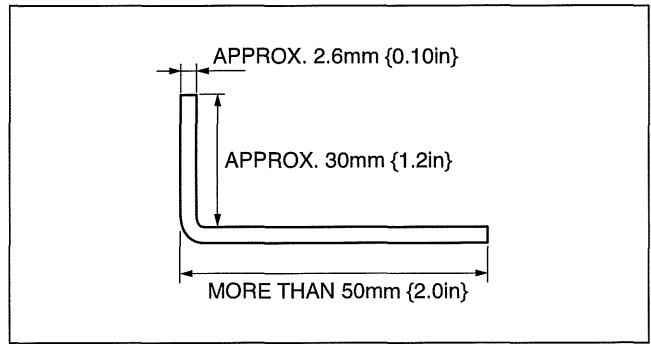
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GLASS/WINDOWS/MIRRORS

4. Make a tool as shown in the figure using wire.

Caution

- Using the tool with bare hands can cause injury. Always wear gloves when using the tool.
- To prevent damage to the lens, do not use a flathead screwdriver.

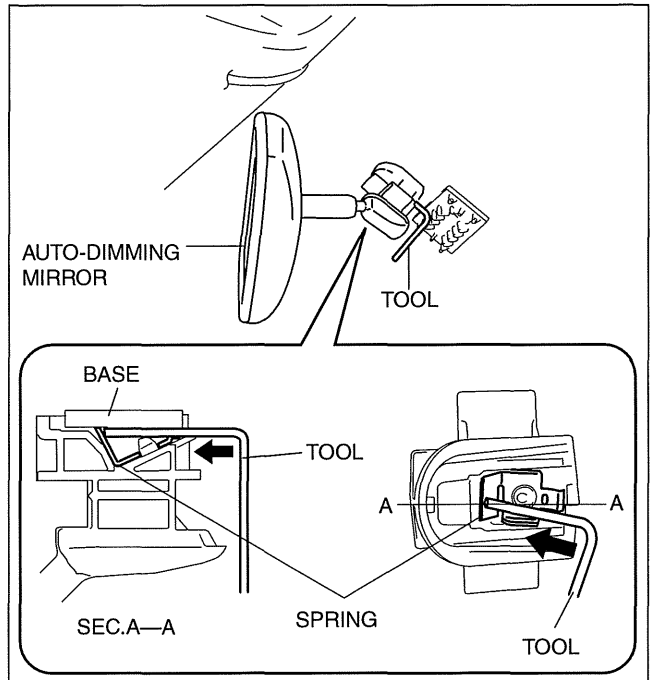


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5. Insert the tool to the position shown in the figure and press the center part of the spring.

Caution

- Perform the procedure while being careful not to damage the lens.

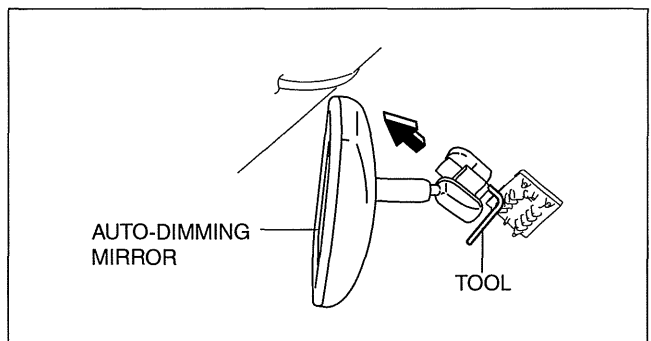


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6. Pull out the rearview mirror toward the vehicle rear.

Caution

- When removing the rearview mirror, it may hit the headliner and cause a damage. Hold the rearview mirror with hands and be careful not to contact it with the headliner.



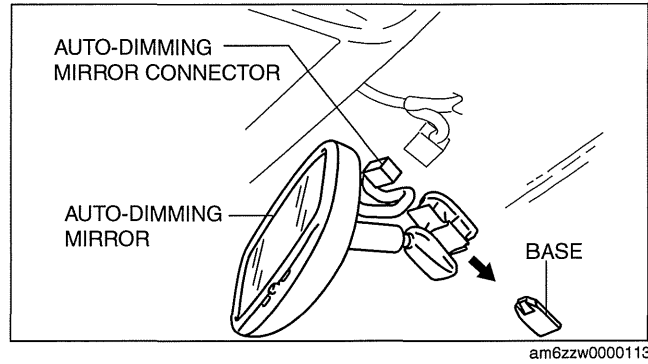
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GLASS/WINDOWS/MIRRORS

AUTO-DIMMING MIRROR INSTALLATION

id091200850200

1. Install the auto-dimming mirror onto the base.
2. Connect the auto-dimming mirror connector.
3. Install the rain sensor. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
4. Install the rain sensor cover. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)



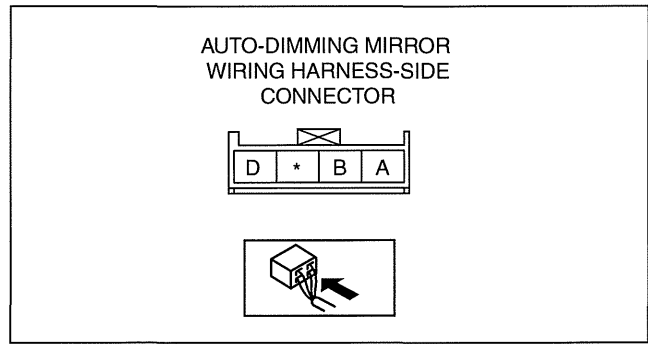
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AUTO-DIMMING MIRROR INSPECTION

id091200812800

1. Remove the rain sensor. (vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
2. Remove the rain sensor cover. (vehicles without auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
3. Measure the voltage at each terminal (other than terminal A).
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item (s)" and related wiring harnesses.
 - If the system does not work properly even though the inspection items or related wiring harnesses do not have any malfunction, replace the auto-dimming mirror.

Terminal Voltage Table (Reference)



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Terminal	Signal name	Connected to	Measured condition	Voltage (V)	Inspection item(s)
A	Power supply (IG1)	<ul style="list-style-type: none"> • Ignition switch • METER 15 A fuse 	Switch the ignition to ON	B+	<ul style="list-style-type: none"> • Ignition switch • METER 15 A fuse • Related wiring harnesses
			Switch the ignition to Off	1.0 or less	
B	R position signal	Back-up light switch/TR switch	R position	B+	<ul style="list-style-type: none"> • Back-up light switch/TR switch • Related wiring harnesses
			Other than R position	1.0 or less	
D	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Related wiring harnesses

GLASS/WINDOWS/MIRRORS

REARVIEW MIRROR REMOVAL

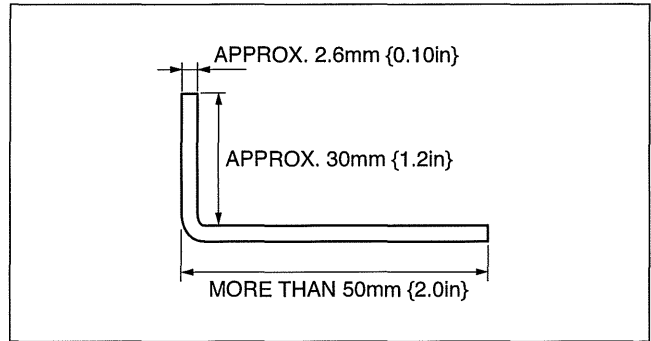
id091200806800

Vehicles With Auto Light/Wiper System

1. Remove the rain sensor. (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
2. Make a tool as shown in the figure using wire.

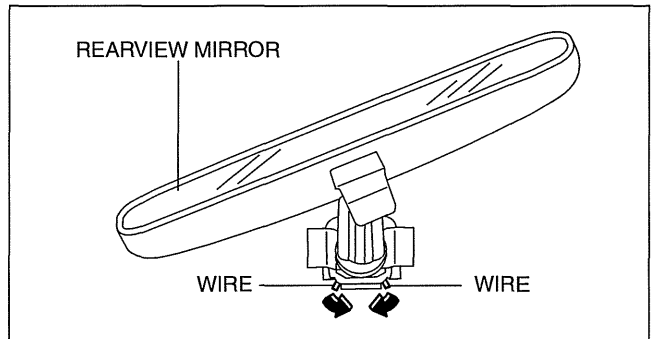
Caution

- Using the tool with bare hands can cause injury. Always wear gloves when using the tool.
- To prevent damage to the lens, do not use a flathead screwdriver.



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3. Push the wire in the direction of the arrow shown in the figure.

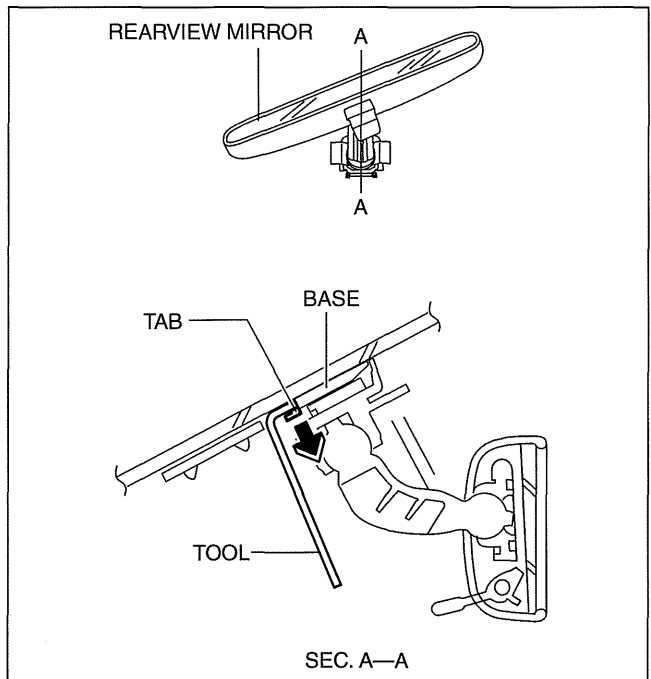


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4. Insert a tool into the position shown in the figure and release the tab in the direction of the arrow.

Caution

- Perform the procedure while being careful not to damage the lens.



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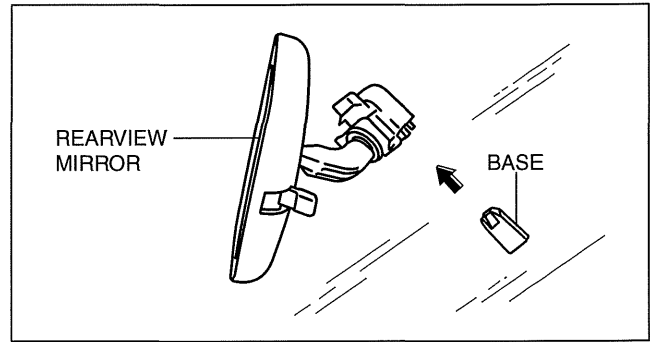
09-12

GLASS/WINDOWS/MIRRORS

5. Pull the rearview mirror in the direction of the arrow shown in the figure and remove it.

Caution

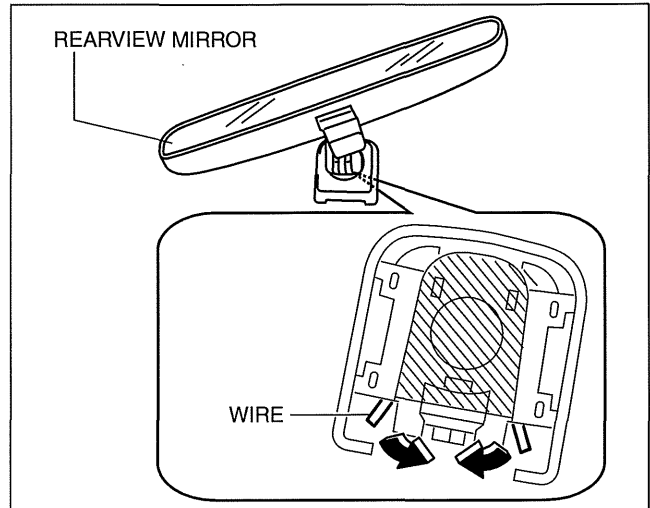
- When removing the rearview mirror, it may hit the headliner and cause a damage. Hold the rearview mirror with hands and be careful not to contact it with the headliner.



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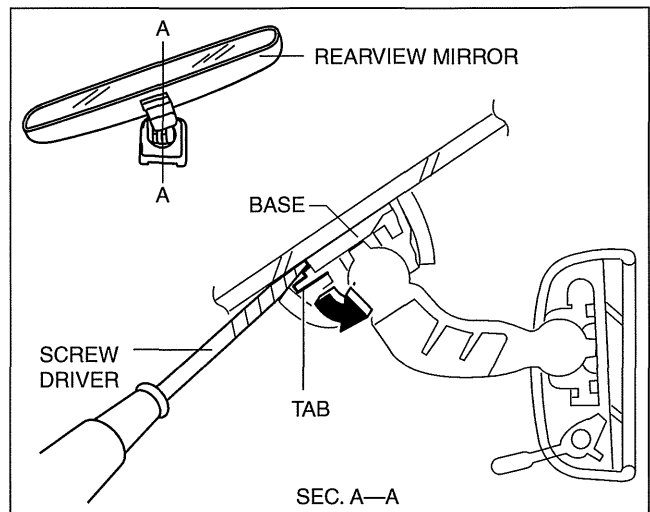
Vehicles Without Auto Light/Wiper System

1. Push the wire in the direction of the arrow shown in the figure.
2. Insert a flathead screwdriver between the rearview mirror and base.



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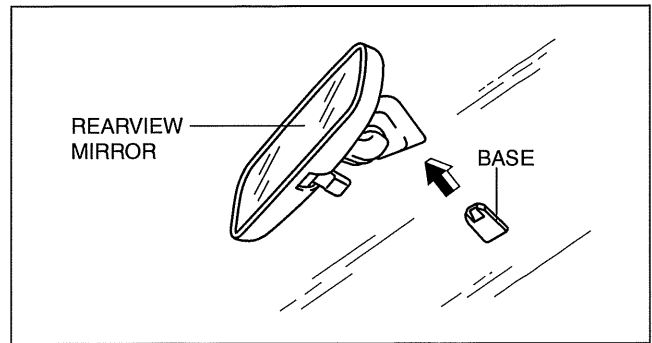
3. Insert a tape-wrapped flathead screwdriver to the position shown in the figure and press the center part of the spring.



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GLASS/WINDOWS/MIRRORS

4. Pull out the rearview mirror toward the vehicle rear.

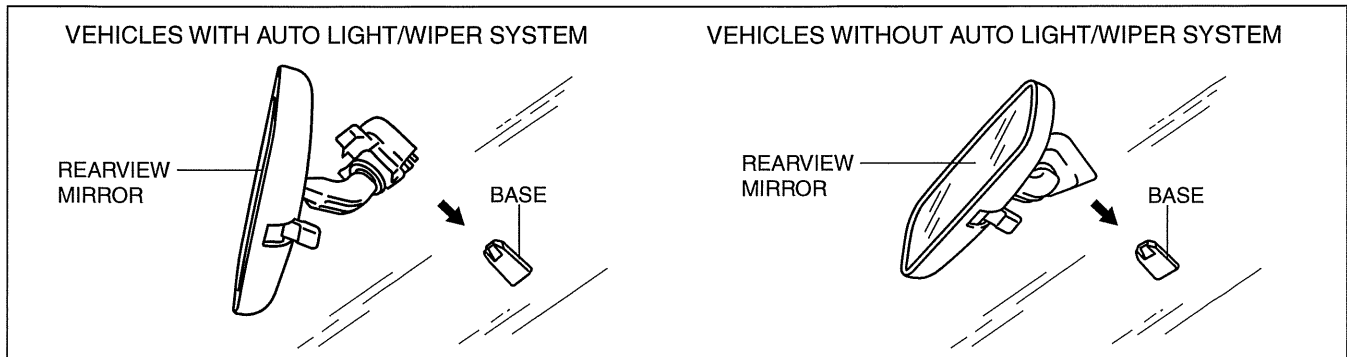


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REARVIEW MIRROR INSTALLATION

id091200806700

1. Install the rearview mirror onto the base.



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09-12

2. Install the rain sensor. (vehicles with auto light/wiper system)(See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)

BASE REMOVAL

id091200803200

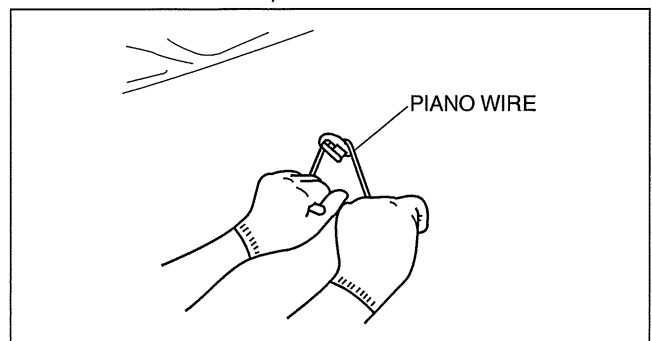
1. Remove the rearview mirror. (See 09-12-47 REARVIEW MIRROR REMOVAL.)
2. Wind each end of a wire around a bar.

Warning

- Using the piano wire with bare hands can cause injury. Always wear gloves when using the piano wire.

Note

- Use a long sawing action to spread the work over the whole length of the piano wire to prevent it from breaking.



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3. Fix one end of the piano wire, and while pulling the other end, cut the sealant to remove the base.

GLASS/WINDOWS/MIRRORS

BASE INSTALLATION

id091200803300

1. Cut away all of the original sealant using a razor.

Warning

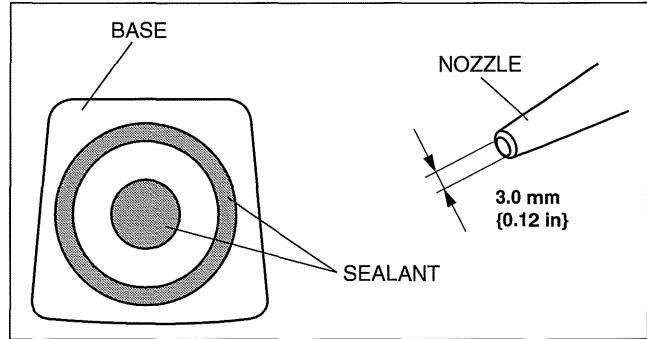
- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

2. Clean and degrease the ceramic coating on the glass and the base.

Caution

- Keep the area free of dirt and grease, and do not touch the surface. Otherwise, the primer may not properly bond to the surface of the glass.

3. Apply primer to the bonding area of the glass and the base.
4. Use only glass primer on the glass, and body primer on the base. Allow the primer to dry for **approx. 30 min.**
5. Apply **3.0 mm {0.12 in}** layer of sealant to the base.

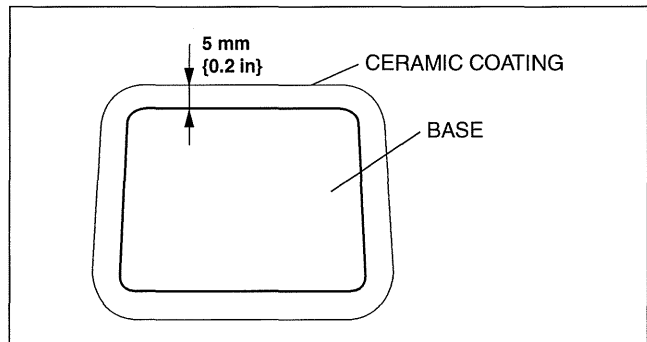


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6. Center the base in the ceramic coating and press it onto the glass.
7. Use isopropyl alcohol to remove any excess repair sealant.

Hardening time of sealant

Temperature	Surface hardening time	Time required until car can be put into service
5 °C {41 °F}	Approx. 1.5 h	Approx. 12 h
20 °C {68 °F}	Approx. 1 h	Approx. 4 h
35 °C {95 °F}	Approx. 10 min	Approx. 2 h



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8. Install the rearview mirror.

GLASS/WINDOWS/MIRRORS PERSONALIZATION FEATURES SETTING PROCEDURE

id091200810000

1. Refer to the control system personalization features setting. (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)

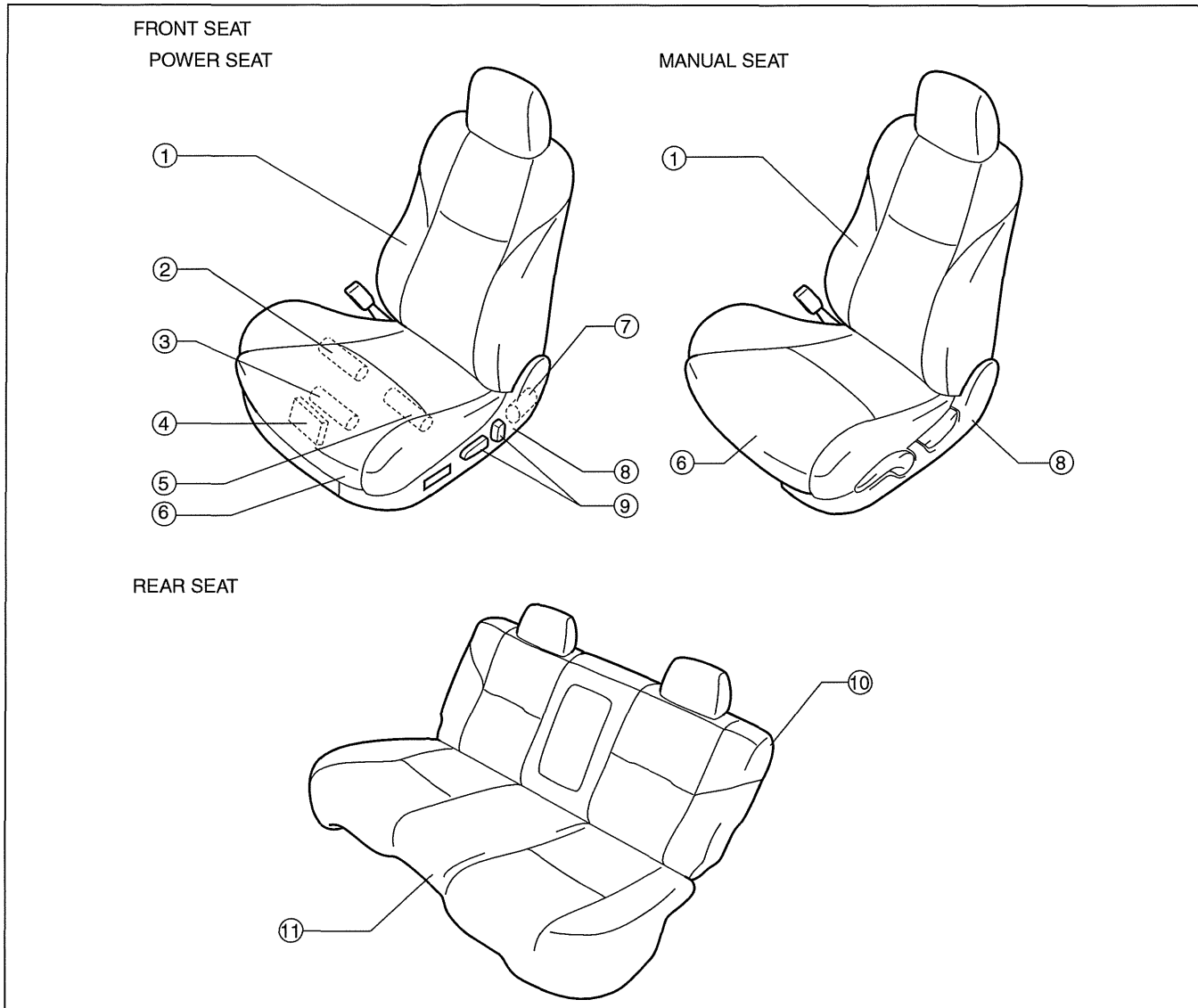
09-13 SEATS

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SEATS

SEATS LOCATION INDEX

id091300800100



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1	Front seat (See 09-13-3 FRONT SEAT REMOVAL/ INSTALLATION.)
2	Front tilt motor (See 09-13-38 FRONT TILT MOTOR INSPECTION.)
3	Slide motor (See 09-13-38 SLIDE MOTOR INSPECTION.)
4	Position memory control module (See 09-13-43 POSITION MEMORY CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-13-41 POSITION MEMORY CONTROL MODULE INSPECTION.)
5	Rear tilt motor (See 09-13-38 REAR TILT MOTOR INSPECTION.)
6	Front seat cushion trim (See 09-13-22 FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION.)
7	Recliner motor (See 09-13-38 RECLINER MOTOR INSPECTION.)

8	Front seat side cover (See 09-13-23 FRONT SEAT COVER REMOVAL/ INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM].) (See 09-13-25 FRONT SEAT COVER REMOVAL/ INSTALLATION [VEHICLES WITHOUT POWER SEAT SYSTEM].)
9	Power seat switch (See 09-13-39 POWER SEAT SWITCH INSPECTION.)
10	Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/ INSTALLATION.) (See 09-13-33 REAR SEAT BACK FRAME REMOVAL/INSTALLATION.) (See 09-13-36 REAR SEAT BACK TRIM REMOVAL/INSTALLATION.)
11	Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/ INSTALLATION.) (See 09-13-37 REAR SEAT CUSHION TRIM REMOVAL/INSTALLATION.)

SEATS

FRONT SEAT REMOVAL/INSTALLATION

id091300800200

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

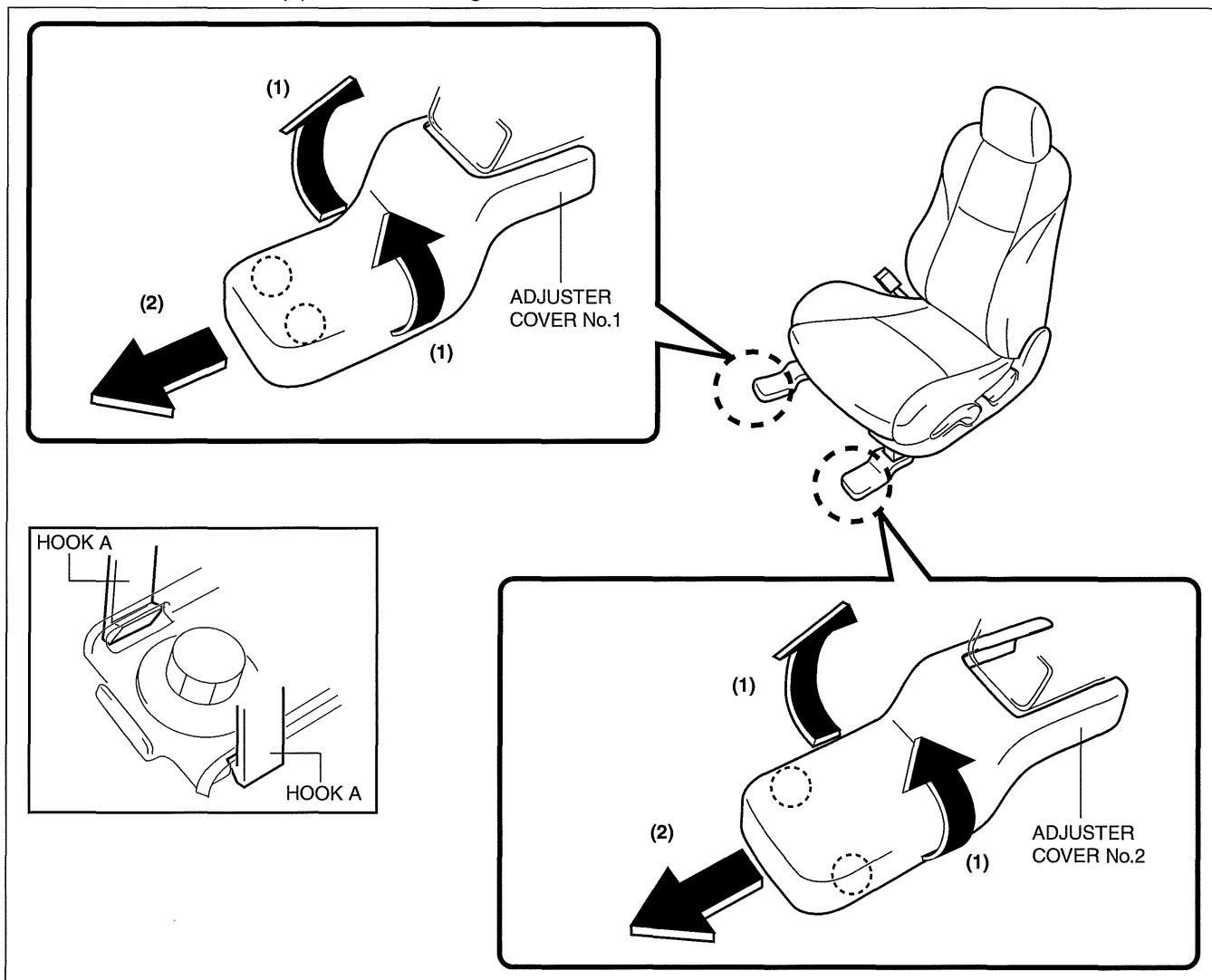
Note

- When removing the front seat out of the vehicle or putting it back in, it can be performed smoothly by removing the headrest.

Driver-side

Vehicles without power seat system

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Detach hook A while pulling the adjuster cover No.1 and No.2 in the direction of the arrow (1), and remove it in the direction of arrow (2) shown in the figure.

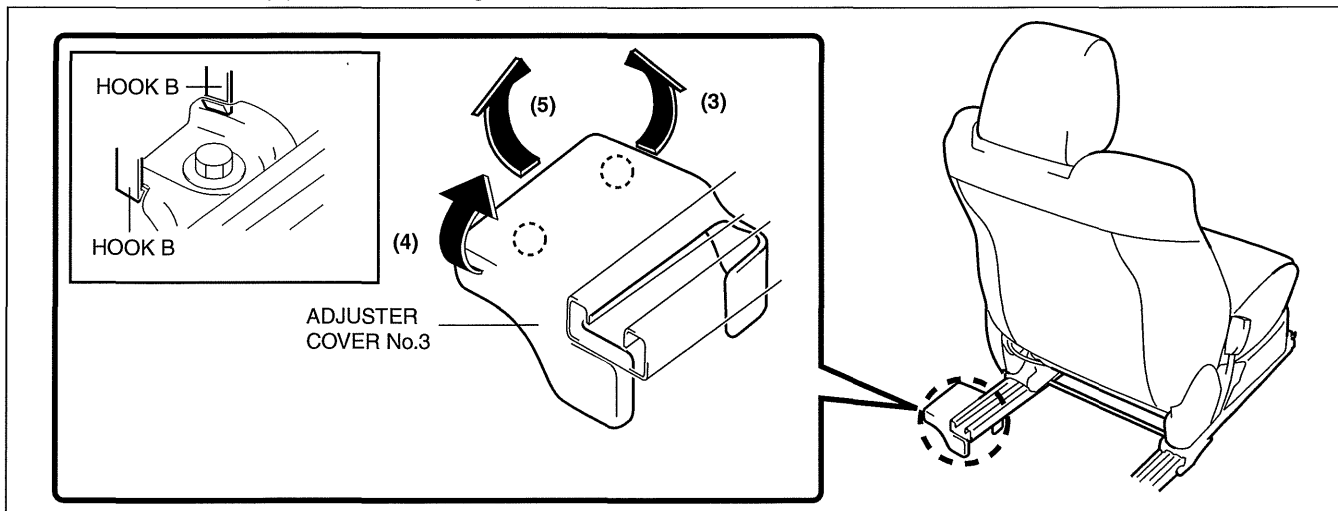


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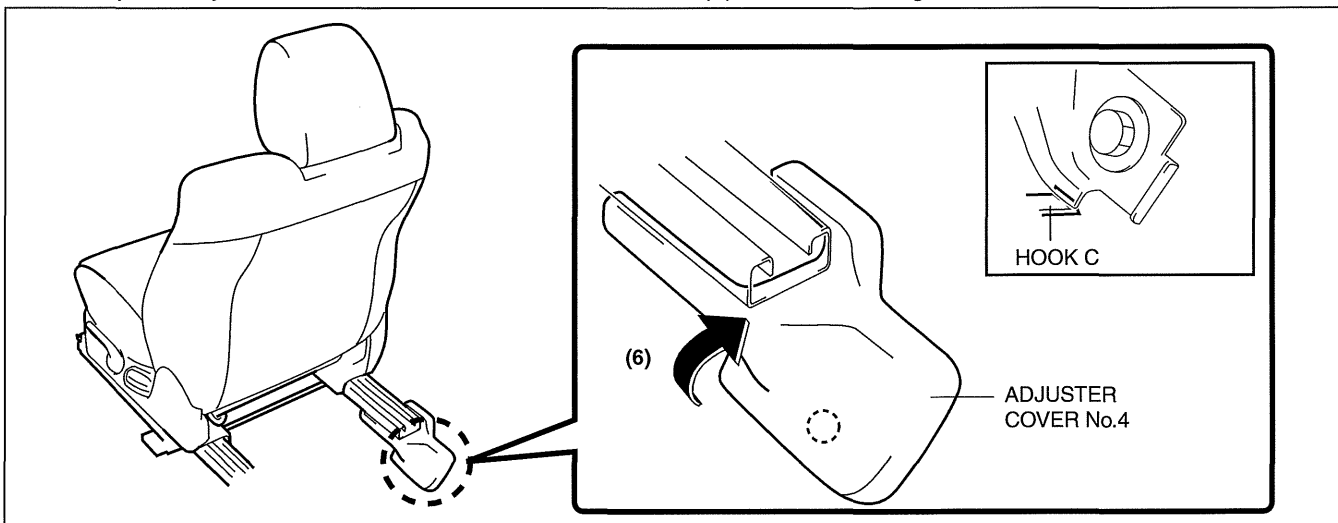
SEATS

5. Detach hook B while pulling the adjuster cover No.3 in the direction of the arrow (3), (4) and remove it in the direction of arrow (5) shown in the figure.



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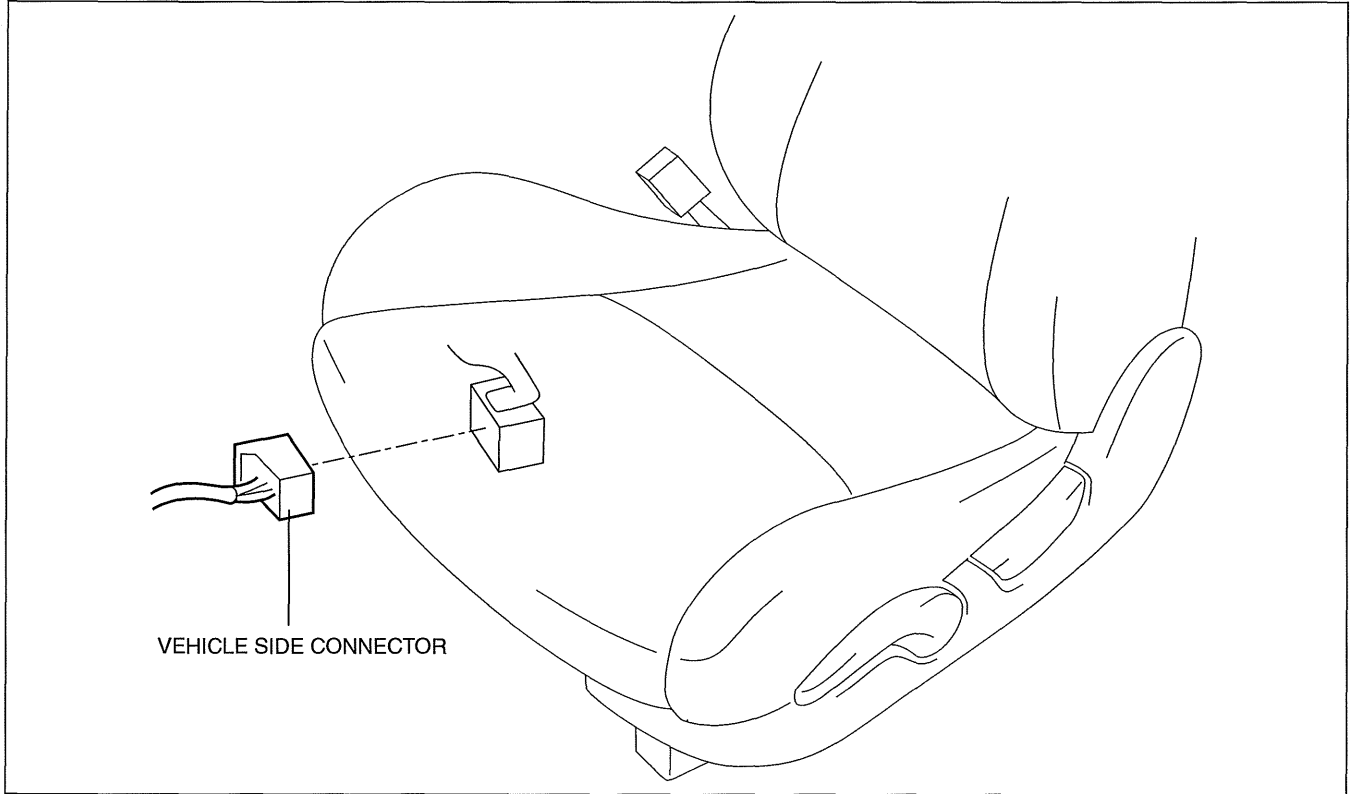
6. Pull up the adjuster cover No.4 in the direction of arrow (6) shown in the figure, while remove the hook C.



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SEATS

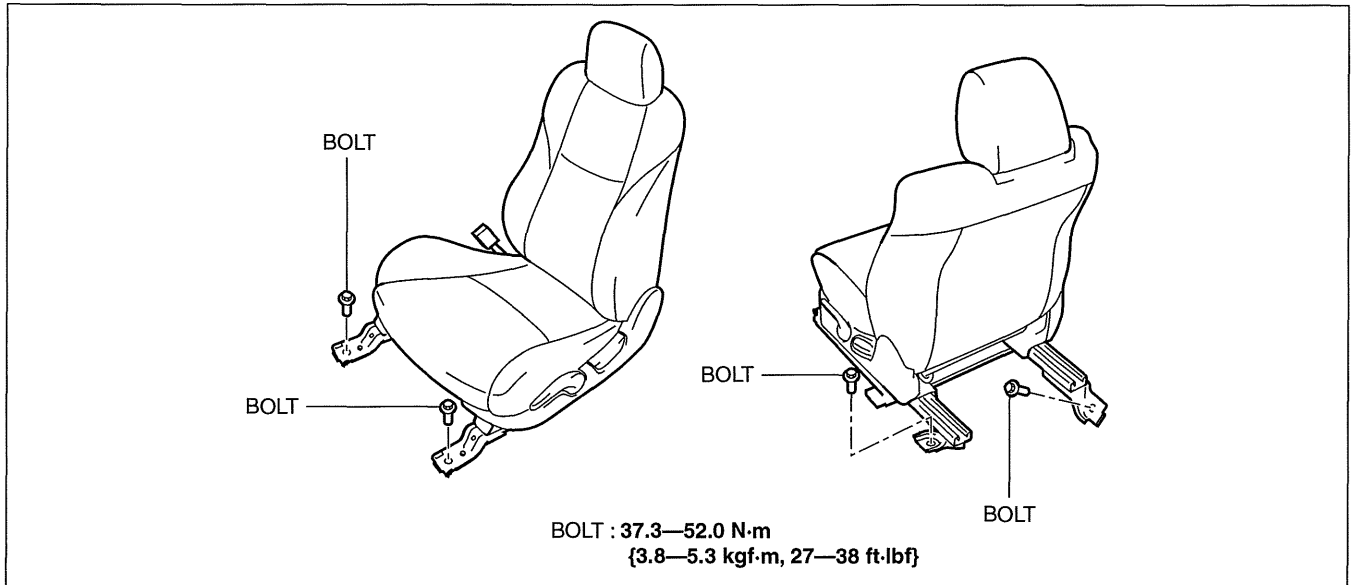
7. Remove the front cover.(Vehicles with power seat system) (See 09-13-23 FRONT SEAT COVER REMOVAL/ INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM].)
8. Disconnect the connector.



09-13

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9. Remove the bolts, then remove the front seat.



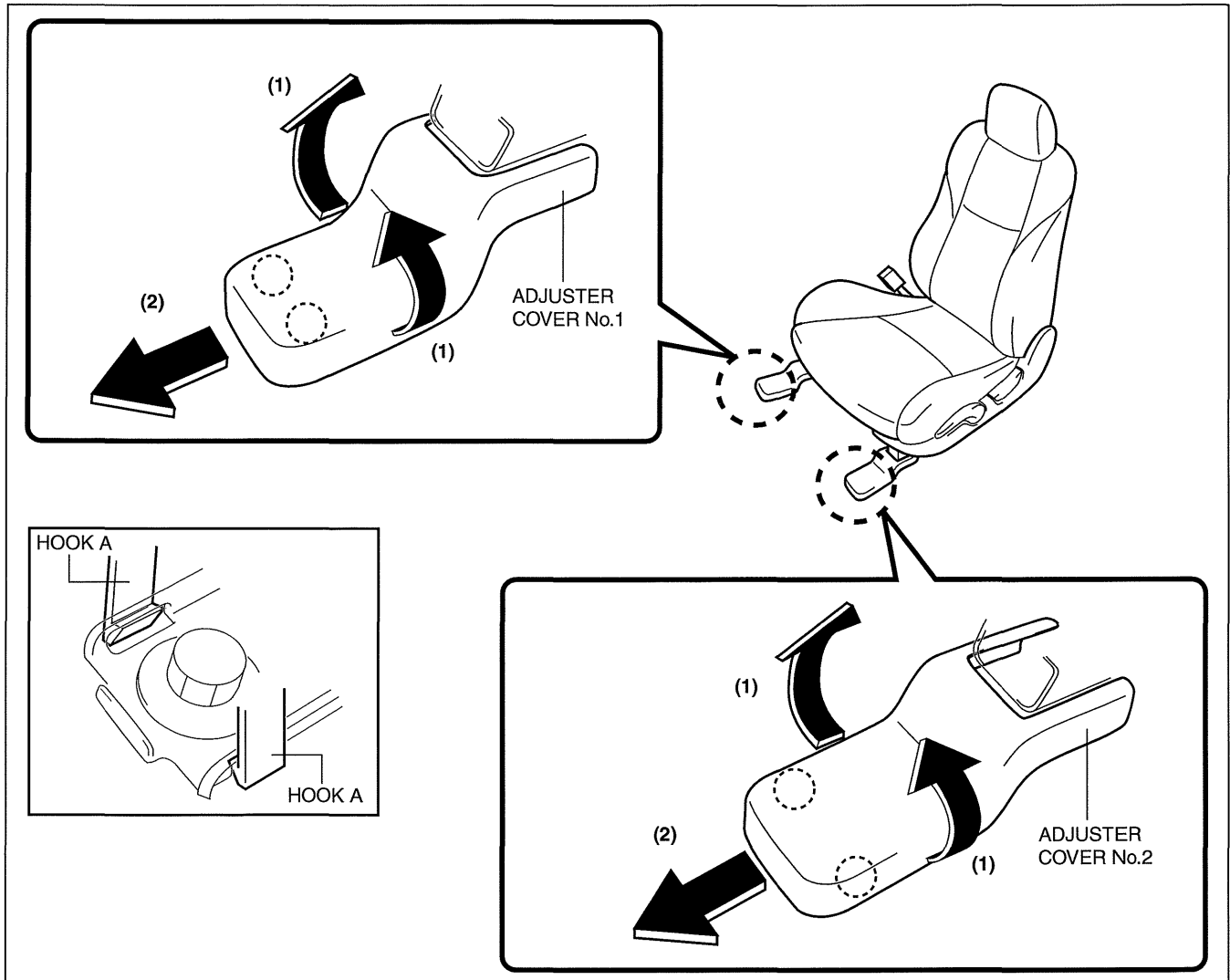
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10. Install in the reverse order of removal.

SEATS

Vehicles with power seat system

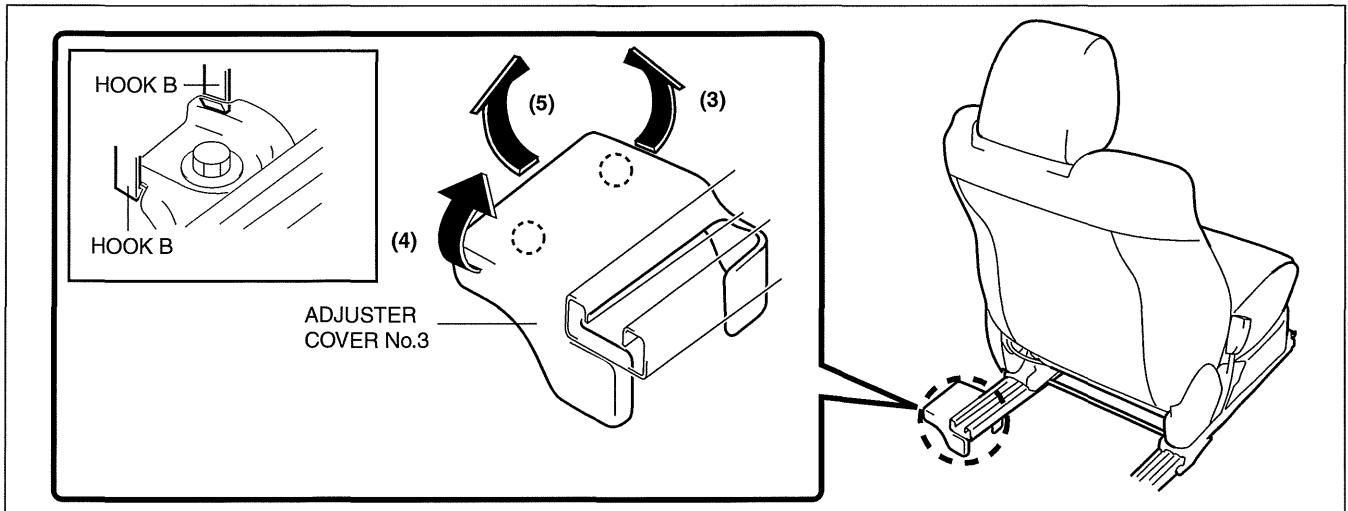
1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Detach hook A while pulling the adjuster cover No.1 and No.2 in the direction of the arrow (1), and remove it in the direction of arrow (2) shown in the figure.



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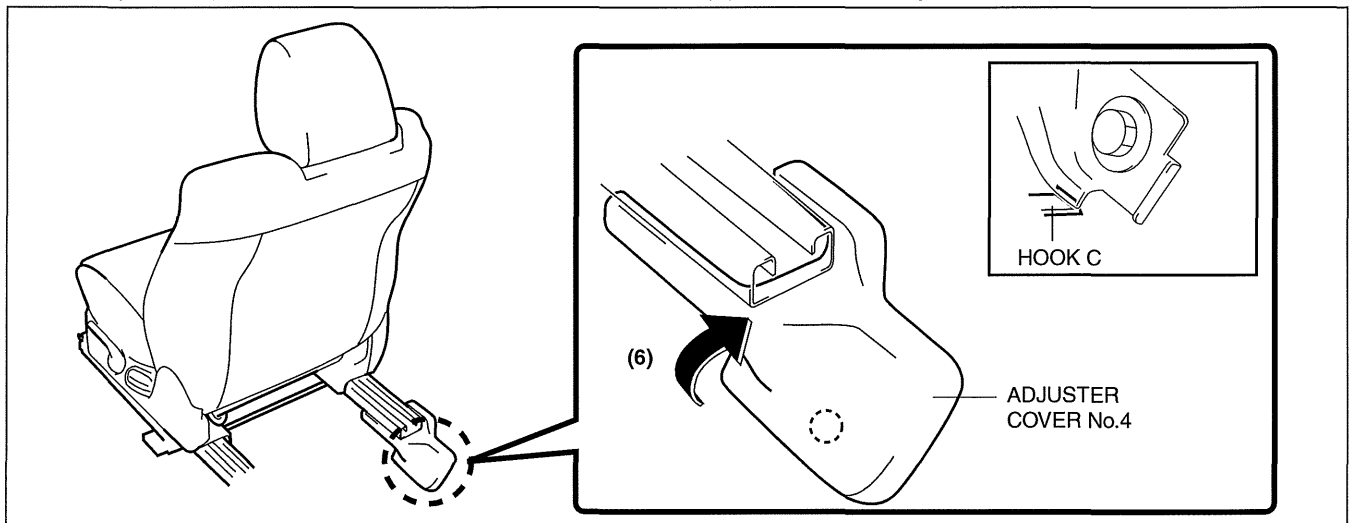
SEATS

5. Detach hook B while pulling the adjuster cover No.3 in the direction of the arrow (3), (4) and remove it in the direction of arrow (5) shown in the figure.



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6. Pull up the adjuster cover No.4 in the direction of arrow (6) shown in the figure, while remove the hook C.

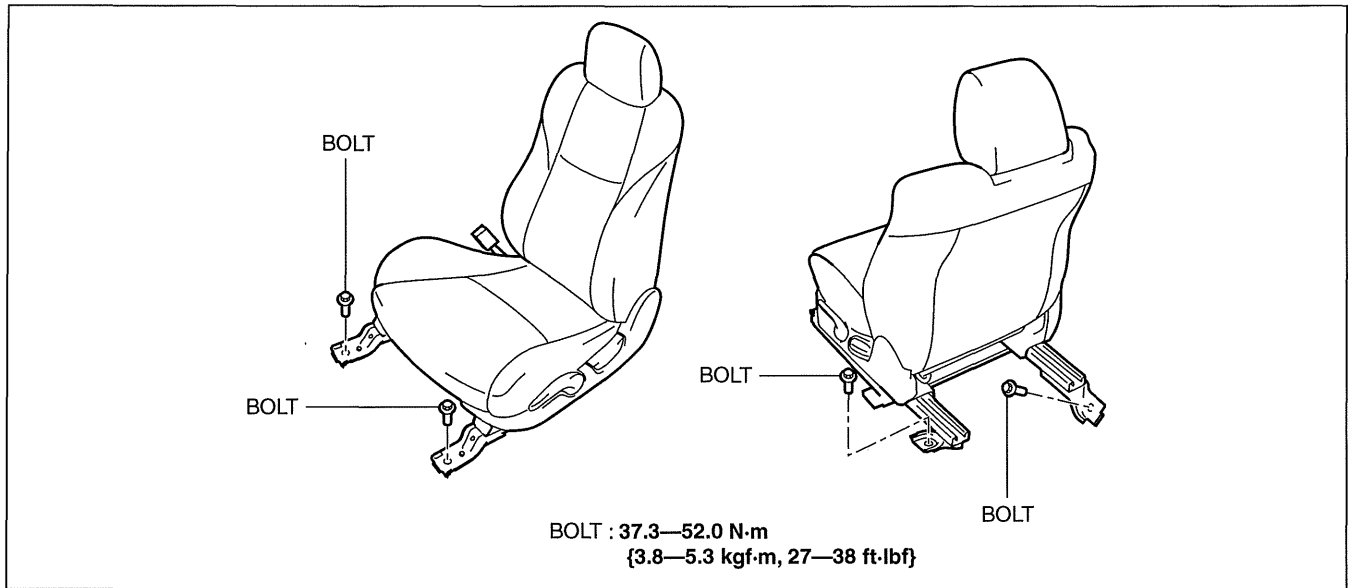


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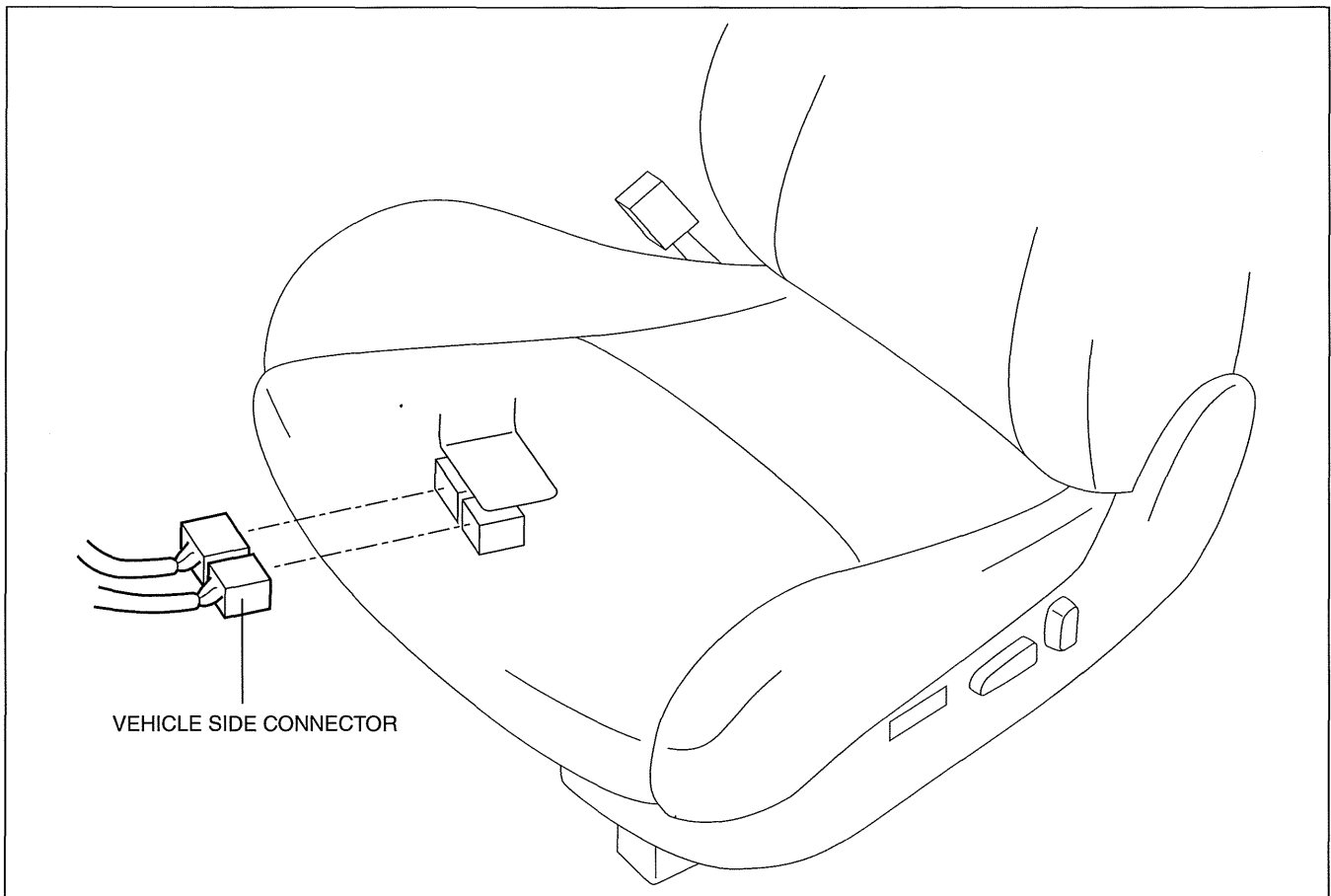
SEATS

7. Remove the front cover.(Vehicles with power seat system) (See 09-13-23 FRONT SEAT COVER REMOVAL/ INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM].)
8. Remove the bolts, then remove the front seat.



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9. Disconnect the connector.



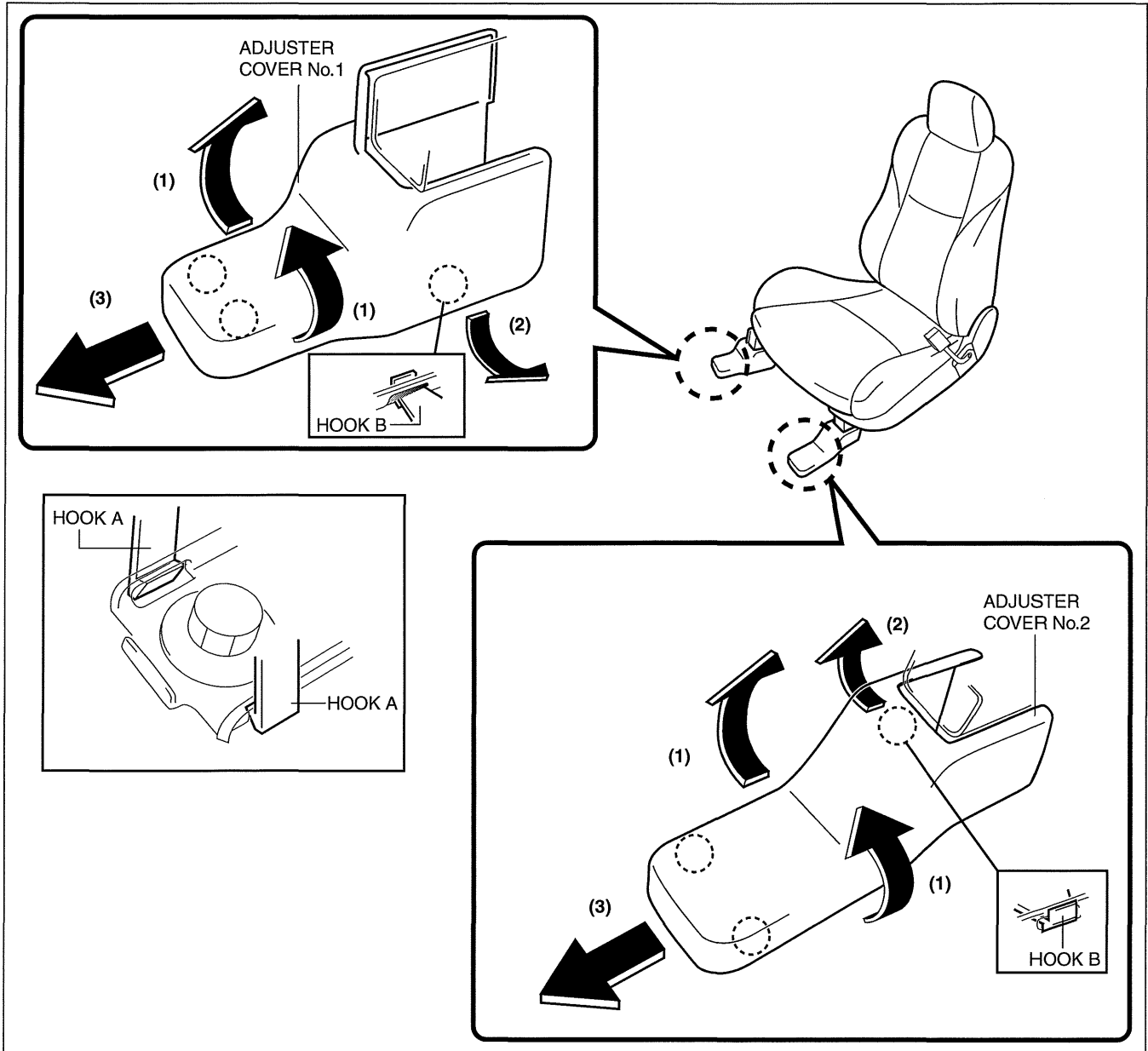
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10. Install in the reverse order of removal.

SEATS

Passenger-side

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the belt anchor cover. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
5. Remove the lower anchor of the front seat belt installation bolt. (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
6. Detach hook A and B while pulling the adjuster cover No.1 in the direction of the arrow (1), (2) and remove it in the direction of arrow (3) shown in the figure.

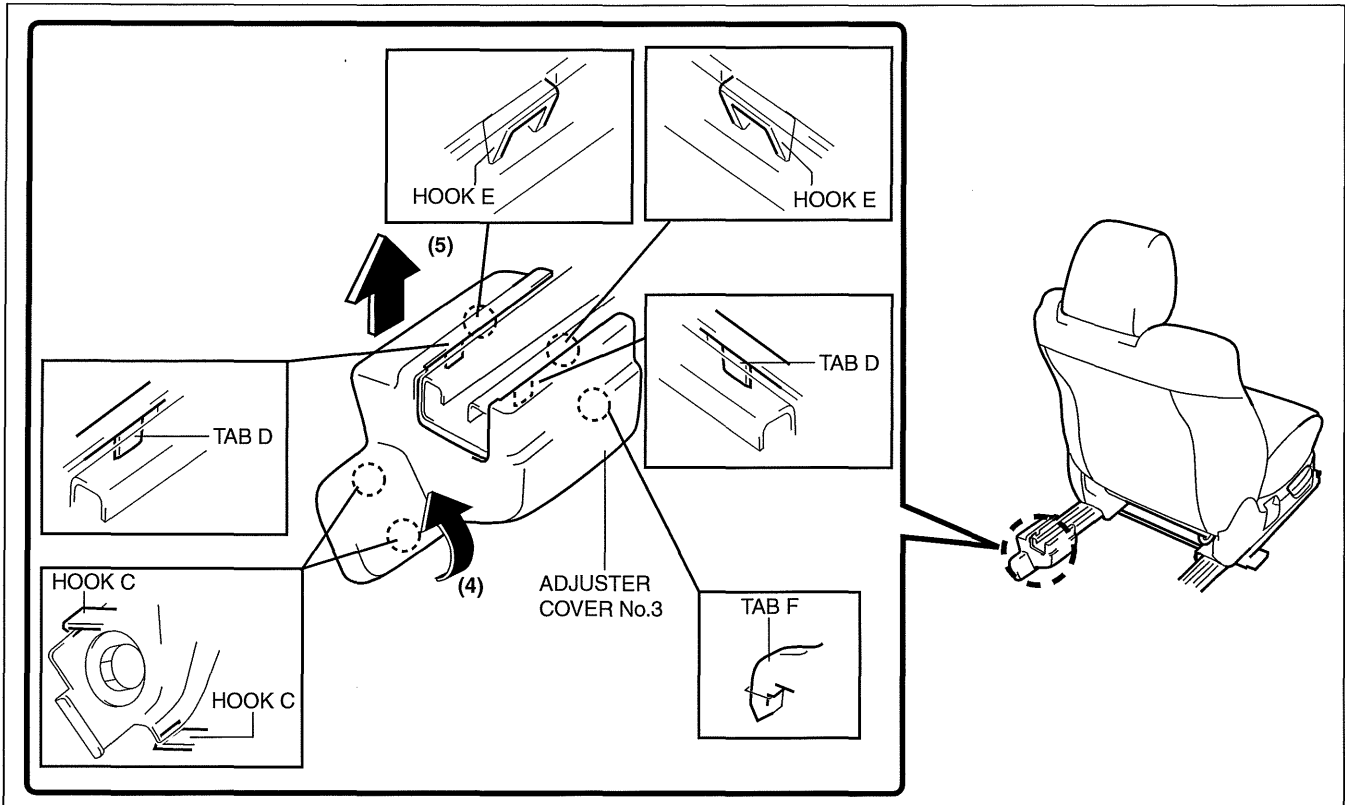


09-13

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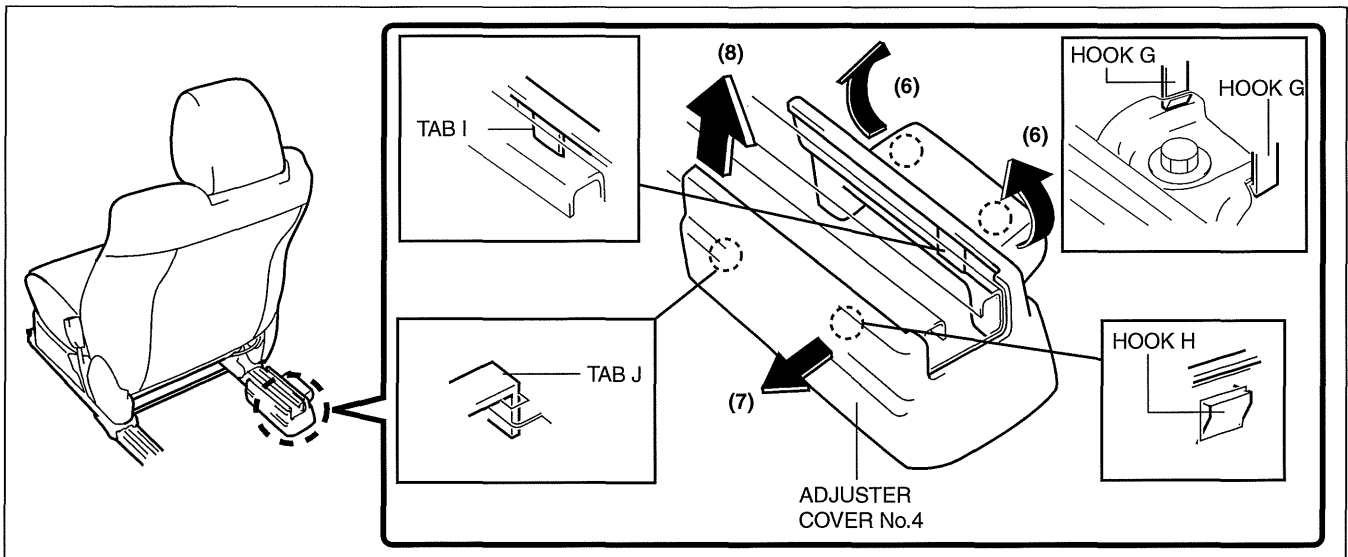
SEATS

7. Detach hook C while pulling the adjuster cover No.3 in the direction of the arrow (4) and remove it in the direction of arrow (5) shown in the figure, while remove the tab D, F and hook E.



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8. Detach hook G and H while pulling the adjuster cover No.4 in the direction of the arrow (6), (7) and remove it in the direction of arrow (8) shown in the figure, while remove the tab I and J.



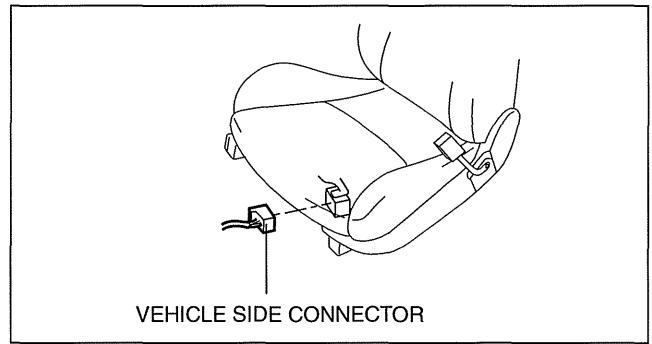
am3uuw0000494

Caution

- When pulling the adjuster cover No.4, be careful not to damage the hooks and tabs.

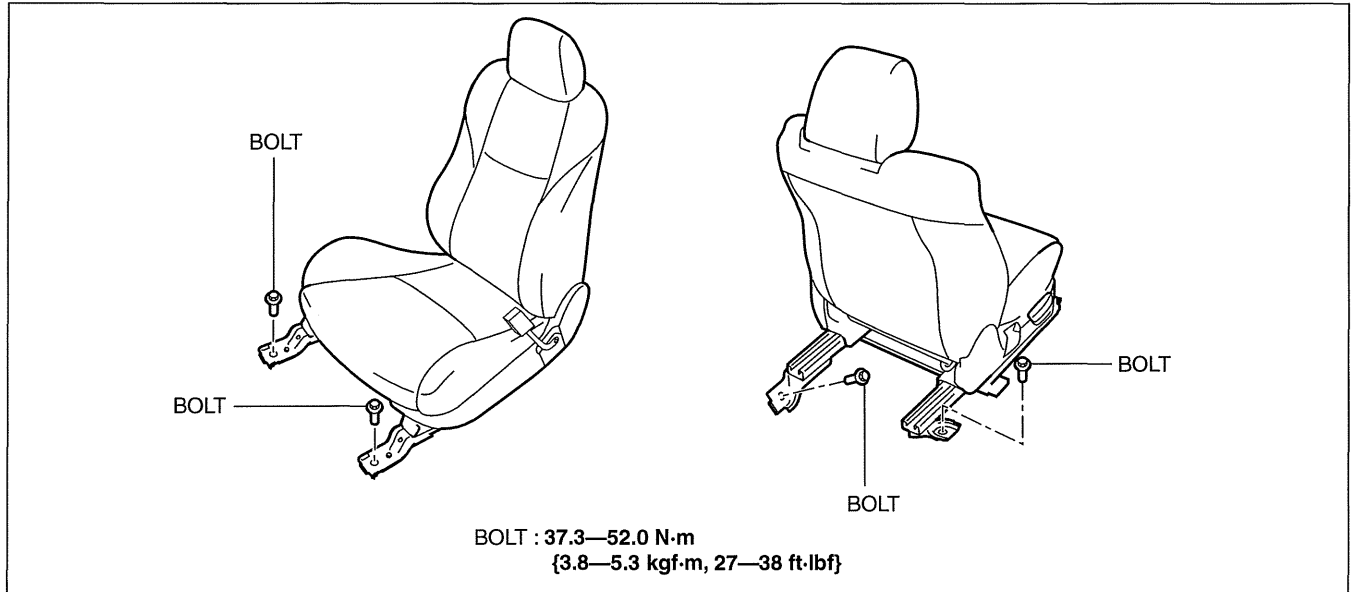
SEATS

9. Disconnect the connector.



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10. Remove the bolts, then remove the front seat.



am3uuw000494

11. Install in the reverse order of removal.

FRONT SEAT BACK COMPONENT [VEHICLES WITHOUT POWER SEAT SYSTEM] REMOVAL/INSTALLATION

id091300912900

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

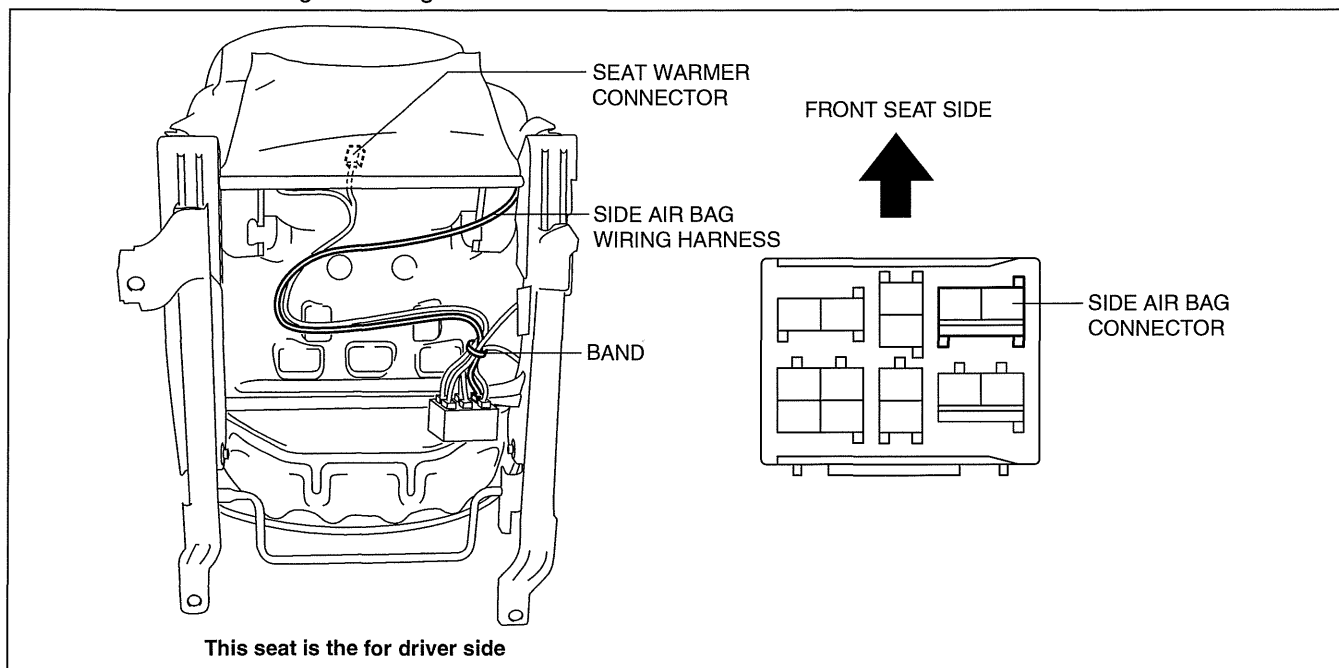
- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove the headrest.
6. Remove the side cover. (See 09-13-25 FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITHOUT POWER SEAT SYSTEM].)

09-13

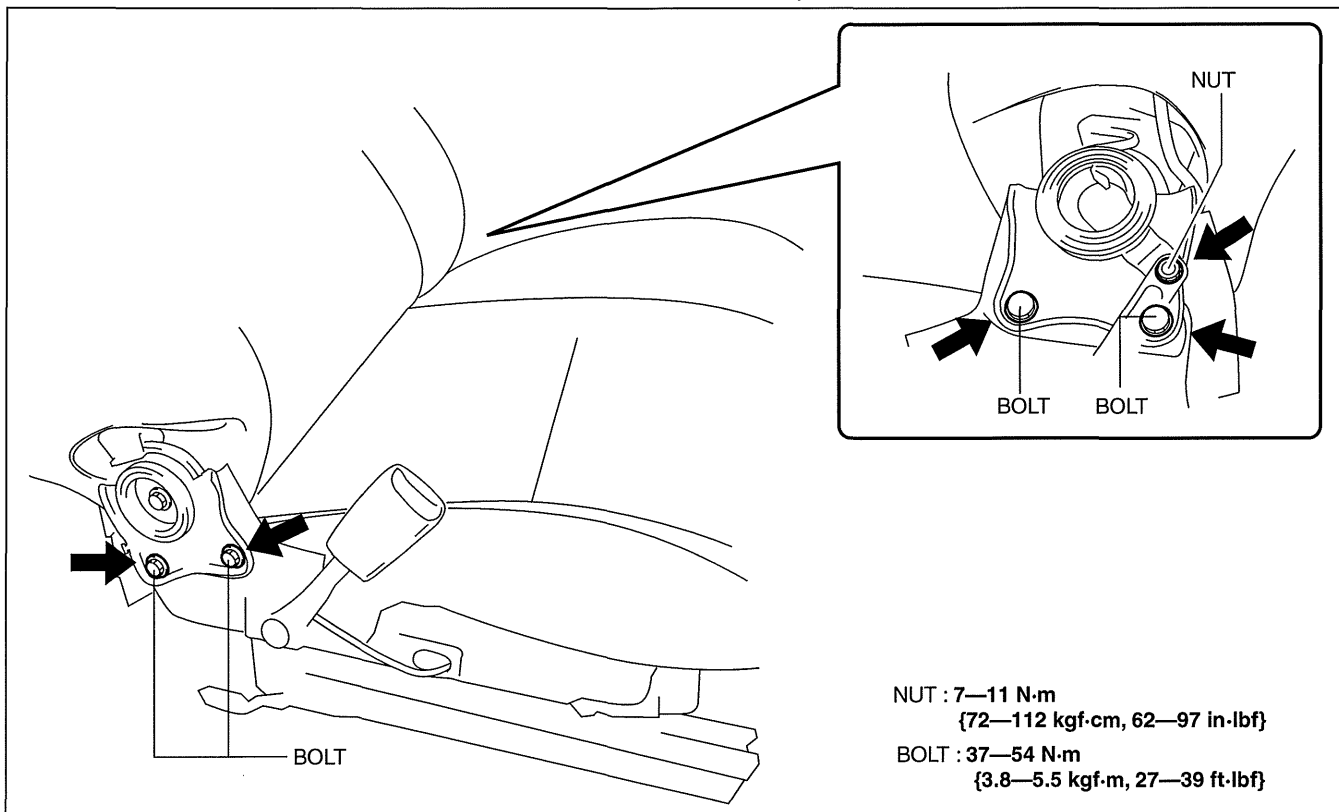
SEATS

7. Cut the band securing the wiring harness.



am3uuw0000526

8. Disconnect the side air bag connector and seat warmer connector (Vehicles with power seat system).
9. Remove the bolts and nut, then remove the front seat back component.



am3uuw0000355

10. Install in the reverse order of removal.

SEATS

FRONT SEAT BACK TRIM REMOVAL/INSTALLATION

id091300912000

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

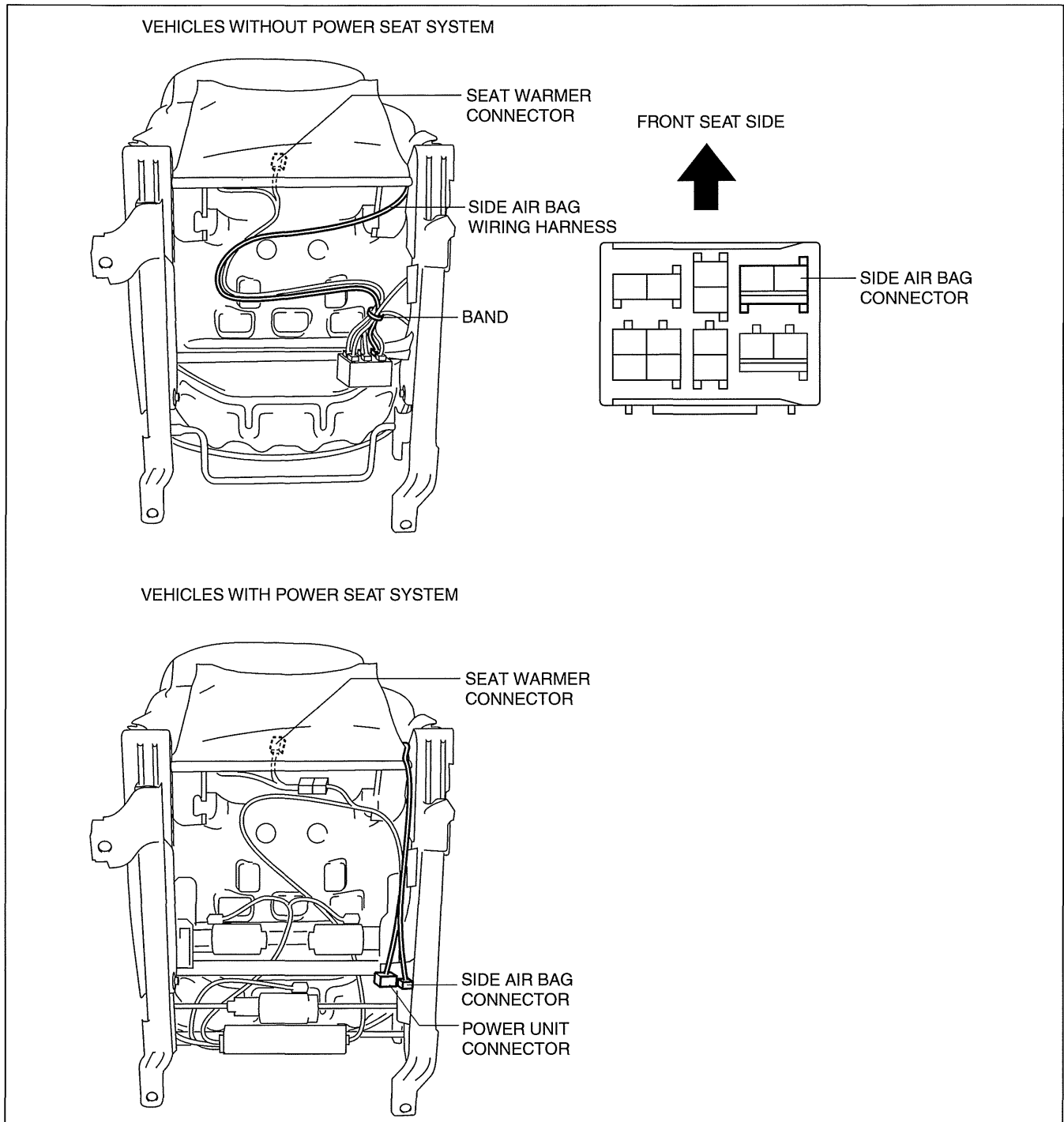
- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

09-13

SEATS

Removal

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove the headrest.
6. Cut the band securing the wiring harness.

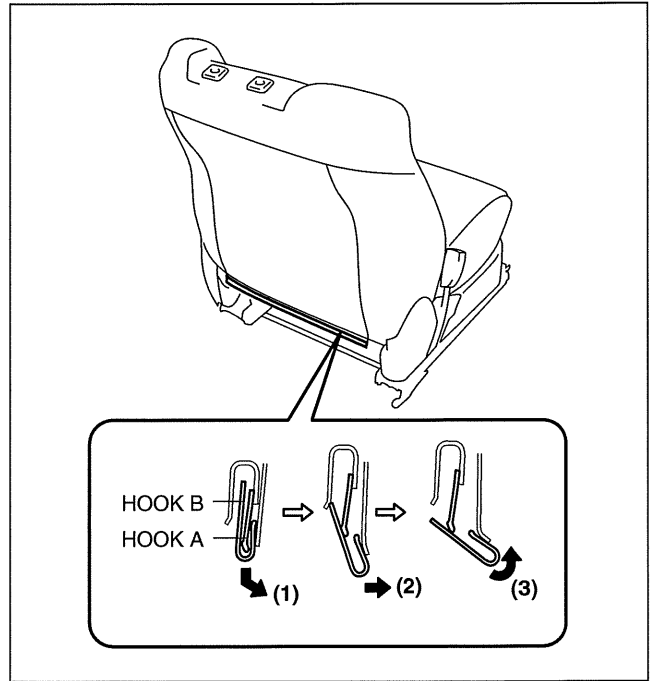


am3uuw0000526

7. Disconnect the side air bag connector and seat warmer connector (Vehicles with power seat system).

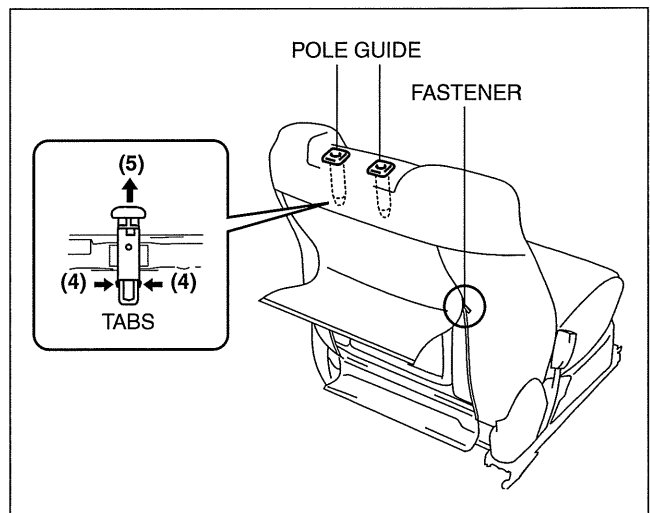
SEATS

- Slide hook A in the order shown in the figure to detach it from hook B.



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- Open the fastener.
- Partially peel back the front seat back trim, release the pole guide tabs in the direction of arrow (4) shown in the figure, then pull the pole guide out in the direction of arrow (5).
- Remove the nut and remove the holder bracket A.

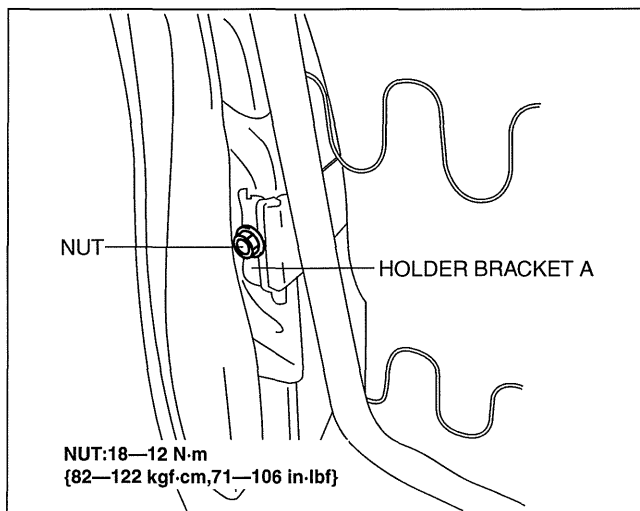


am3uuw000353

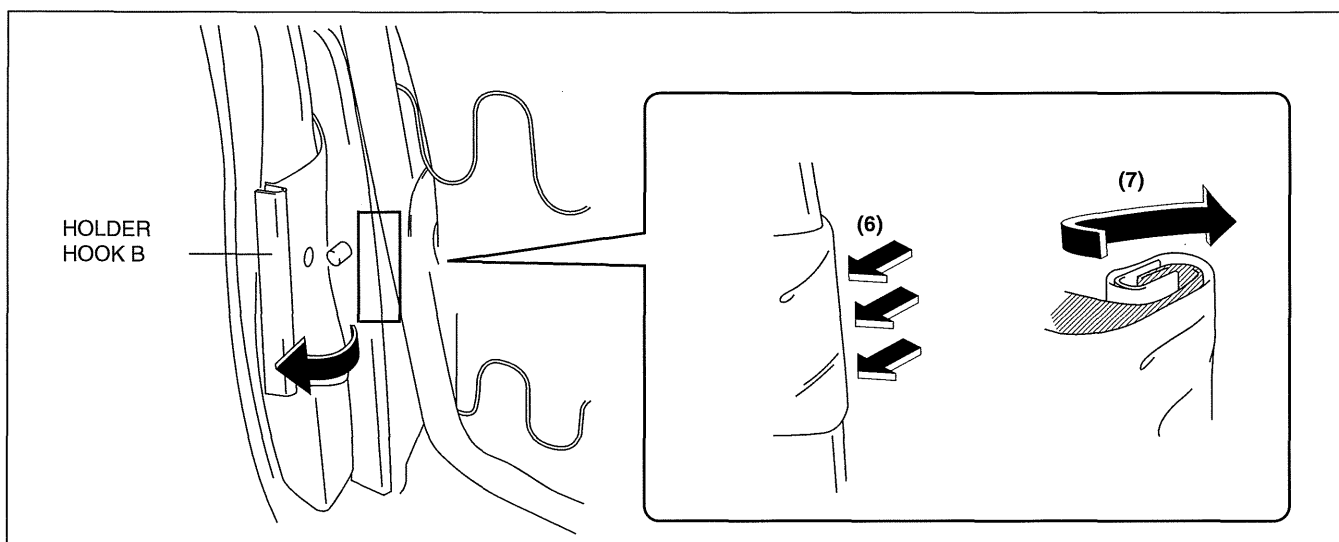
09-13

SEATS

12. Remove the holder hook B in the order of (6), (7) as shown in the figure.

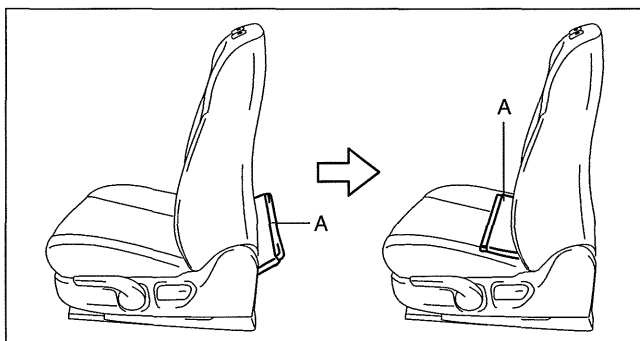


am3uuw0000553



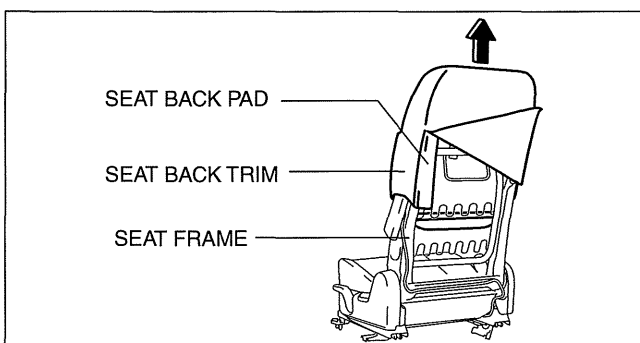
am3uuw0000554

13. Pull out part A shown in the figure to the front.



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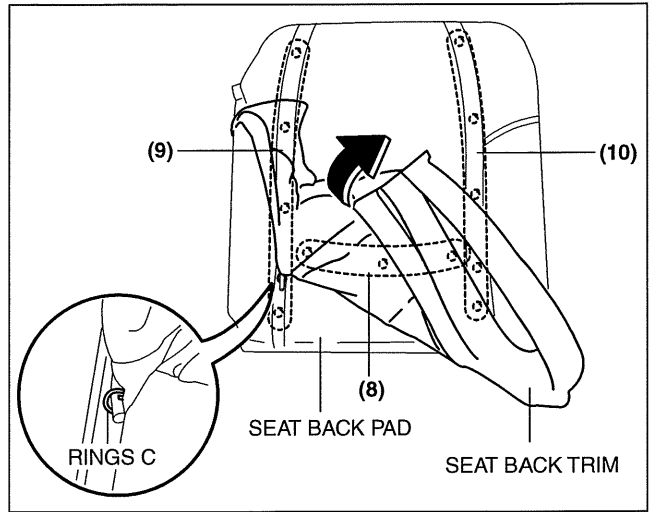
14. Remove the seat back trim and the seat back pad as a single unit from the seat frame by pulling them in the direction of the arrow.



am3uuw0000554

SEATS

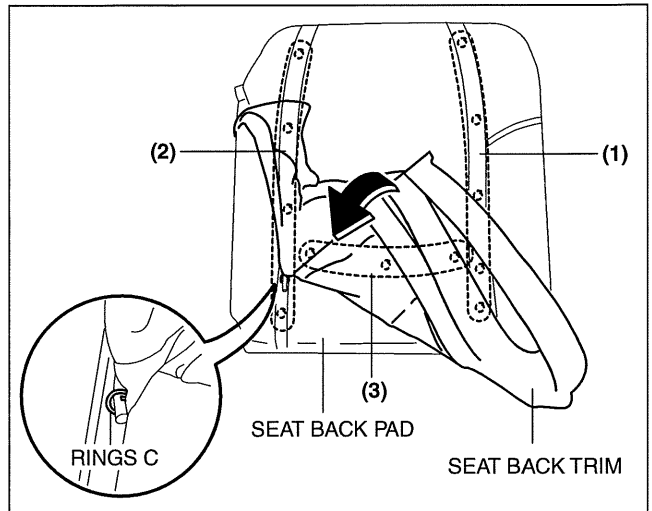
- Partially peel back the seat back trim from the seat back pad, remove rings C in the order of (8), (9), (10) shown in the figure, then remove the seat back trim.



am3uuw0000353

Installation

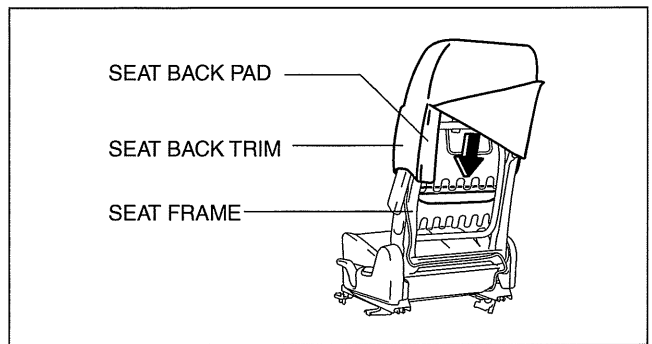
- Install the seat back trim to the front seat back pad, install the rings C in the order of (1), (2), (3) shown in the figure, then install the seat back trim.



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09-13

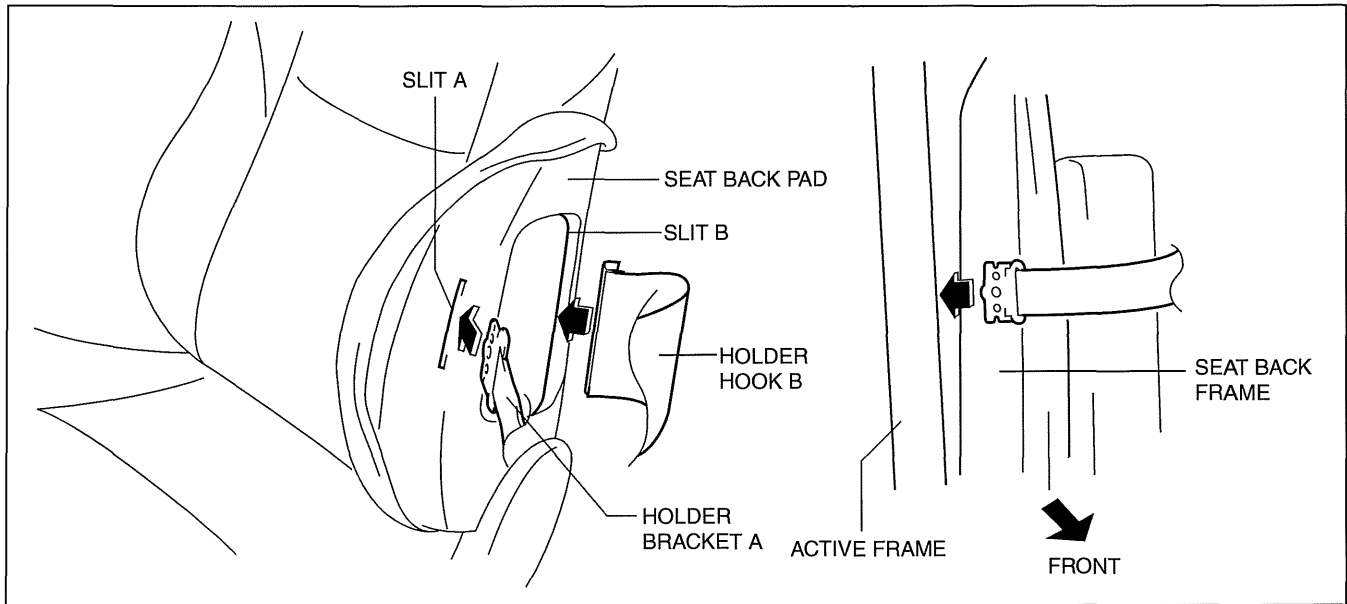
- Install the seat back trim and the seat back pad as a single unit from the seat frame by pushing them in the direction of the arrow



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SEATS

3. Pass holder bracket A through slit A, holder hook B through slit B of the seat back pad.

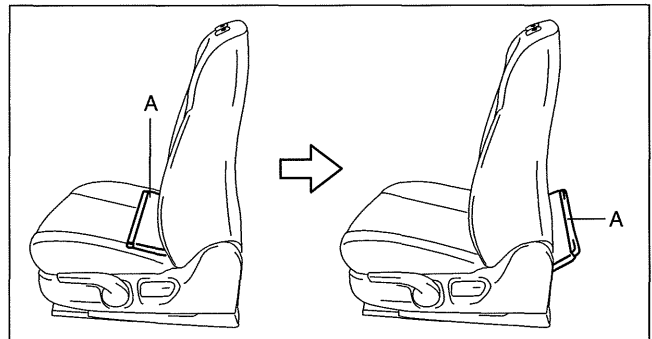


am3uuw0000554

Caution

- Install it without twisting the sleeve.
- Get the holder bracket through between active frame and seat back frame.

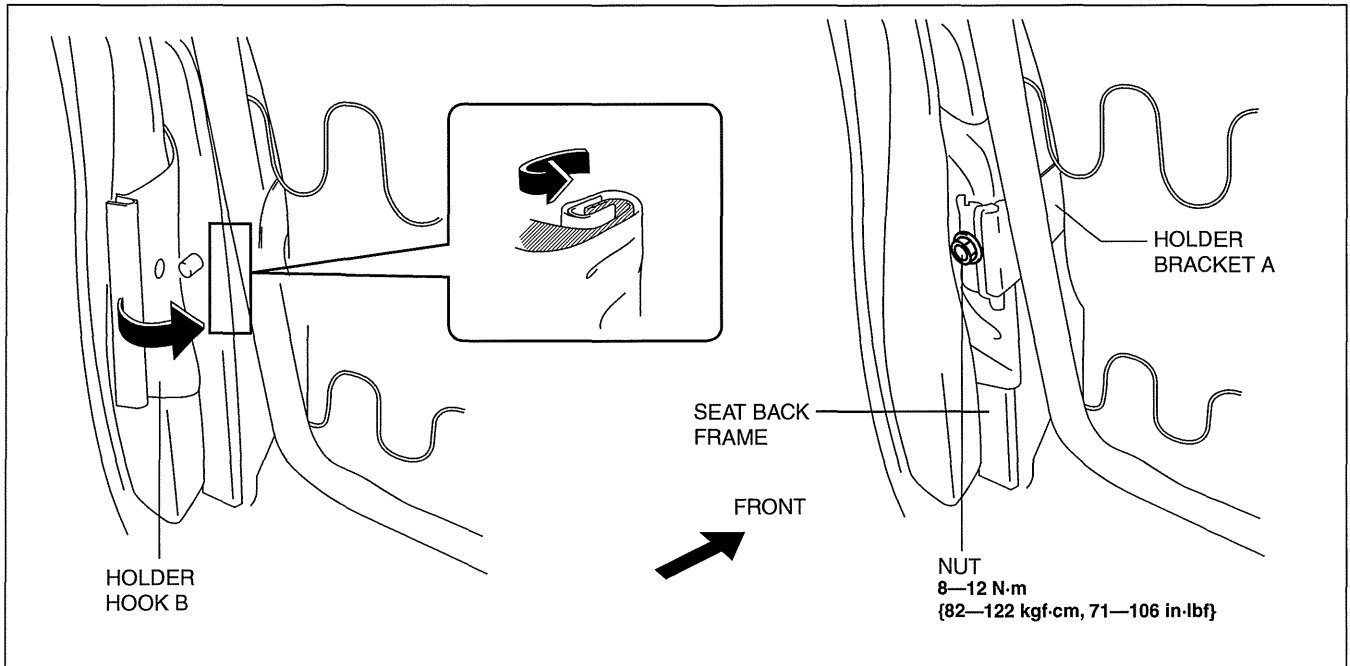
4. Push the part A shown in the figure to the rear.



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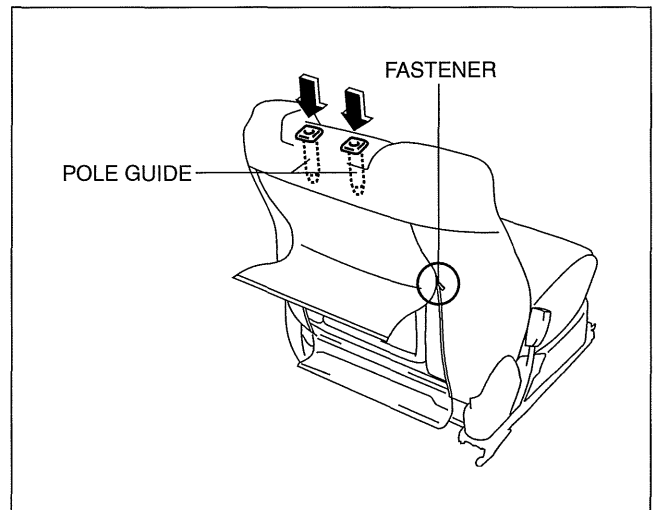
SEATS

5. Assemble the holder bracket A to the seat back frame and install the nut shown in the figure.



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6. Install the pole guide in the direction of arrow shown in the figure.
7. shut the fastener.

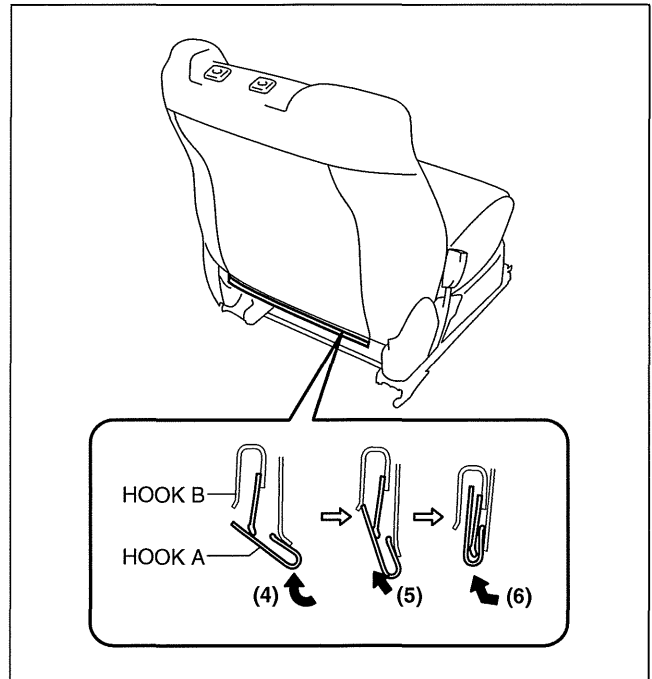


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09-13

SEATS

8. Slide hook A in the order of (4), (5), (6) shown in the figure to install it to hook B

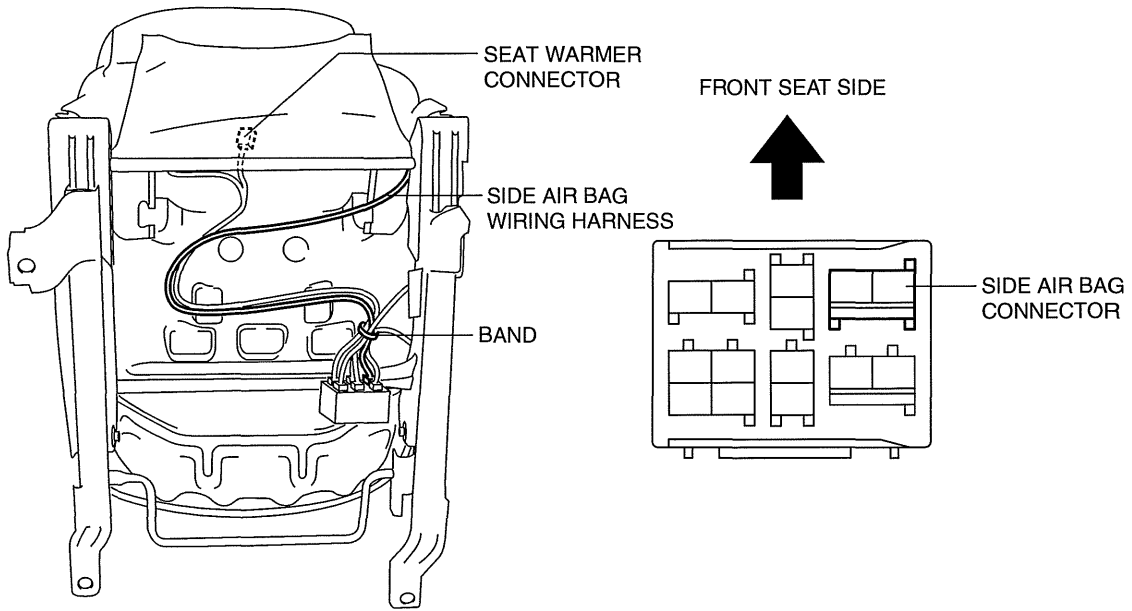


am3uuw0000554

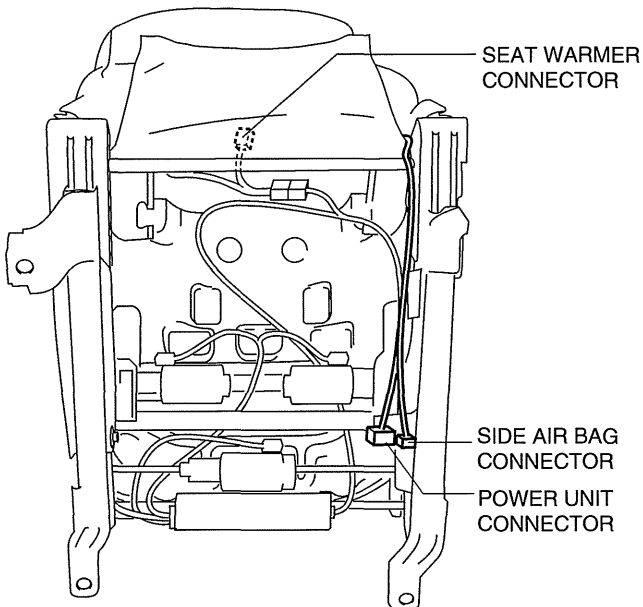
SEATS

9. Install the band, while tighten the wiring harness.

VEHICLES WITHOUT POWER SEAT SYSTEM



VEHICLES WITH POWER SEAT SYSTEM



09-13

am3uuw000526

SEATS

FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION

id091300911700

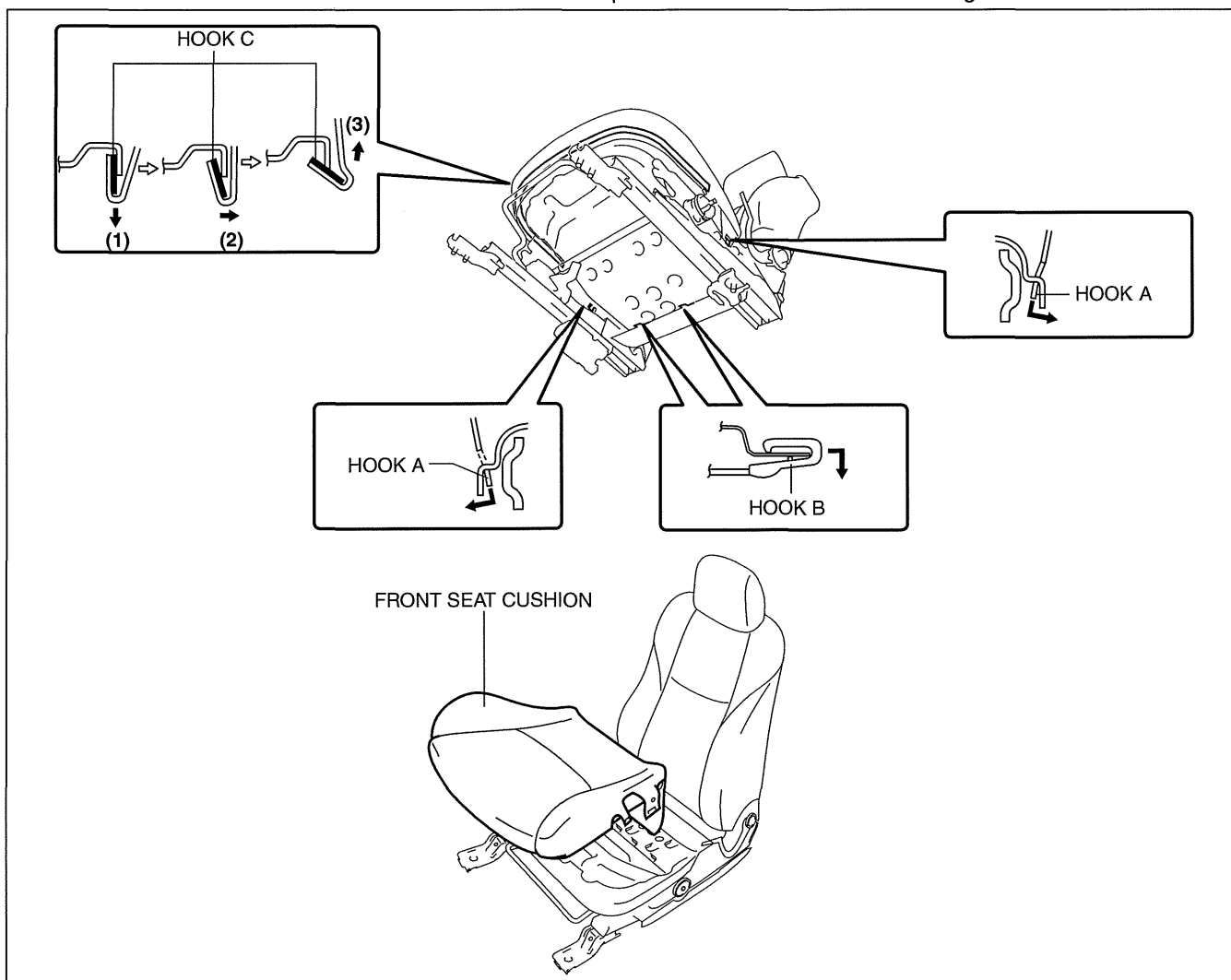
Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

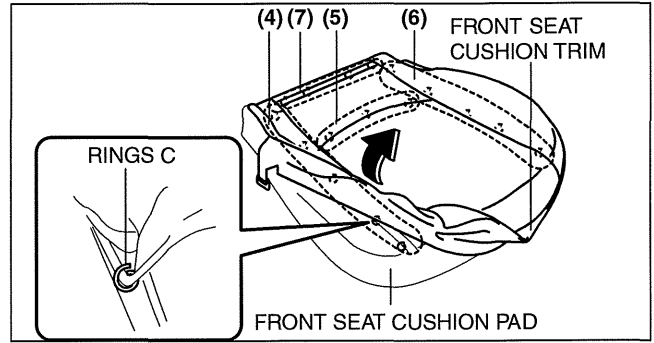
1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove the side cover. (See 09-13-23 FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM].) (See 09-13-25 FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITHOUT POWER SEAT SYSTEM].)
6. Detach hook A and B in the direction of the arrow shown in the figure.
7. Detach hook C by sliding it in the order of (1), (2), and (3) as shown in the figure.
8. Remove the seat cushion trim and the seat cushion pad from the seat frame as a single unit.



am3uuw0000554

SEATS

- Remove rings C in the order of (4), (5), (6) and (7) as shown in the figure, then remove the seat cushion trim from the seat cushion pad in the direction of the arrow shown in the figure.
- Install in the reverse order of removal.



FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM]

id091300989141

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

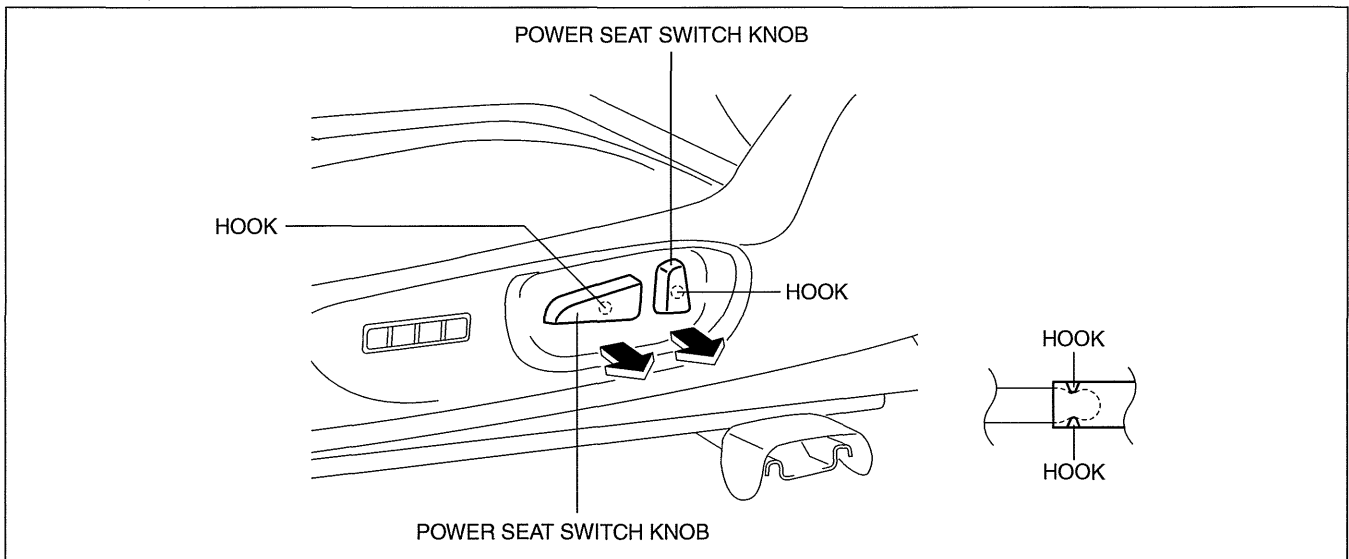
Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

Side Cover

Driver-side

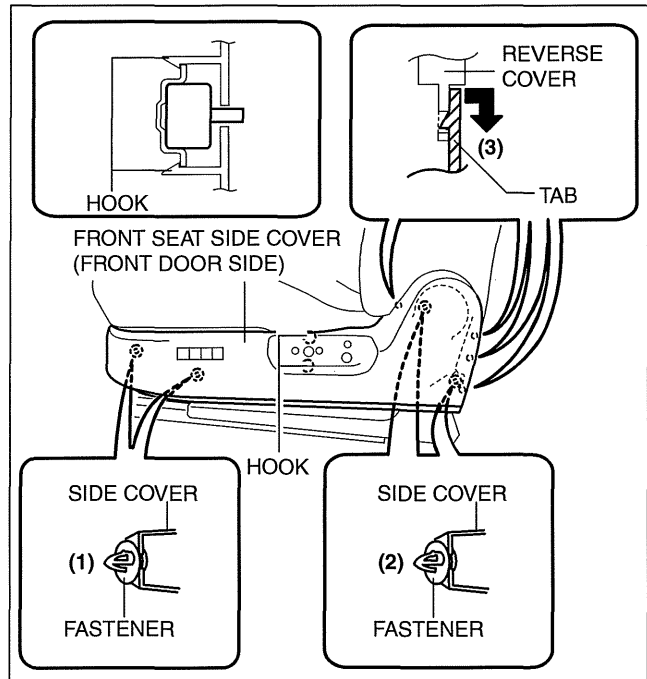
- Switch the ignition to off.
- Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
- Disconnect the negative battery cable and wait **1 min or more**.
- Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
- Pull the power seat switch knobs in the direction of arrow, while remove the hook.



09-13

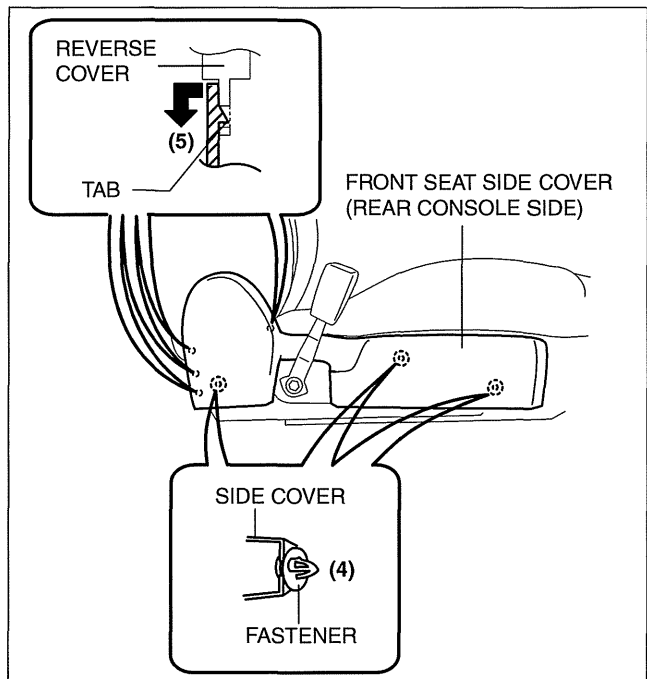
SEATS

6. Pull the side cover (front door side) in the order of (1), (2), (3) shown in the figure to disengage the fastener, hook and tab.
7. Remove the front seat side cover (front door side).
8. Disconnect the seat position memory switch connector.



am3uuw000555

9. Pull the side cover (rear console side) in the order of (4), (5) shown in the figure to disengage the fastener and tab.
10. Remove the front seat side cover (rear console side).
11. Install in the reverse order of removal.

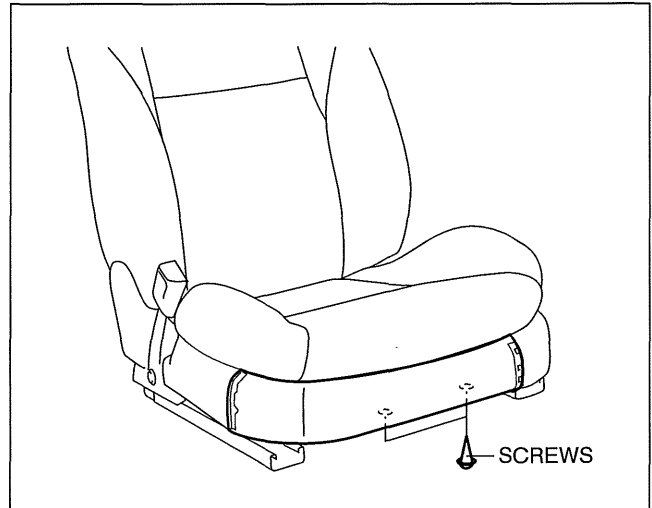


am3uuw000356

SEATS

Front Cover

1. Remove the screws.
2. Remove the front cover.
3. Install in the reverse order of removal.



am3uuw0000356

FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITHOUT POWER SEAT SYSTEM]

id091300989142

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

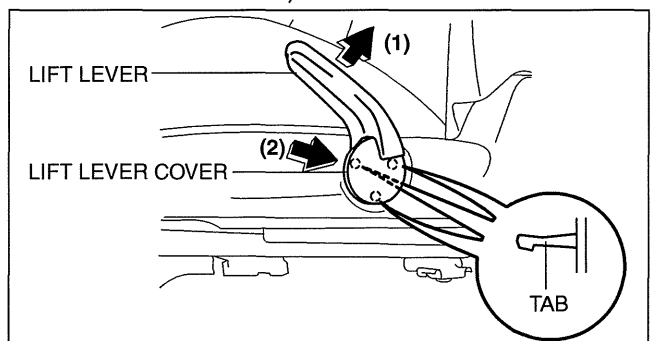
- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

09-13

Side Cover

Driver-side

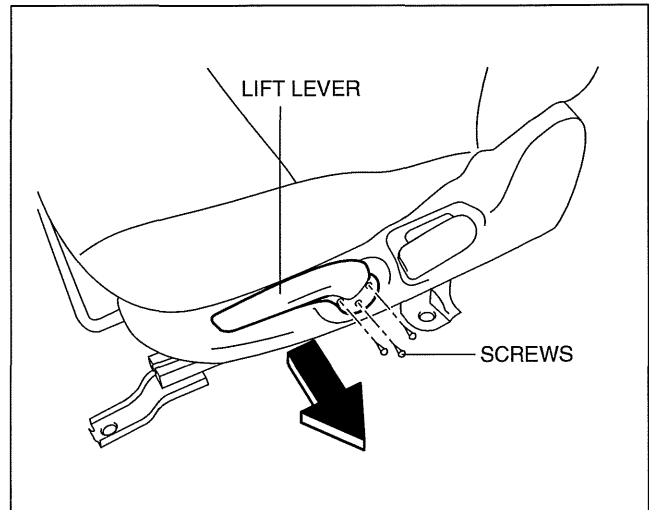
1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Operate the lift lever in the direction of arrow (1) shown in the figure.
6. Insert a fastener remover from the position of arrow (2) shown in the figure, and remove the lift lever cover by disengaging the tab.



am3uuw0000356

SEATS

7. Remove the screws, then remove the lift lever in the direction of the arrow.

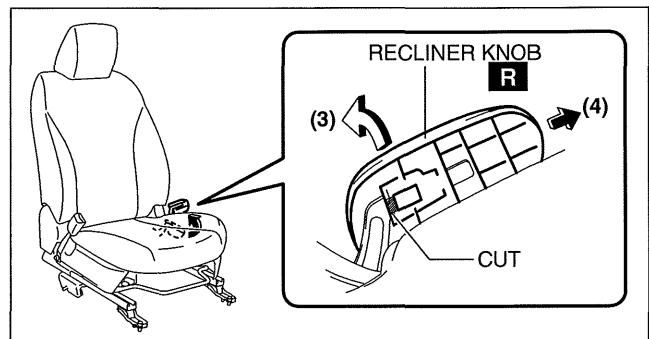


am3uuw0000356

8. After operating the recliner knob in the upward direction (3), cut the area indicated in the figure, then remove the recliner knob in the direction of arrow (4).

Caution

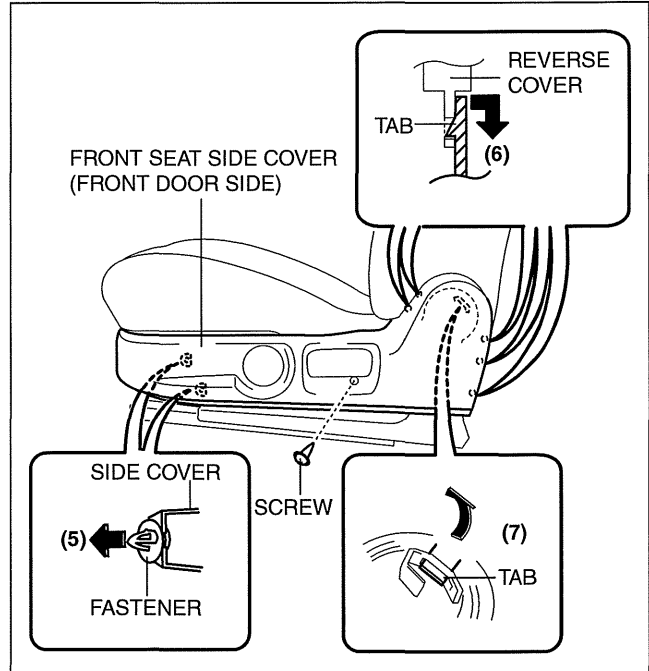
- The seat back folds forward when the recliner knob is operated. Be careful when operating the recliner knob.



am3uuw0000356

9. Remove the screw.

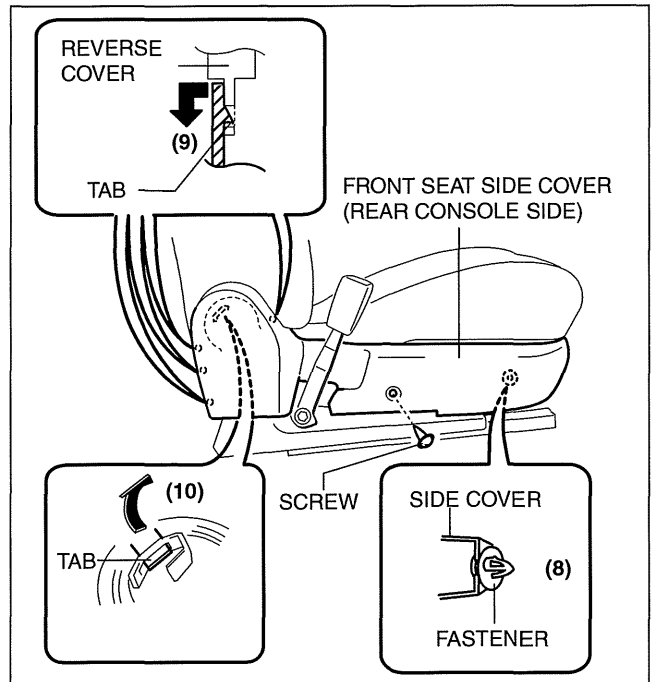
10. Pull the side cover (front door side) in the order of (5), (6), (7) shown in the figure to disengage the fastener and tab.
11. Remove the front seat side cover (front door side).
12. Remove the fastener left to the front seat frame and install it to the original position of the cover.
13. Remove the screw.



am3uuw0000555

SEATS

14. Remove the screws, and pull the side cover (rear console side) in the order of (8), (9), (10) shown in the figure to disengage the fastener and tab.
15. Remove the front seat side cover (rear console side).
16. Remove the fastener left to the front seat frame and install it to the original position of the cover.
17. Install in the reverse order of removal.



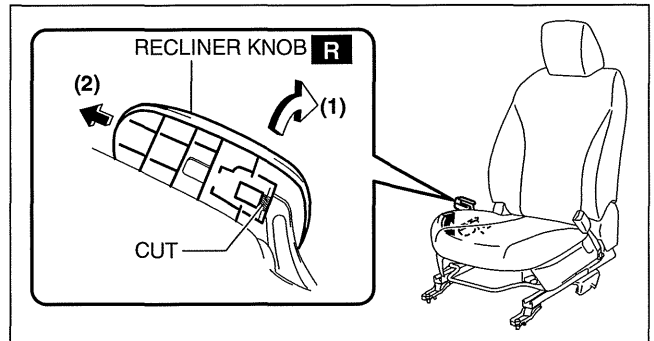
Passenger-side

1. After operating the recliner knob in the upward direction (1), cut the area indicated in the figure, then remove the recliner knob in the direction of arrow (2).

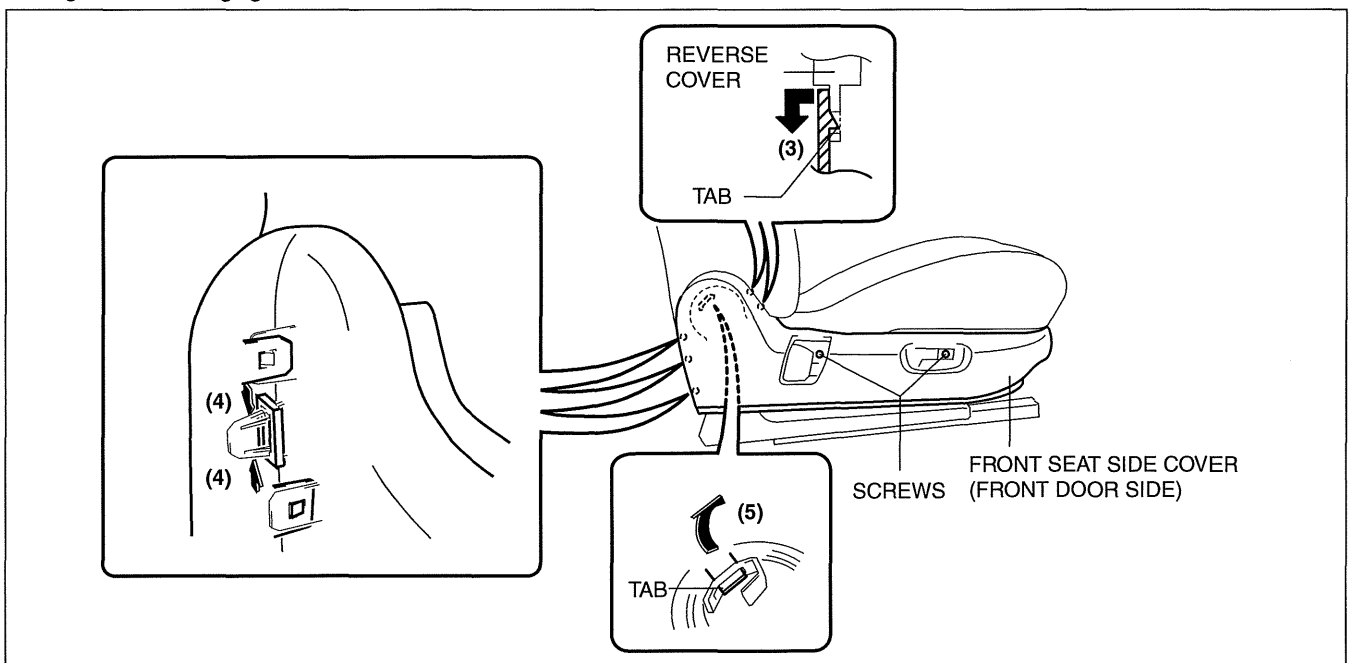
Caution

- The seat back folds forward when the recliner knob is operated. Be careful when operating the recliner knob.

2. Remove the screws, and pull the side cover (front door side) in the order of (3), (4), (5) shown in the figure to disengage the tab.



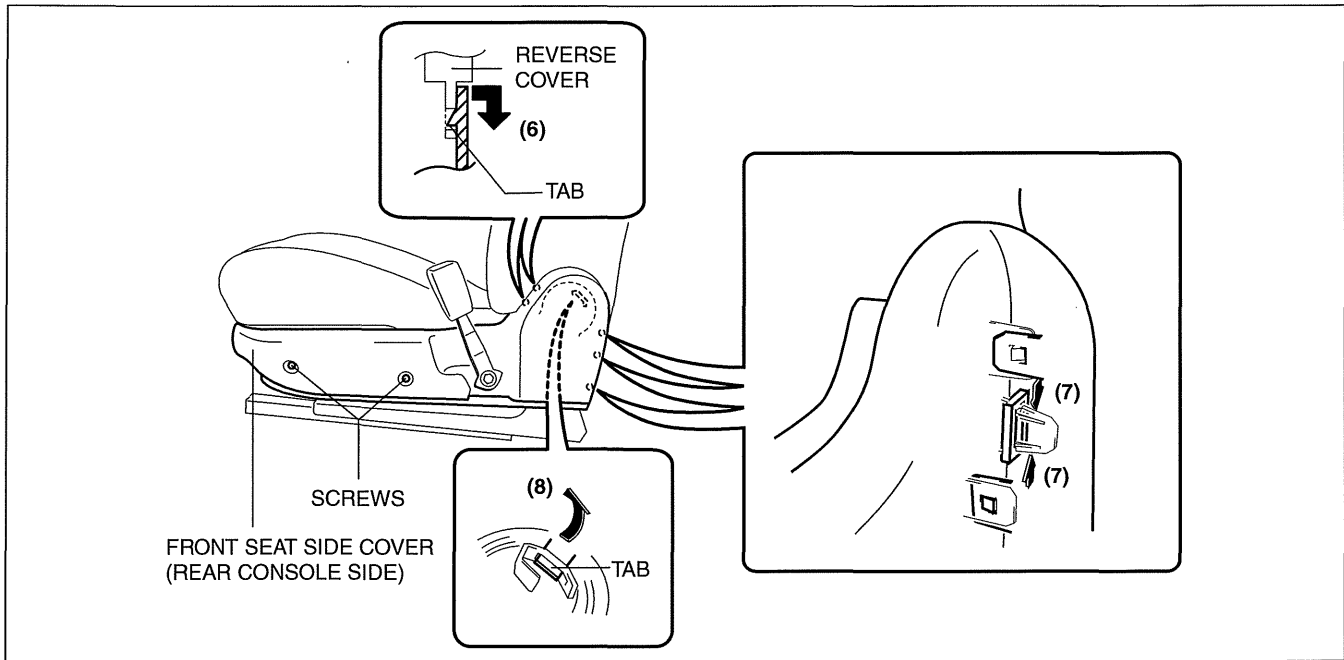
09-13



3. Remove the front seat side cover (front door side).

SEATS

4. Remove the screws, and pull the side cover (rear console side) in the order of (6), (7), (8) shown in the figure to disengage the tab.



am3uuw0000357

5. Remove the front seat side cover (rear console side).
6. Install in the reverse order of removal.

SEATS

FRONT SEAT RAIL GUIDE COVER REMOVAL/INSTALLATION

id091300989200

Warning

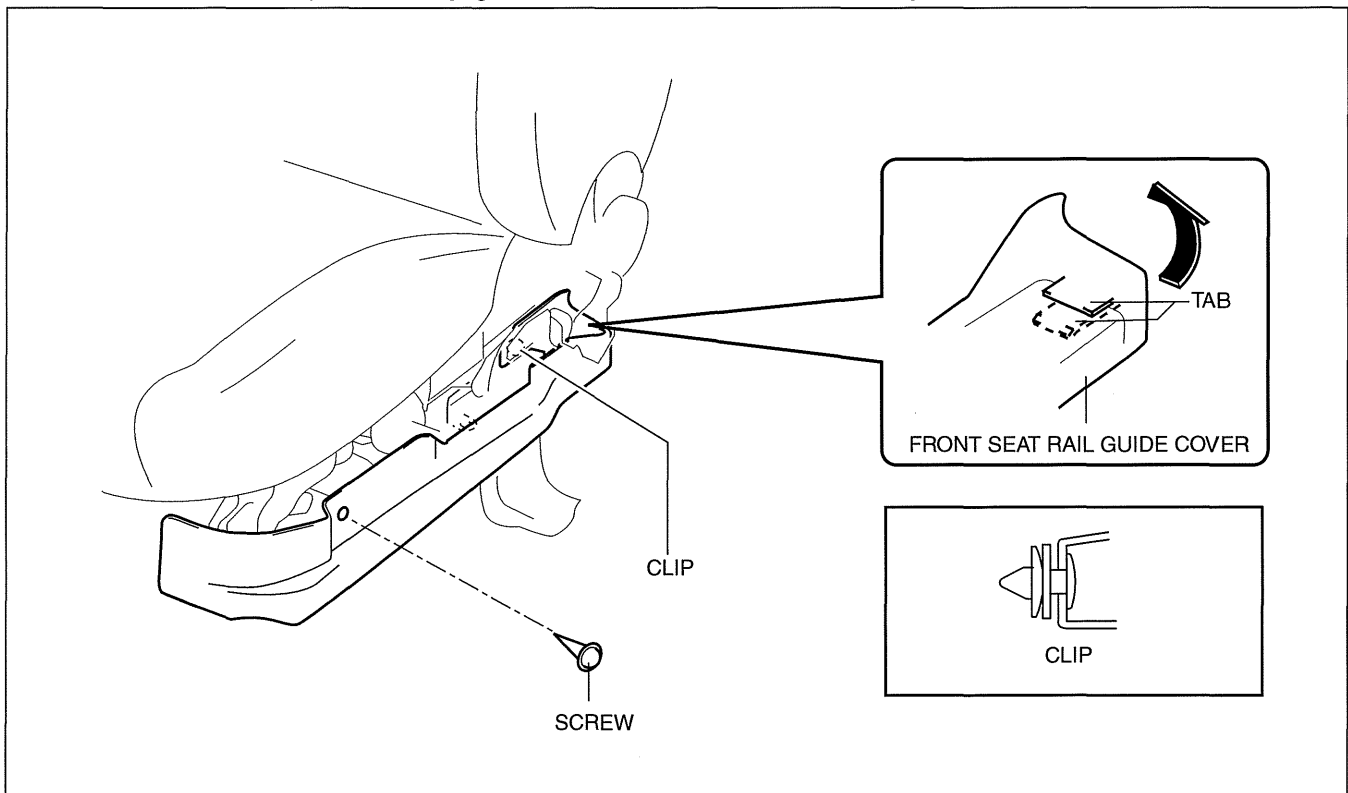
- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

Vehicles Without Power Seat System

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove the screw, clip and disengage the tab, remove the front seat rail guide cover.



09-13

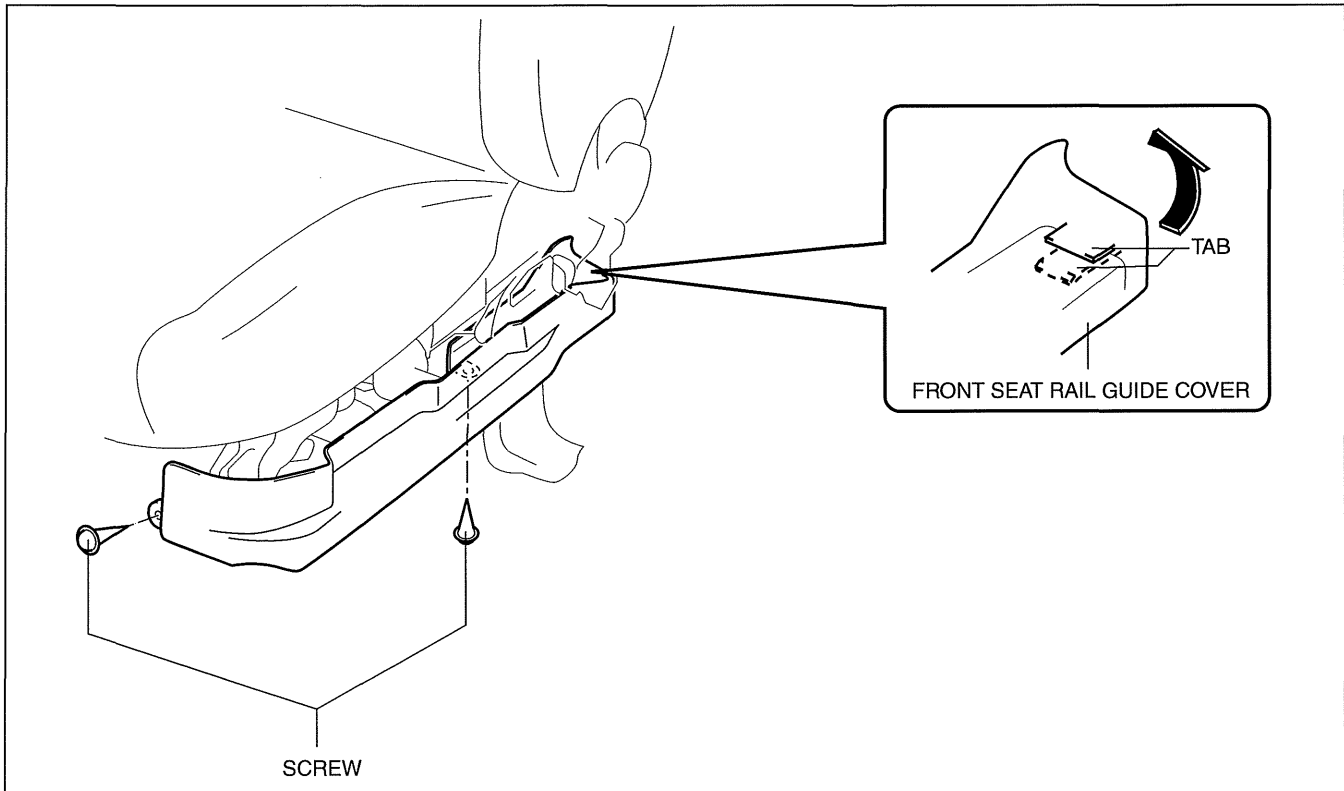
am3uuw0000555

6. Install in the reverse order of removal.

SEATS

Vehicles With Power Seat System

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove the screws and disengage the tab, remove the front seat rail guide cover.



am3uuw0000358

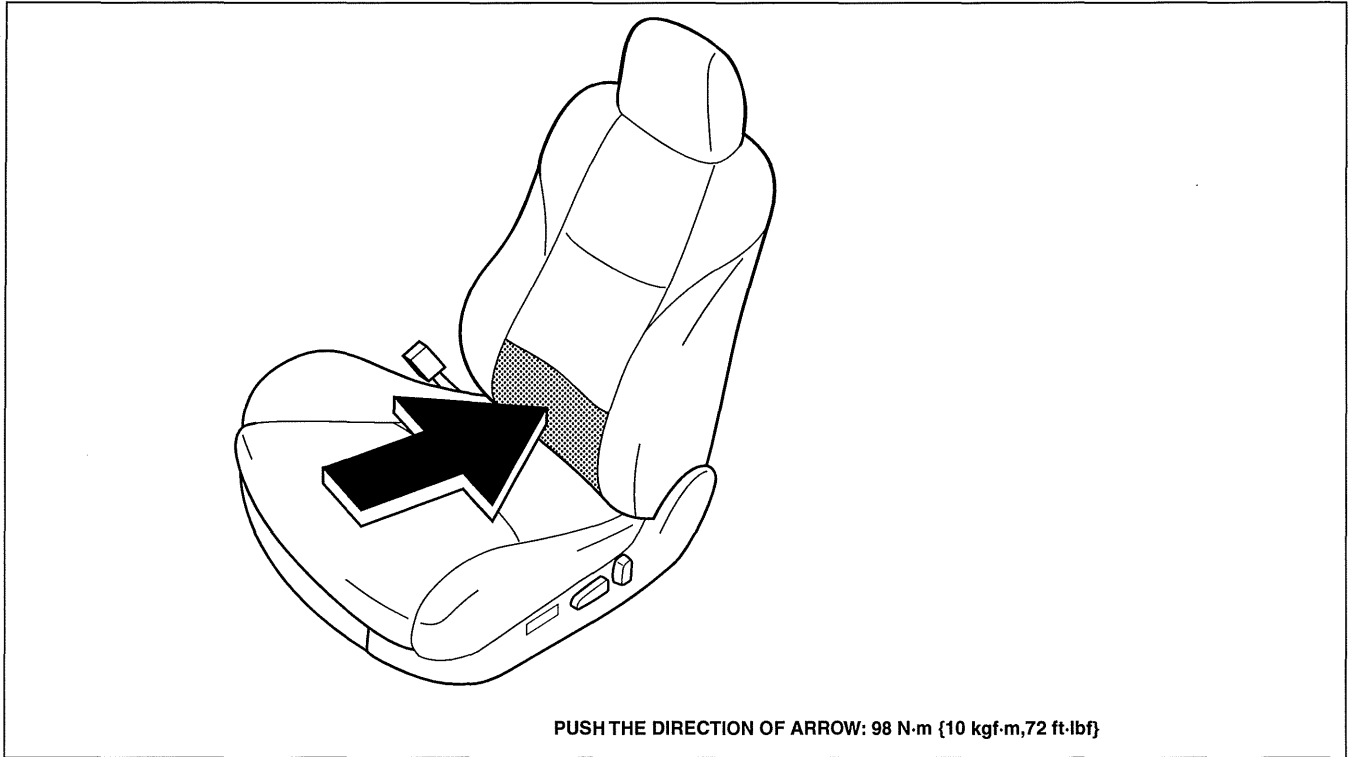
6. Install in the reverse order of removal.

SEATS

ACTIVE HEADREST INSPECTION

id091300822200

1. Push the bottom of front seat back in the direction of arrow shown in the figure.



am3uuw0000358

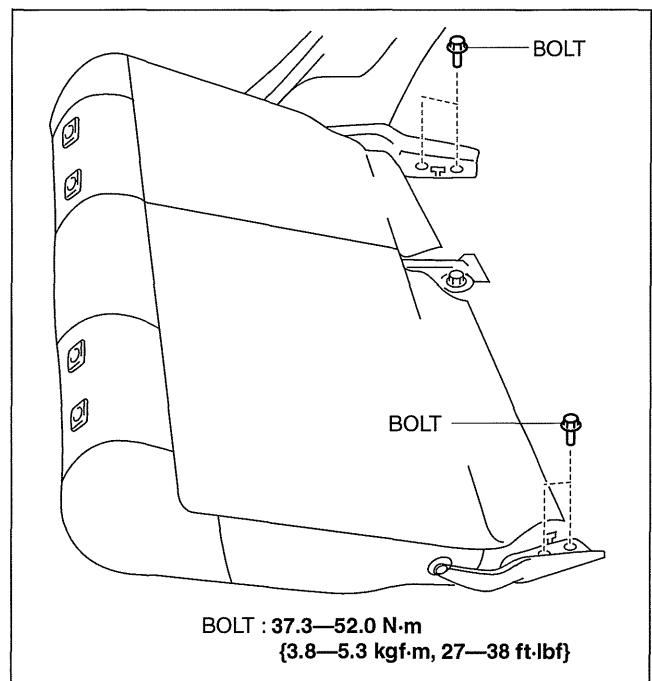
09-13

2. While inspecting for move the front seat back.

REAR SEAT BACK REMOVAL/INSTALLATION

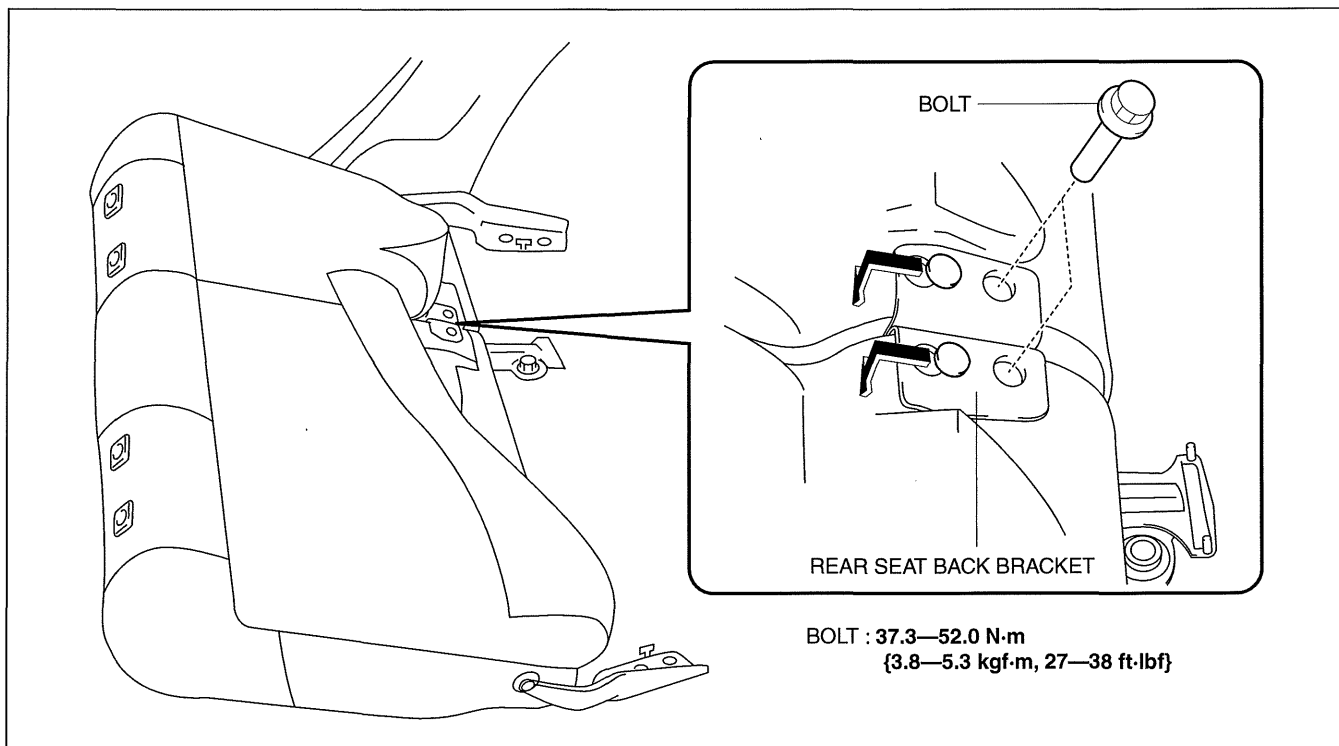
id091300912400

1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove the rear buckle installation bolt. (See 08-11-12 REAR BUCKLE REMOVAL/INSTALLATION.)
3. Fold the rear seat back.
4. Remove the bolts.



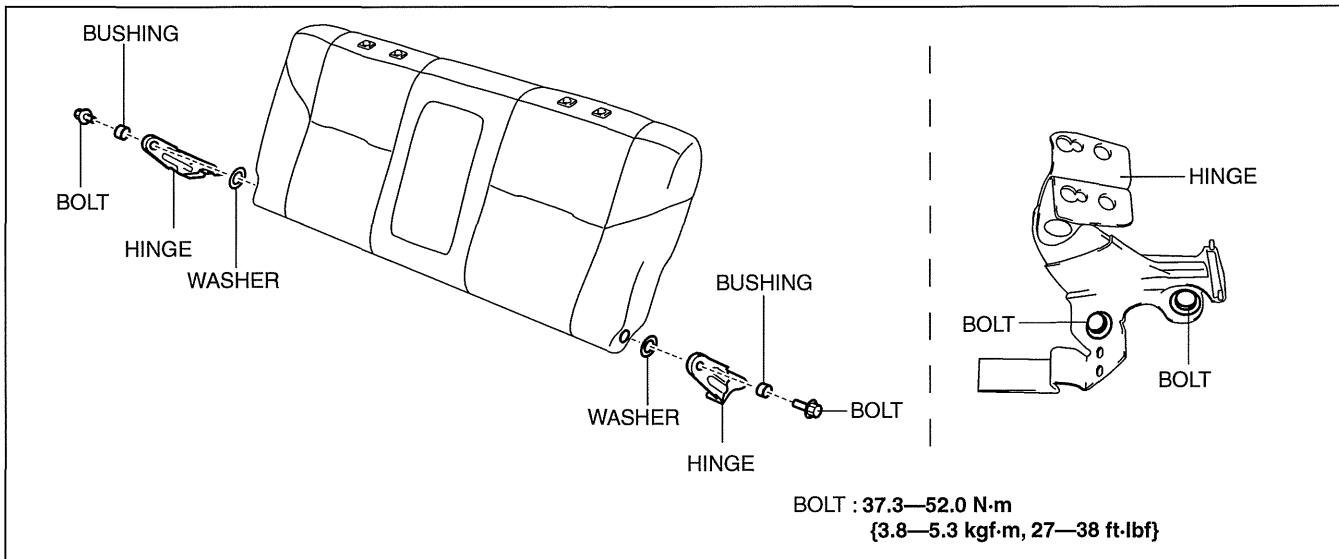
am3uuw0000526

SEATS



am3uuw0000354

5. Remove the rear seat back from the rear seat back bracket by pulling the rear seat back in the direction of the arrow shown in the figure.
6. Remove the bolts, remove the hinge.



am3uuw0000555

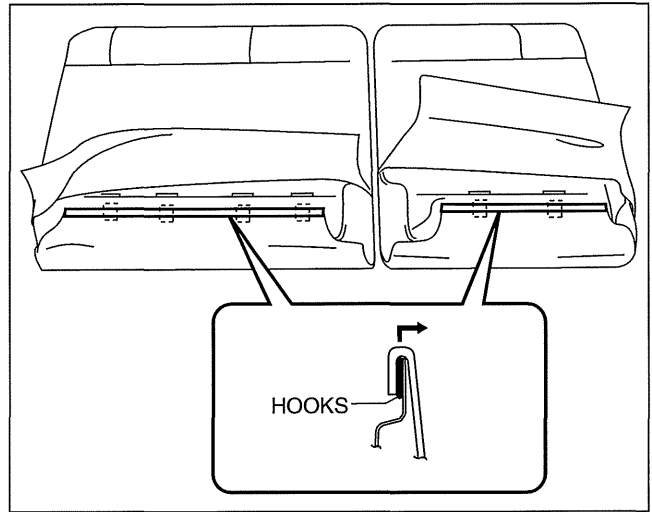
7. Install in the reverse order of removal.

SEATS

REAR SEAT BACK FRAME REMOVAL/INSTALLATION

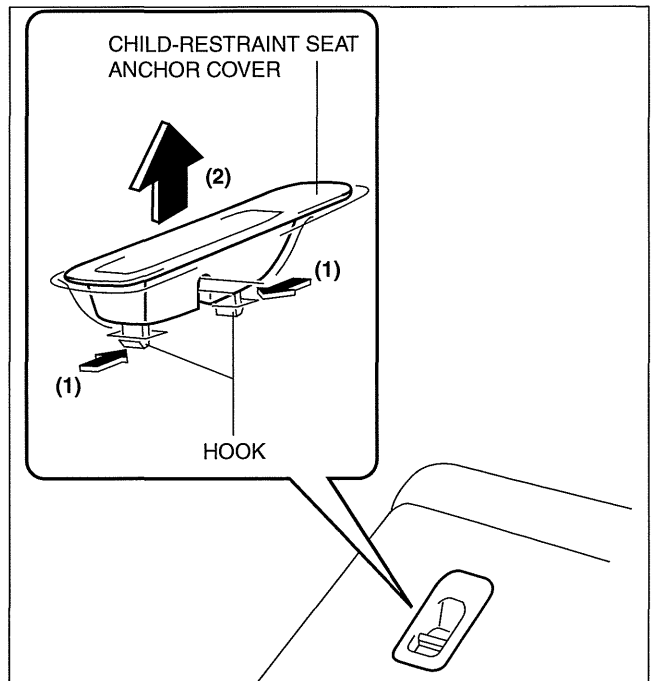
id091300912500

1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove the rear buckle installation bolt. (See 08-11-12 REAR BUCKLE REMOVAL/INSTALLATION.)
3. Remove the rear seat back. (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
4. Remove the headrest.
5. Open the fasteners.
6. Detach the hooks.



am3uuw0000555

7. Remove the child-restraint seat anchor covers in the order of (1), (2) as shown in the figure.

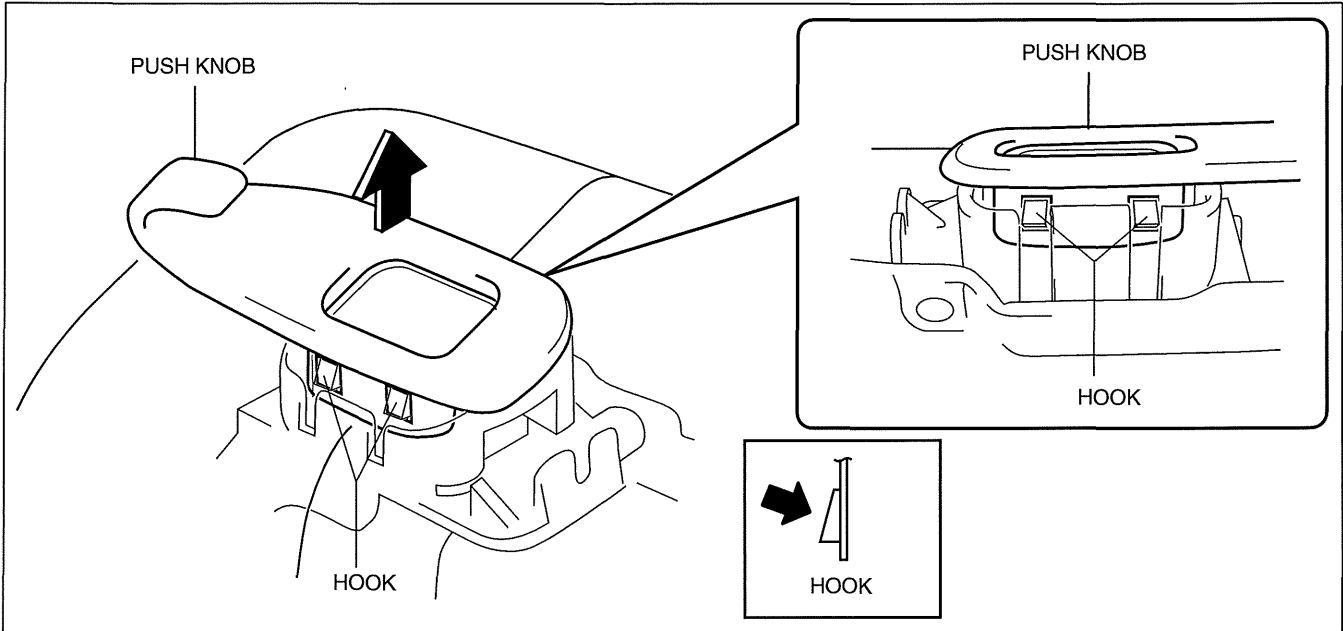


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09-13

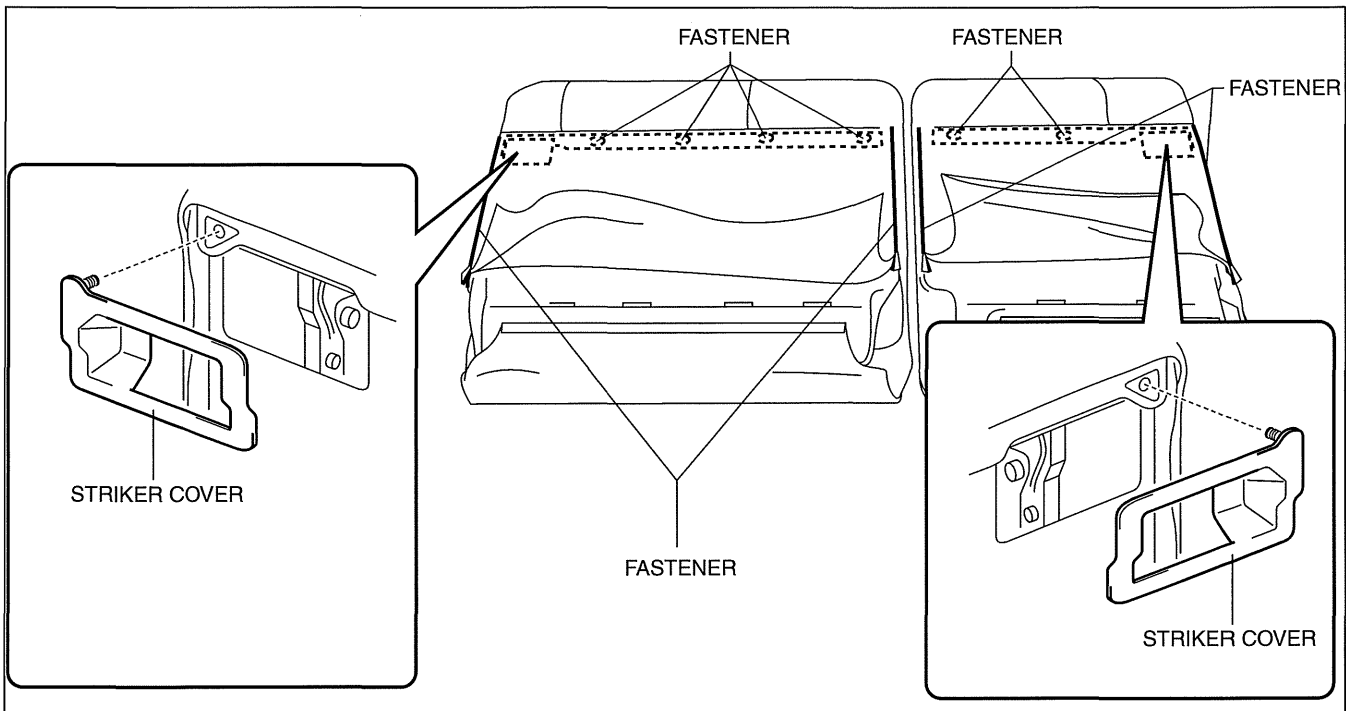
SEATS

8. Remove the push knob while remove the hooks in the direction of arrow shown in the figure.



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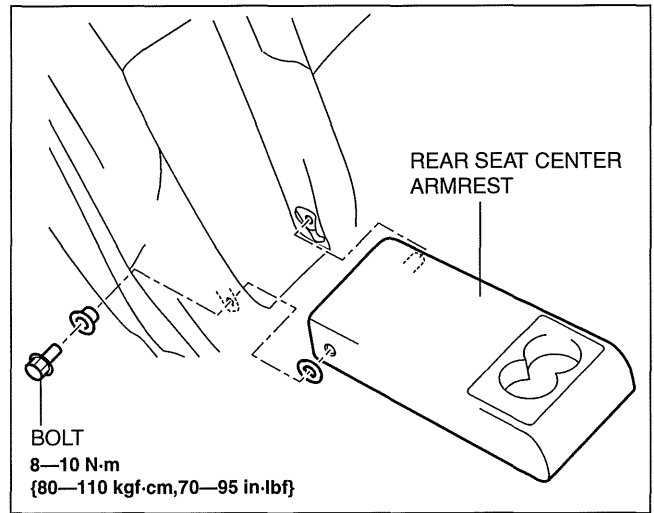
9. Open the fastener, remove the fastener and striker cover.



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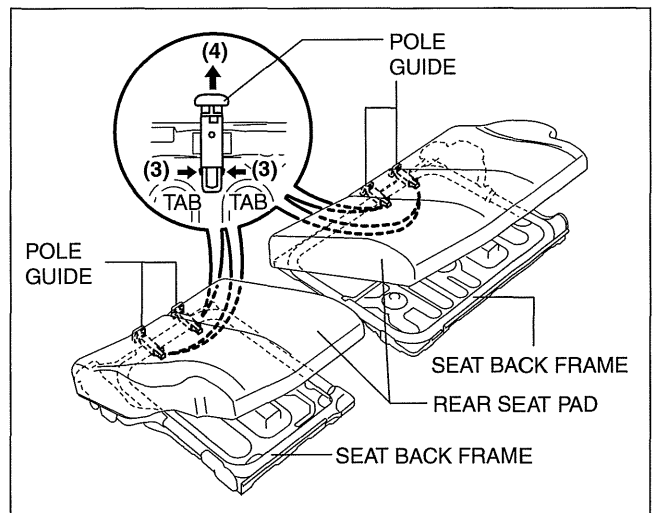
SEATS

10. Remove the bolt then remove the rear seat center armrest. (Vehicles with the rear seat center armrest)



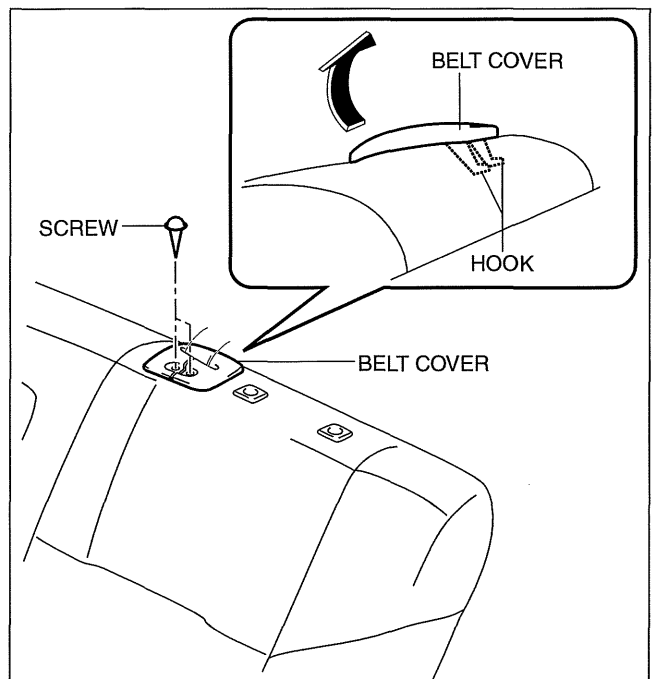
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11. Peel back the rear seat pad, release the pole guide tabs in the direction of arrow (3) shown in the figure, then pull out the pole guides in the direction of arrow (4).



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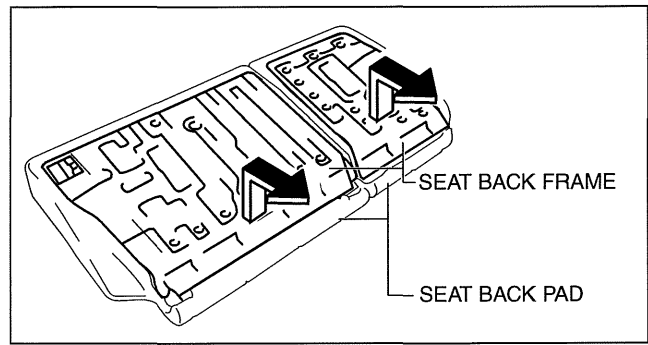
12. Remove the screws, then remove the belt cover in the direction of arrow shown in the figure.
13. Open the fasteners.



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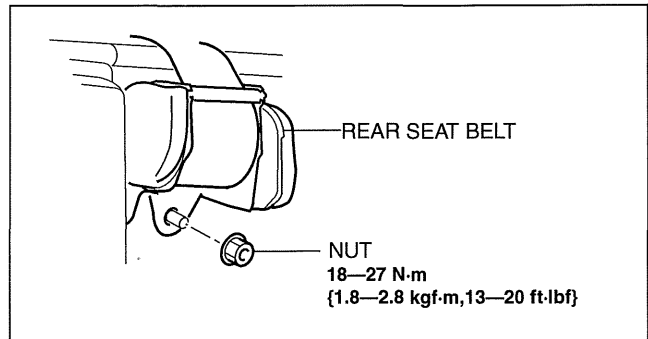
SEATS

14. Remove the seat back frame from the seat back pad by pulling it in the direction of the arrow.(5HB)



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15. Remove the nut, then remove the rear seat belt.
16. Install in the reverse order of removal.(5HB)

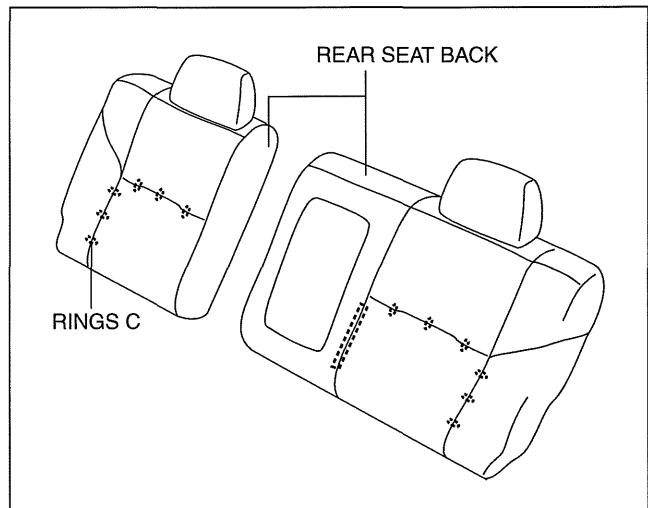


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REAR SEAT BACK TRIM REMOVAL/INSTALLATION

id091300989400

1. Remove the rear seat back frame. (See 09-13-33 REAR SEAT BACK FRAME REMOVAL/INSTALLATION.)
2. Remove rings C, then remove the seat back trim from the seat back pad.
3. Install in the reverse order of removal.



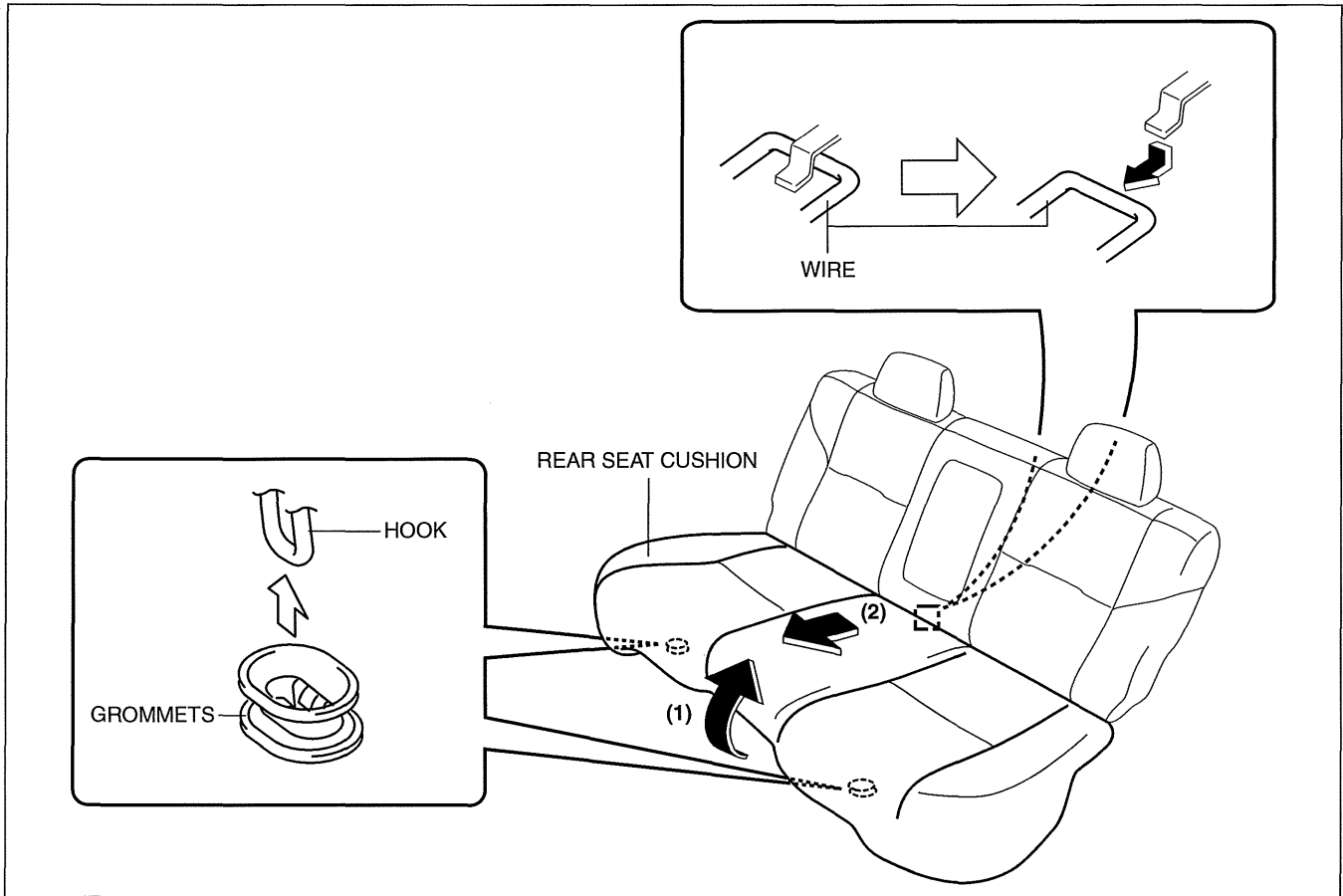
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SEATS

REAR SEAT CUSHION REMOVAL/INSTALLATION

id091300912600

1. Detach the hooks from the grommets by pulling the rear seat cushion in the order of (1), (2) in the direction of the arrow shown in the figure, while remove the wire.



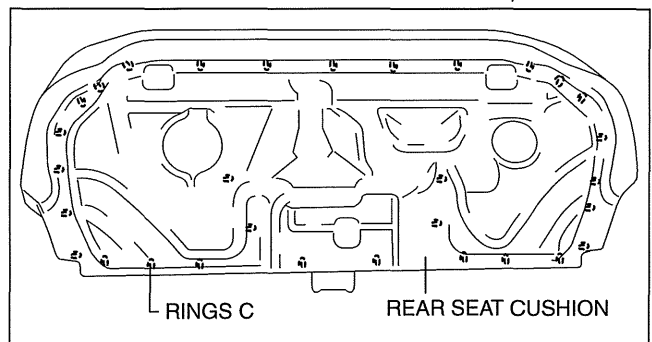
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2. Install in the reverse order of removal.

REAR SEAT CUSHION TRIM REMOVAL/INSTALLATION

id091300912700

1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove rings C, then remove the seat cushion trim from the seat cushion pad.
3. Install in the reverse order of removal.



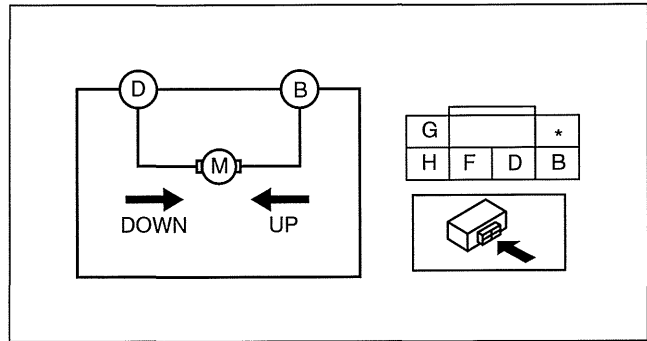
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FRONT TILT MOTOR INSPECTION

id091300800700

1. Disconnect the front tilt motor connector.
2. Apply battery positive voltage to the front tilt motor terminals and inspect the front tilt motor operation
 - If not as specified, replace the front tilt motor.

Motor operation	Connection	
	B+	GND
Up	B	D
Down	D	B



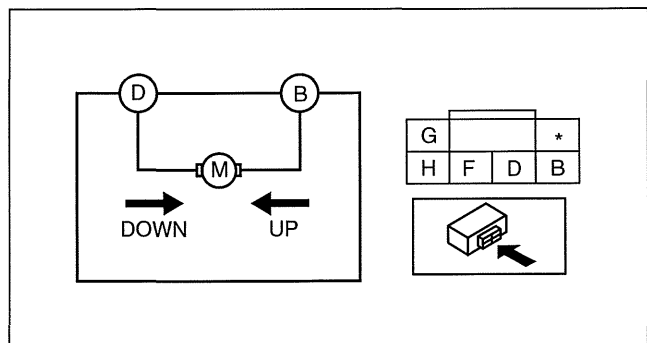
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REAR TILT MOTOR INSPECTION

id091300800800

1. Disconnect the rear tilt motor connector.
2. Apply battery positive voltage to the rear tilt motor terminals and inspect the rear tilt motor operation
 - If not as specified, replace the rear tilt motor.

Motor operation	Connection	
	B+	GND
Up	B	D
Down	D	B



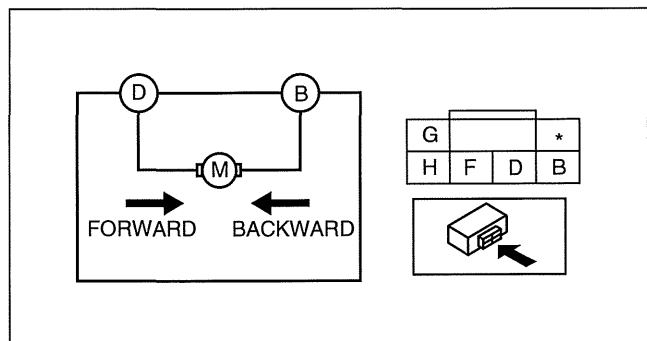
am6zzw0000298

SLIDE MOTOR INSPECTION

id091300800900

1. Disconnect the slide motor connector.
2. Apply battery positive voltage to the slide motor terminals and inspect the slide motor operation
 - If not as specified, replace the seat cushion frame.

Motor operation	Connection	
	B+	GND
Forward	D	B
Backward	B	D



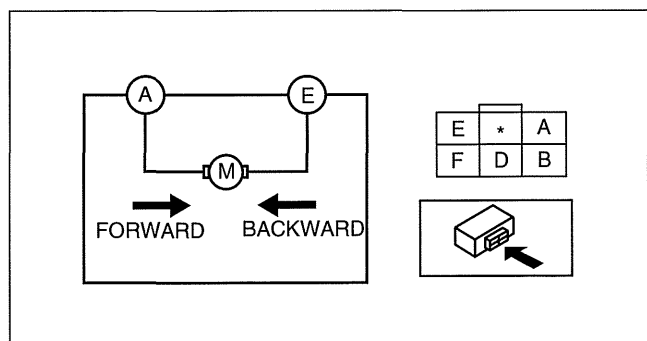
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RECLINER MOTOR INSPECTION

id091300801000

1. Disconnect the recliner motor connector.
2. Apply battery positive voltage to the recliner motor terminals and inspect the recliner motor operation.
 - If not as specified, replace the recliner motor.

Motor operation	Connection	
	B+	GND
Forward	A	E
Backward	E	A



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SEATS

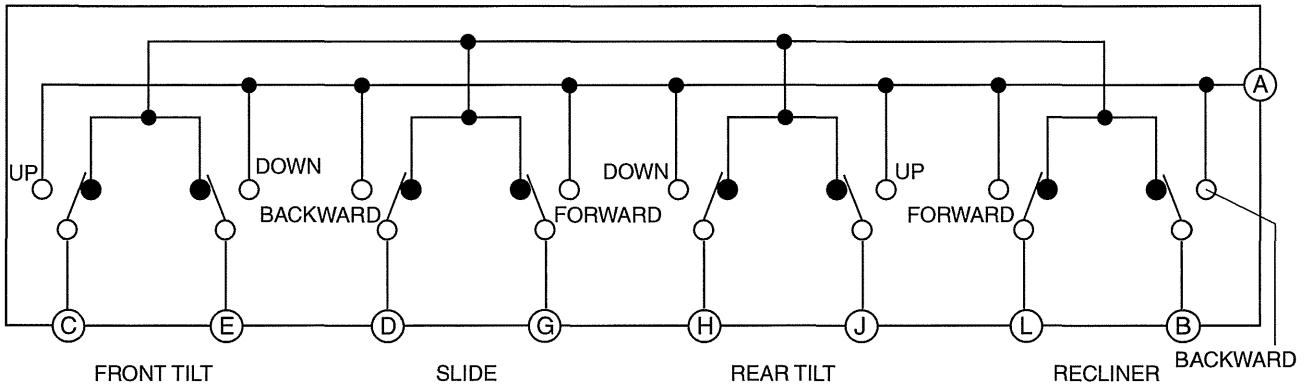
POWER SEAT SWITCH INSPECTION

id091300801100

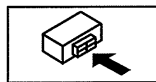
1. Disconnect the power seat switch connector.
2. Inspect for continuity between the power seat switch connector terminals using an ohmmeter.
 - If not as specified, replace the power seat switch.

○—○ : Continuity

Switch position		Terminal									
		A	B	C	D	E	G	H	J	L	
Recliner	Forward	○									○
	Backward	○	○								
Slide	Forward	○					○				
	Backward	○			○						
Front tilt	Up	○		○							
	Down	○				○					
Rear tilt	Up	○								○	
	Down	○							○		



*	*	G	E	C	A
L	J	H	*	D	B



09-13

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SEATS

POSITION MEMORY SWITCH REMOVAL/INSTALLATION

id091300989300

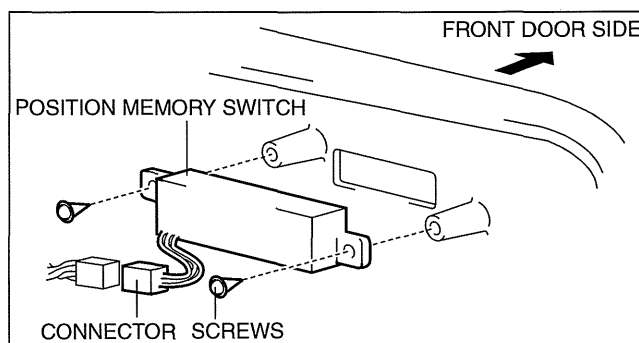
Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

1. Switch the ignition to off.
2. Remove the battery cover. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove the front seat side cover. (See 09-13-23 FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM].)
6. Remove the connector and the screws, then remove the position memory switch.
7. Install in the reverse order of removal.



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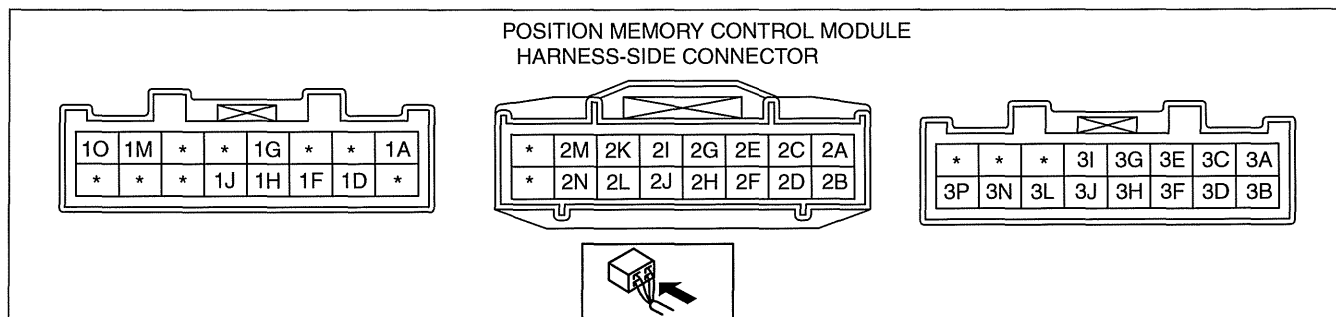
SEATS

POSITION MEMORY CONTROL MODULE INSPECTION

id091300811200

1. Measure the voltage at each terminal as indicated in the Terminal Voltage Tables.
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item (s)" and related wiring harnesses.
2. If the system does not work properly even though the inspection items or related wiring harnesses do not have any malfunction, replace the position memory control module.

Terminal Voltage Table (Reference)



am3uuw0005666

Terminal	Signal name	Connected to	Measured condition	Voltage (V)	Inspection item (s)
1A	Keyless entry signal	BCM	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> • BCM • Related wiring harness
1D	Vehicle speed input	Instrument cluster	Measure the waveform while driving using the oscilloscope.	High output: B+ Low output: 1.0 or less	<ul style="list-style-type: none"> • Instrument cluster • Related wiring harness
1F	Door open/closed	Front door latch and lock actuator (Door close on)	Driver-side door open: Inspect for continuity to ground. B+ Driver-side door closed: Inspect for continuity to ground. 1.0 or less		<ul style="list-style-type: none"> • Front door latch and lock actuator (Door close on) • Related wiring harness
1G	IG2	HEATER 10 A fuse	Switch the ignition to ON Switch the ignition to off or ACC	B+ 1.0 or less	<ul style="list-style-type: none"> • HEATER 10 A fuse • Related wiring harness
1H	Signal GND	Body ground	Under any condition	1.0 or less	Related wiring harness
1J	Power GND	Body ground	Under any condition	1.0 or less	Related wiring harness
1M	Power supply	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> • ROOM 15 A fuse • Related wiring harness
1O	Power supply	P SEAT 30 A fuse	Under any condition	B+	<ul style="list-style-type: none"> • P SEAT 30 A fuse • Related wiring harness
2A	Slide switch input (forward)	Power seat switch	Press the slide switch to forward Other	1.0 or less 5.0	<ul style="list-style-type: none"> • Power seat switch • Related wiring harness
2B	Slide switch input (backward)	Power seat switch	Press the slide switch to backward Other	1.0 or less 5.0	<ul style="list-style-type: none"> • Power seat switch • Related wiring harness
2C	Front tilt switch input (up)	Power seat switch	Press the front tilt switch to up Other	1.0 or less 5.0	<ul style="list-style-type: none"> • Power seat switch • Related wiring harness
2D	Front tilt switch input (down)	Power seat switch	Press the front tilt switch to down Other	1.0 or less 5.0	<ul style="list-style-type: none"> • Power seat switch • Related wiring harness
2E	Rear tilt switch input (up)	Power seat switch	Press the rear tilt switch to up Other	1.0 or less 5.0	<ul style="list-style-type: none"> • Power seat switch • Related wiring harness
2F	Rear tilt switch input (down)	Power seat switch	Press the rear tilt switch to down Other	1.0 or less 5.0	<ul style="list-style-type: none"> • Power seat switch • Related wiring harness

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SEATS

Terminal	Signal name	Connected to	Measured condition	Voltage (V)	Inspection item (s)
2G	Recliner switch input (forward)	Power seat switch	Press the recliner switch to forward	1.0 or less	<ul style="list-style-type: none"> Power seat switch Related wiring harness
			Other	5.0	
2H	Recliner switch input (backward)	Power seat switch	Press the recliner switch to backward	1.0 or less	<ul style="list-style-type: none"> Power seat switch Related wiring harness
			Other	5.0	
2I	Signal GND input	Power seat switch	Under any condition	1.0 or less	<ul style="list-style-type: none"> Power seat switch Related wiring harness
2J	Signal GND input	Position memory switch	Under any condition	1.0 or less	<ul style="list-style-type: none"> Position memory switch Related wiring harness
2K	Set switch input	Position memory switch	Press the set switch	1.0 or less	<ul style="list-style-type: none"> Position memory switch Related wiring harness
			Other	5.0	
2L	Memory switch 1 input	Position memory switch	Press the memory switch 1	1.0 or less	<ul style="list-style-type: none"> Position memory switch Related wiring harness
			Other	5.0	
2M	Memory switch 2 input	Position memory switch	Press the memory switch 2	1.0 or less	<ul style="list-style-type: none"> Position memory switch Related wiring harness
			Other	5.0	
2N	Memory switch 3 input	Position memory switch	Press the memory switch 3	1.0 or less	<ul style="list-style-type: none"> Position memory switch Related wiring harness
			Other	5.0	
3A	Slide motor output (forward)	Slide motor	While slide motor is moving to forward	B+	<ul style="list-style-type: none"> Slide motor Related wiring harness
			Other	1.0 or less	
3B	Slide motor output (backward)	Slide motor	While slide motor is moving to backward	B+	<ul style="list-style-type: none"> Slide motor Related wiring harness
			Other	1.0 or less	
3C	Front tilt motor output (up)	Front tilt motor	While front tilt motor is moving to up	B+	<ul style="list-style-type: none"> Front tilt motor Related wiring harness
			Other	1.0 or less	
3D	Front tilt motor output (down)	Front tilt motor	While front tilt motor is moving to down	B+	<ul style="list-style-type: none"> Front tilt motor Related wiring harness
			Other	1.0 or less	
3E	Rear tilt motor output (up)	Rear tilt motor	While rear tilt motor is moving to up	B+	<ul style="list-style-type: none"> Rear tilt motor Related wiring harness
			Other	1.0 or less	
3F	Rear tilt motor output (down)	Rear tilt motor	While rear tilt motor is moving to down	B+	<ul style="list-style-type: none"> Rear tilt motor Related wiring harness
			Other	1.0 or less	
3G	Recliner motor output (forward)	Recliner motor	While recliner motor is moving to forward	B+	<ul style="list-style-type: none"> Recliner motor Related wiring harness
			Other	1.0 or less	
3H	Recliner motor output (backward)	Recliner motor	While recliner motor is moving to backward	B+	<ul style="list-style-type: none"> Recliner motor Related wiring harness
			Other	1.0 or less	
3I	Position sensor (slide)+	Position sensor (slide)	Because this terminal is for signal, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Position sensor (slide) Related wiring harnesses
3J	Position sensor (slide)-	Position sensor (slide)	Because this terminal is for signal, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Position sensor (slide) Related wiring harnesses
3L	Position sensor (tilt)-	Position sensor (tilt)	Because this terminal is for signal, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Position sensor (tilt) Related wiring harnesses
3N	Position sensor (lift)-	Position sensor (lift)	Because this terminal is for signal, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Position sensor (lift) Related wiring harnesses
3P	Position sensor (reclining)-	Position sensor (reclining)	Because this terminal is for signal, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Position sensor (reclining) Related wiring harnesses

SEATS

POSITION MEMORY CONTROL MODULE REMOVAL/INSTALLATION

id091300811100

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

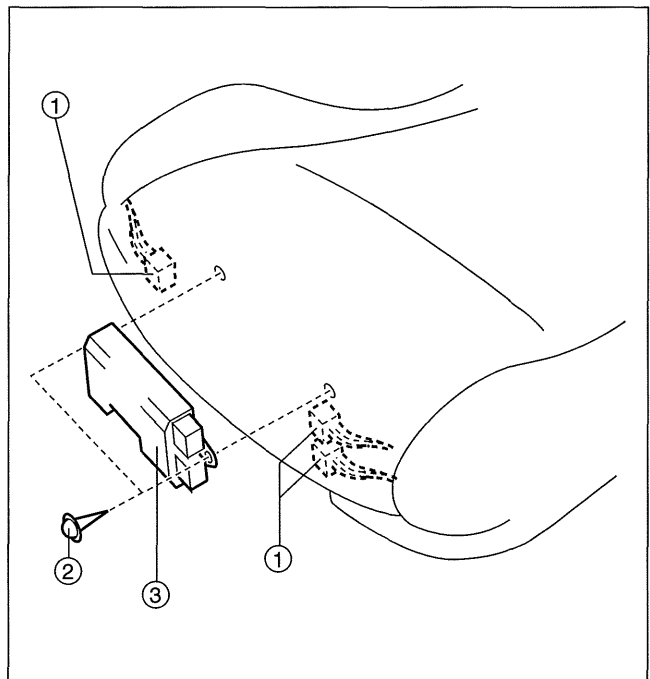
Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

1. Operate the power seat switch and move the seat cushion forward and upward.
2. Turn the ignition switch to the LOCK position.
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the driver-side front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
5. Remove in the order indicated in the table.

1	Connector
2	Screw
3	Position memory control module

6. Install in the reverse order of removal.



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09-13

POSITION MEMORY SWITCH INSPECTION

id091300811300

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

1. Remove the front seat side cover. (See 09-13-23 FRONT SEAT COVER REMOVAL/INSTALLATION [VEHICLES WITH POWER SEAT SYSTEM].)
2. Disconnect the position memory switch connector.

SEATS

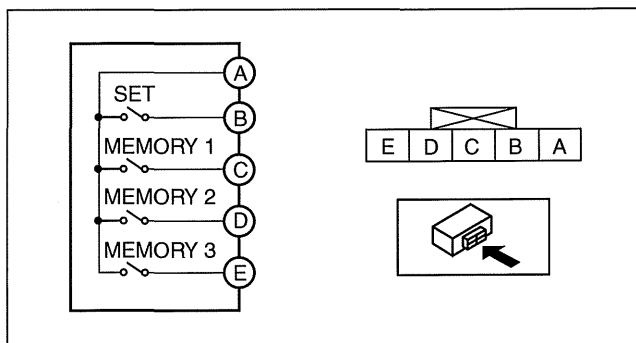
3. Inspect for continuity between the power seat switch connector terminals.

- If not as specified, replace the position memory switch.

○—○ : Continuity

Switch position	Terminal				
	A	B	C	D	E
Set switch on	○—○				
Memory switch 1 on	○—○	○—○			
Memory switch 2 on	○—○		○—○		
Memory switch 3 on	○—○			○—○	
Off					

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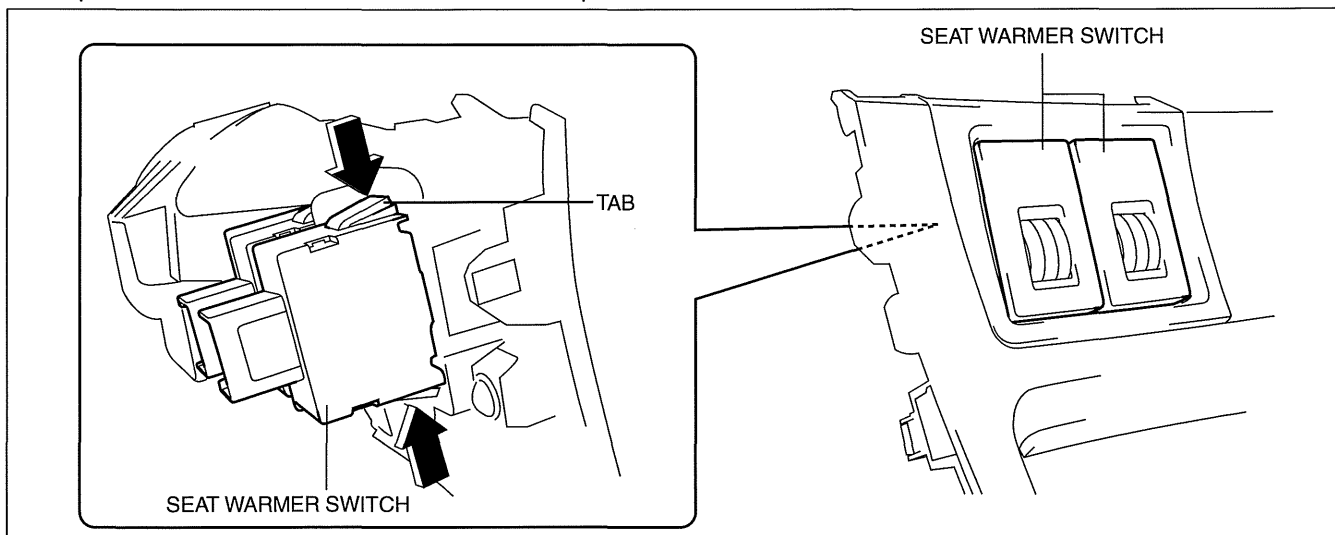


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SEAT WARMER SWITCH REMOVAL/INSTALLATION

id091300801200

1. Disconnect the negative battery cable.
2. Remove the shift panel. (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
3. Squeeze the tabs of seat warmer switch and pull it outward to remove it.



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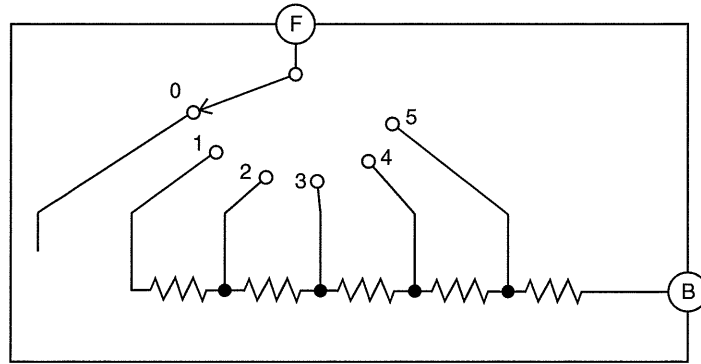
4. Remove the seat warmer switch.
5. Install in the reverse order of removal.

SEATS

SEAT WARMER SWITCH INSPECTION

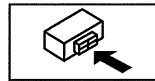
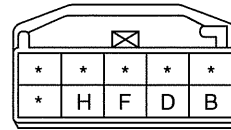
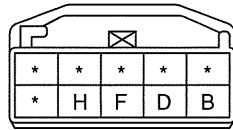
id091300801300

1. Inspect for resistance and continuity between the seat warmer switch terminals using a tester.



SEAT WARMER SWITCH LH

SEAT WARMER SWITCH RH



O-M-O : RESISTANCE

SWITCH POSITION	TERMINAL		RESISTANCE (ohm)
	F	B	
0			0
1	○	○	1189—1237
2	○	○	774—808
3	○	○	416—436
4	○	○	106—114
5	○	○	8—12

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- If not as specified, replace the seat warmer switch.

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SEAT WARMER UNIT INSPECTION

Warning

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See 08-10-3 AIR BAG SYSTEM SERVICE WARNINGS.)

Caution

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

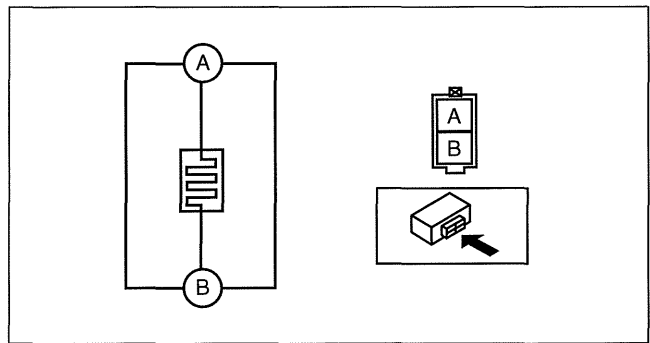
Seat Cushion

1. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
2. Remove the seat cushion trim. (See 09-13-22 FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION.)
3. Verify that the continuity between terminals A and B is as indicated in the table.
 - If not as indicated in the table, replace the seat cushion pad. (See 09-13-22 FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION.)

○—○ : Continuity

Test condition	Terminal	
	A	B
Under any condition	○—○	○—○

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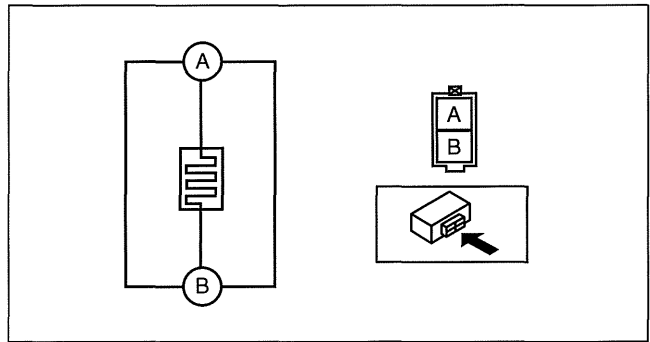
Seat Back

1. Remove the front seat. (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
2. Remove the seat back trim. (See 09-13-13 FRONT SEAT BACK TRIM REMOVAL/INSTALLATION.)
3. Verify that the continuity between terminals A and B is as indicated in the table.
 - If not as indicated in the table, replace the seat back pad. (See 09-13-13 FRONT SEAT BACK TRIM REMOVAL/INSTALLATION.)

○—○ : Continuity

Test condition	Terminal	
	A	B
Under any condition	○—○	○—○

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09-14 SECURITY AND LOCKS

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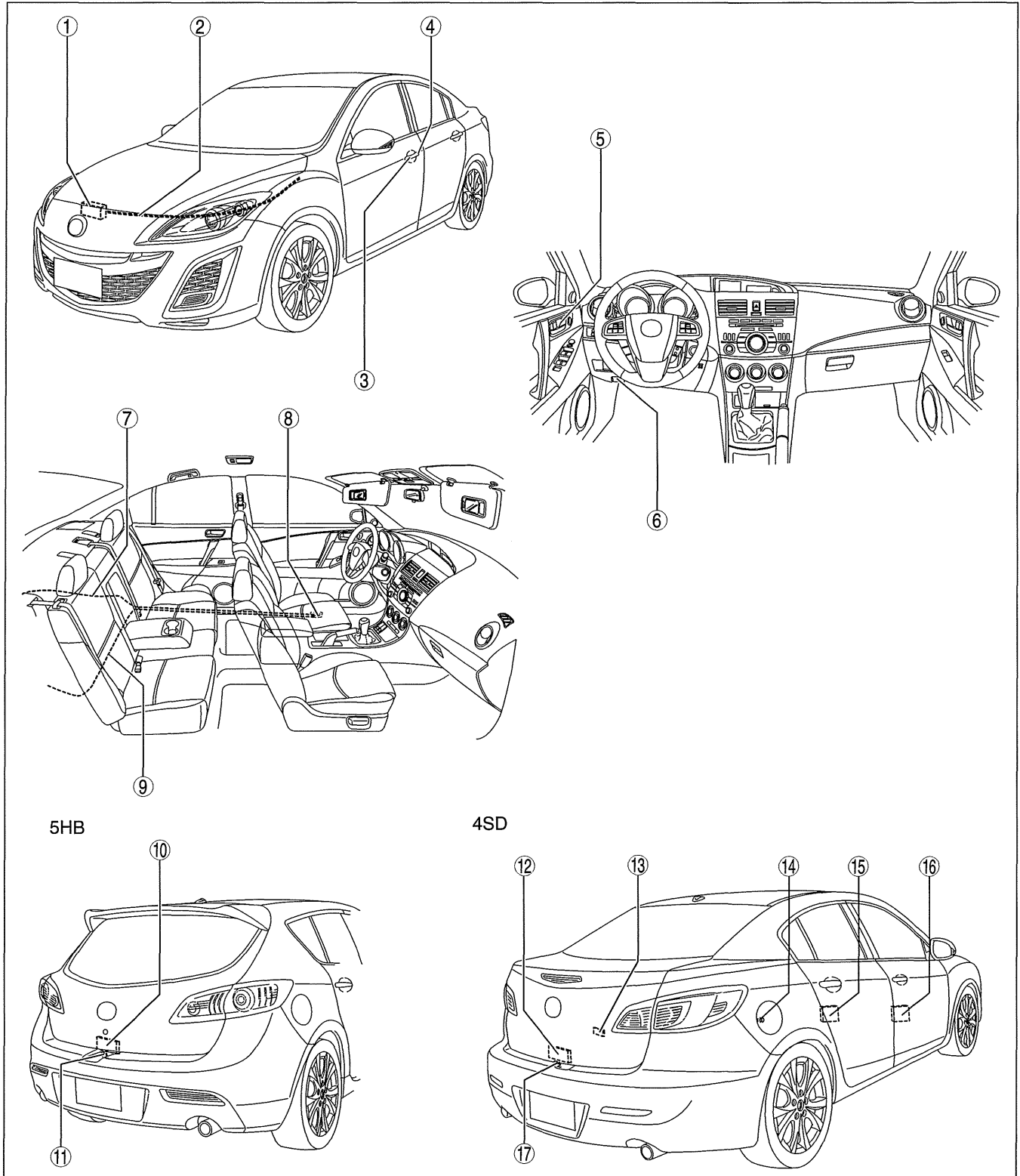
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Locks and Openers



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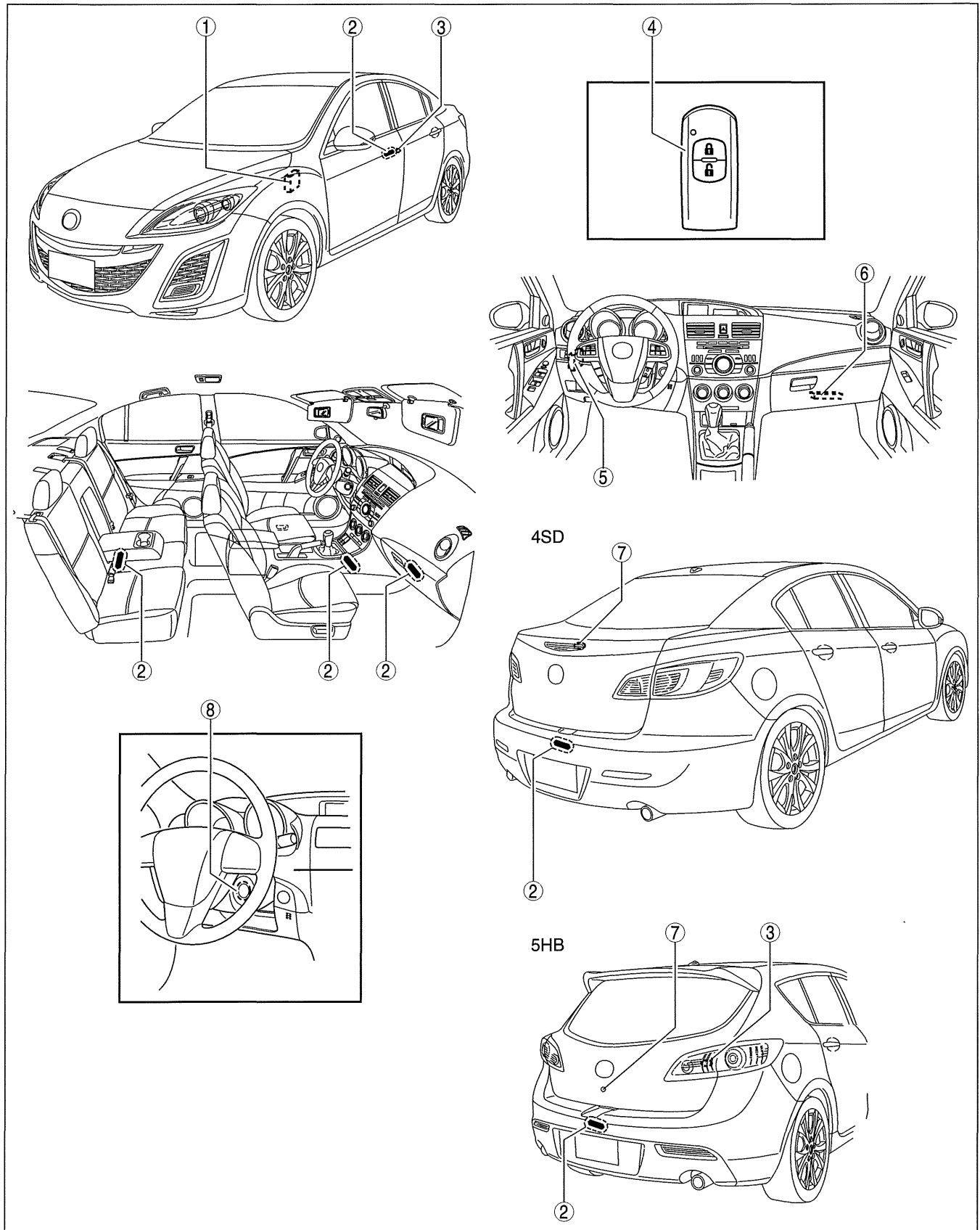
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7	Trunk lid opener cable (4SD) (See 09-14-57 TRUNK LID OPENER CABLE REMOVAL/INSTALLATION.)
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16	Front door latch and lock actuator (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.) (See 09-14-37 FRONT DOOR LATCH AND LOCK ACTUATOR INSPECTION.) (See 09-14-39 FRONT DOOR LOCK ACTUATOR INSPECTION.) (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.)
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SECURITY AND LOCKS

Advanced Keyless Entry And Push Button Start System/Immobilizer System



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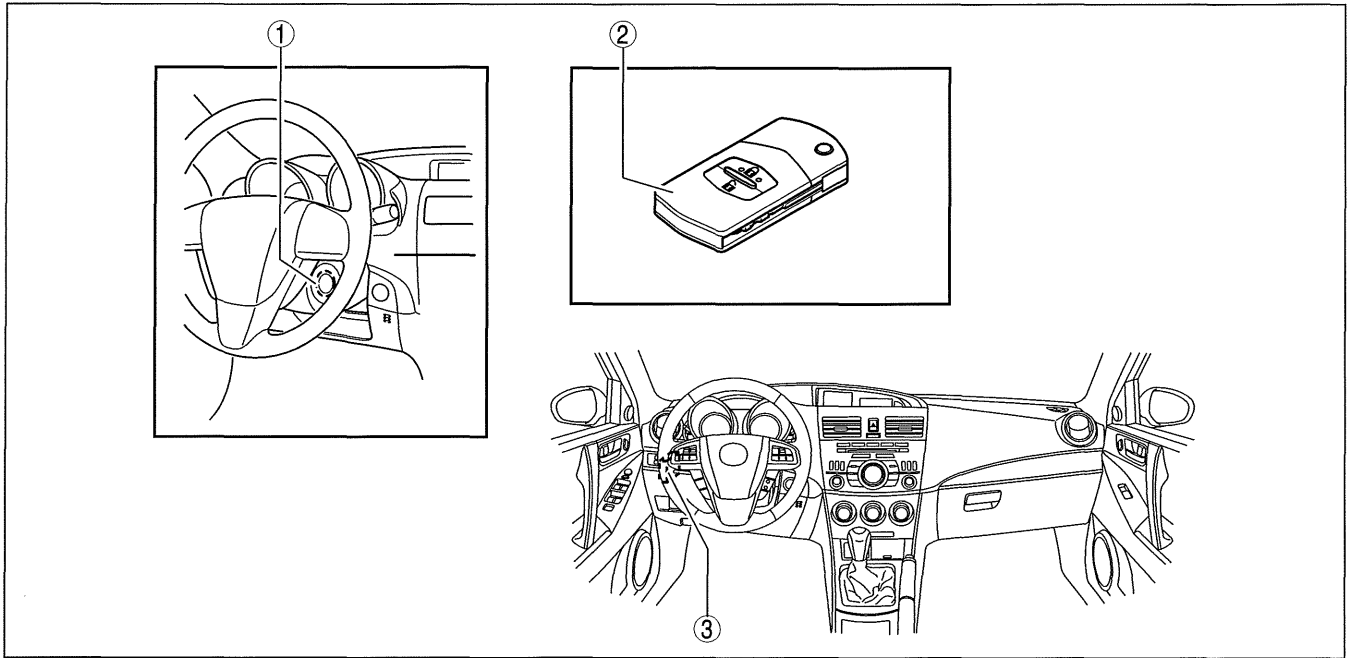
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3	Request switch (See 09-14-73 REQUEST SWITCH REMOVAL/INSTALLATION.) (See 09-14-74 REQUEST SWITCH INSPECTION.)
4	Advanced key (See 09-14-82 ADVANCED KEY DISASSEMBLY/ASSEMBLY.) (See 09-14-84 ADVANCED KEY ID CODE REGISTRATION.) (See 09-14-85 CLEARING ADVANCED KEY.)
5	Keyless receiver (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.) (See 09-14-82 KEYLESS RECEIVER INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

6	Keyless control module (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-14-68 KEYLESS CONTROL MODULE INSPECTION.) (See 09-14-72 KEYLESS CONTROL MODULE CONFIGURATION.) (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-14-72 PERSONALIZATION FEATURES SETTING PROCEDURE.)
7	Liftgate opener switch (5HB) (See 09-14-64 LIFTGATE OPENER SWITCH REMOVAL/INSTALLATION.) (See 09-14-65 LIFTGATE OPENER SWITCH INSPECTION.) Trunk lid opener switch (4SD) (See 09-14-54 TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION.) (See 09-14-54 TRUNK LID OPENER SWITCH INSPECTION.)
8	Coil antenna (See 09-14-88 COIL ANTENNA REMOVAL/INSTALLATION.)

SECURITY AND LOCKS

Keyless Entry System/Immobilizer System



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1	Coil antenna (See 09-14-88 COIL ANTENNA REMOVAL/ INSTALLATION.) (See 09-14-88 IMMOBILIZER SYSTEM- RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)
2	Transmitter (See 09-14-85 TRANSMITTER DISASSEMBLY/ASSEMBLY.) (See 09-14-87 TRANSMITTER ID CODE REGISTRATION.)

3	Keyless receiver (See 09-14-80 KEYLESS RECEIVER REMOVAL/INSTALLATION.) (See 09-14-81 KEYLESS RECEIVER INSPECTION [KEYLESS ENTRY SYSTEM].)
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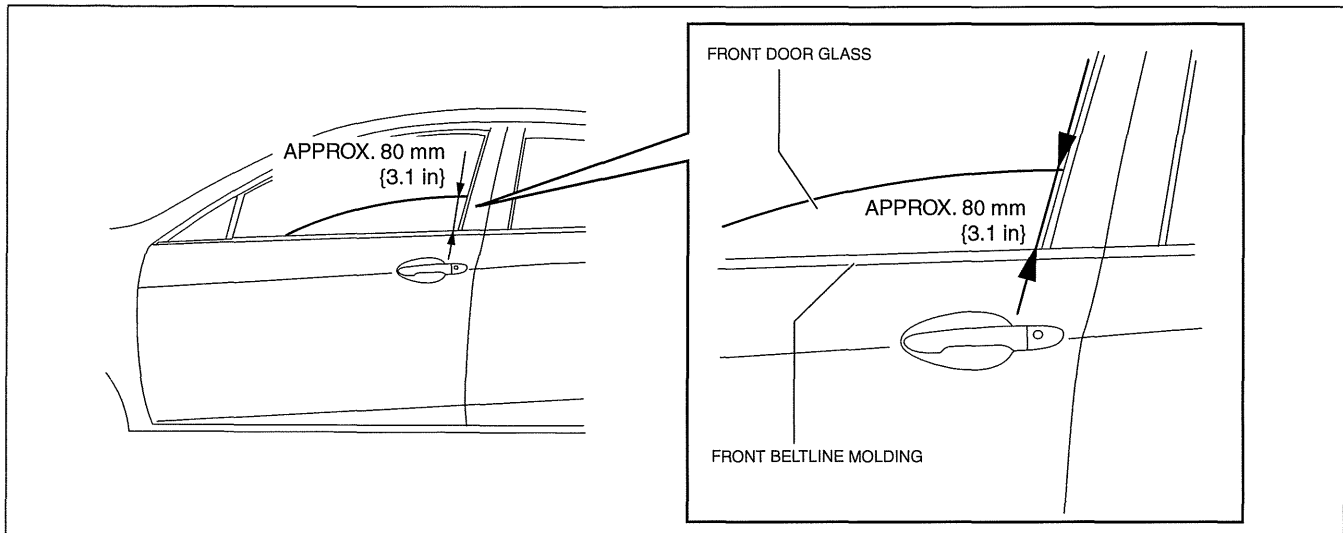
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SECURITY AND LOCKS

FRONT OUTER HANDLE REMOVAL/INSTALLATION

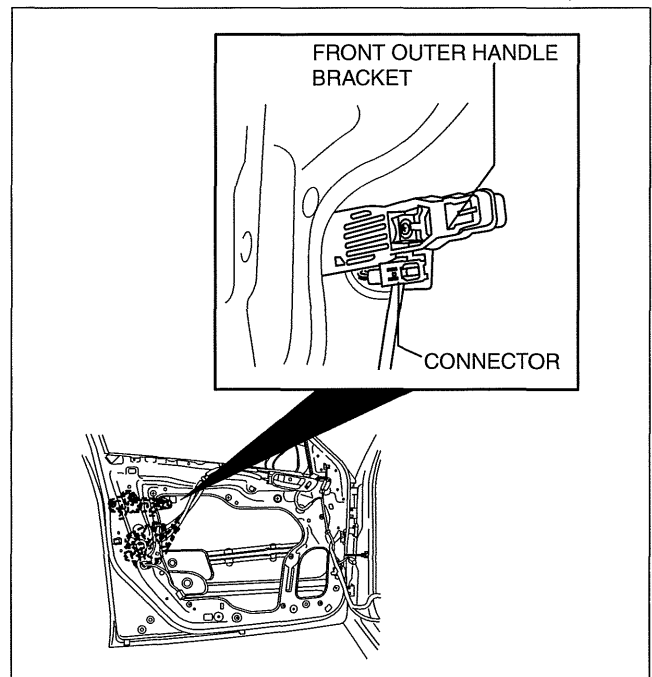
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1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**



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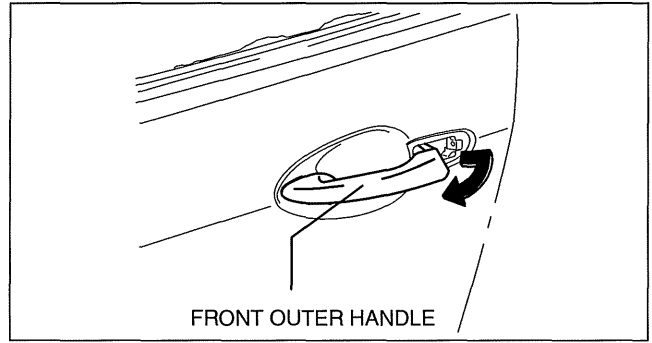
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
 - (6) Front door key cylinder (See 09-14-28 FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION.)
4. Disconnect the keyless antenna connector (With advanced keyless entry and push button start system).



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SECURITY AND LOCKS

5. Remove the front outer handle.

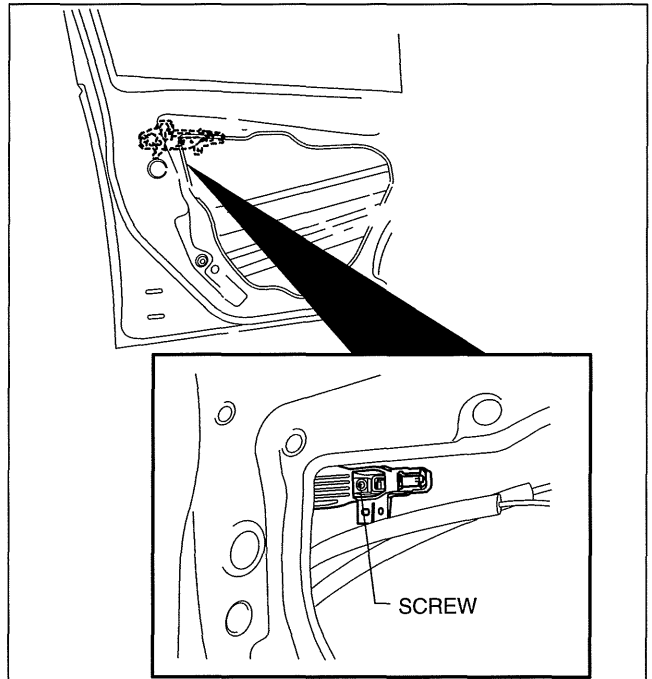


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6. Remove the screw.

Note

- The screw cannot be removed because of the stopper.

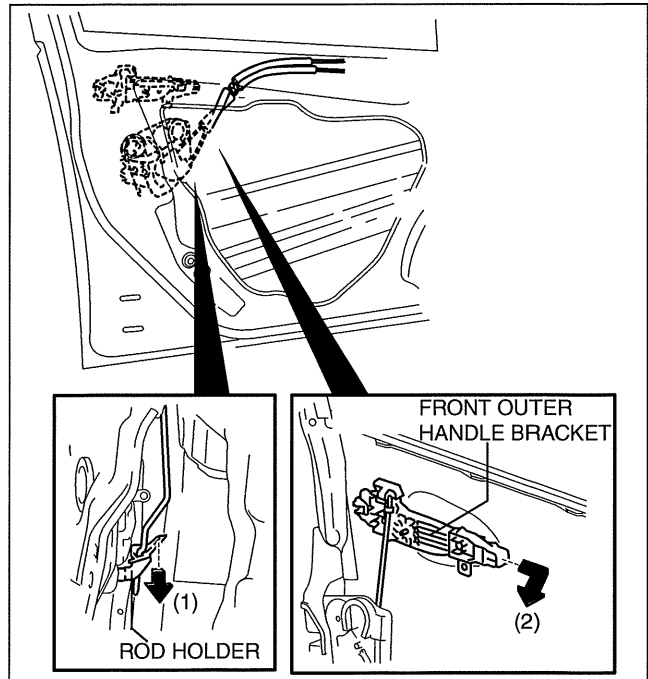


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SECURITY AND LOCKS

7. Press down the rod holder in the direction of arrow (1) and remove the front outer handle bracket in the direction of arrow (2).
8. Install in the reverse order of removal.

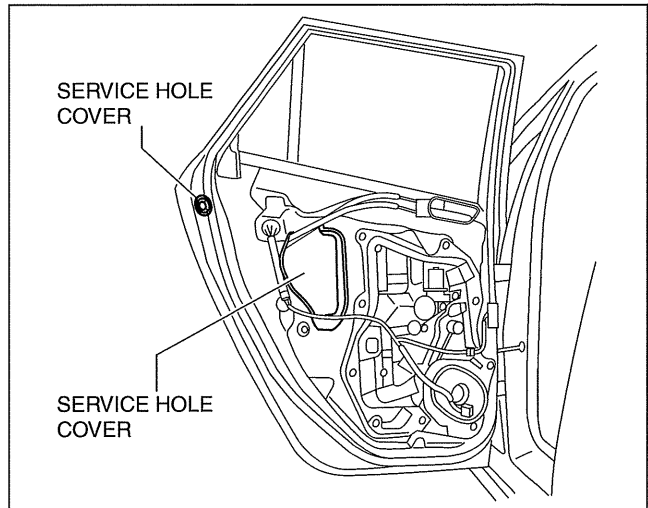


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REAR OUTER HANDLE REMOVAL/INSTALLATION

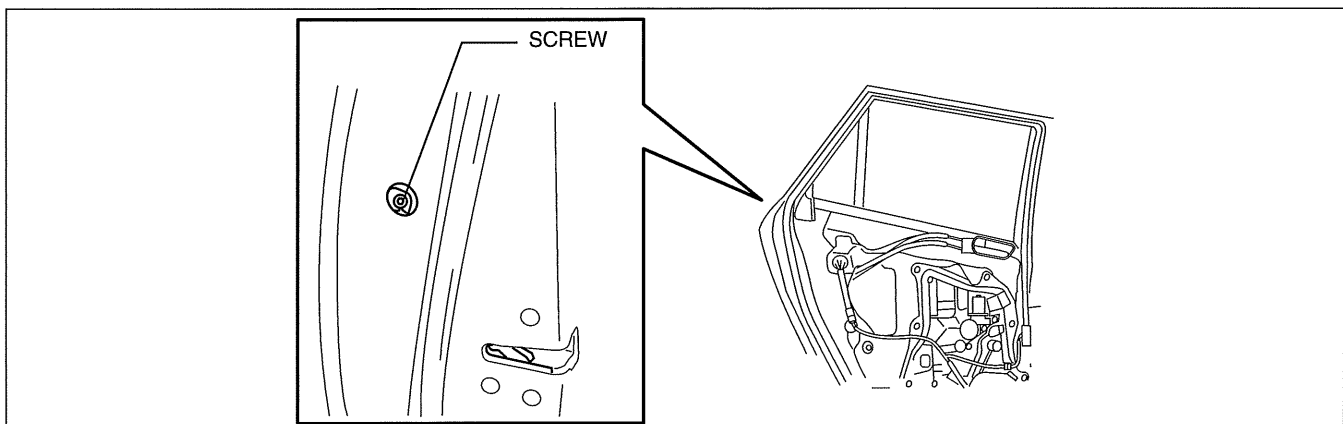
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1. Fully close the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the service hole cover.



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5. Remove the screw from the service hole.



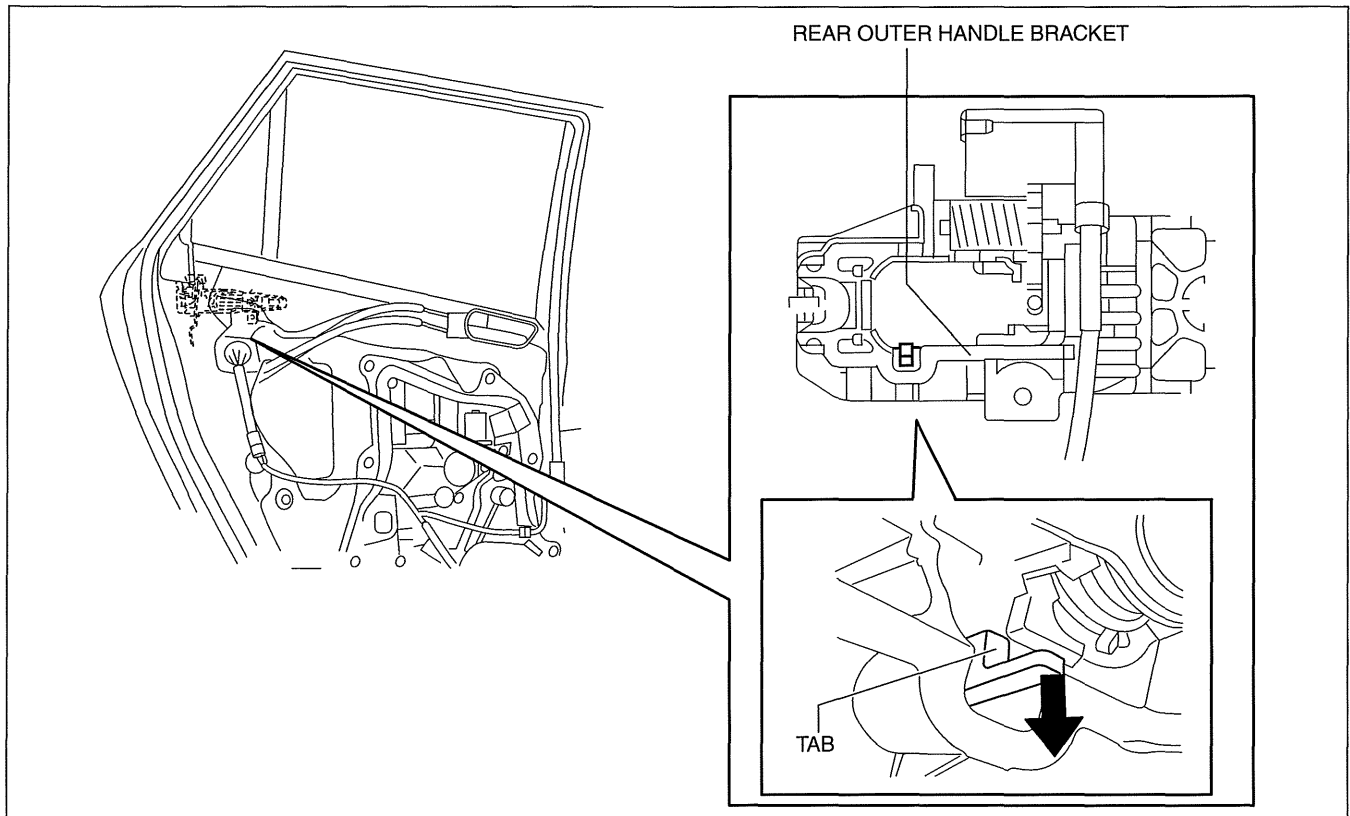
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SECURITY AND LOCKS

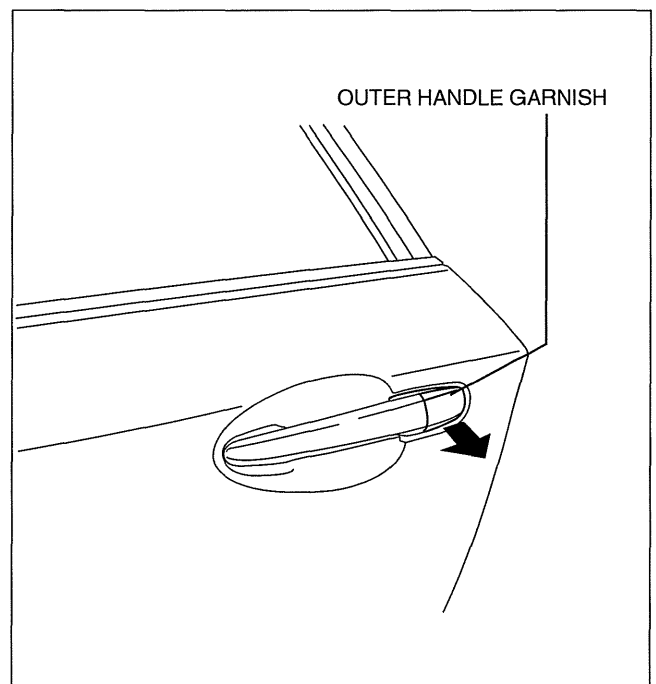
Note

- The screw cannot be removed because of the stopper.

6. Press the tab on the rear outer handle bracket in the direction of the arrow.

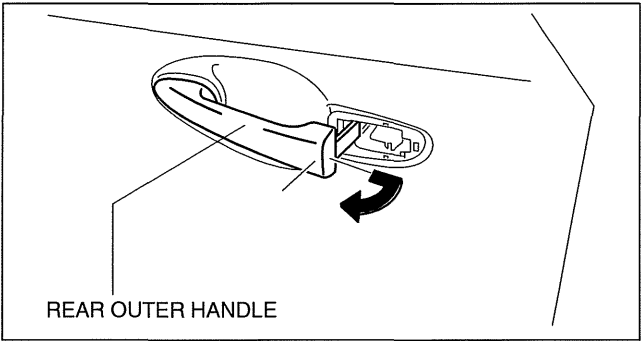


7. Maintaining the condition in procedure 6, remove the outer handle garnish.



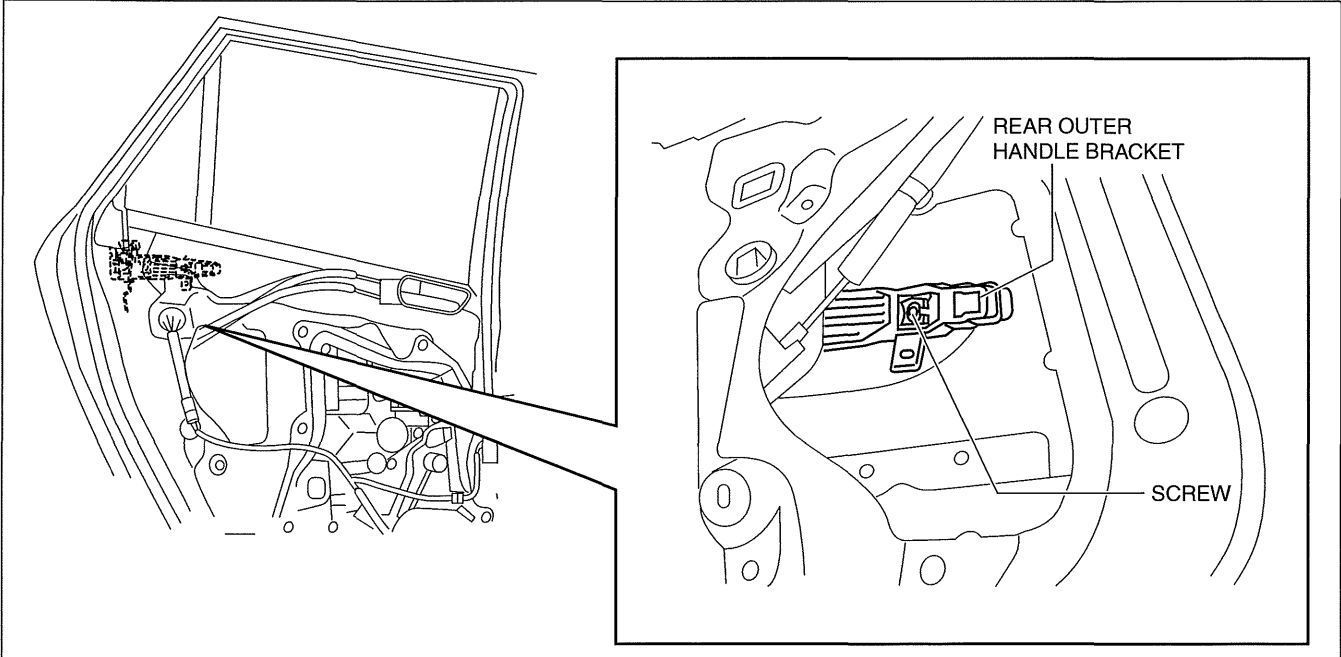
SECURITY AND LOCKS

8. Remove the rear outer handle.



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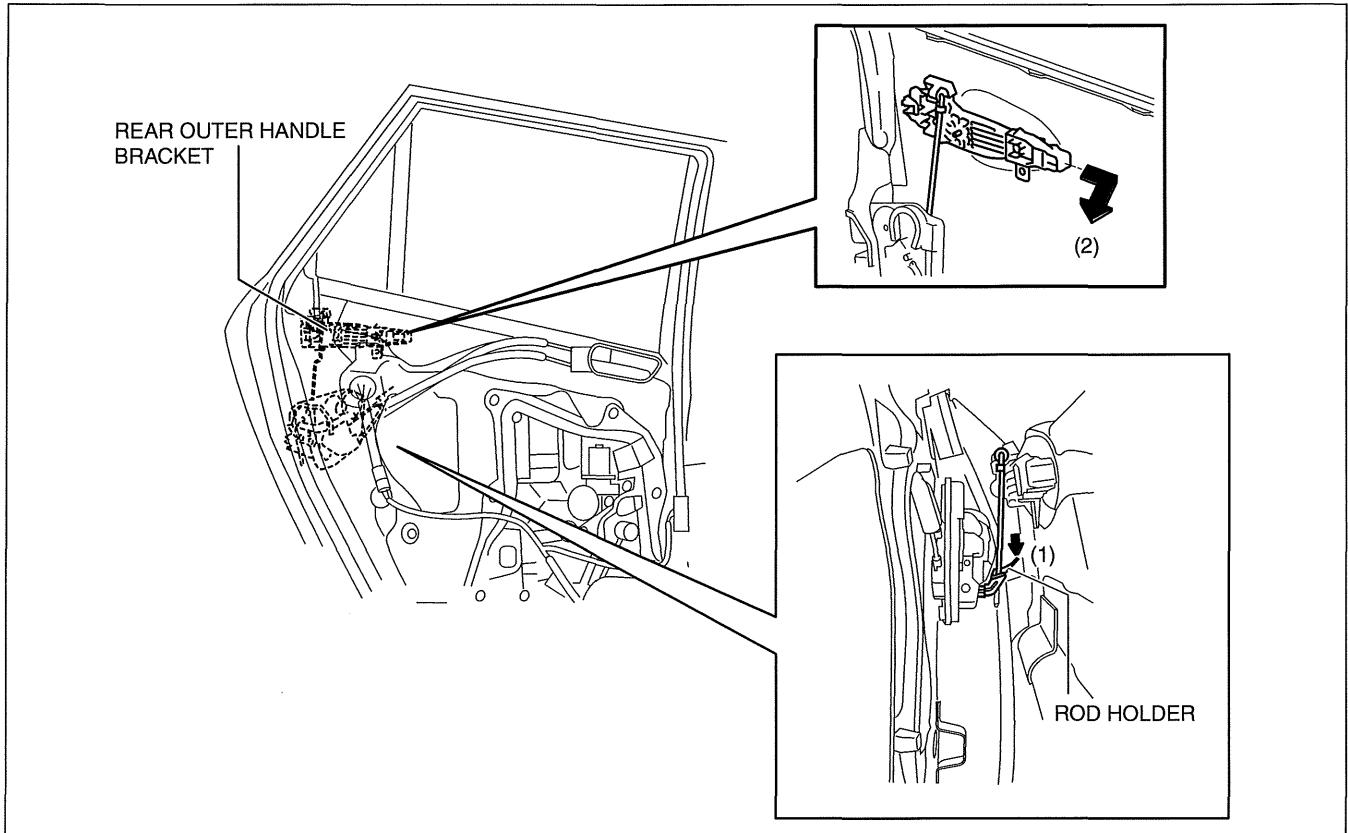
9. Loosen the screw.



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SECURITY AND LOCKS

10. Press down the rod holder in the direction of arrow (1) and remove the rear outer handle bracket in the direction of arrow (2).



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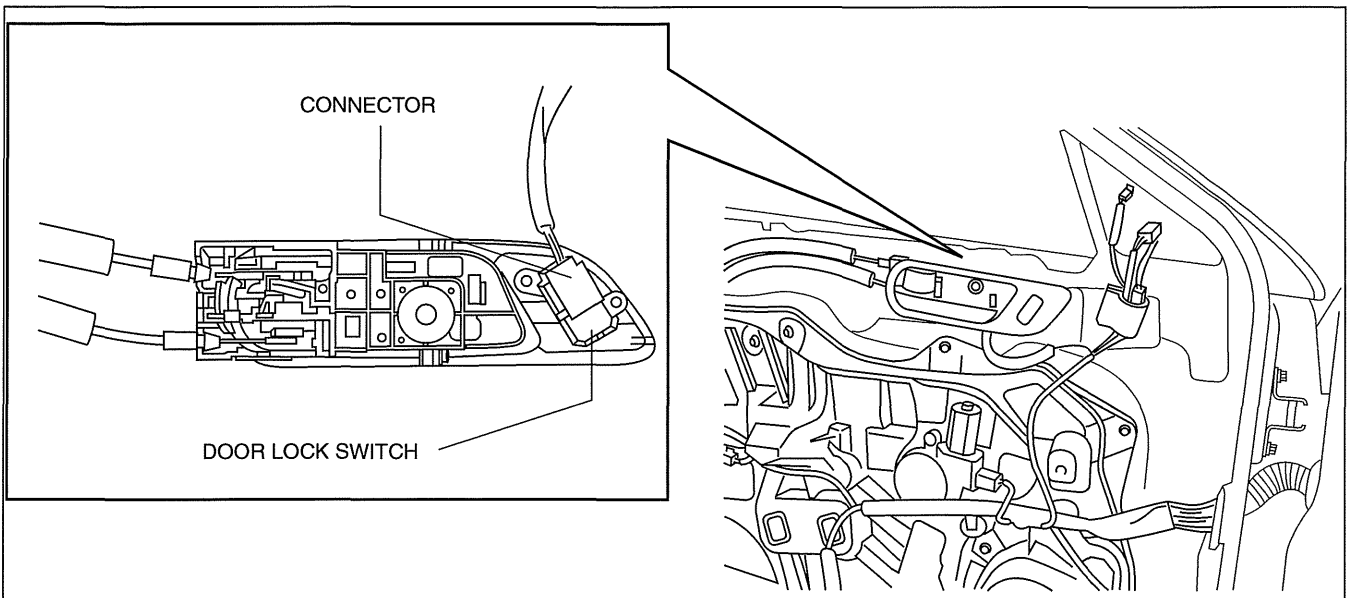
11. Install in the reverse order of removal.

INNER HANDLE REMOVAL/INSTALLATION

id091400510300

Front Inner Handle

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Disconnect the door lock switch connector.

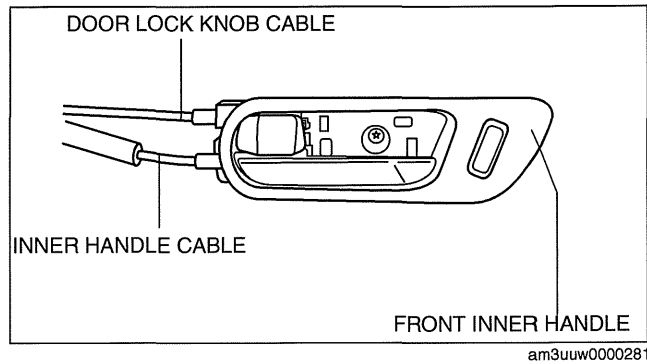


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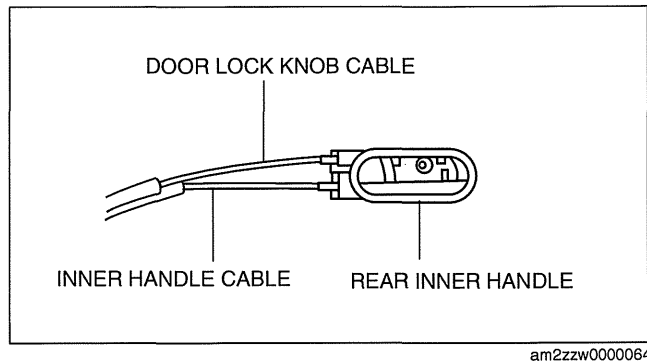
SECURITY AND LOCKS

5. Disconnect each cable and remove the front inner handle.
6. Install in the reverse order of removal.



Rear Inner Handle

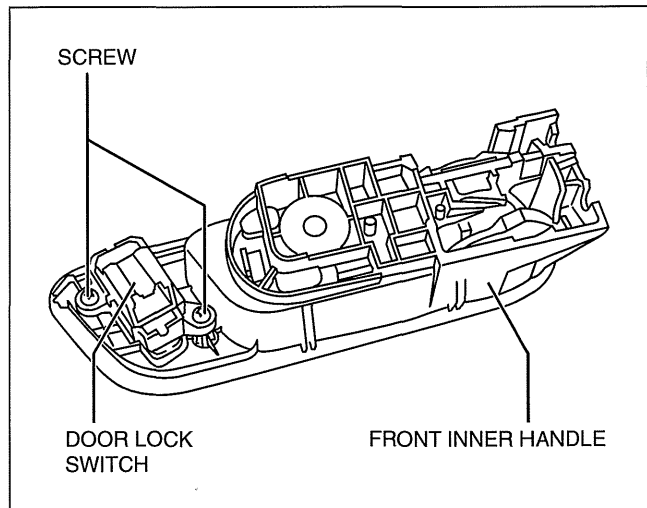
1. Disconnect the negative battery cable.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Disconnect each cable and remove the rear inner handle.
4. Install in the reverse order of removal.



DOOR LOCK SWITCH REMOVAL/INSTALLATION

id091400518600

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the front inner handle. (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
5. Remove the screws, then remove the door lock switch.
6. Install in the reverse order of removal.

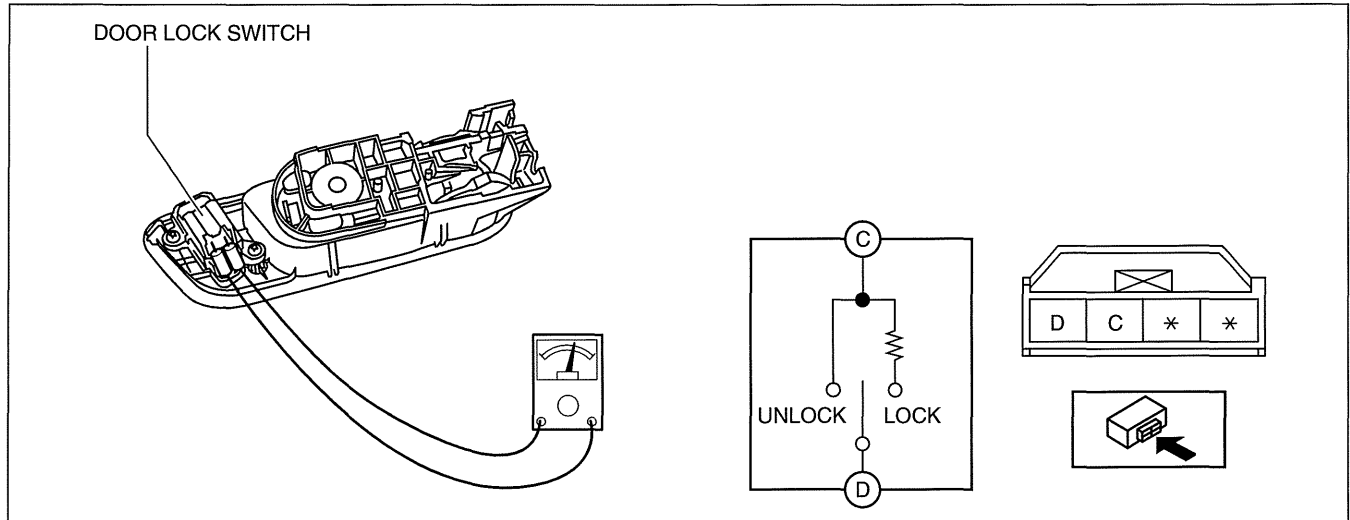


SECURITY AND LOCKS

DOOR LOCK SWITCH INSPECTION

id091400518700

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the front inner handle. (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
5. Inspect for continuity between the door lock switch terminals using an ohmmeter.



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- If not as indicated in the table, replace the door lock switch.

○—○: Continuity ○— R —○: Resistance

Position	Terminal	
	C	D
Lock	○— R —○	○—○
Unlock	○—○	○—○

R: 940—1,060 ohms

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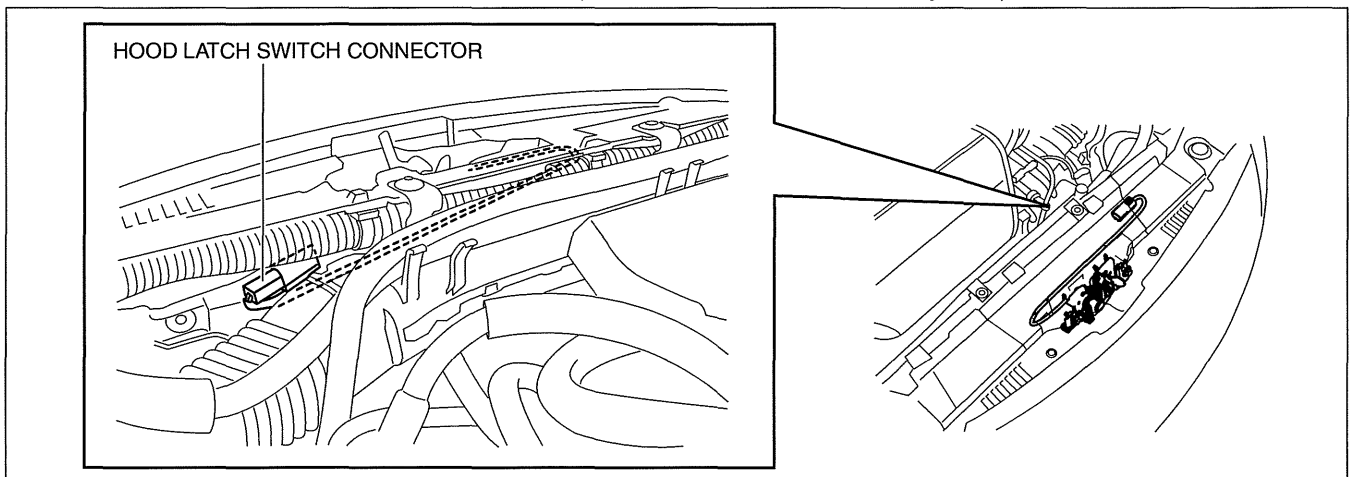
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HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION

id091400516600

Hood latch

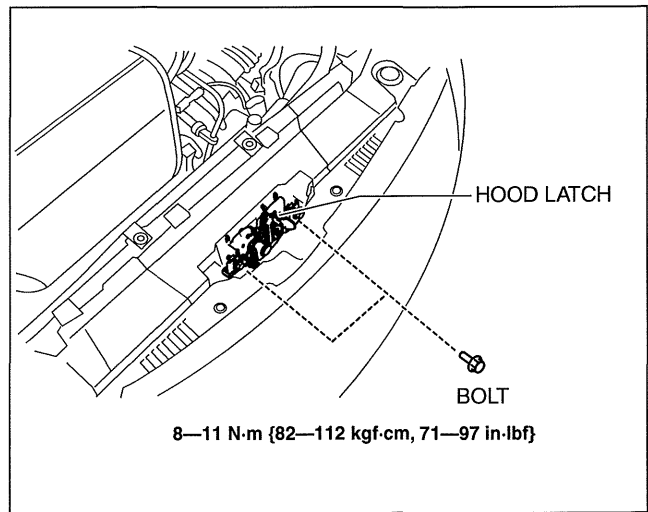
1. Open the hood.
2. Disconnect the negative battery cable.
3. Disconnect the hood latch switch connector. (vehicles with theft-deterrent system)



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SECURITY AND LOCKS

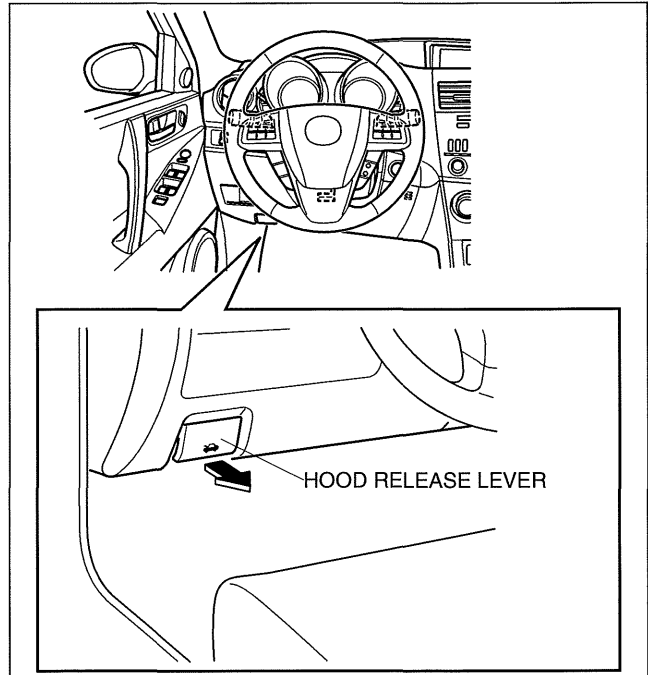
4. Remove the bolts.
5. Remove the hood latch.
6. Install in the reverse order of removal.
7. Adjust the hood. (See 09-10-12 HOOD ADJUSTMENT.)



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Hood release lever

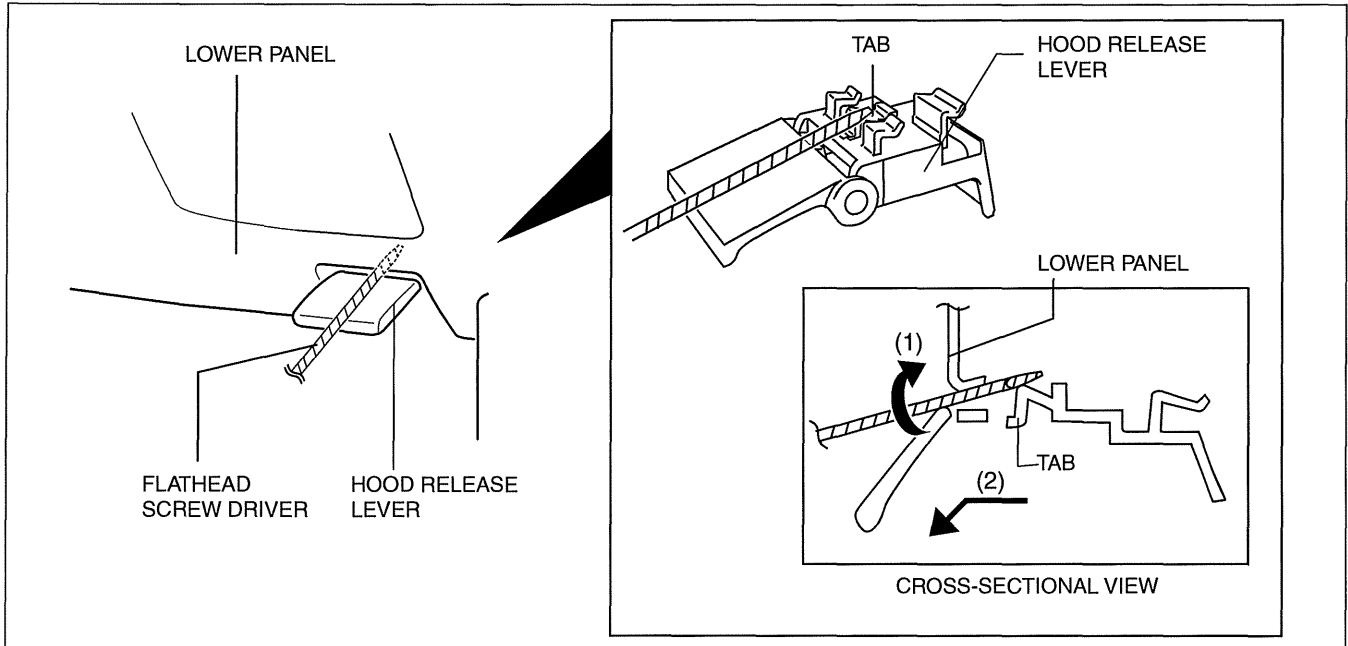
1. Pull the hood release lever.



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SECURITY AND LOCKS

2. While maintaining the condition in procedure 1, insert a tape-wrapped flathead screwdriver as shown in the figure, press the ends of the tabs with the screwdriver in the direction of the arrows (1), pull the hood release lever in the direction of arrow (2), and then disconnect the lower panel.



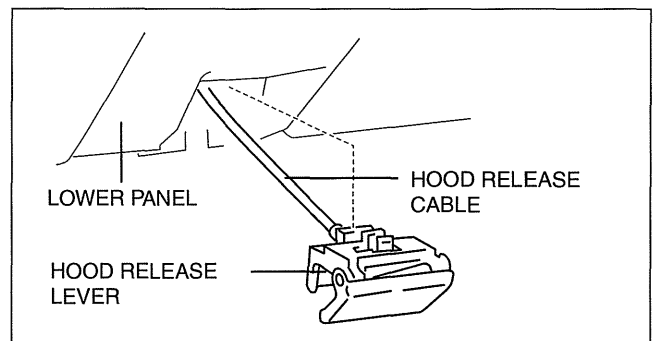
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Caution

- Remove the hood release lever while being careful not to damage the hood release cable with the flathead screwdriver.

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3. Pull the latch release lever outward, remove it from the lower panel, and then disconnect the hood release cable.
4. Install in the reverse order of removal.



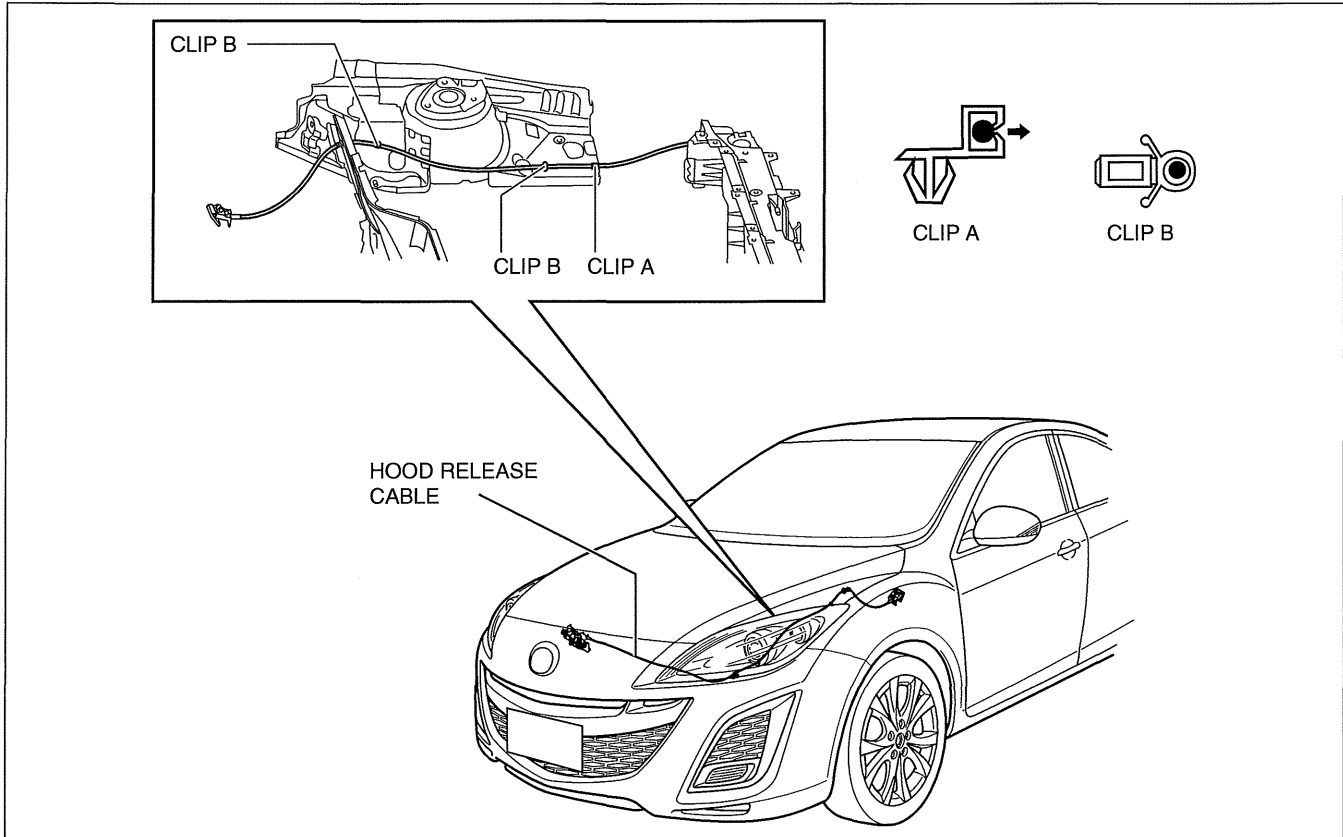
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SECURITY AND LOCKS

HOOD RELEASE CABLE REMOVAL/INSTALLATION

id091400516700

1. Disconnect the negative battery cable.
2. Remove the battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove the Front mudguard (LH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
4. Remove the hood release cable from clips A.



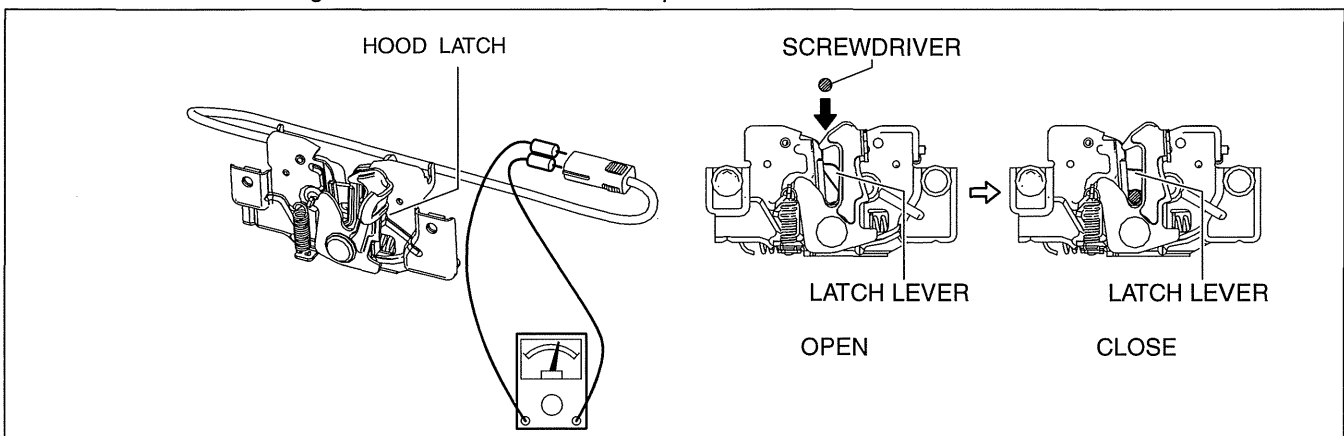
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5. Remove the clips B.
6. Disconnect the hood latch from the hood release cable.
7. Remove the hood release cable from outside of the vehicle.
8. Install in the reverse order of removal.

HOOD LATCH SWITCH INSPECTION

id091400516800

1. Disconnect the negative battery cable.
2. Remove the hood latch. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
3. Press the latch in using a flathead screwdriver to inspect the latch lever condition.



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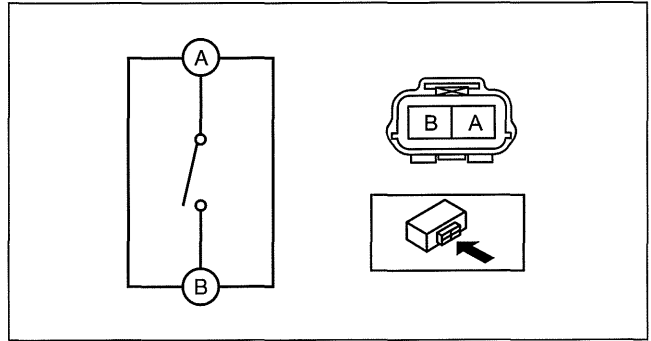
SECURITY AND LOCKS

4. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the hood latch.

○—○ CONTINUITY

HOOD LATCH SWITCH	TERMINAL	
	A	B
OPEN		
CLOSE	○—○	○—○

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am2zzw0000045

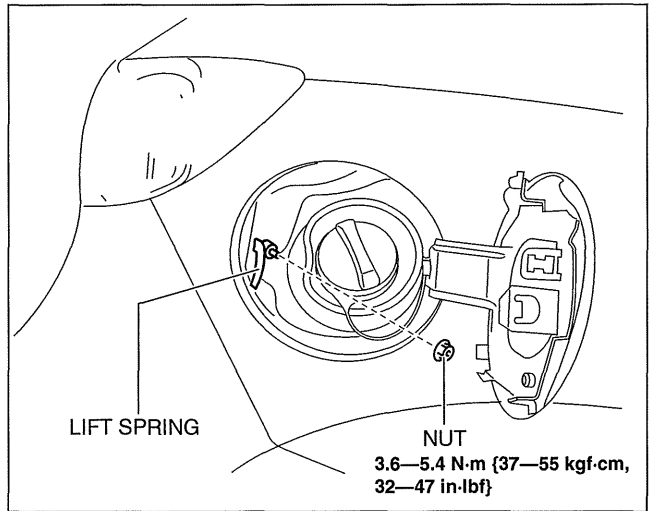
FUEL-FILLER LID OPENER AND LEVER REMOVAL/INSTALLATION

id091400510700

Fuel-filler Lid Opener

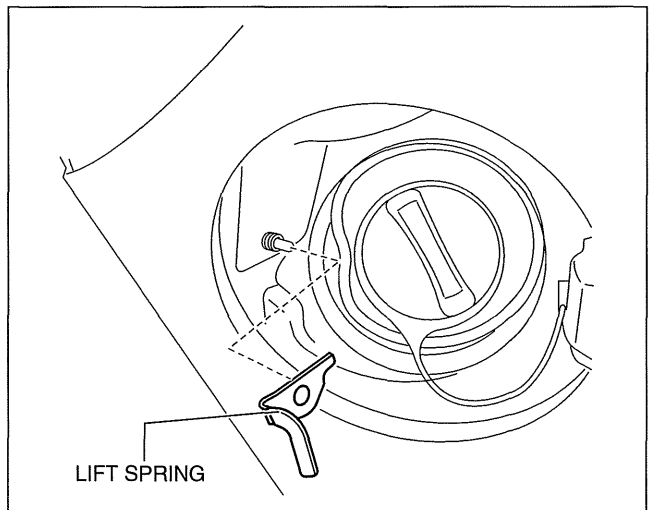
4SD

1. Open the fuel-filler lid.
2. Remove the following parts:
 - (1) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (2) Trunk side trim (RH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
3. Remove the nut.



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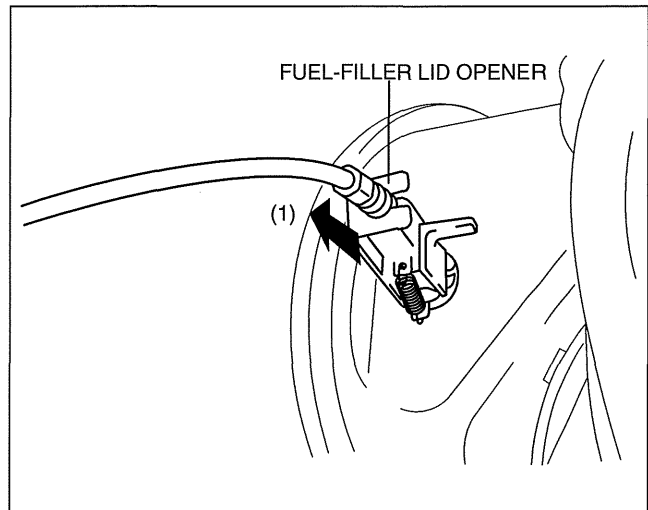
4. Remove the lift spring.



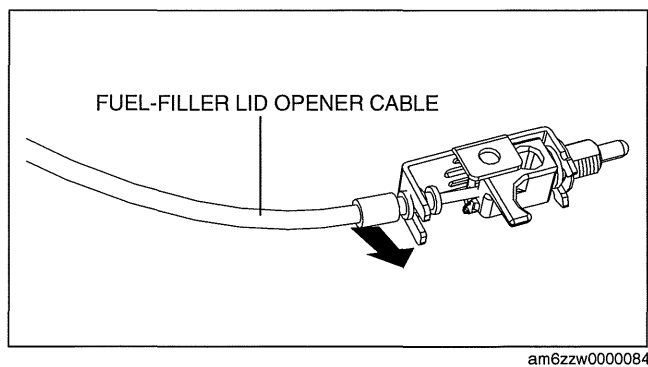
am3uuw0000295

SECURITY AND LOCKS

5. Pull out the fuel-filler lid opener in the direction of the arrow (1).

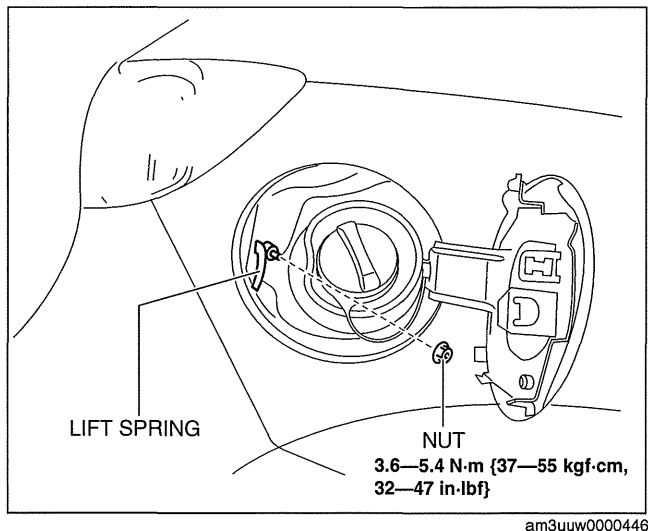


6. Disconnect the fuel-filler lid opener from the fuel-filler lid opener cable.
7. Install in the reverse order of removal.



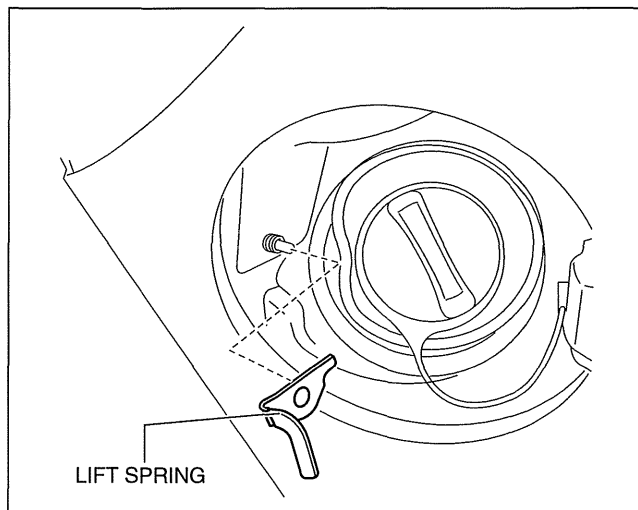
5HB

1. Open the fuel-filler lid.
2. Remove the following parts:
 - (1) Rear scuff plate (RH) (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (3) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (4) Tire house trim (RH) (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (5) Trunk side upper trim (RH) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (7) Trunk side trim (RH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
3. Remove the nut.



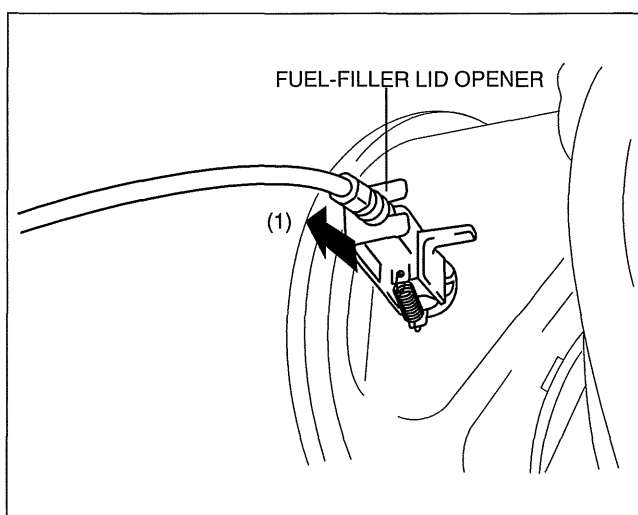
SECURITY AND LOCKS

4. Remove the lift spring.



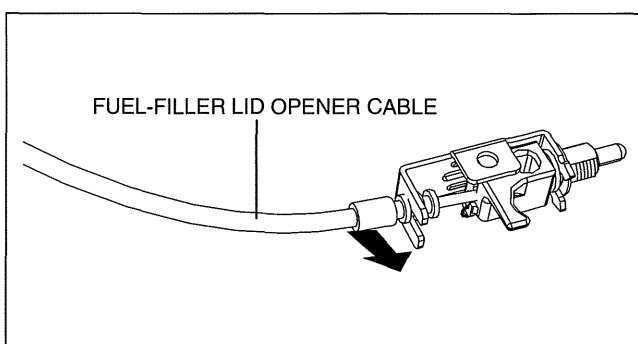
am3uuw0000295

5. Pull out the fuel-filler lid opener in the direction of the arrow (1).



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6. Disconnect the fuel-filler lid opener from the fuel-filler lid opener cable.
7. Install in the reverse order of removal.



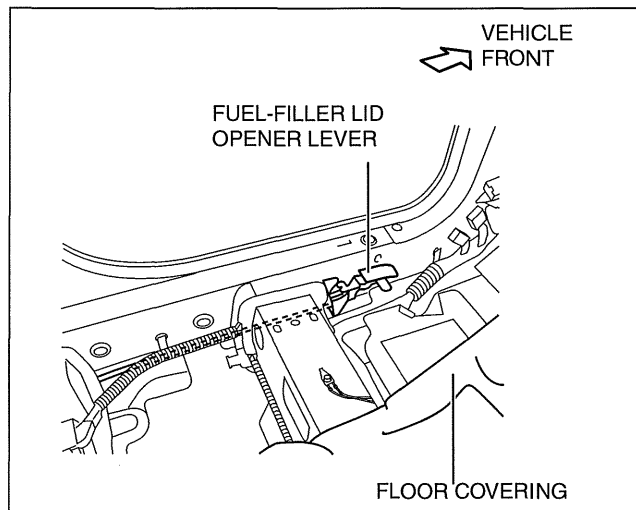
am6zzw0000084

09-14

SECURITY AND LOCKS

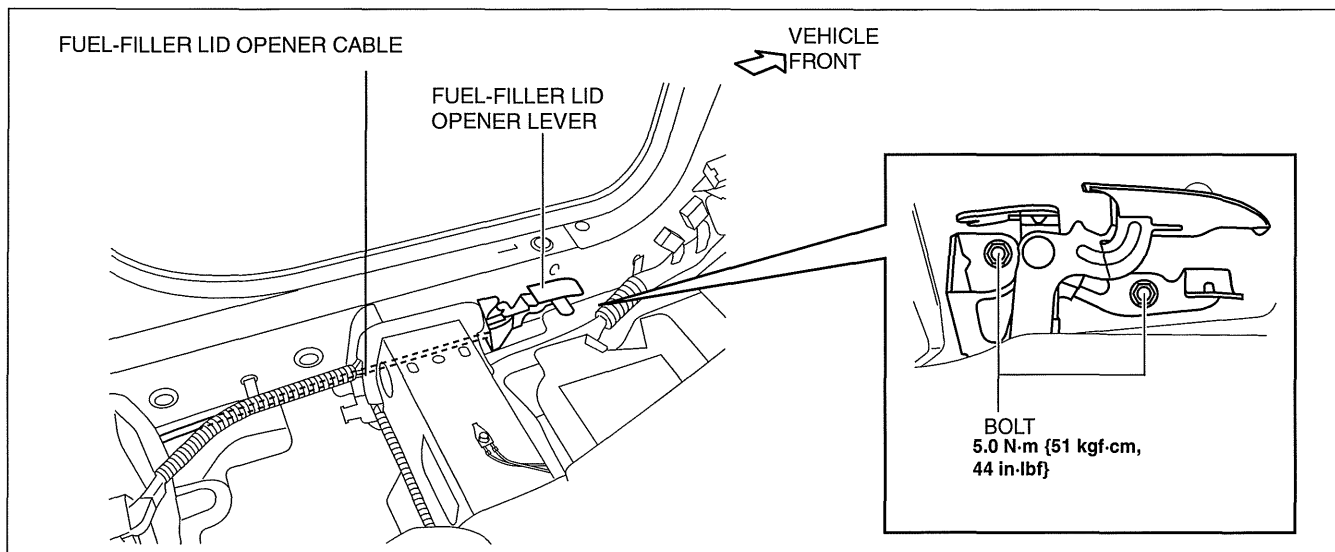
Fuel-filler Lid Opener Lever

1. Remove the front scuff plate (LH). (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the front side trim (LH). (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
3. Remove the fuel-filler lid opener bezel. (See 09-17-70 FUEL-FILLER LID OPENER BEZEL REMOVAL/INSTALLATION.)
4. Partially peel back the floor covering.



am3uuw000435

5. Remove the bolts.



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6. Disconnect the cable and fuel-filler lid opener lever.
7. Install in the reverse order of removal.

FUEL-FILLER LID OPENER CABLE REMOVAL/INSTALLATION

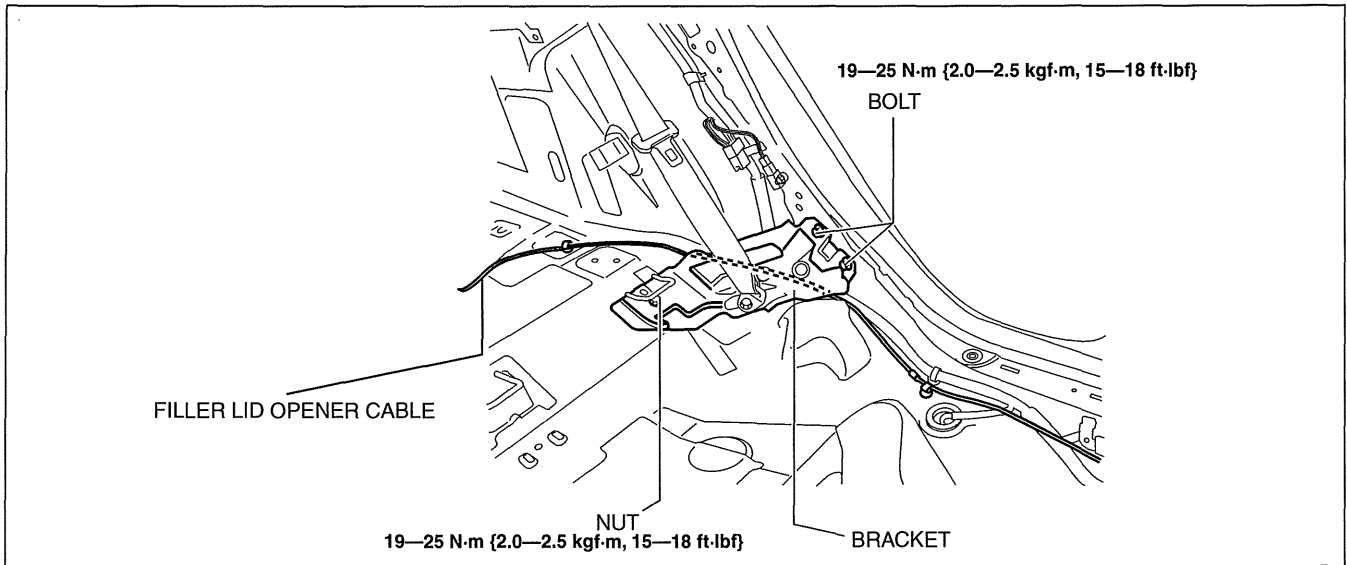
id091400510800

4SD

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front seat (LH) (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (5) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (6) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (7) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (8) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (9) Trunk side trim (RH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (10) Fuel-filler lid opener (See 09-14-19 FUEL-FILLER LID OPENER AND LEVER REMOVAL/INSTALLATION.)
 - (11) Fuel-filler lid opener lever (See 09-14-19 FUEL-FILLER LID OPENER AND LEVER REMOVAL/INSTALLATION.)

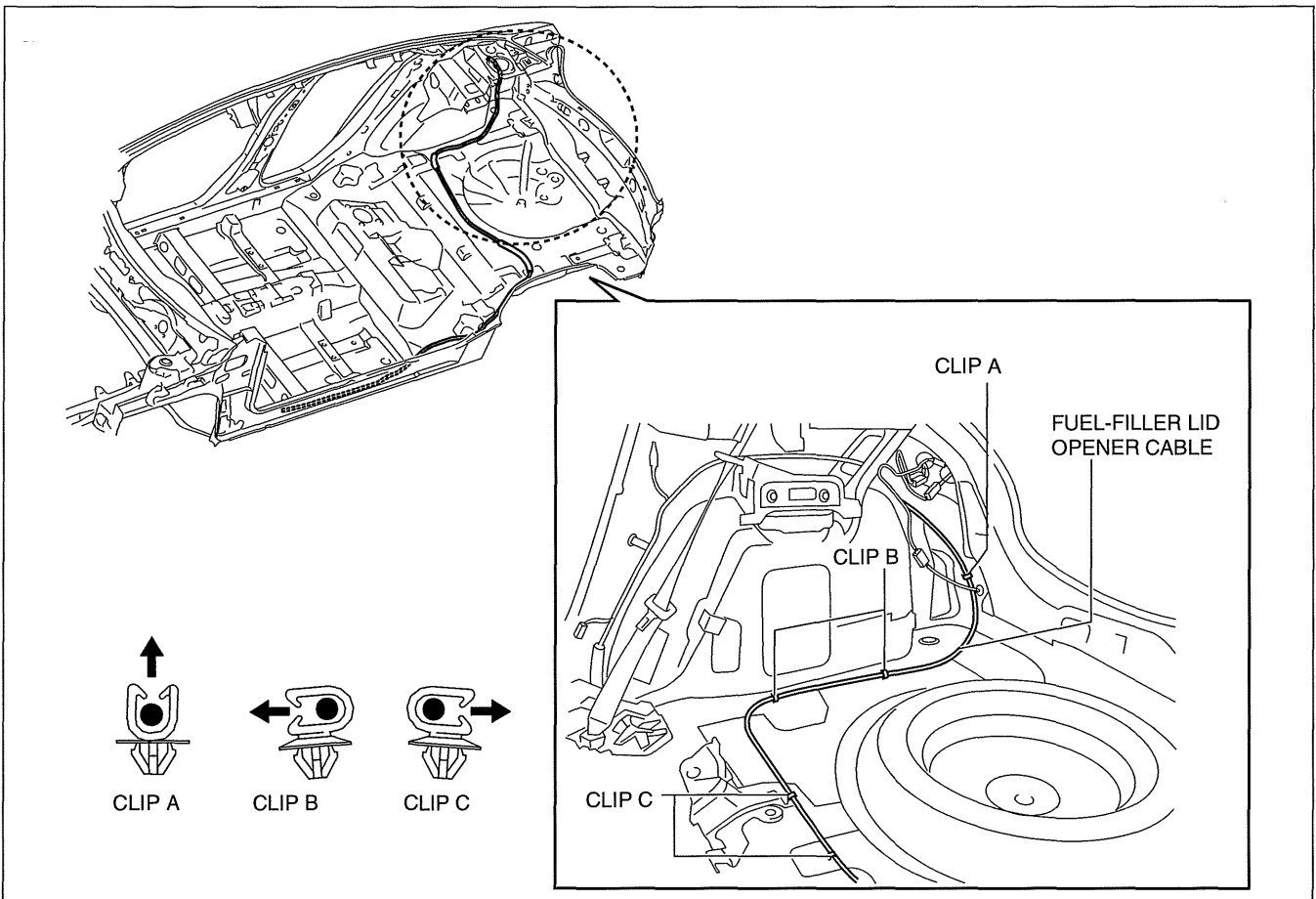
SECURITY AND LOCKS

3. Remove the bolts and nut.



4. Remove the bracket.

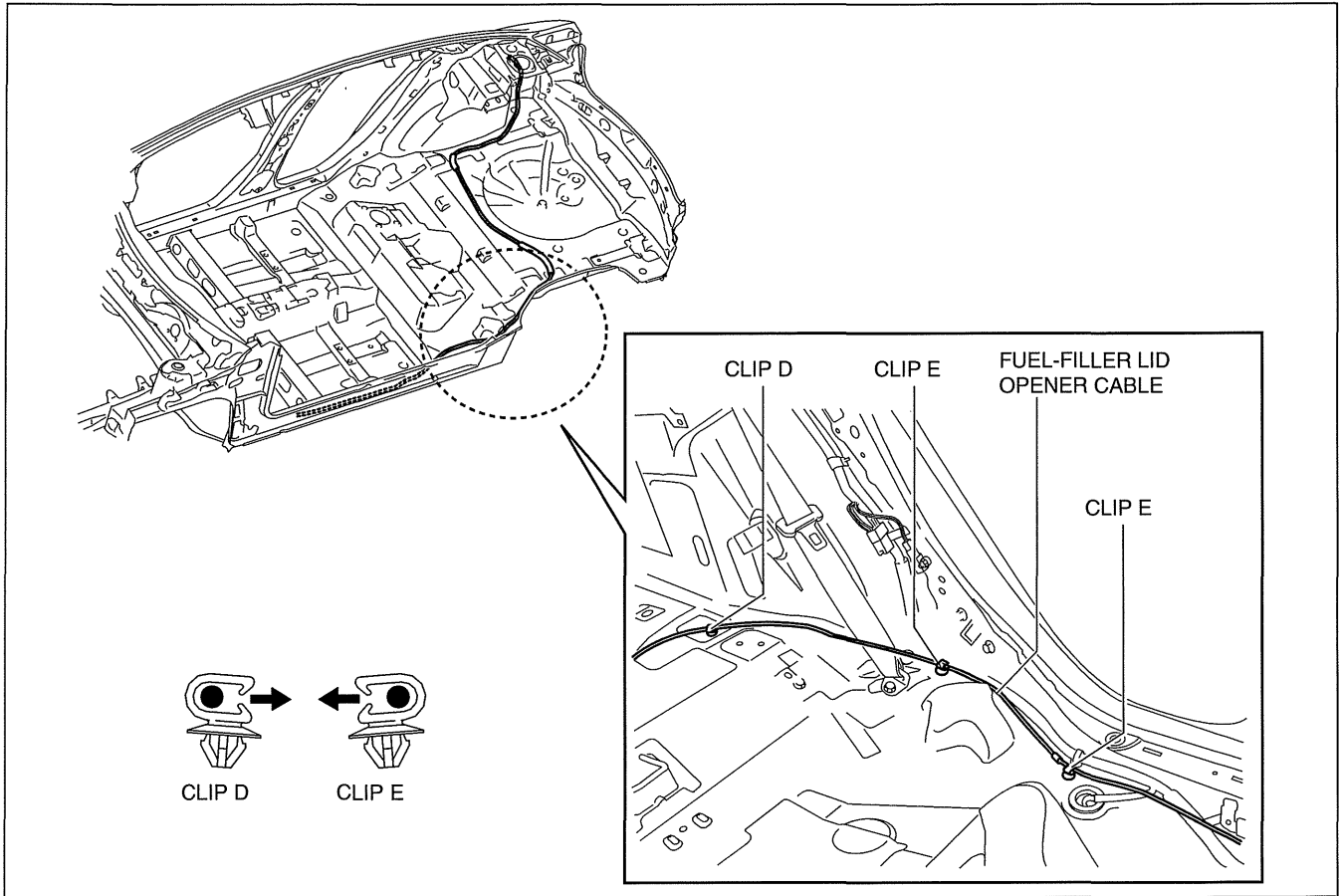
5. Remove the fuel-filler lid opener cable from clips A and B.



6. Remove the fuel-filler lid opener cable from clips C.

SECURITY AND LOCKS

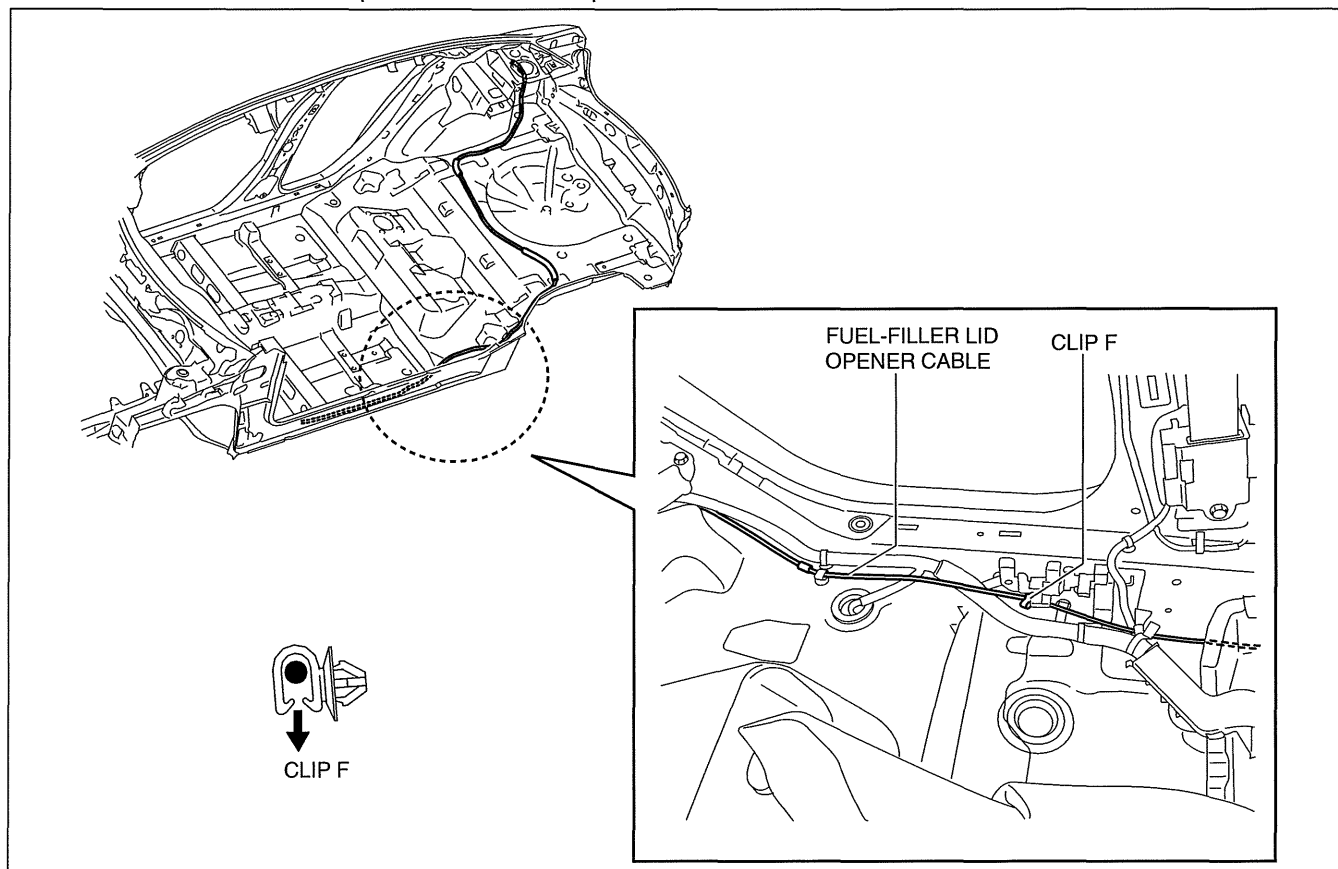
7. Remove the fuel-filler lid opener cable from clips D and E.



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SECURITY AND LOCKS

8. Remove the fuel-filler lid opener cable from clips F.



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09-14

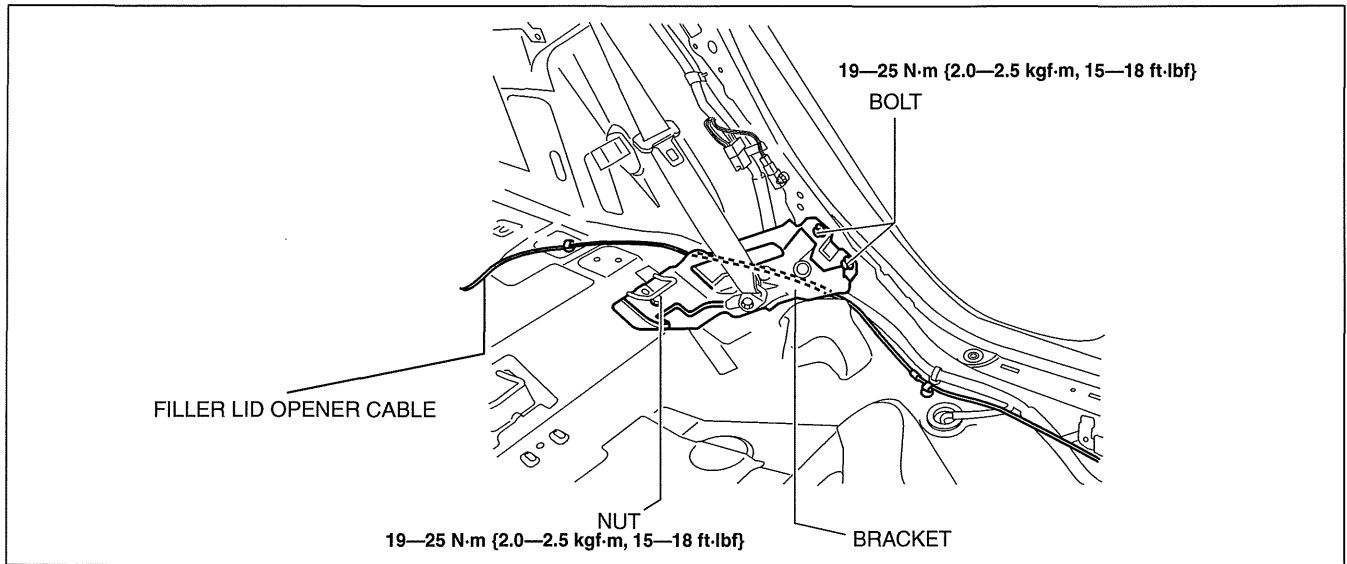
9. Install in the reverse order of removal.

5HB

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front seat (LH) (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (5) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (6) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (7) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (8) Trunk side upper trim (RH) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (9) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side trim (RH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (11) Fuel-filler lid opener (See 09-14-19 FUEL-FILLER LID OPENER AND LEVER REMOVAL/INSTALLATION.)
 - (12) Fuel-filler lid opener lever (See 09-14-19 FUEL-FILLER LID OPENER AND LEVER REMOVAL/INSTALLATION.)

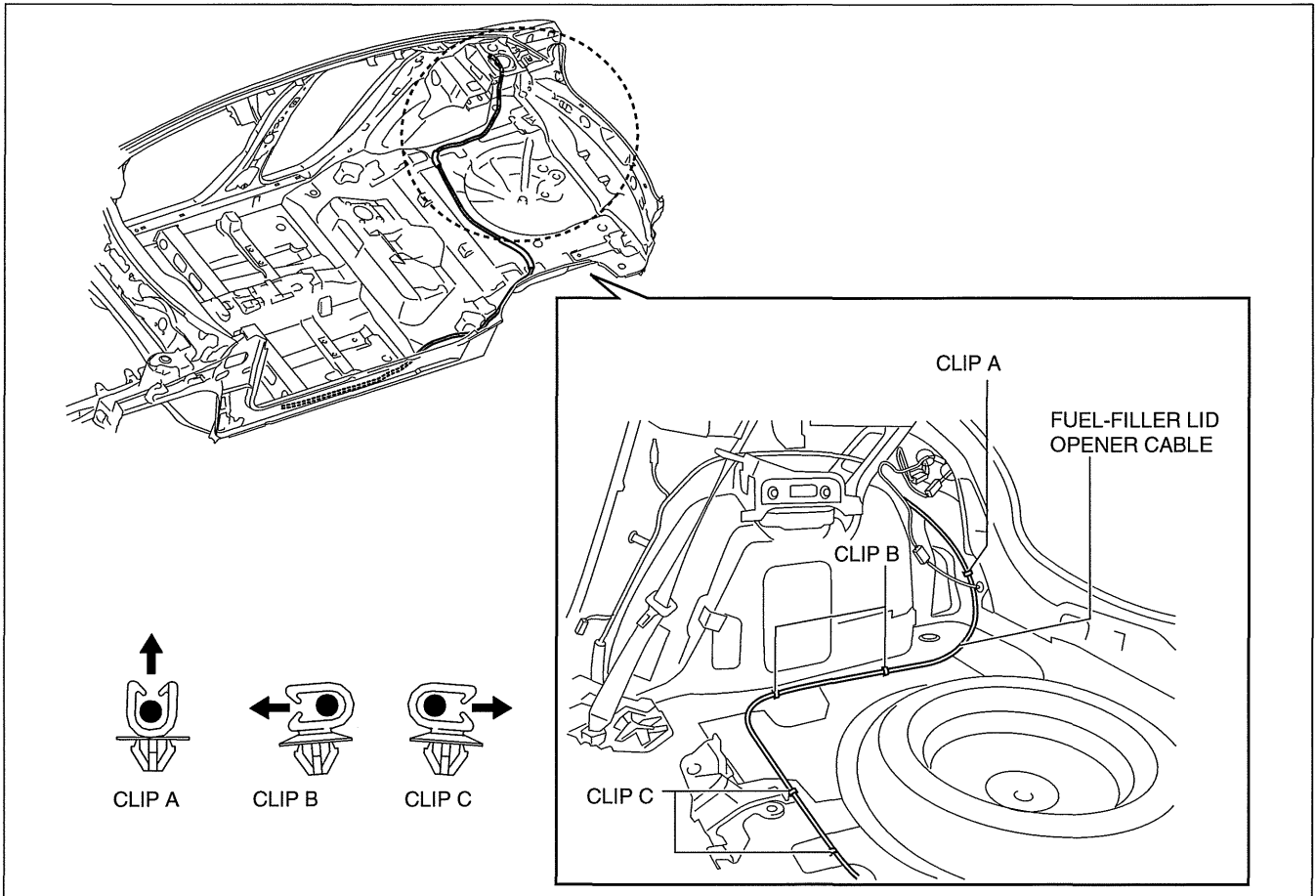
SECURITY AND LOCKS

3. Remove the bolts and nut.



4. Remove the bracket.

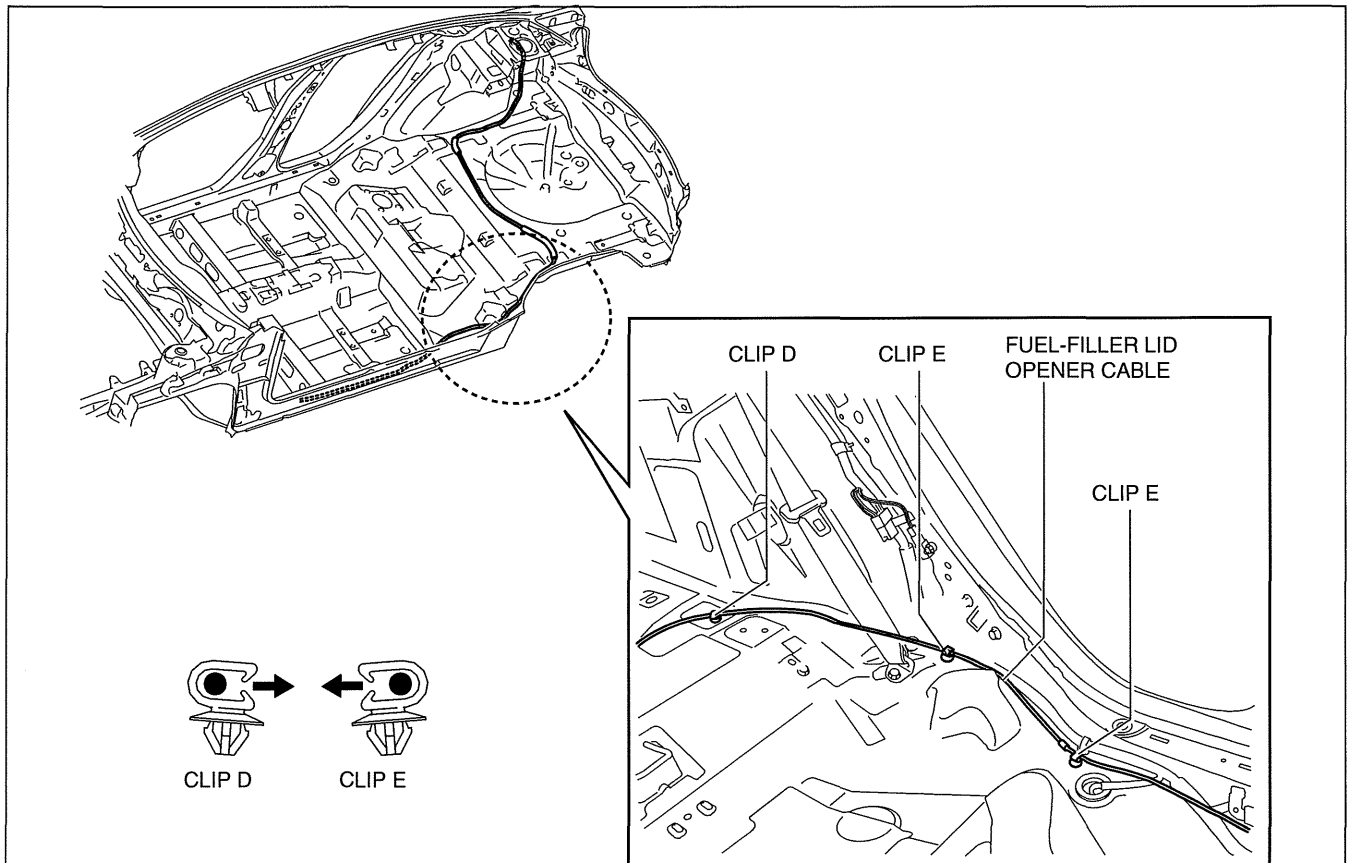
5. Remove the fuel-filler lid opener cable from clips A and B.



6. Remove the fuel-filler lid opener cable from clips C.

SECURITY AND LOCKS

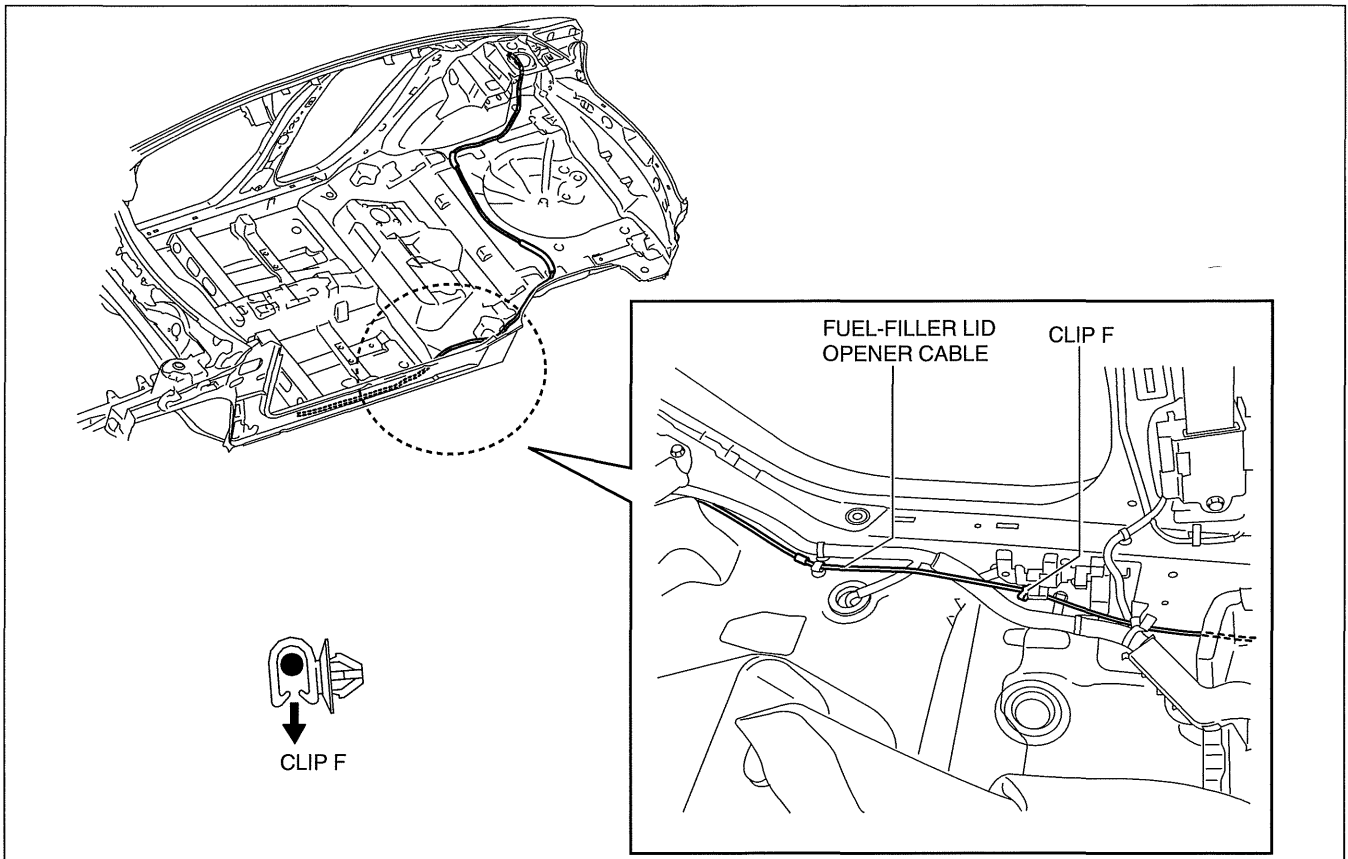
7. Remove the fuel-filler lid opener cable from clips D and E.



09-14

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8. Remove the fuel-filler lid opener cable from clips F.



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9. Install in the reverse order of removal.

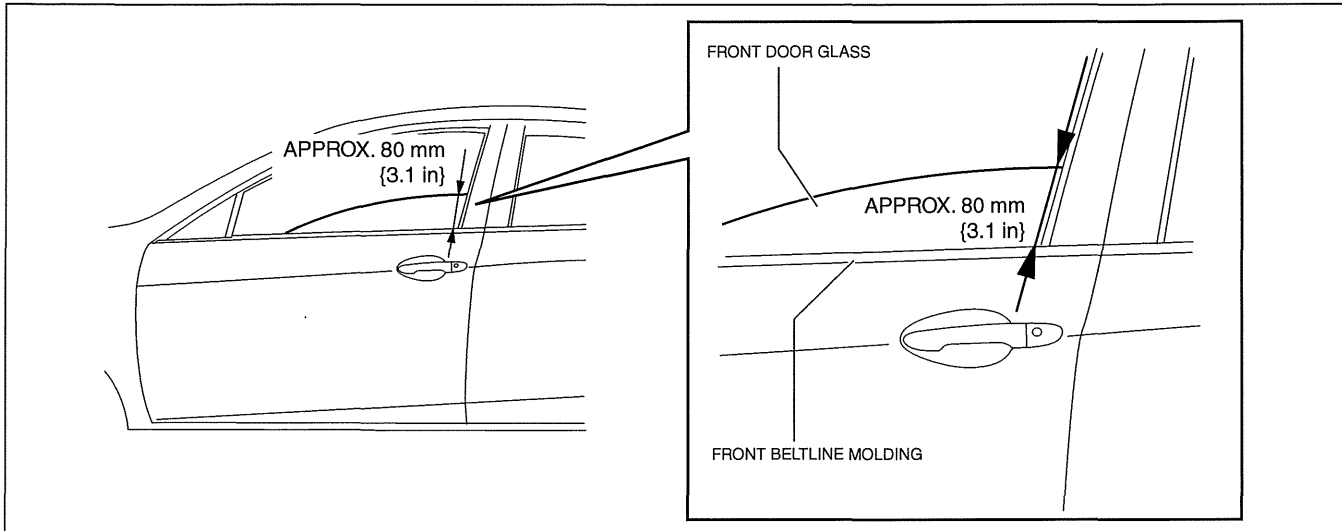
09-14-27

SECURITY AND LOCKS

FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION

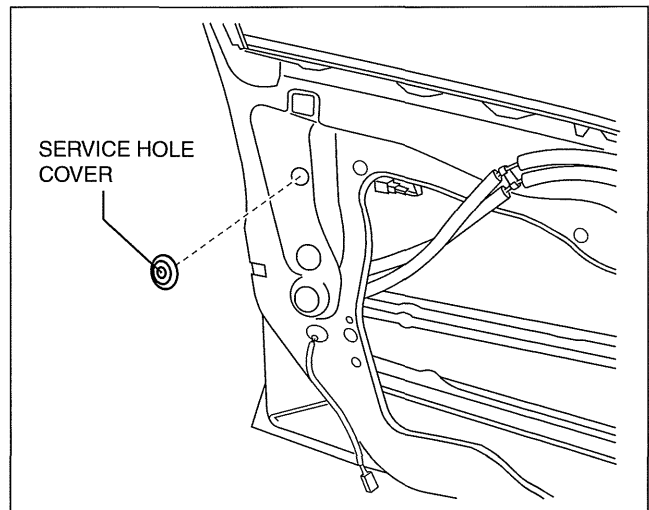
id091400510900

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in}**.



am3uuw0000315

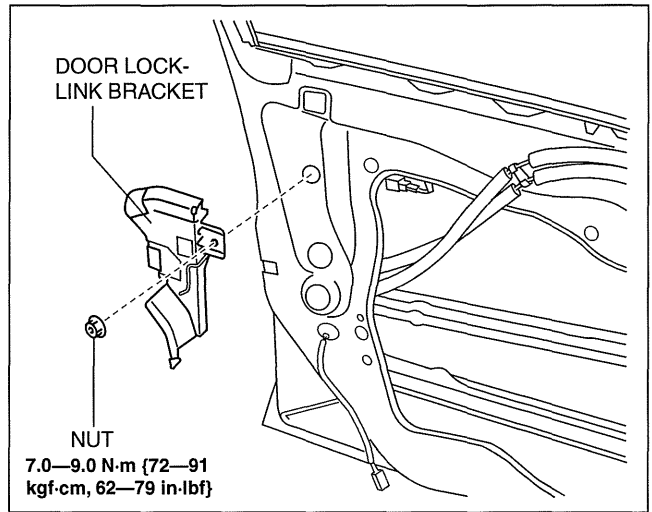
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
4. Remove the service hole cover.



am3uuw0000296

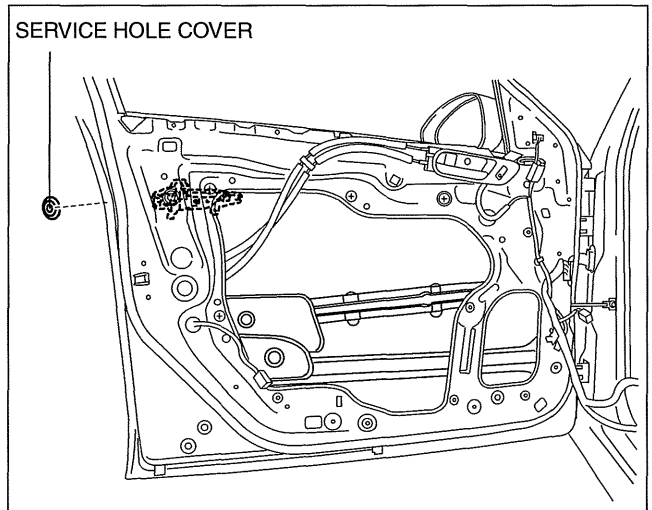
SECURITY AND LOCKS

5. Remove the tab, then remove the door lock-link bracket.



am3uuw0000514

6. Remove the service hole cover.

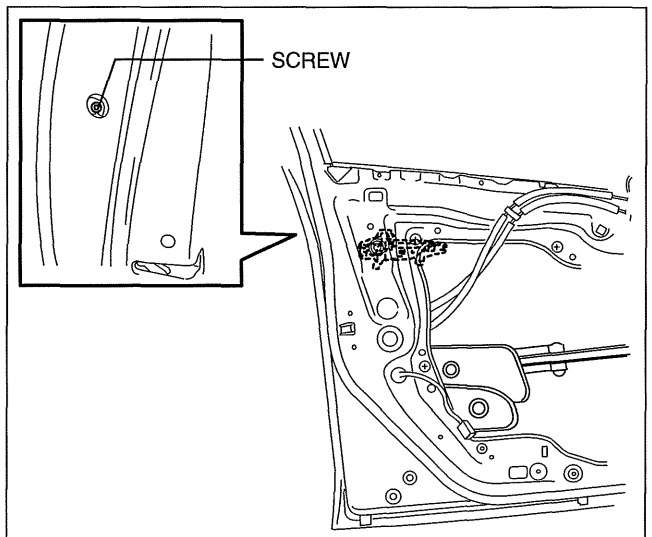


am3uuw0000297

7. Remove the screw from the service hole.

Note

- The screw cannot be removed because of the stopper.

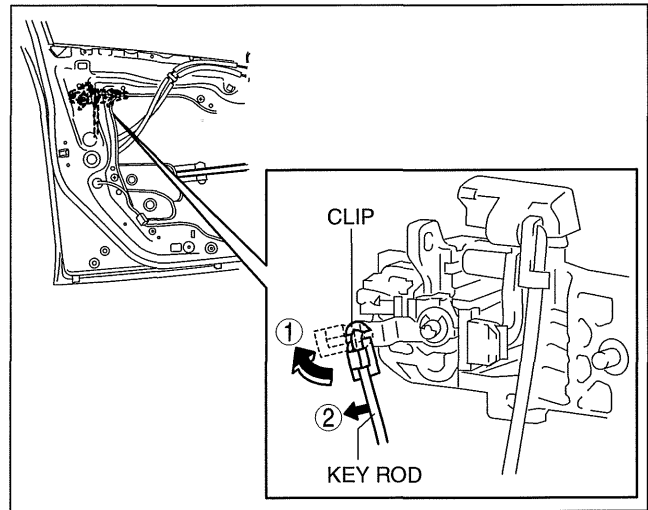


am3uuw00002971

09-14

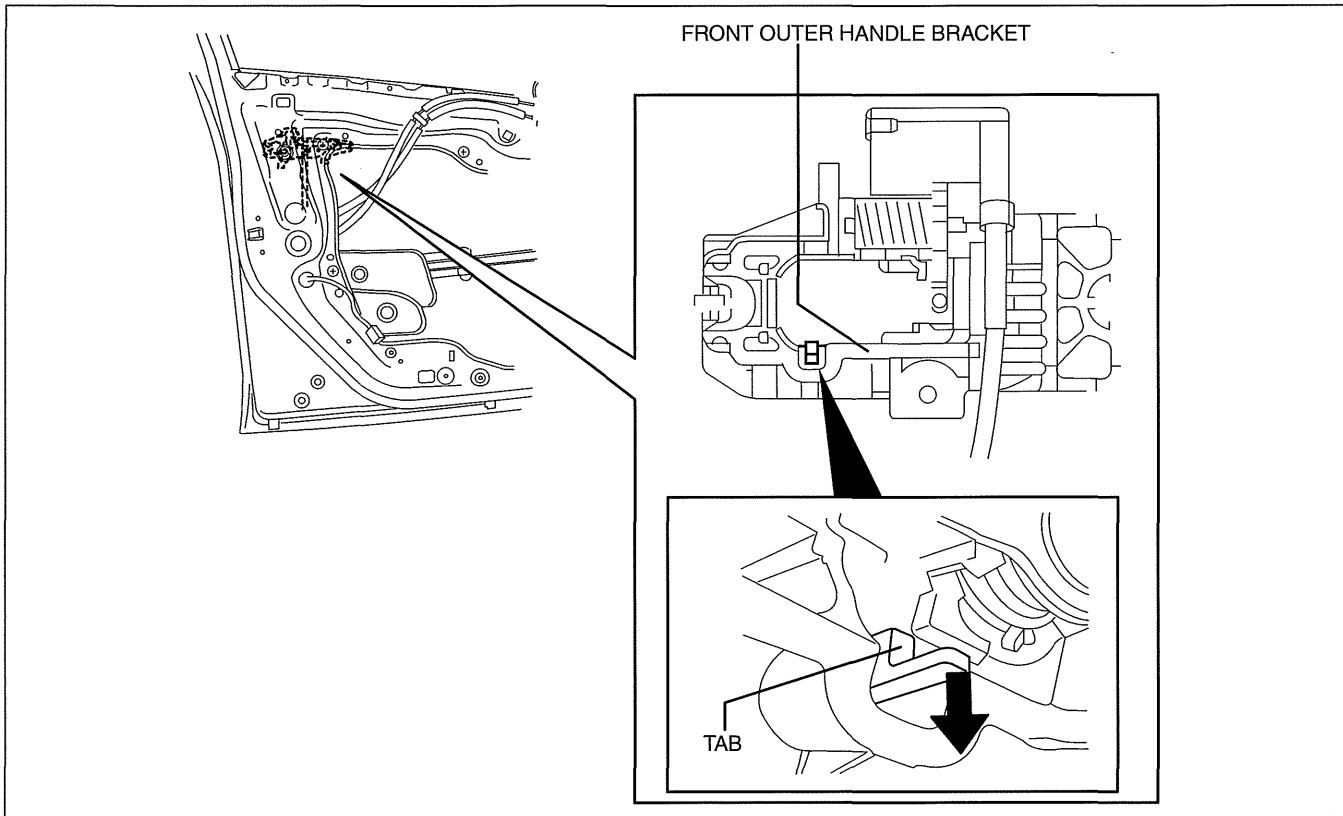
SECURITY AND LOCKS

8. Lift the clip in the direction of the arrow (1), and pull out the key rod in the direction of the arrow (2).



am3uuw0000297

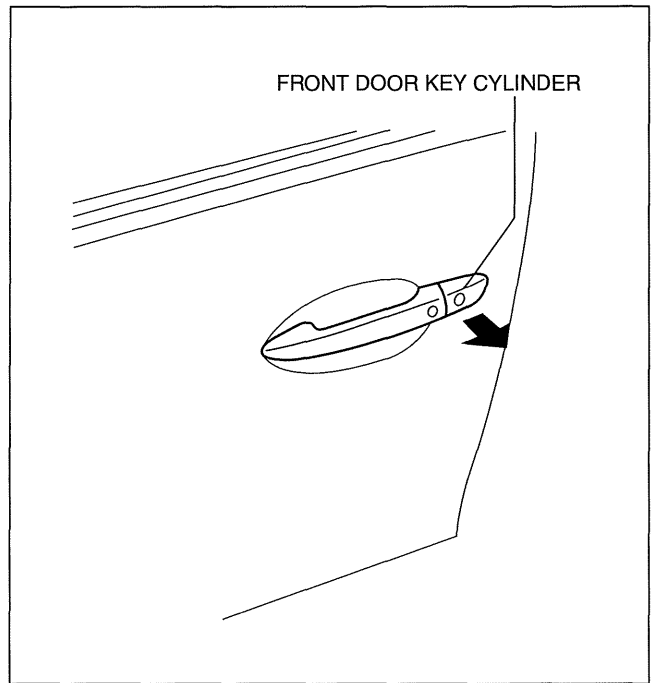
9. Press the tab on the front outer handle bracket in the direction of the arrow.



am3uuw0000297

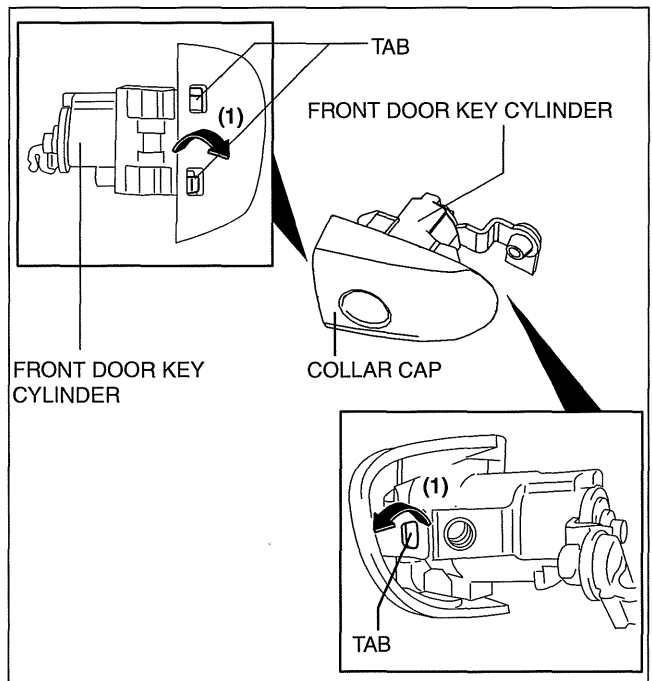
SECURITY AND LOCKS

10. Maintaining the condition in Step 9, remove the front key cylinder.



am3uuw0000297

11. Using a tape-wrapped fastener remover, press up the collar cap in the direction of the arrow shown in the arrow, press aside the front door key cylinder tabs (1), and remove the collar cover from the front door key cylinder.
12. Install in the reverse order of removal.



am3uuw0000466

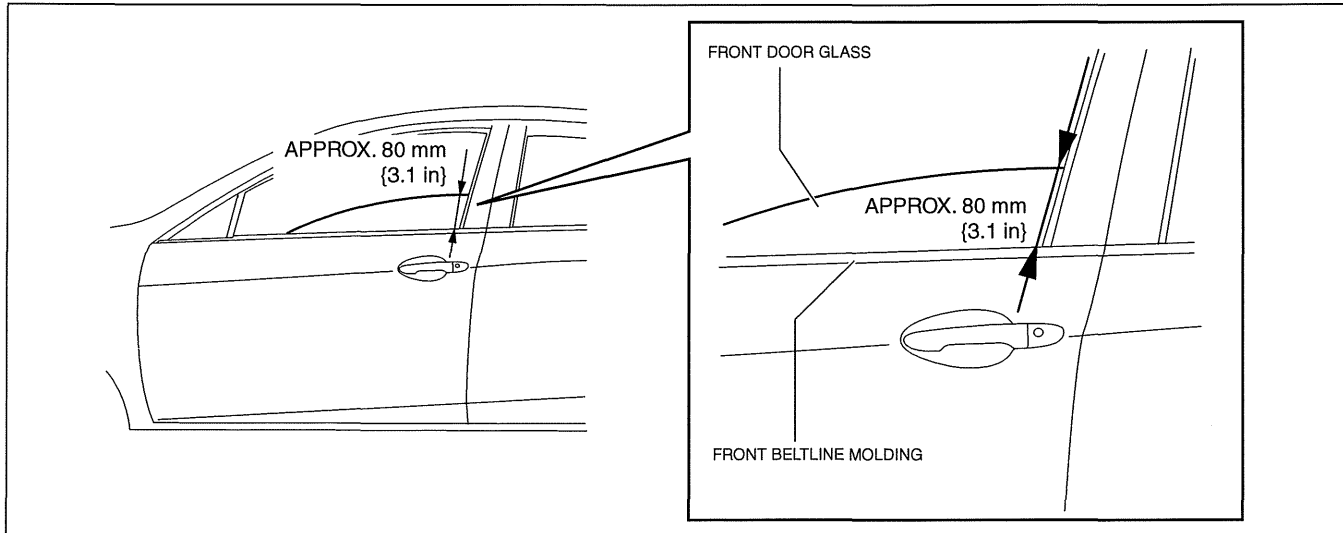
09-14

SECURITY AND LOCKS

FRONT DOOR KEY CYLINDER SWITCH INSPECTION

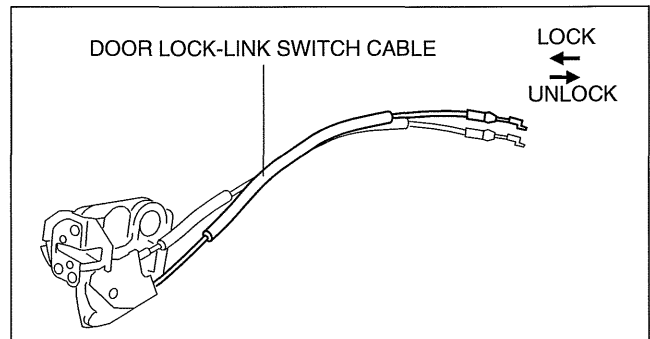
id091400511000

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**



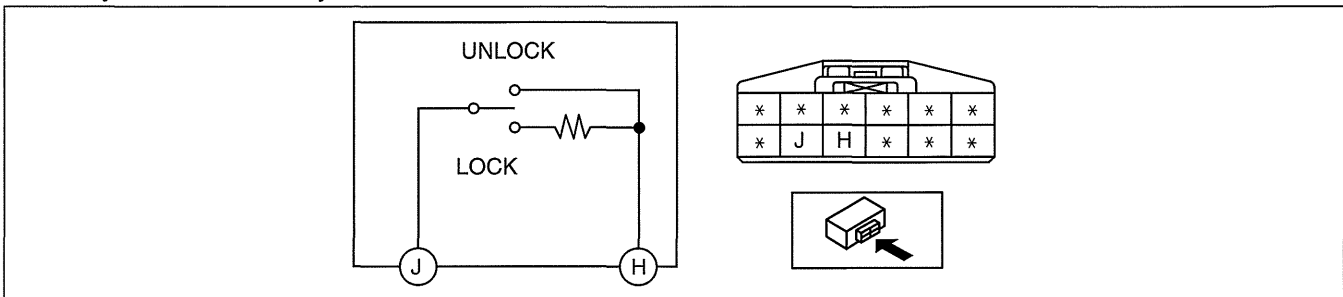
am3uuw0000316

2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
 - (6) Front door latch and lock actuator (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
4. If the door lock condition is to be inspected, pull the door lock-link switch cable, or press it in.



am2zzw0000181

5. Verify that the continuity is as indicated in the table.



am6xuw0000237

SECURITY AND LOCKS

- If not as indicated in the table, replace the front door latch and lock actuator.

○—○ : Continuity ○≡○ : Resistance

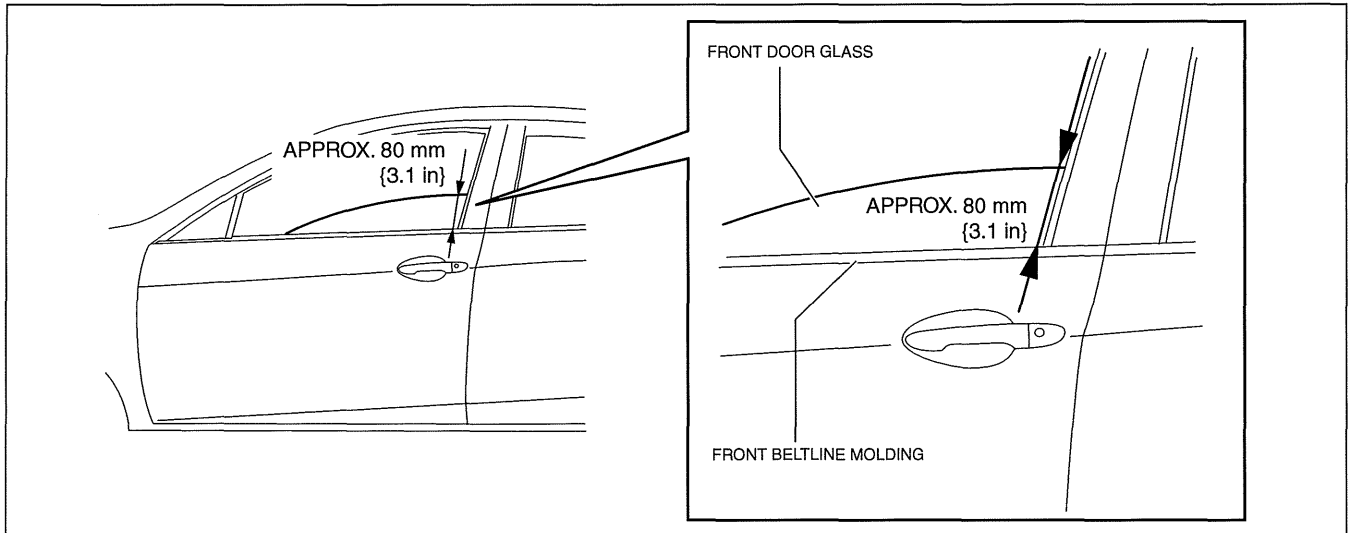
Key cylinder position	Terminal	
	J	H
Unlock	○—○	○—○
Lock	○—○	○—○ R

R: 1 kirohms
am3uuw00005483

FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION

id091400511100

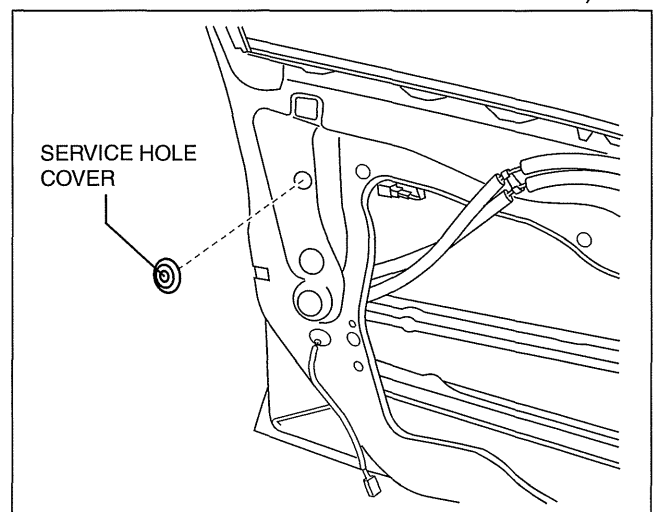
- To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**



09-14

am3uuw0000316

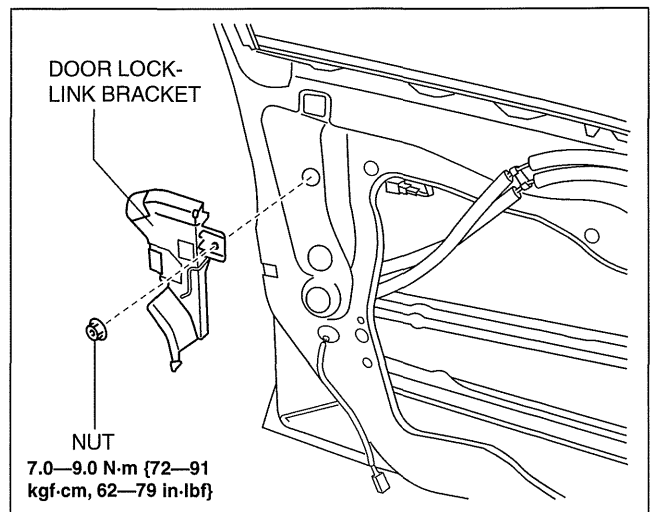
- Disconnect the negative battery cable.
- Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front inner handle (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
 - (4) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (5) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (6) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
- Remove the service hole cover (with front door key cylinder).



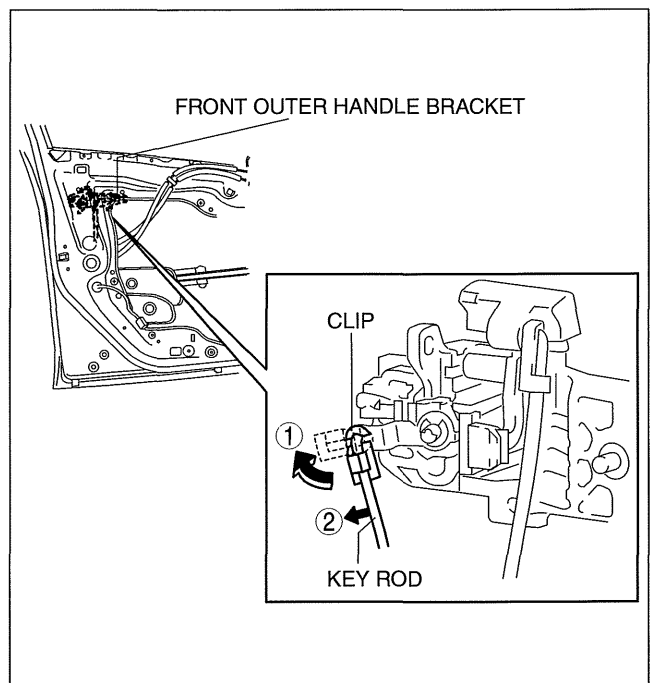
am3uuw0000296

SECURITY AND LOCKS

5. Remove the tab, then remove the door lock-link bracket (with front door key cylinder).

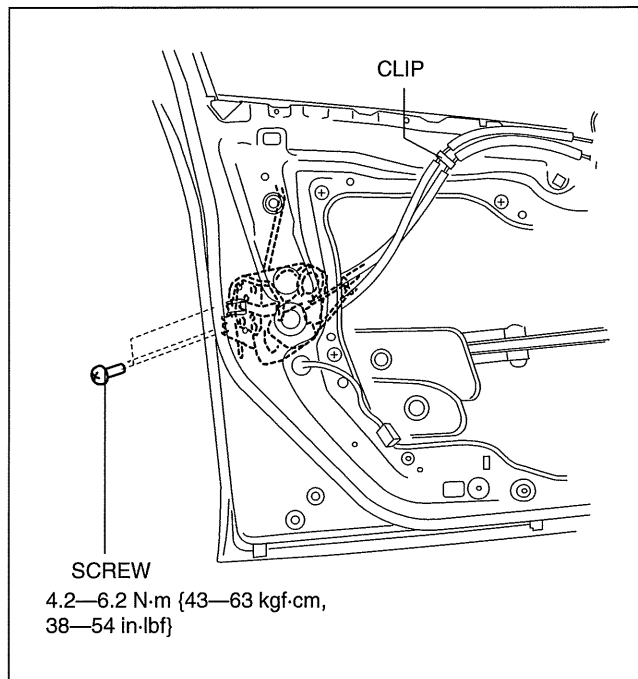


6. Disconnect the key rod from the front outer handle bracket.



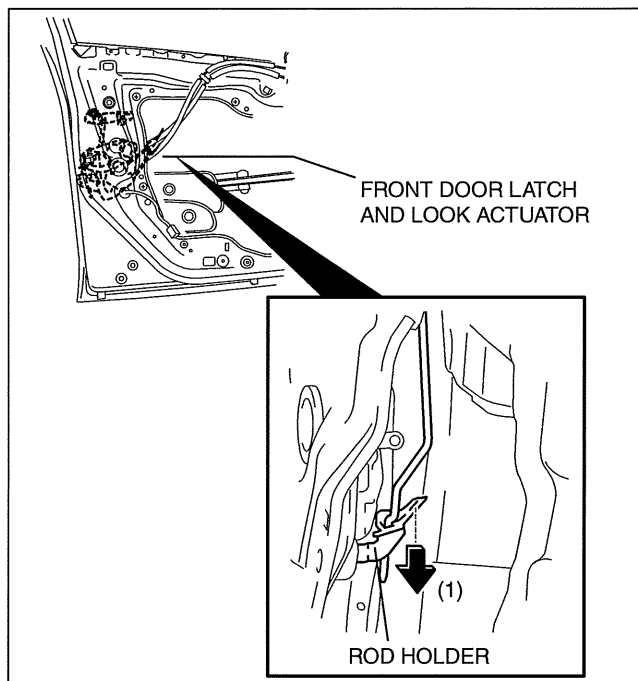
SECURITY AND LOCKS

7. Remove the screw
8. Detach the clips.



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9. Press down the rod holder of the front door latch and lock actuator in the direction of the arrow.

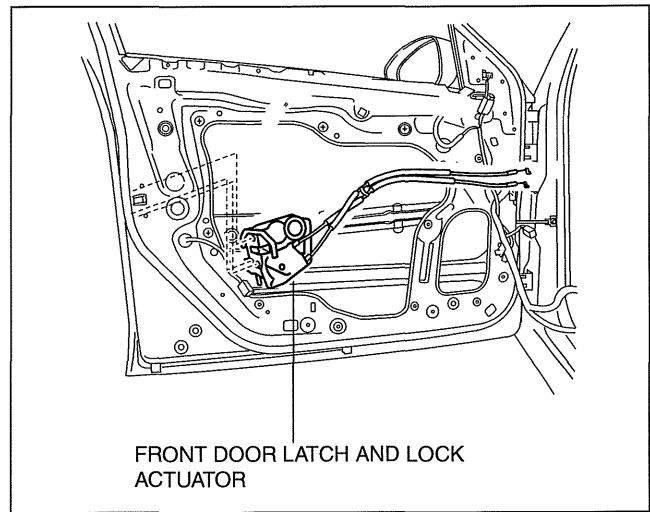


am3uuw0000298

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SECURITY AND LOCKS

10. Maintaining the condition in Step 9, remove the front door latch and lock actuator.
11. Install in the reverse order of removal.



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SECURITY AND LOCKS

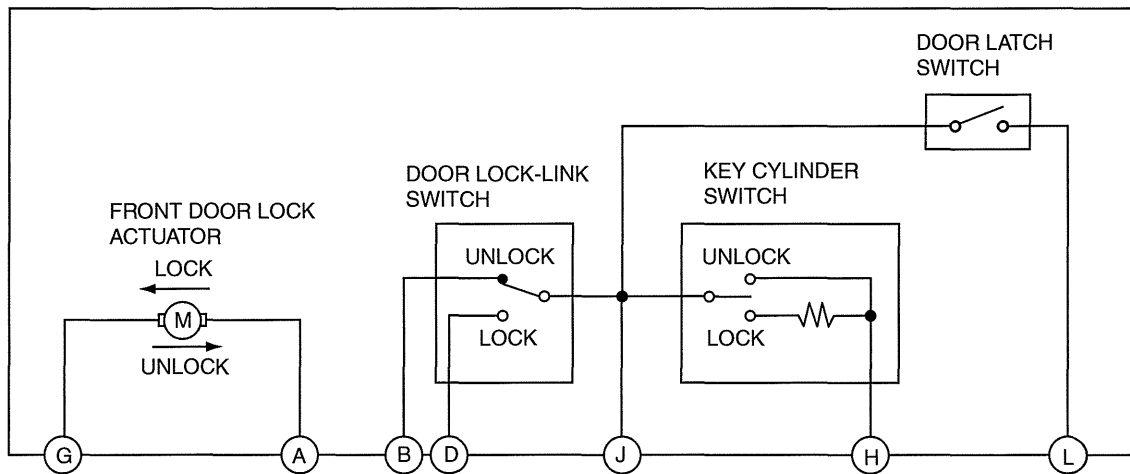
FRONT DOOR LATCH AND LOCK ACTUATOR INSPECTION

id091400511200

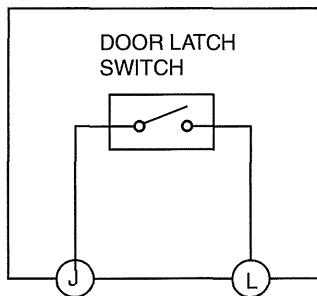
- The following actuators and switches are integrated with the front door latch and lock actuator. Inspect the front door latch and lock actuator according to each inspection procedure for the following items.
 - Front door lock actuator (See 09-14-39 FRONT DOOR LOCK ACTUATOR INSPECTION.)
 - Door lock-link switch (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.)
 - Door latch switch (See 09-14-41 FRONT DOOR LATCH SWITCH INSPECTION.)
 - Front door key cylinder (See 09-14-32 FRONT DOOR KEY CYLINDER SWITCH INSPECTION.)

LH

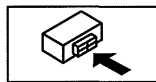
WITH POWER DOOR LOCK SYSTEM



WITHOUT POWER DOOR LOCK SYSTEM



*	*	G	*	*	A
L	J	H	*	D	B



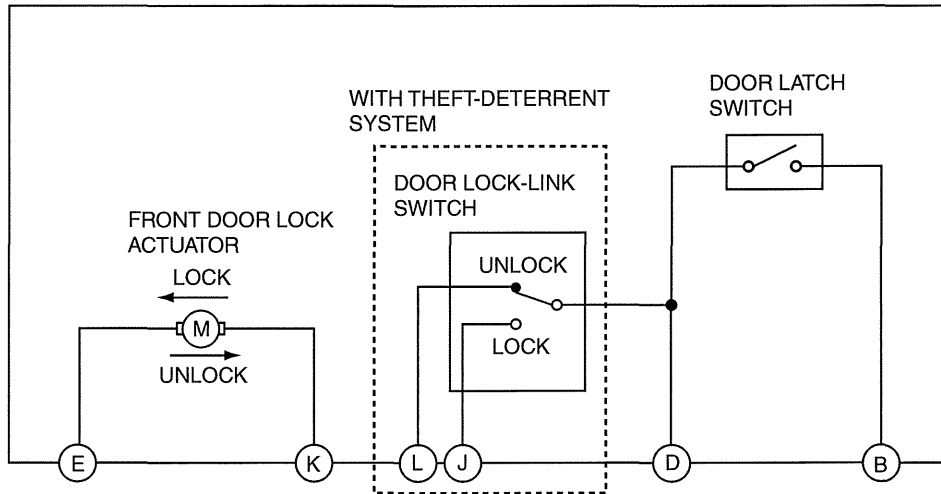
09-14

am3uuw000446

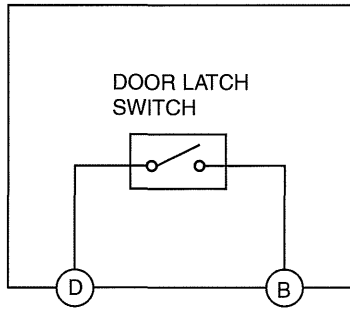
SECURITY AND LOCKS

RH

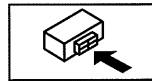
WITH POWER DOOR LOCK SYSTEM



WITHOUT POWER DOOR LOCK SYSTEM



K	*	*	E	*	*
L	J	*	*	D	B



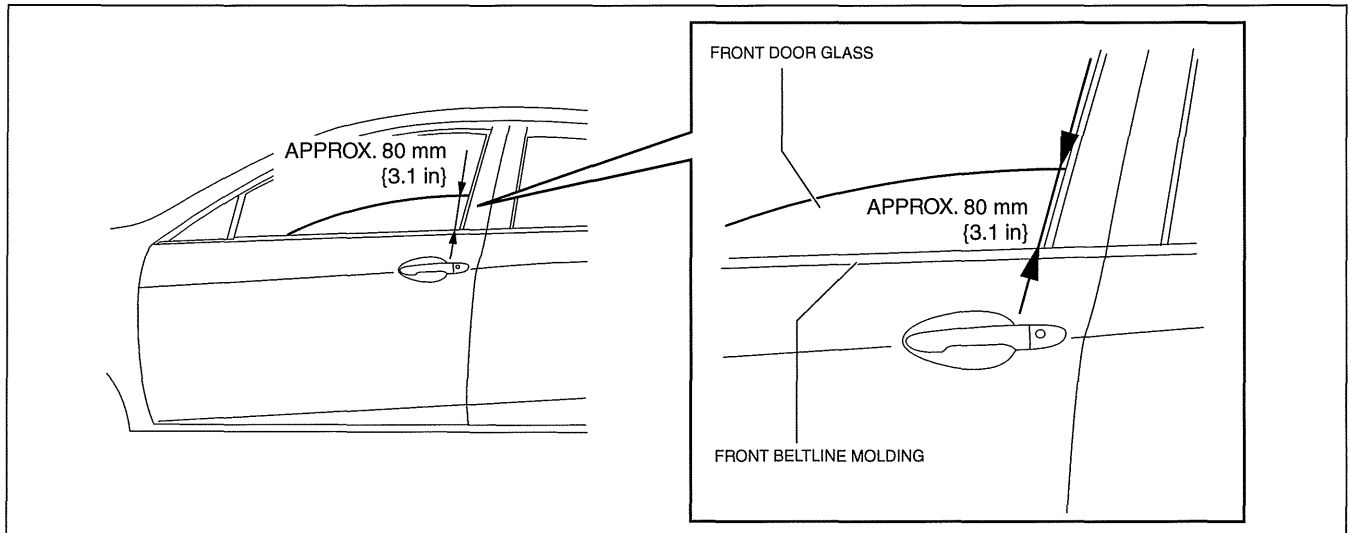
am3uuw0000446

SECURITY AND LOCKS

FRONT DOOR LOCK ACTUATOR INSPECTION

id091400511300

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**



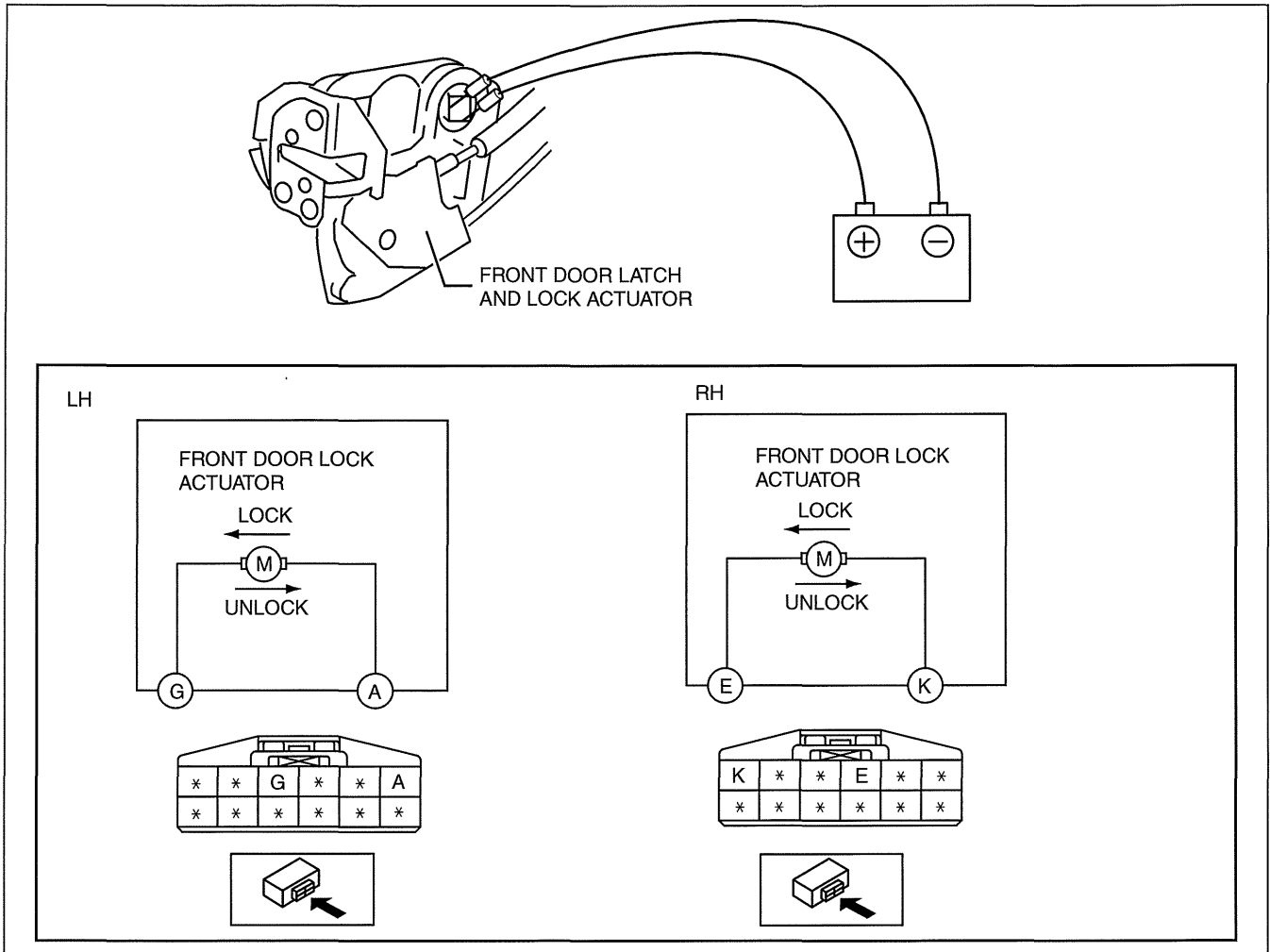
am3uuw0000316

2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
 - (6) Front door latch and lock actuator (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)

09-14

SECURITY AND LOCKS

4. Apply battery positive voltage and connect the ground to each terminal, and then verify the operation.



am3uuw0000453

- If not as indicated in the table, replace the front door latch and lock actuator.

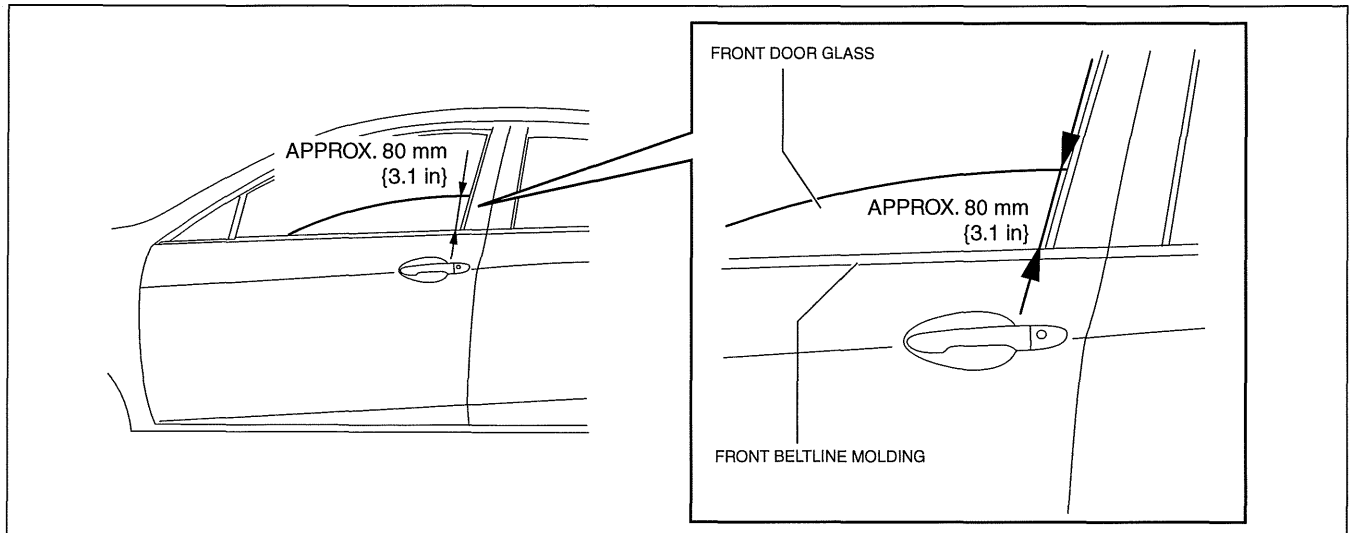
Operation		Terminal	
		B+	Ground
LOCK	LH	A	G
	RH	K	E
UNLOCK	LH	G	A
	RH	E	K

SECURITY AND LOCKS

FRONT DOOR LATCH SWITCH INSPECTION

id091400511400

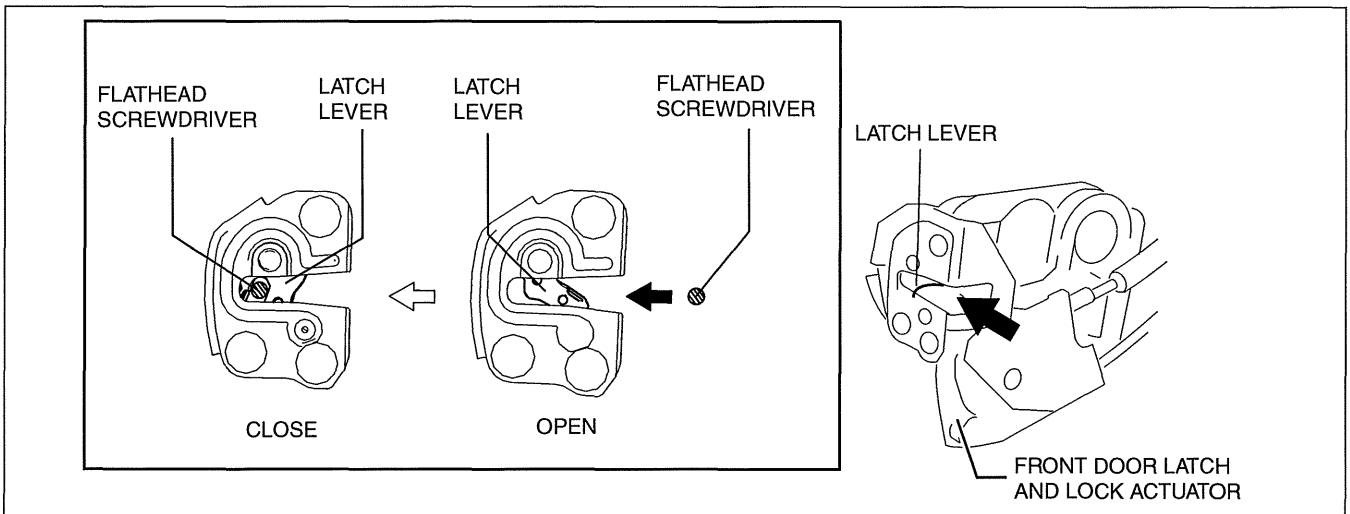
1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**



am3uuw0000316

2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
 - (6) Front door latch and lock actuator (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
4. Press the latch in using a flathead screwdriver to inspect the latch lever condition.

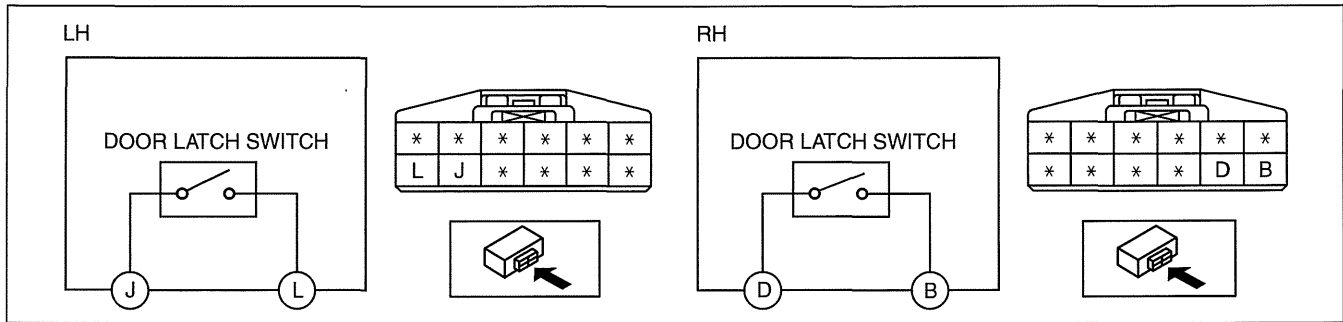
09-14



am3uuw0000453

SECURITY AND LOCKS

5. Verify that the continuity is as indicated in the table.



am3uuw0000446

- If not as indicated in the table, replace the front door latch and lock actuator.

○—○ : CONTINUITY

DOOR LATCH SWITCH	TERMINAL	
	LH:L RH:B	LH:J RH:D
OPEN		
CLOSE	○—○	

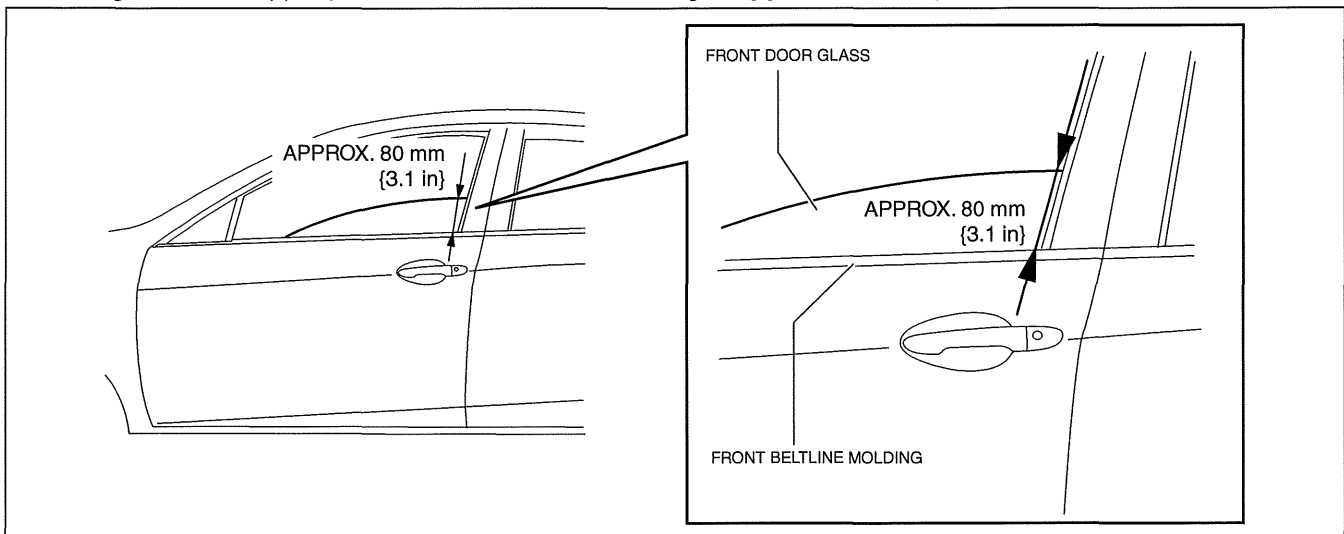
am2zzw00000686

DOOR LOCK-LINK SWITCH INSPECTION

id091400511500

Front Door Lock-link Inspection

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in.}**

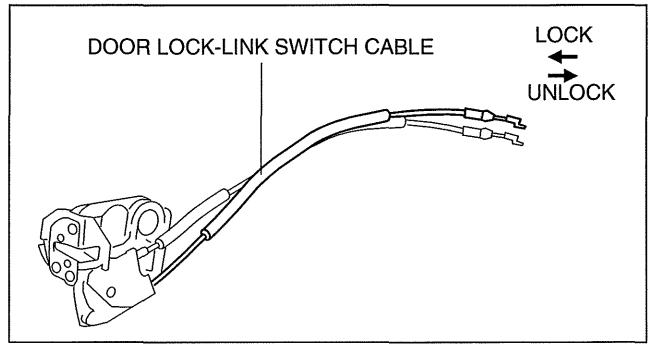


am3uuw0000316

2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
 - (6) Front door latch and lock actuator (See 09-14-33 FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)

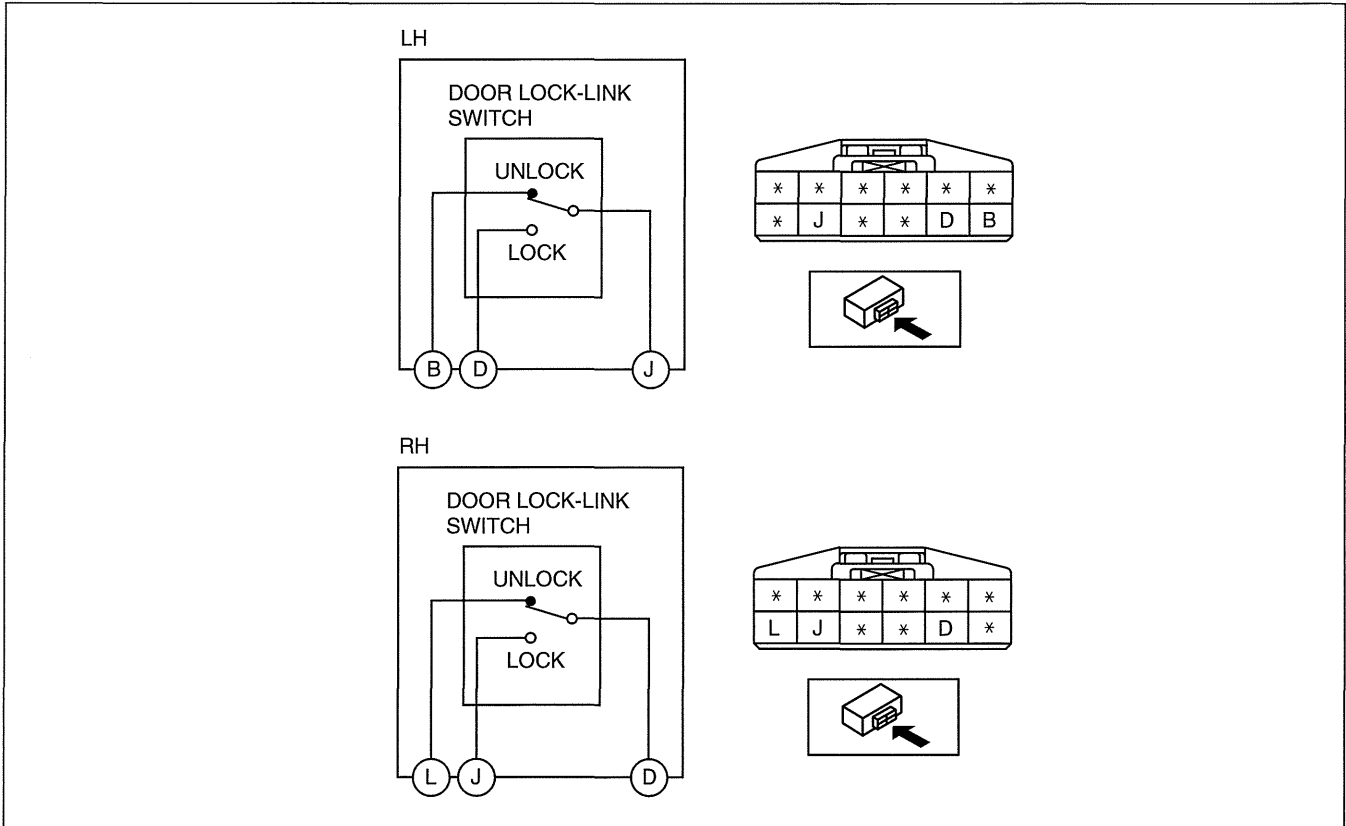
SECURITY AND LOCKS

4. If the door lock condition is to be inspected, pull the door lock-link switch cable, or press it in.



am2zzw0000067

5. Verify that the continuity is as indicated in the table.



am3uuw0000446

- If not as indicated in the table, replace the front door latch and lock actuator.

○—○ : CONTINUITY

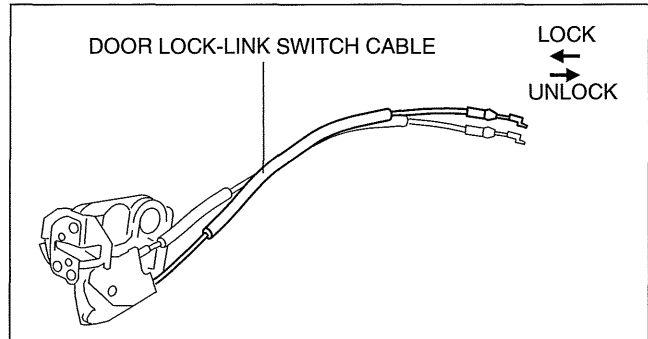
LOCK KNOB POSITION	TERMINAL		
	LH:D RH:J	LH:J RH:D	LH:B RH:L
LOCK	○—○	○—○	
UNLOCK		○—○	○—○

am3uuw00004540

SECURITY AND LOCKS

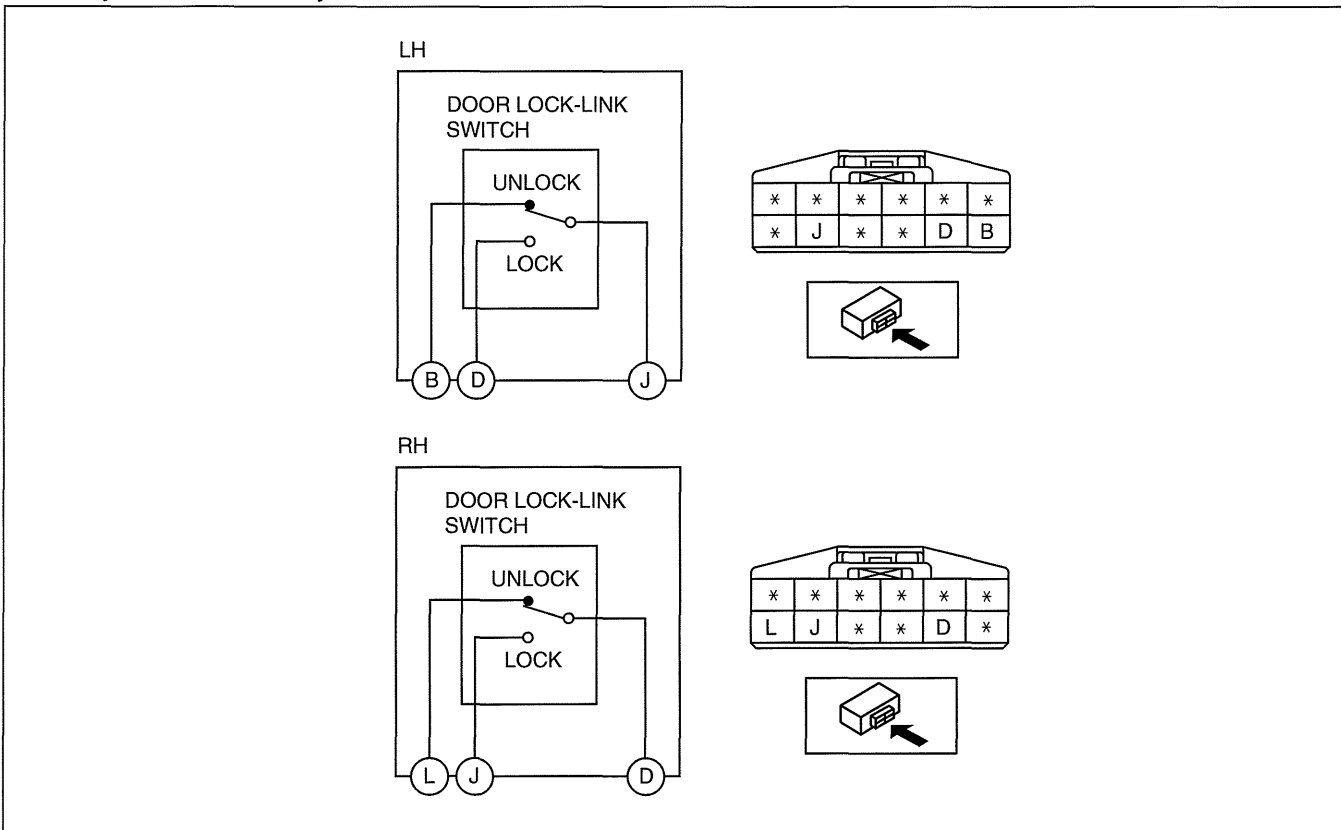
Rear Door Lock-link Inspection

1. Fully open the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear inner handle (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
 - (3) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Rear power window motor (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
 - (5) Rear door glass (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)
 - (6) Rear door latch and lock actuator (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
4. If the door lock condition is to be inspected, pull the door lock-link switch cable, or press it in.



am2zzw000067

5. Verify that the continuity is as indicated in the table.



am3uuw000046

- If not as indicated in the table, replace the rear door latch and lock actuator.

○—○ : CONTINUITY

LOCK KNOB POSITION	TERMINAL		
	LH:D RH:J	LH:J RH:D	LH:B RH:L
LOCK	○—○	○—○	
UNLOCK		○—○	○—○

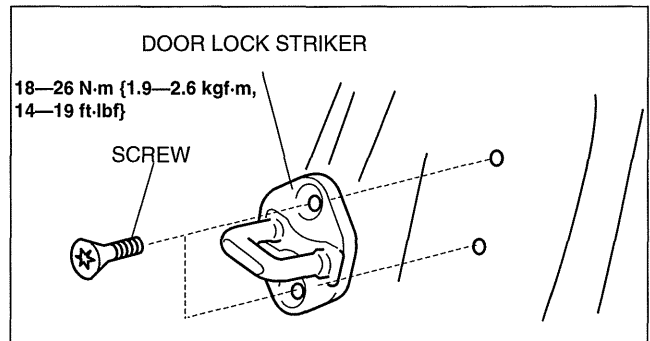
am3uuw00004540

SECURITY AND LOCKS

DOOR LOCK STRIKER REMOVAL/INSTALLATION

id091400511600

1. Remove the screws, then remove the door lock striker.
2. Install in the reverse order of removal.
3. Adjust the door lock striker. (See 09-11-19 DOOR ADJUSTMENT.)

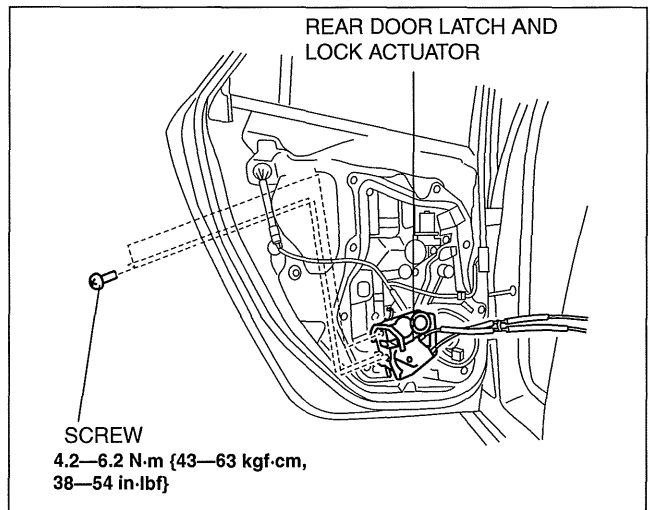


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REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION

id091400511700

1. Fully open the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear inner handle (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
 - (3) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Rear power window motor (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
 - (5) Rear door glass (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)
4. Remove the screw.
5. Remove the rear door latch and lock actuator.
6. Install in the reverse order of removal.



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09-14

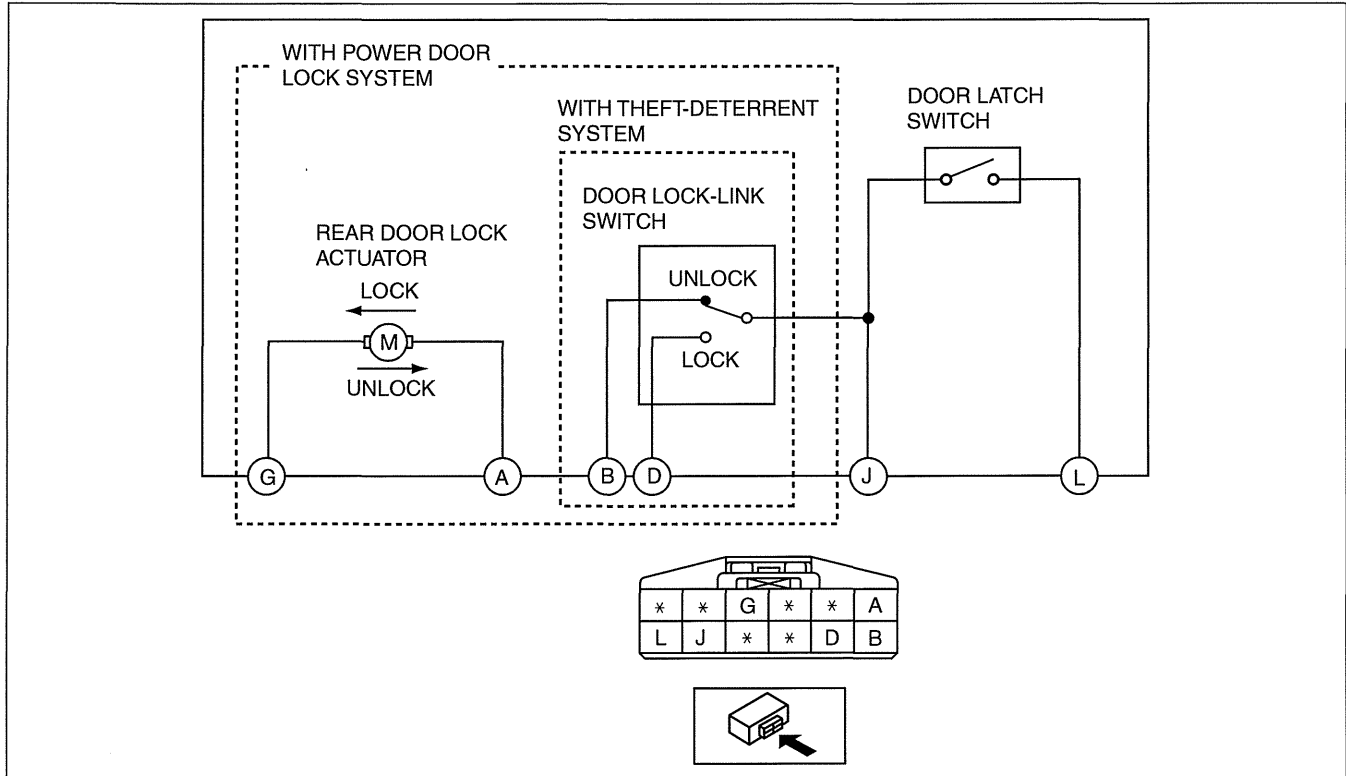
SECURITY AND LOCKS

REAR DOOR LATCH AND LOCK ACTUATOR INSPECTION

id091400511800

1. The following actuator and switch are integrated with the rear door latch and lock actuator. Inspect the rear door latch and lock actuator according to each inspection procedure for the following items.
 - Rear door lock actuator (See 09-14-48 REAR DOOR LOCK ACTUATOR INSPECTION.)
 - Rear door latch switch (See 09-14-49 REAR DOOR LATCH SWITCH INSPECTION.)
 - Rear door lock-link switch (See 09-14-42 DOOR LOCK-LINK SWITCH INSPECTION.)

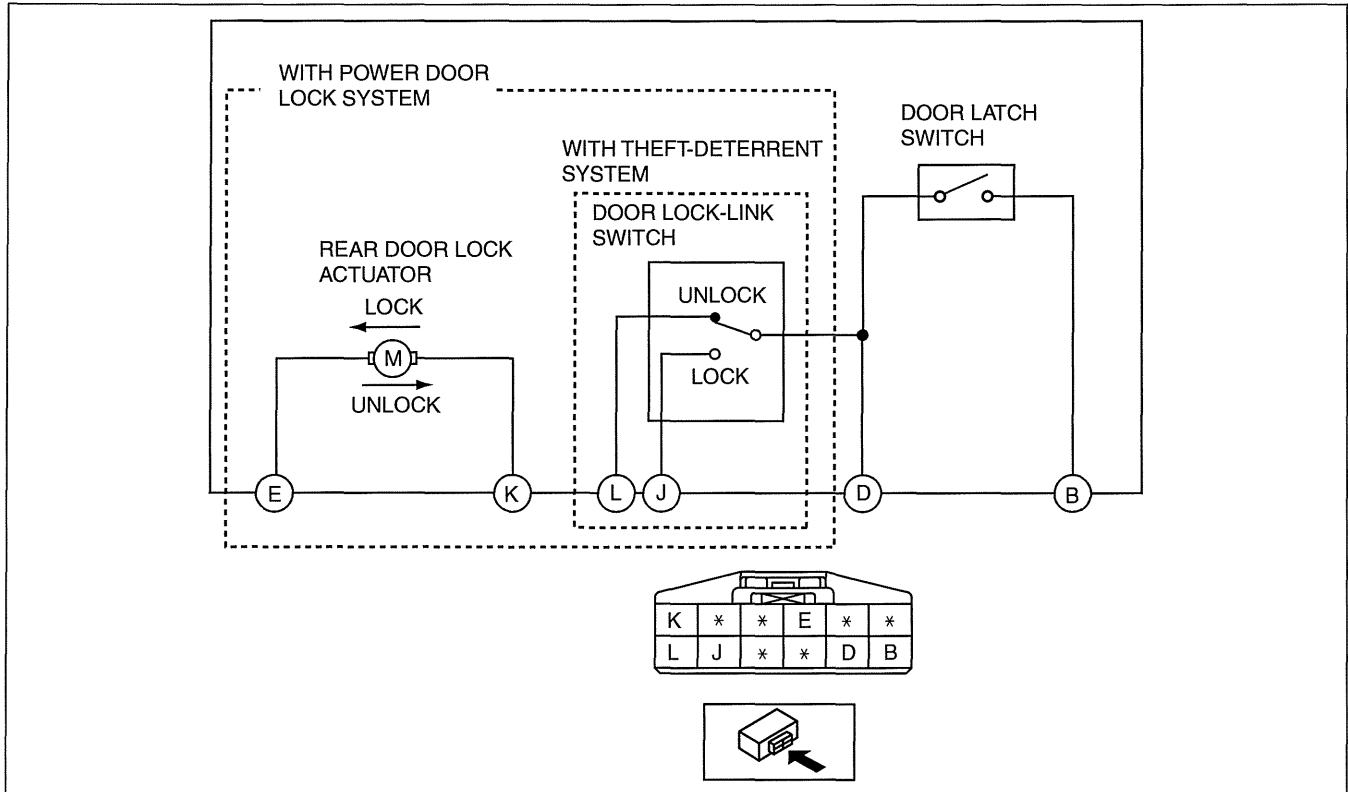
LH



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SECURITY AND LOCKS

RH



am3uuw0000447

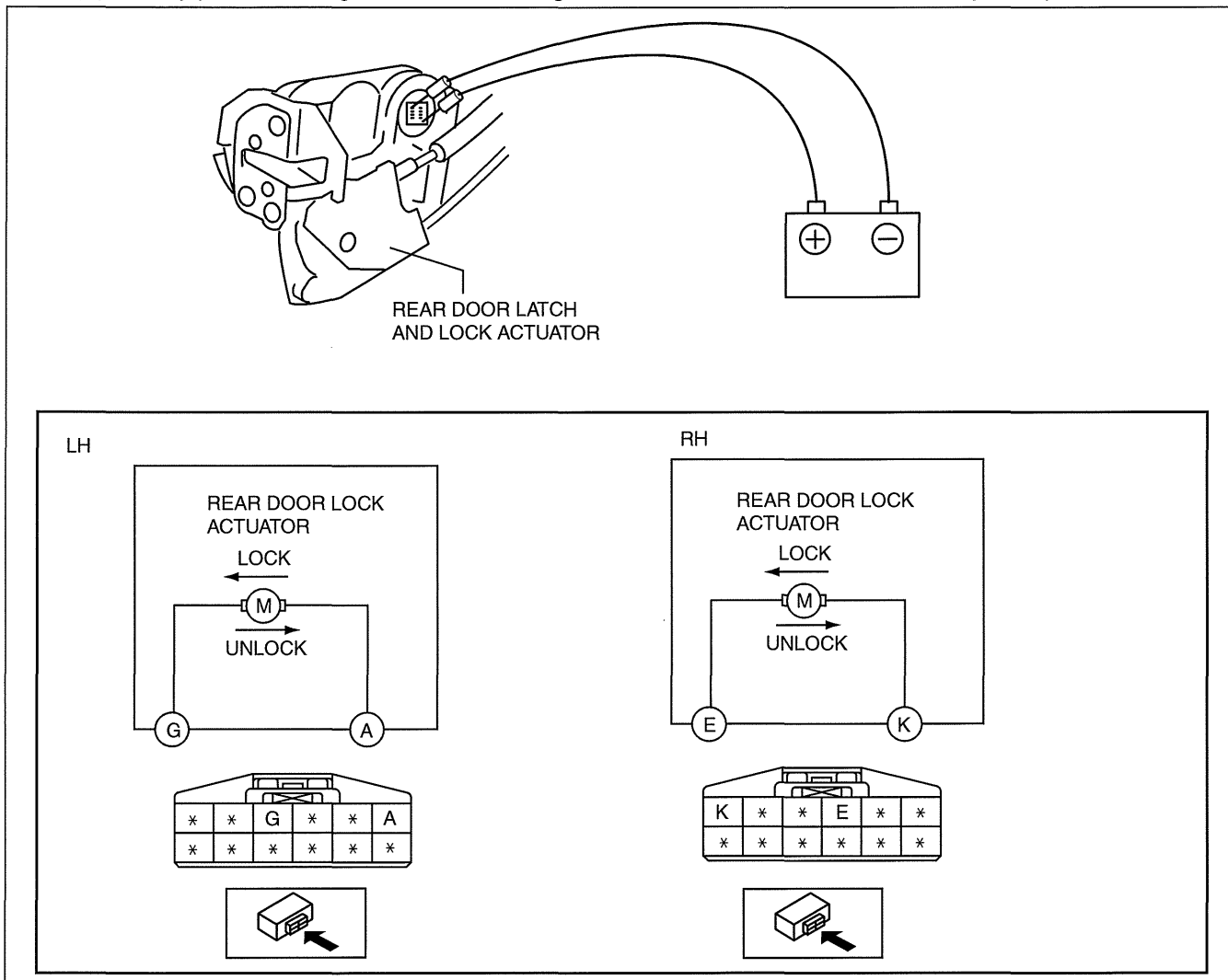
09-14

SECURITY AND LOCKS

REAR DOOR LOCK ACTUATOR INSPECTION

id091400512000

1. Fully open the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear inner handle (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
 - (3) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Rear power window motor (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
 - (5) Rear door glass (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)
 - (6) Rear door latch and lock actuator (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
4. Apply battery positive voltage and connect the ground to each terminal, and then verify the operation.



am3uuw0000454

- If not as indicated in the table, replace the rear door latch and lock actuator.

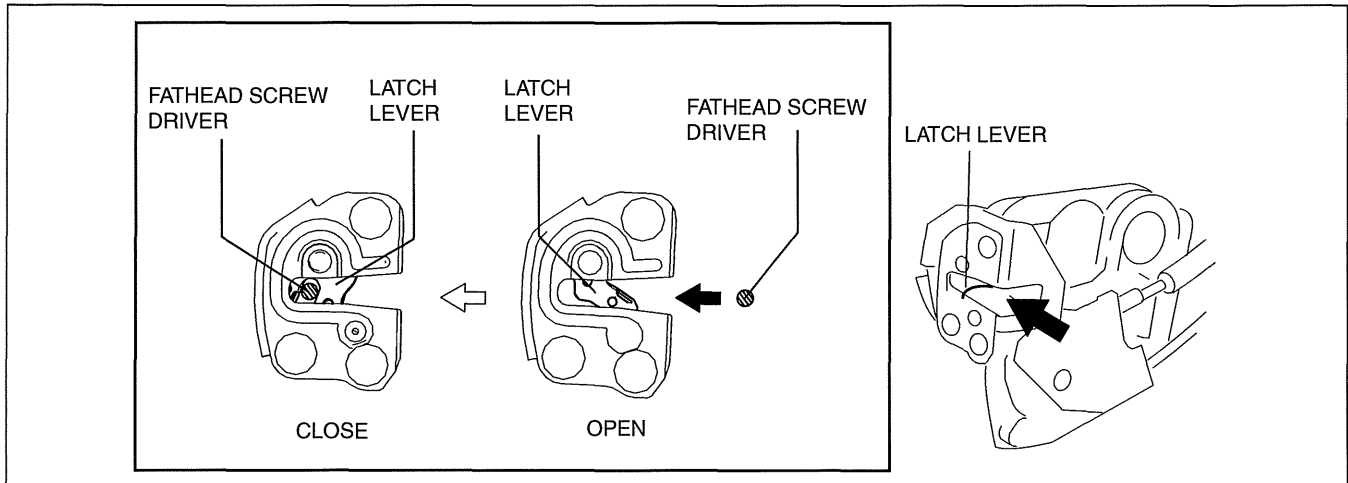
Operation		Terminal	
		B+	Ground
LOCK	LH	A	G
	RH	K	E
UNLOCK	LH	G	A
	RH	E	K

SECURITY AND LOCKS

REAR DOOR LATCH SWITCH INSPECTION

id091400511900

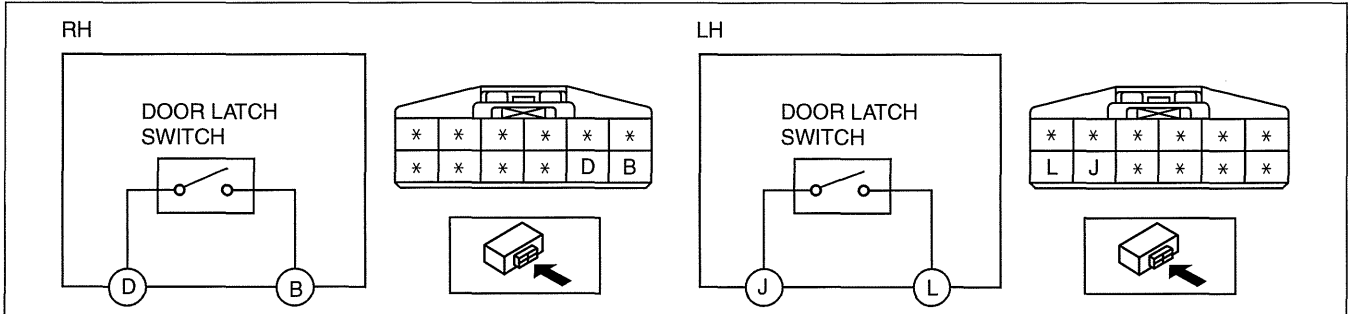
1. Fully open the rear door glass.
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear inner handle (See 09-14-13 INNER HANDLE REMOVAL/INSTALLATION.)
 - (3) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Rear power window motor (See 09-12-11 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)
 - (5) Rear door glass (See 09-12-5 REAR DOOR GLASS REMOVAL/INSTALLATION.)
 - (6) Rear door latch and lock actuator (See 09-14-45 REAR DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
4. Press the latch in using a flathead screwdriver to inspect the latch lever condition.



am2zzw000068

09-14

5. Verify that the continuity is as indicated in the table.



am3uuw000047

- If not as indicated in the table, replace the rear door latch and lock actuator.

○—○: CONTINUITY

DOOR LATCH SWITCH	TERMINAL	
	LH:L RH:B	LH:J RH:D
OPEN		
CLOSE	○—○	○—○

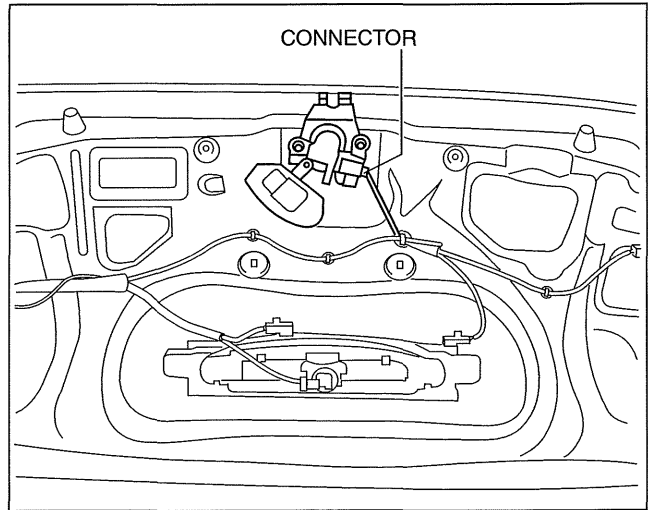
am3uuw00004541

SECURITY AND LOCKS

TRUNK LID LATCH AND RELEASE ACTUATOR REMOVAL/INSTALLATION

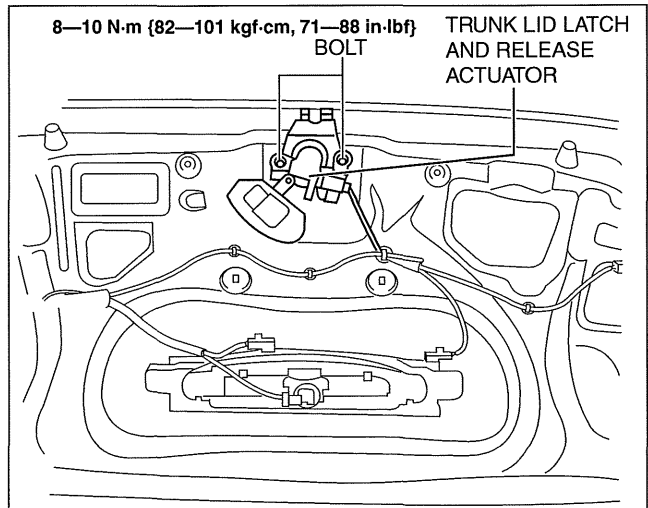
id091400513300

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.



am3uuw0000300

4. Remove the bolts.
5. Remove the trunk lid latch and release actuator.
6. Install in the reverse order of removal.



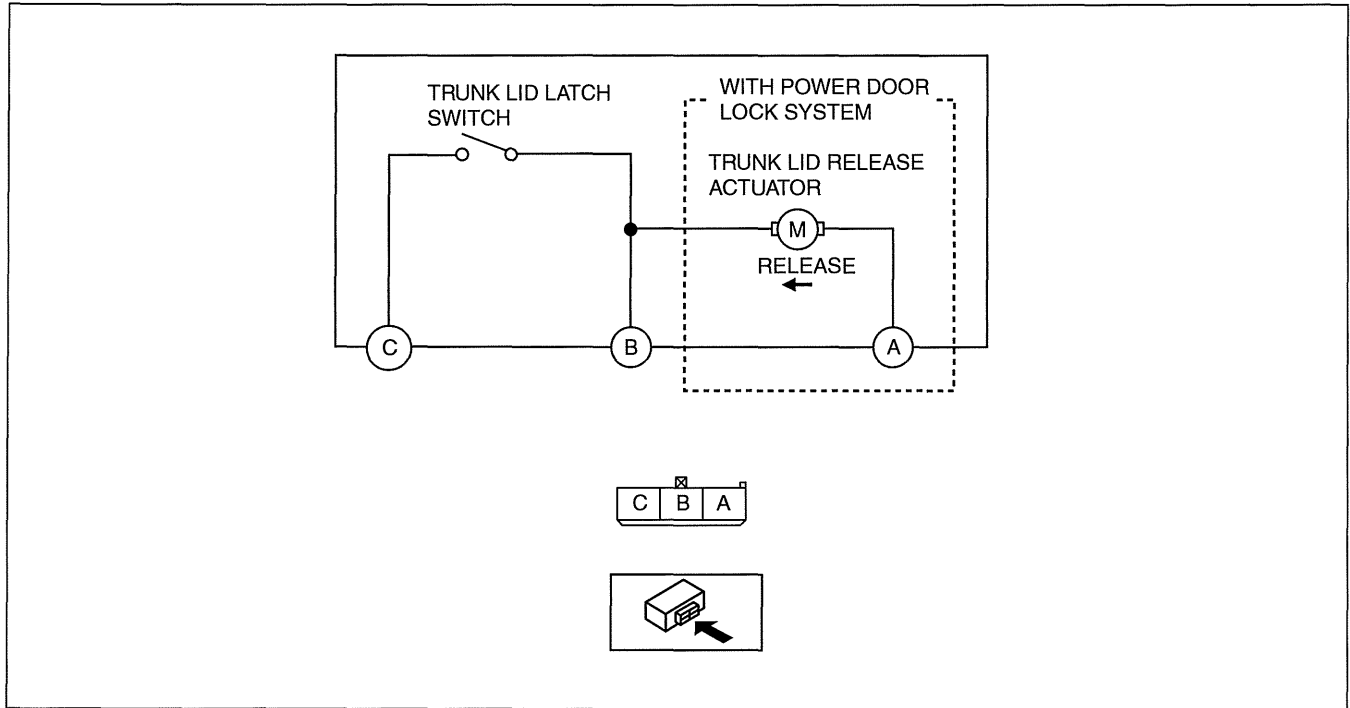
am3uuw0000300

SECURITY AND LOCKS

TRUNK LID LATCH AND RELEASE ACTUATOR INSPECTION

id091400513400

1. The following actuator and switch are integrated with the release actuator. Inspect the trunk lid latch and release actuator according to each inspection procedure for the following items.
 - Trunk lid latch switch (See 09-14-53 TRUNK LID LATCH SWITCH INSPECTION.)
 - Trunk lid release actuator (See 09-14-52 TRUNK LID RELEASE ACTUATOR INSPECTION.)



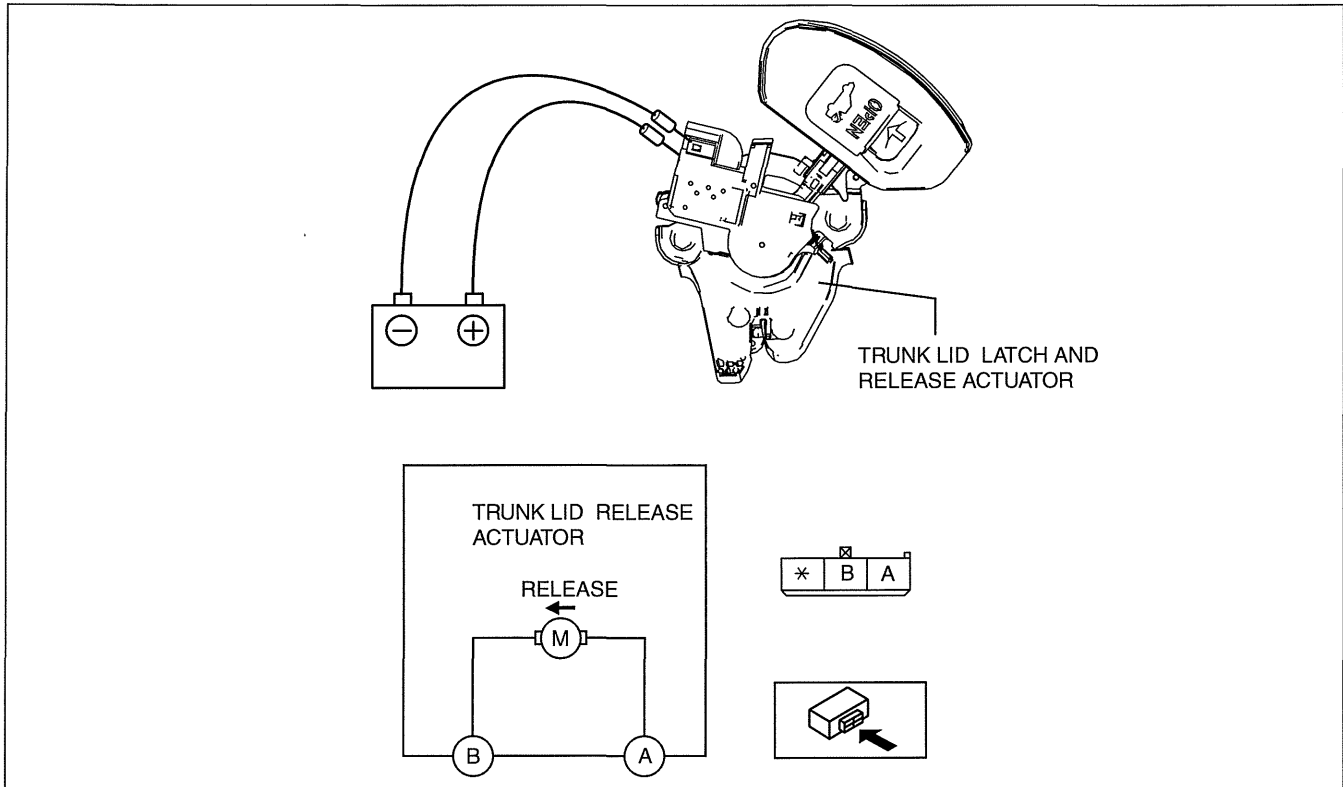
09-14

SECURITY AND LOCKS

TRUNK LID RELEASE ACTUATOR INSPECTION

id091400513500

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Remove the trunk lid latch and release actuator. (See 09-14-50 TRUNK LID LATCH AND RELEASE ACTUATOR REMOVAL/INSTALLATION.)
4. Apply battery positive voltage and connect the ground to each terminal, and then verify the operation.



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- If not as indicated in the table, replace the trunk lid latch and release actuator.

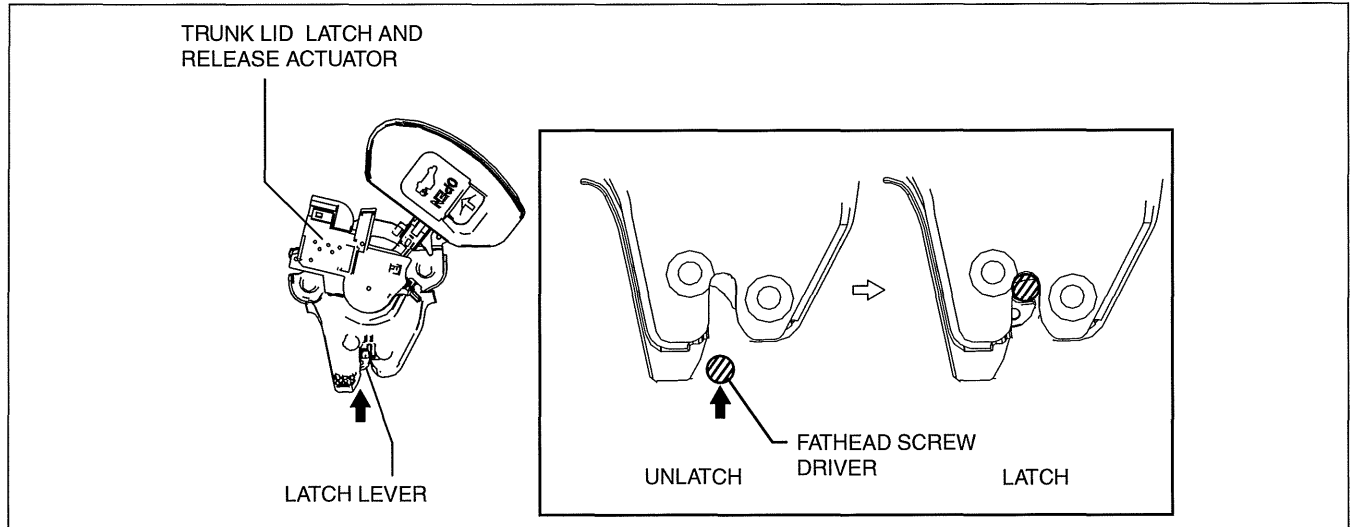
Release actuator operation	Terminal	
	B+	Ground
RELEASE	A	B

SECURITY AND LOCKS

TRUNK LID LATCH SWITCH INSPECTION

id091400513600

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Remove the trunk lid latch and lock actuator. (See 09-14-50 TRUNK LID LATCH AND RELEASE ACTUATOR REMOVAL/INSTALLATION.)
4. Press the latch in using a flathead screwdriver to inspect the latch lever condition.



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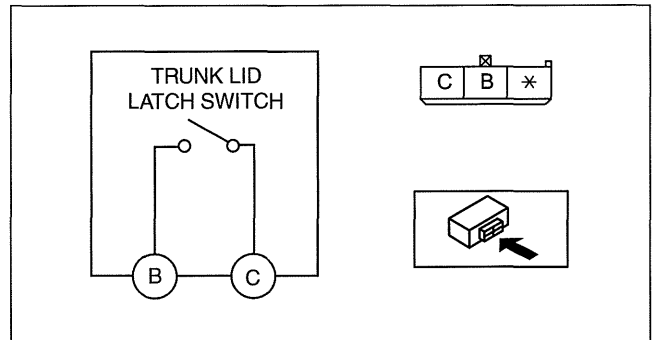
5. Verify that the continuity is as indicated in the table.

- If not as indicated in the table, replace the trunk lid latch and release actuator

○—○: CONTINUITY

LATCH CONDITION	TERMINAL	
	B	C
LATCH (TRUNK LID CLOSE)		
UNLATCH (TRUNK LID OPEN)	○—○	○—○

am6zzw00001896



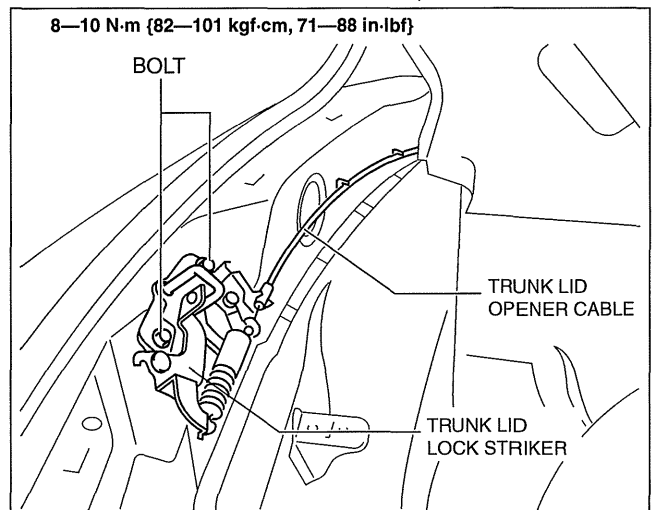
am3uuw0000452

09-14

TRUNK LID LOCK STRIKER REMOVAL/INSTALLATION

id091400513700

1. Remove the trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
2. Disconnect the trunk lid lock striker from the trunk lid opener cable.
3. Remove the bolts, then remove the trunk lid lock striker.
4. Install in the reverse order of removal.
5. Adjust the trunk lid lock striker. (See 09-10-6 TRUNK LID ADJUSTMENT.)



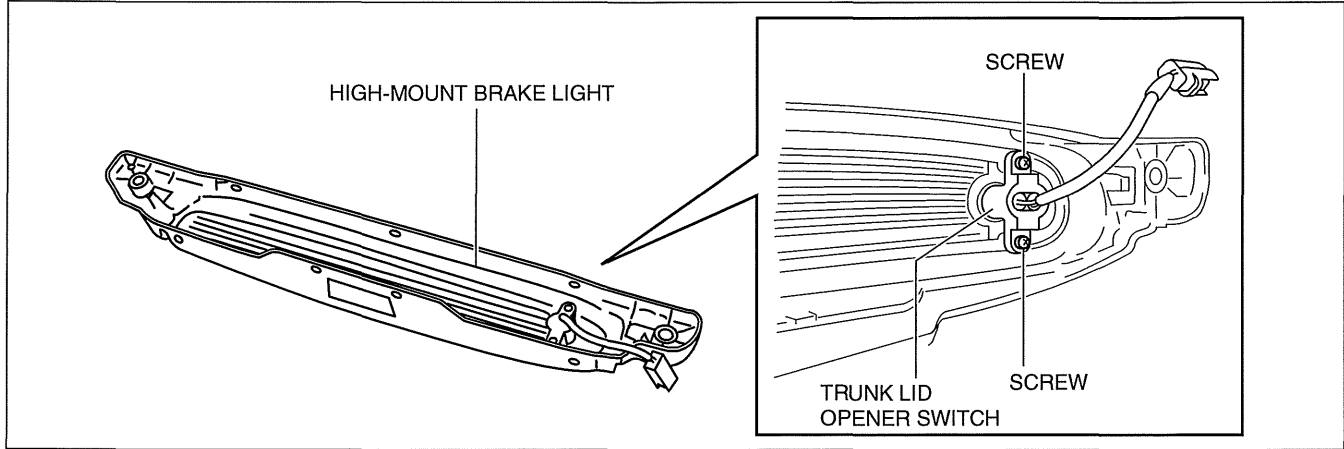
am3uuw0000301

SECURITY AND LOCKS

TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION

id091400516300

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Remove the high-mount brake light. (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
4. Remove the screw.



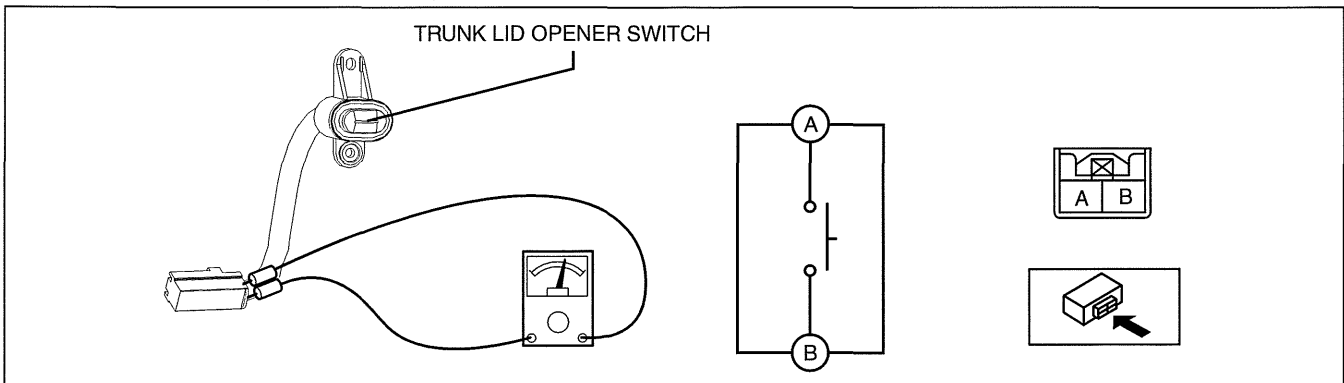
am3uuw0000430

5. Install in the reverse order of removal.

TRUNK LID OPENER SWITCH INSPECTION

id091400516400

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Remove the high-mount brake light. (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
4. Remove the trunk lid opener switch. (See 09-14-54 TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION.)
5. Verify the continuity of trunk lid opener switch terminals A and B.



am3uuw0000431

6. Verify that the continuity is as indicated in the table.

○—○: CONTINUITY

SWITCH POSITION	TERMINAL	
	A	B
ON (PUSH)	○—○	○—○
OFF (RELEASE)		

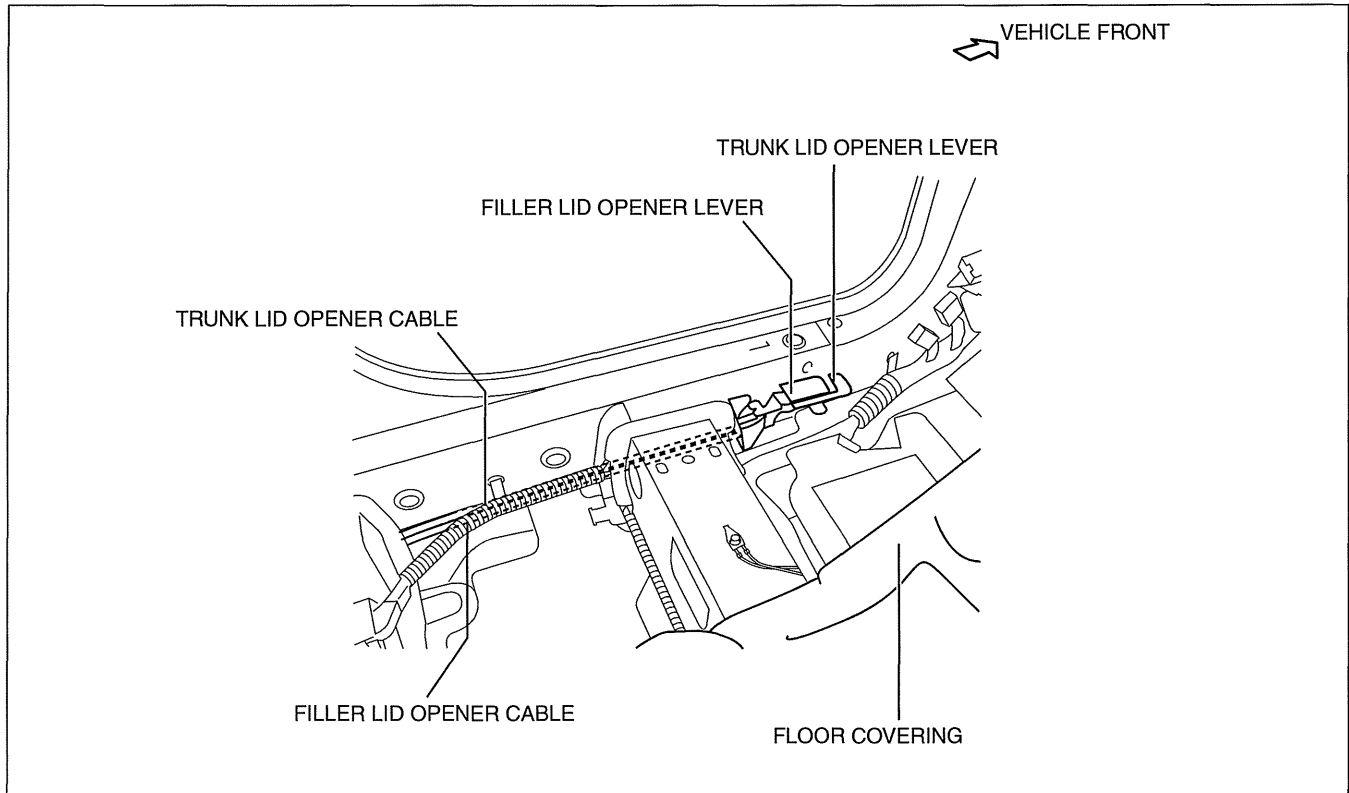
am3uuw0000431

SECURITY AND LOCKS

TRUNK LID OPENER LEVER REMOVAL/INSTALLATION

id091400620500

1. Remove the front scuff plate (LH). (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Remove the front side trim (LH). (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
3. Remove the fuel-filler lid opener bezel. (See 09-17-70 FUEL-FILLER LID OPENER BEZEL REMOVAL/INSTALLATION.)
4. Partially peel back the floor covering.

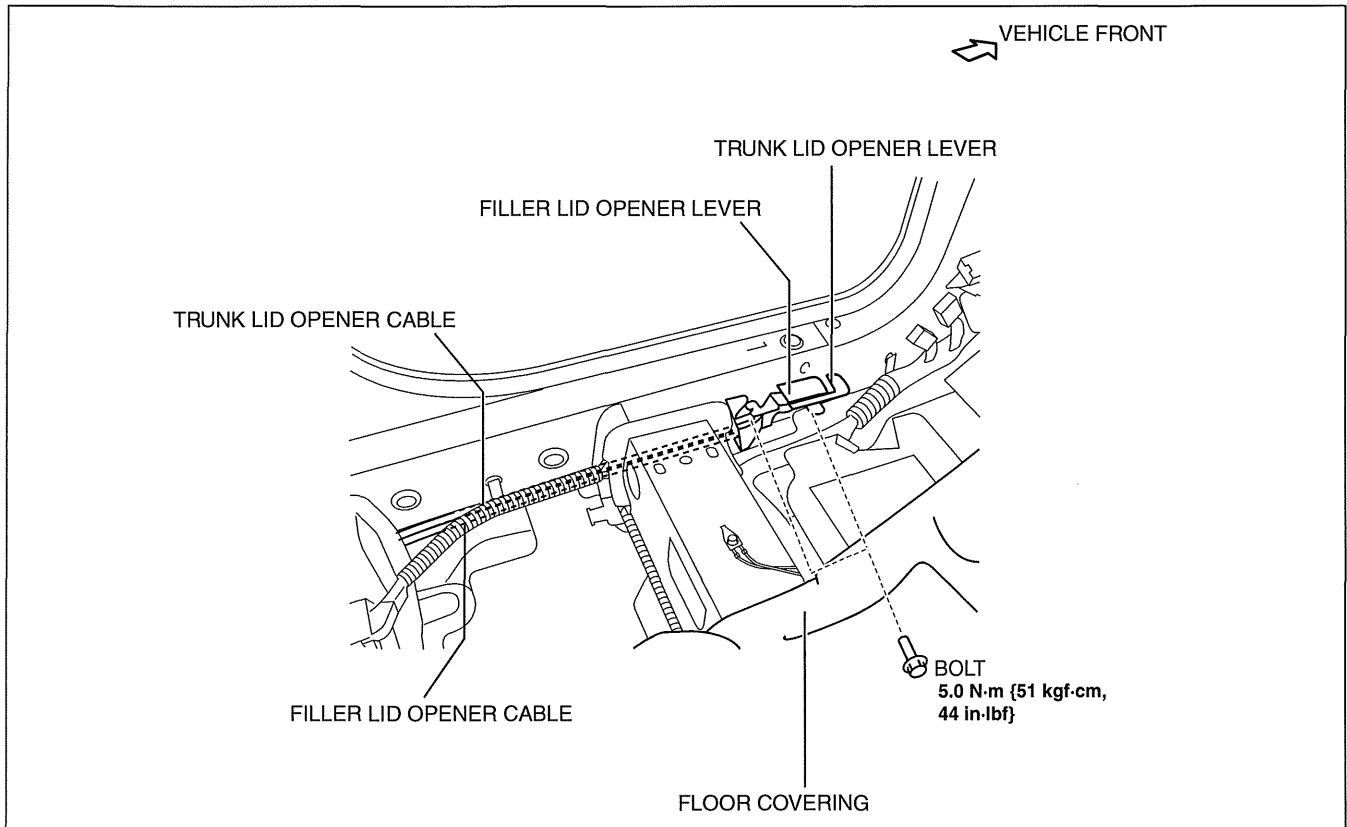


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09-14

SECURITY AND LOCKS

5. Remove the bolts.



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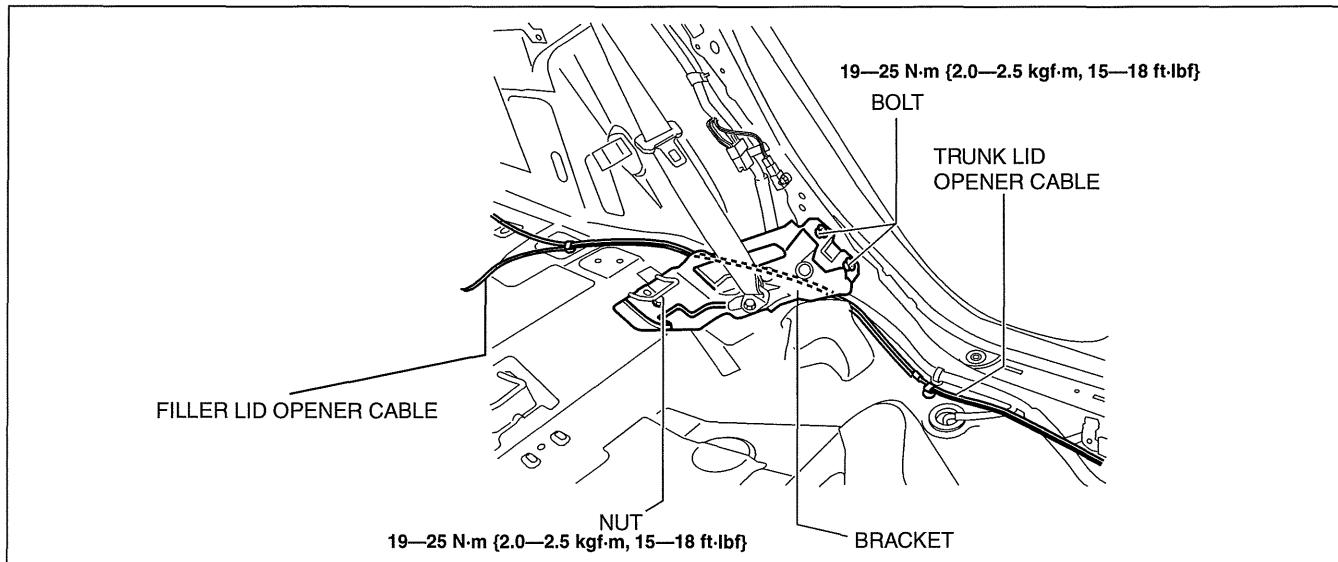
6. Disconnect the cable and trunk lid opener lever.
7. Install in the reverse order of removal.

SECURITY AND LOCKS

TRUNK LID OPENER CABLE REMOVAL/INSTALLATION

id091400620400

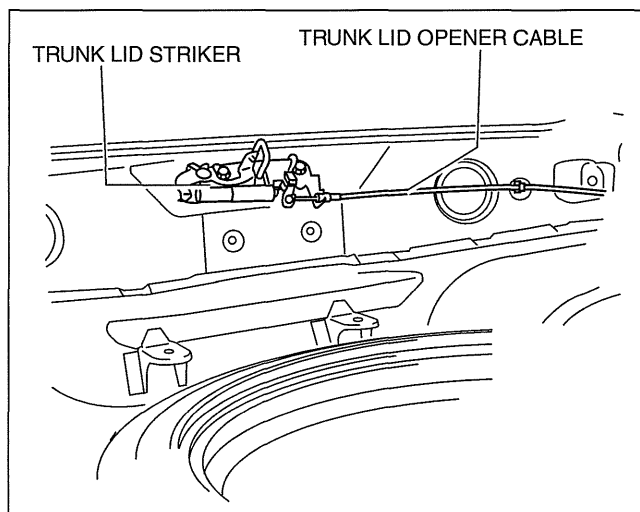
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front seat (LH)(See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (5) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (6) Rear seat back (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (7) Tire house trim (LH) (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (8) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (9) Trunk side trim (LH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (10)Trunk lid opener lever (See 09-14-55 TRUNK LID OPENER LEVER REMOVAL/INSTALLATION.)
3. Remove the bolts and nut.



09-14

am3uuw0000436

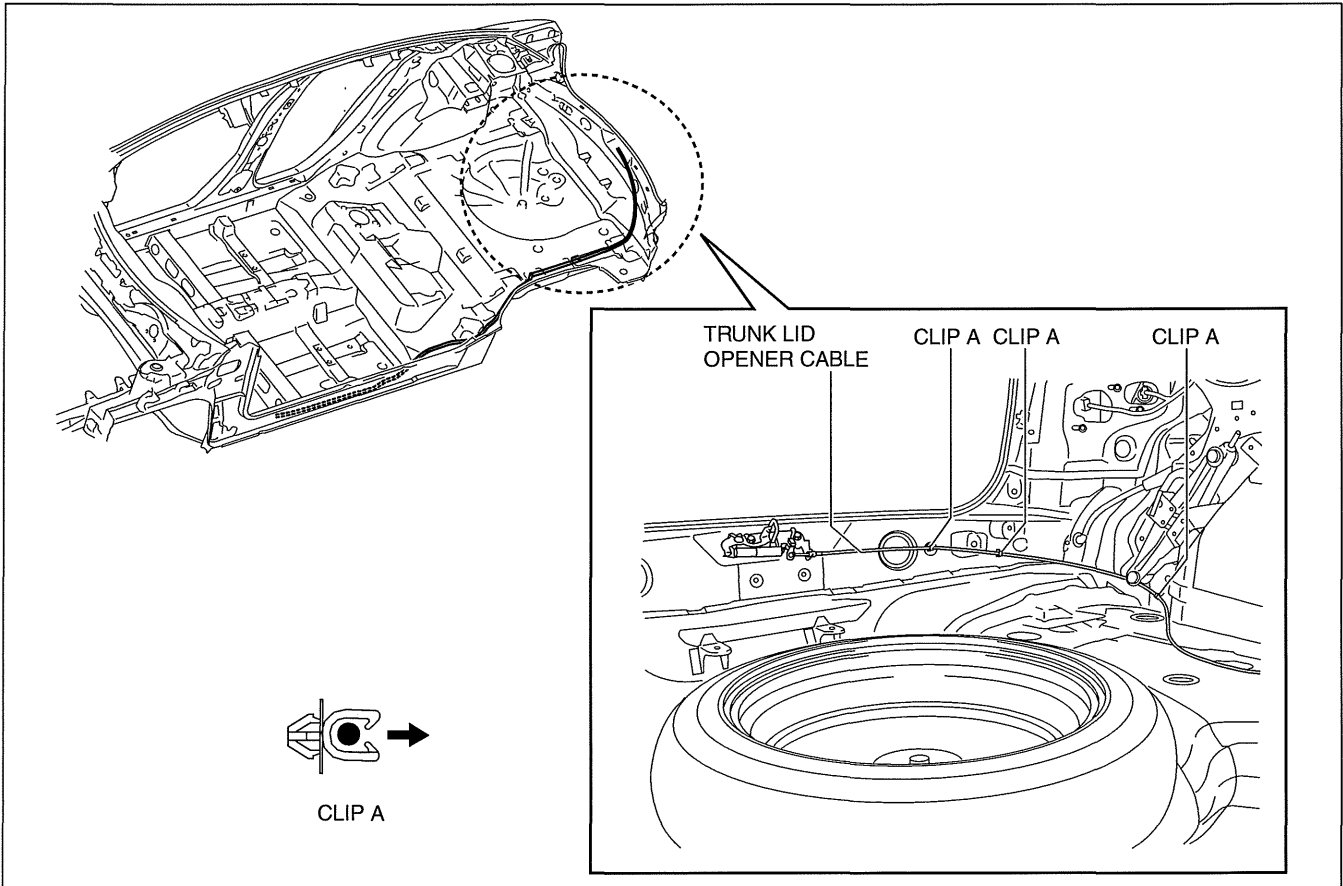
4. Remove the bracket.
5. Disconnect the trunk lid striker from the trunk lid opener cable.



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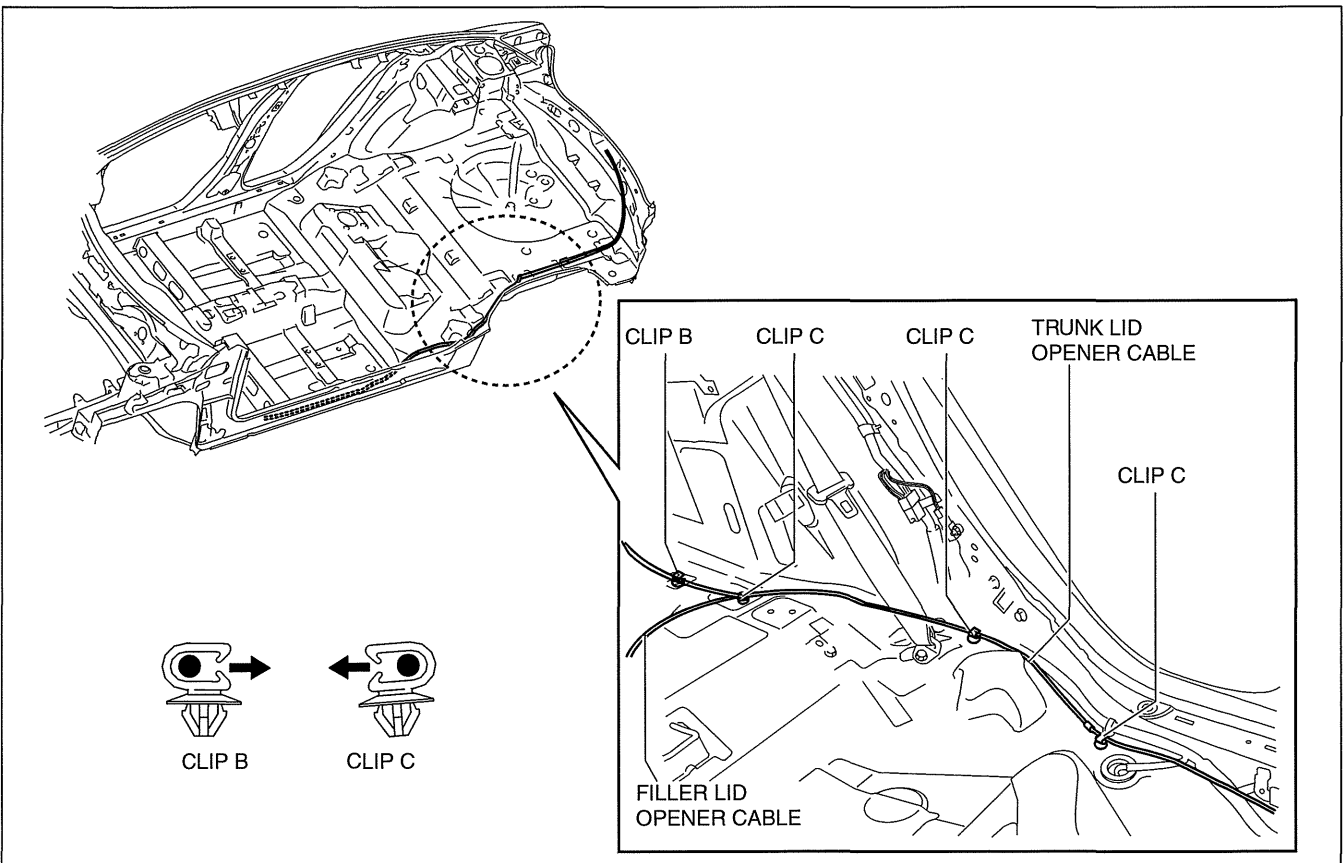
SECURITY AND LOCKS

6. Remove the trunk lid opener cable from clips A.



am3uuw0000414

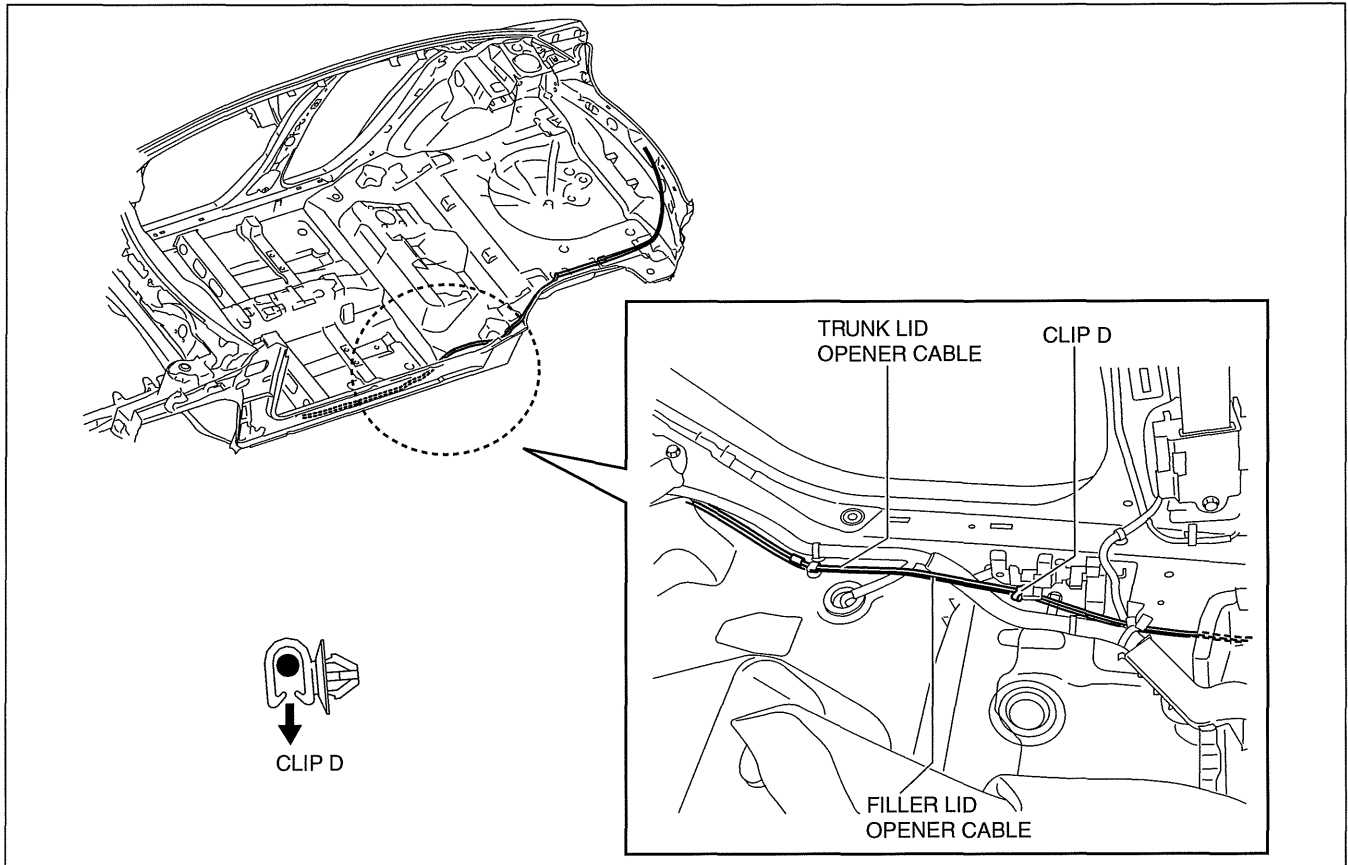
7. Remove the trunk lid opener cable from clips B and C.



am3uuw0000514

SECURITY AND LOCKS

8. Remove the trunk lid opener cable from clips D.



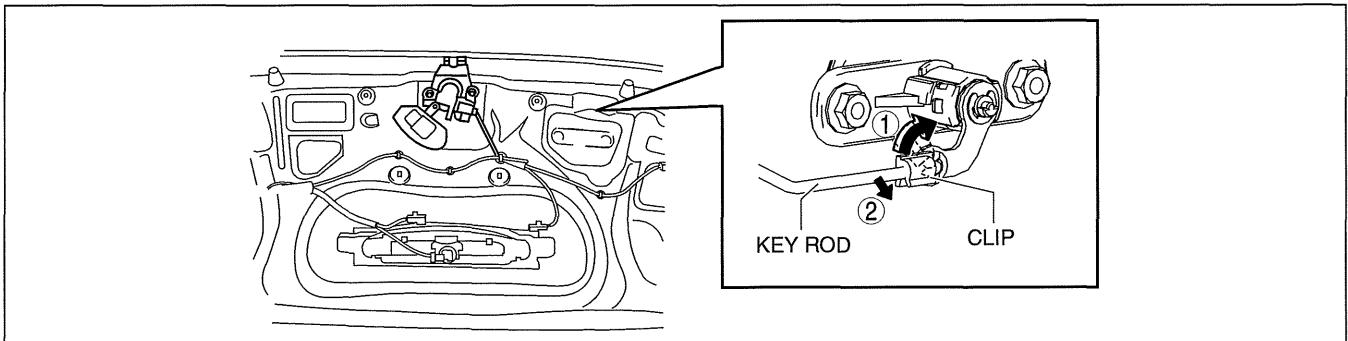
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9. Install in the reverse order of removal.

TRUNK LID KEY CYLINDER REMOVAL/INSTALLATION

id091400621100

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Lift the clip in the direction of the arrow (1), and pull out the key rod in the direction of the arrow (2).

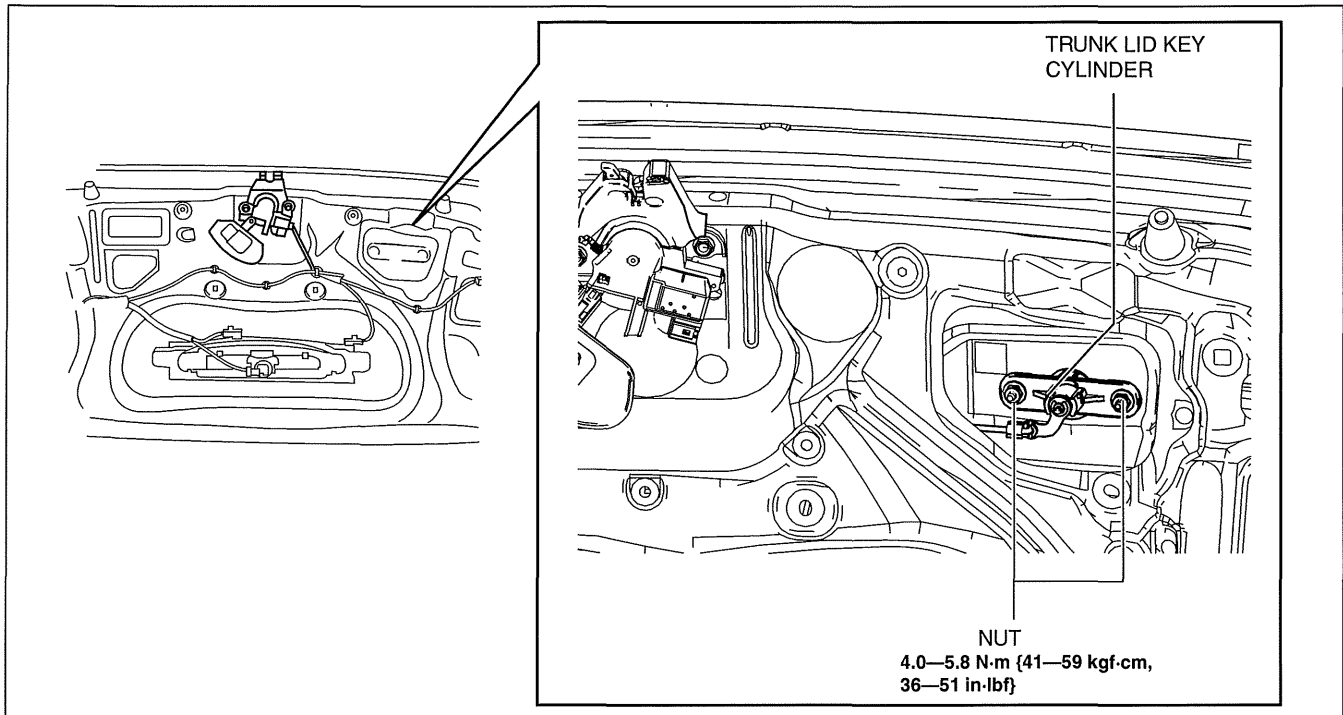


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09-14

SECURITY AND LOCKS

4. Remove the nuts.



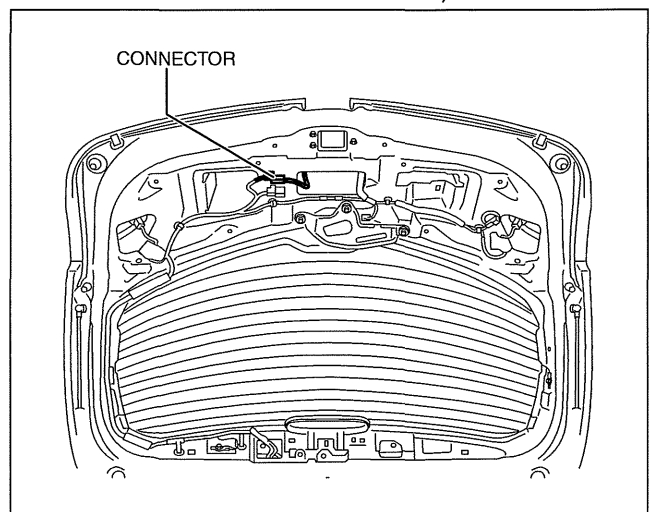
am3uuw0000438

5. Remove the trunk lid key cylinder.
6. Install in the reverse order of removal.

LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION

id091400516900

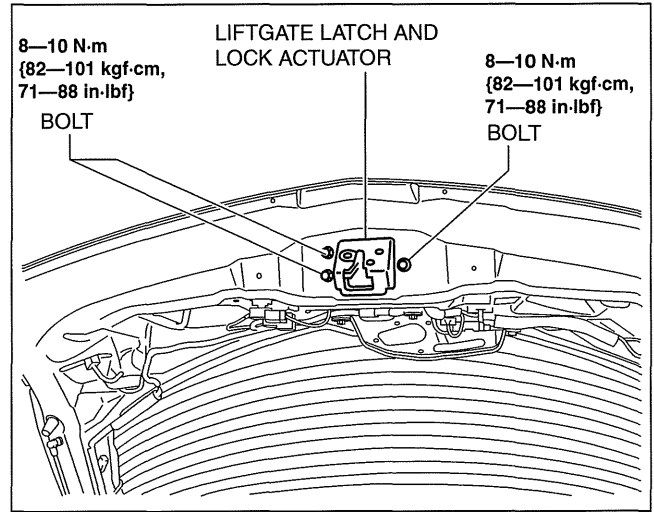
1. Disconnect the negative battery cable.
2. Remove the following parts
 - (1) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (2) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.



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SECURITY AND LOCKS

4. Remove the bolts.
5. Remove the liftgate latch and lock actuator.
6. Install in the reverse order of removal.

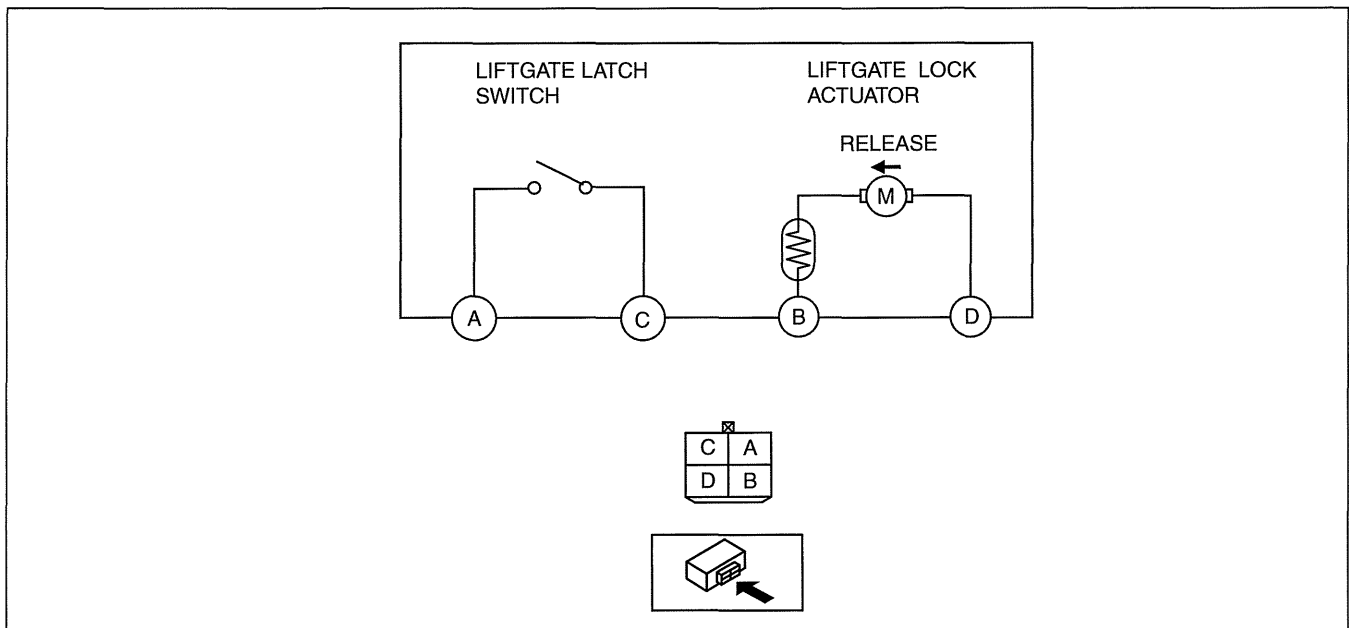


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LIFTGATE LATCH AND LOCK ACTUATOR INSPECTION

id091400517000

1. The following actuator and switch are integrated with the liftgate latch and lock actuator. Inspect the liftgate latch and lock actuator according to each inspection procedure for the following items.
 - Liftgate latch switch (See 09-14-63 LIFTGATE LATCH SWITCH INSPECTION.)
 - Liftgate lock actuator (See 09-14-62 LIFTGATE LOCK ACTUATOR INSPECTION.)



am3uuw0000452

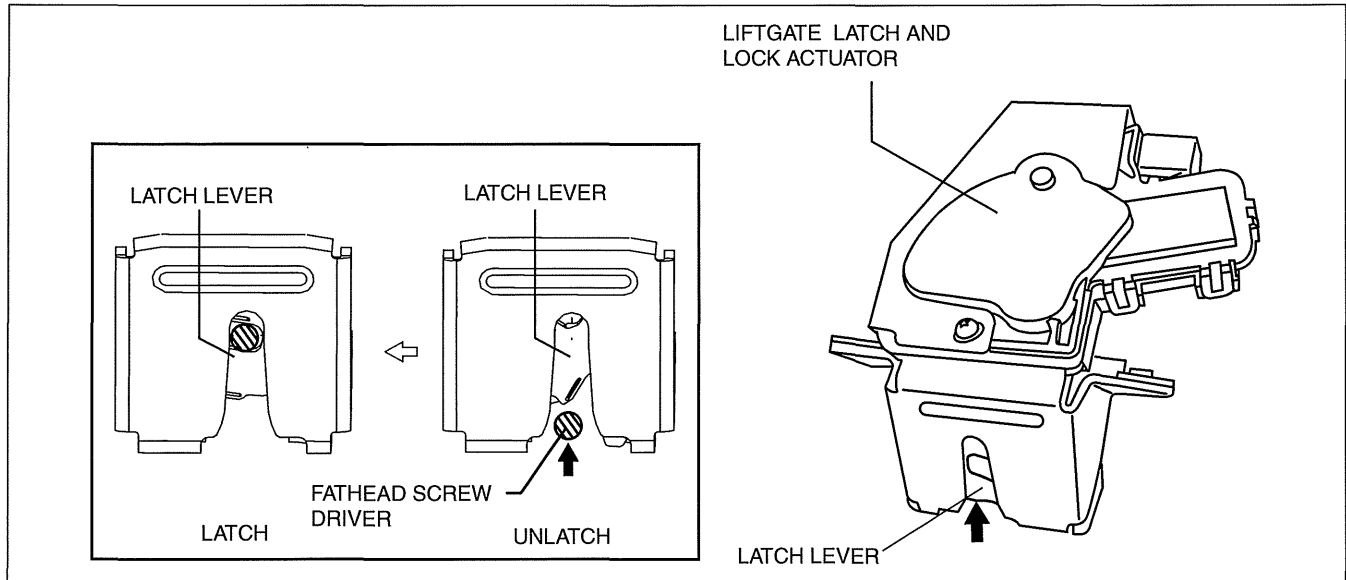
09-14

SECURITY AND LOCKS

LIFTGATE LOCK ACTUATOR INSPECTION

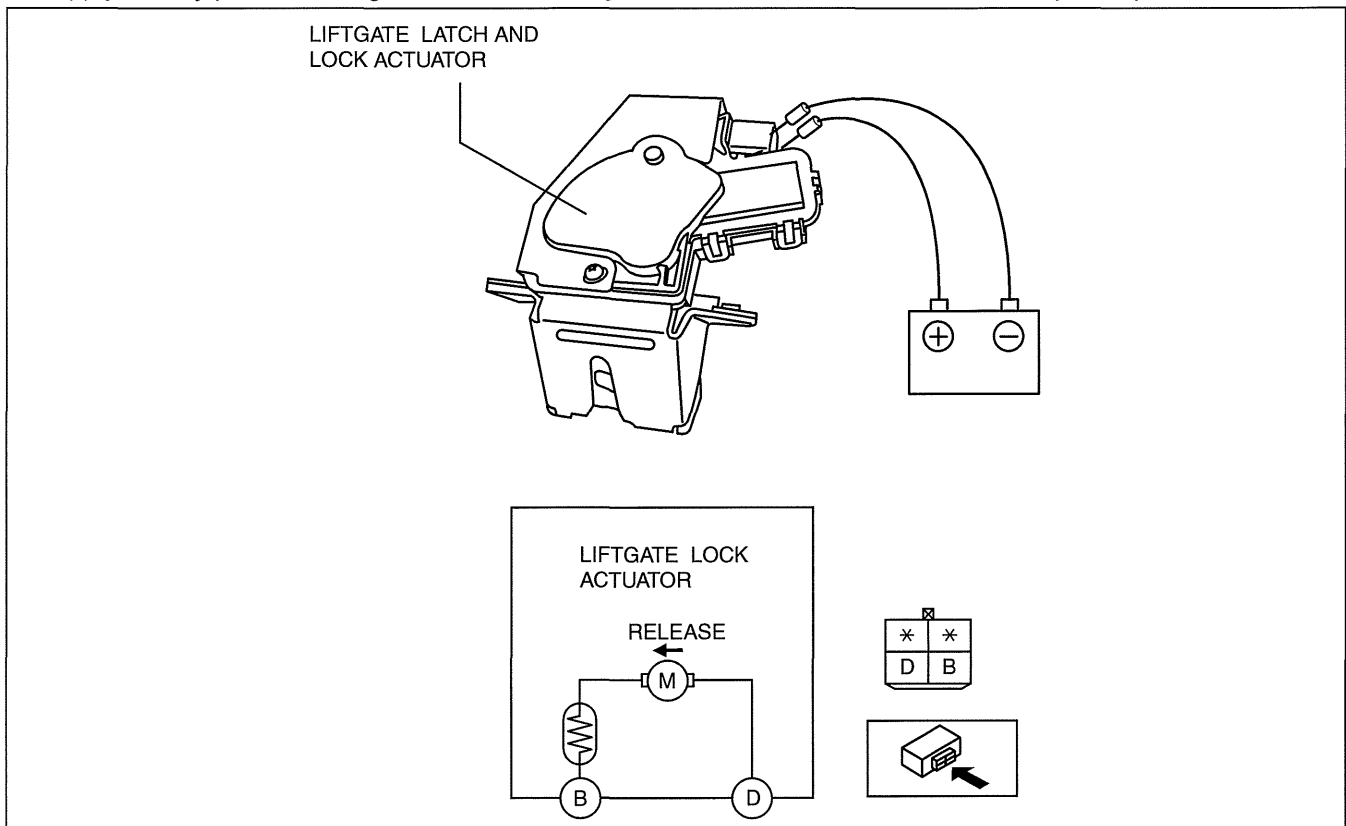
id091400512100

1. Disconnect the negative battery cable.
2. Remove the following parts
 - (1) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (2) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate latch and lock actuator (See 09-14-60 LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
3. Press the latch in using a flathead screwdriver to inspect the latch lever condition.



am3uuw0000454

4. Apply battery positive voltage and connect the ground to each terminal, and then verify the operation.



am3uuw0000454

SECURITY AND LOCKS

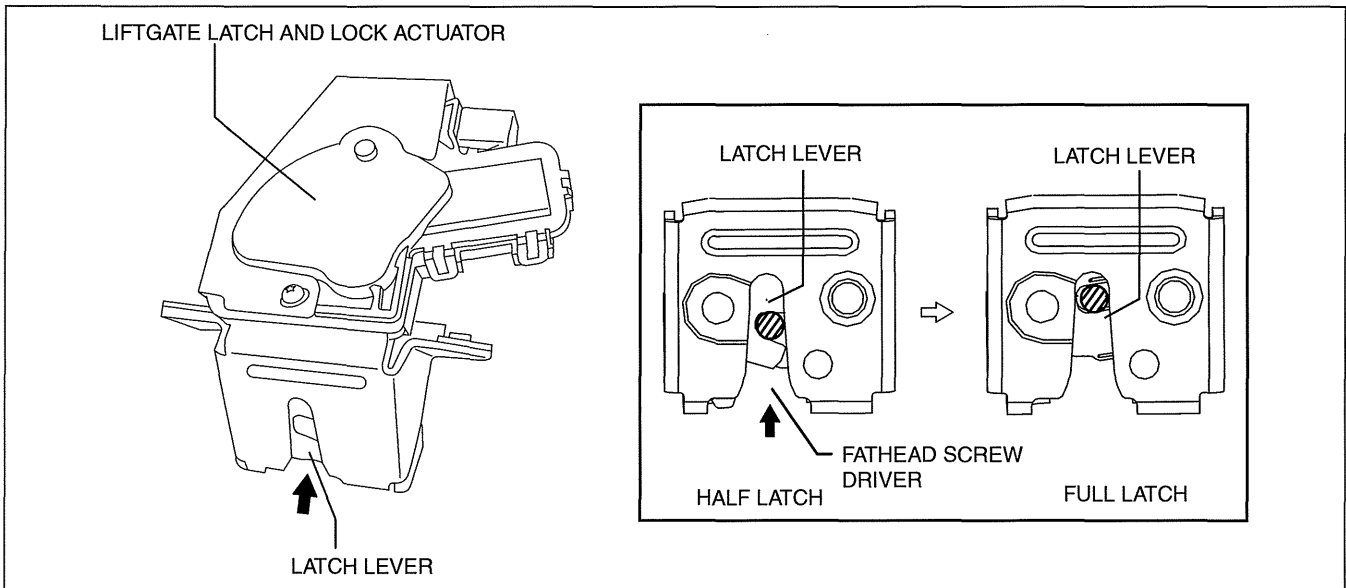
- If not as indicated in the table, replace the liftgate latch and lock actuator.

Lock actuator operation	Terminal	
	B+	Ground
RELEASE	D	B

LIFTGATE LATCH SWITCH INSPECTION

id091400512200

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (2) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate latch and lock actuator (See 09-14-60 LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
3. Press the latch in using a flathead screwdriver to inspect the latch lever condition.



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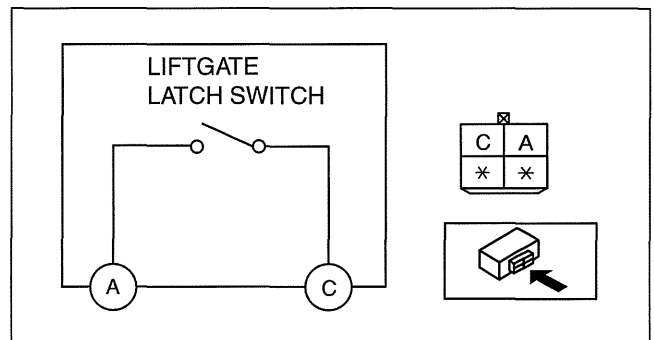
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4. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the liftgate latch and lock actuator

○—○: CONTINUITY

LATCH CONDITION	TERMINAL	
	A	C
LATCH (LIFTGATE CLOSE)	○—○	○—○
UNLATCH (LIFTGATE OPEN)	○—○	○—○

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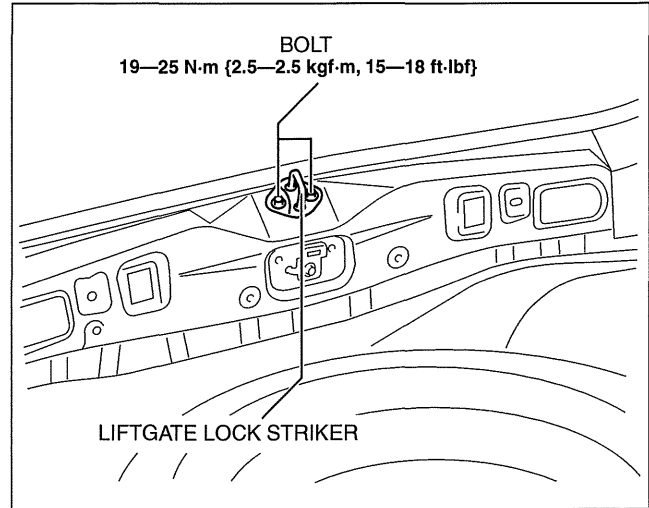
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SECURITY AND LOCKS

LIFTGATE LOCK STRIKER REMOVAL/INSTALLATION

id091400513000

1. Remove the trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
2. Remove the bolts, then remove the liftgate lock striker.
3. Install in the reverse order of removal.
4. Adjust the liftgate lock striker. (See 09-11-20 LIFTGATE ADJUSTMENT.)

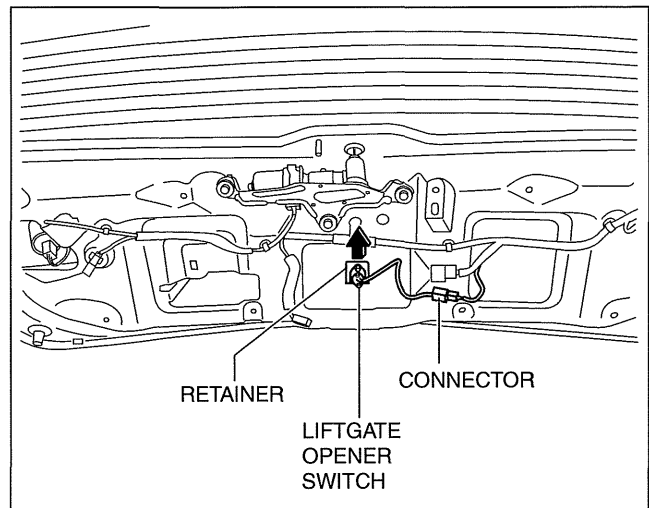


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LIFTGATE OPENER SWITCH REMOVAL/INSTALLATION

id091400516100

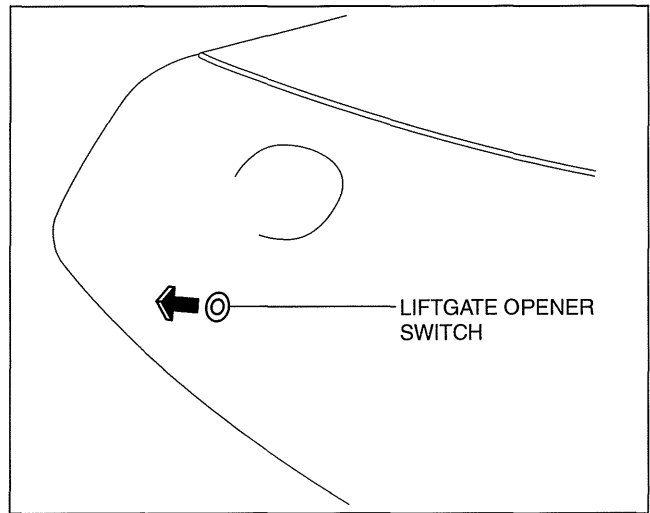
1. Disconnect the negative battery cable.
2. Remove the following parts
 - (1) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (2) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate latch and lock actuator (See 09-14-60 LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Pull out the retainer in the direction of the arrow.



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SECURITY AND LOCKS

5. Remove the liftgate opener switch.
6. Install in the reverse order of removal.



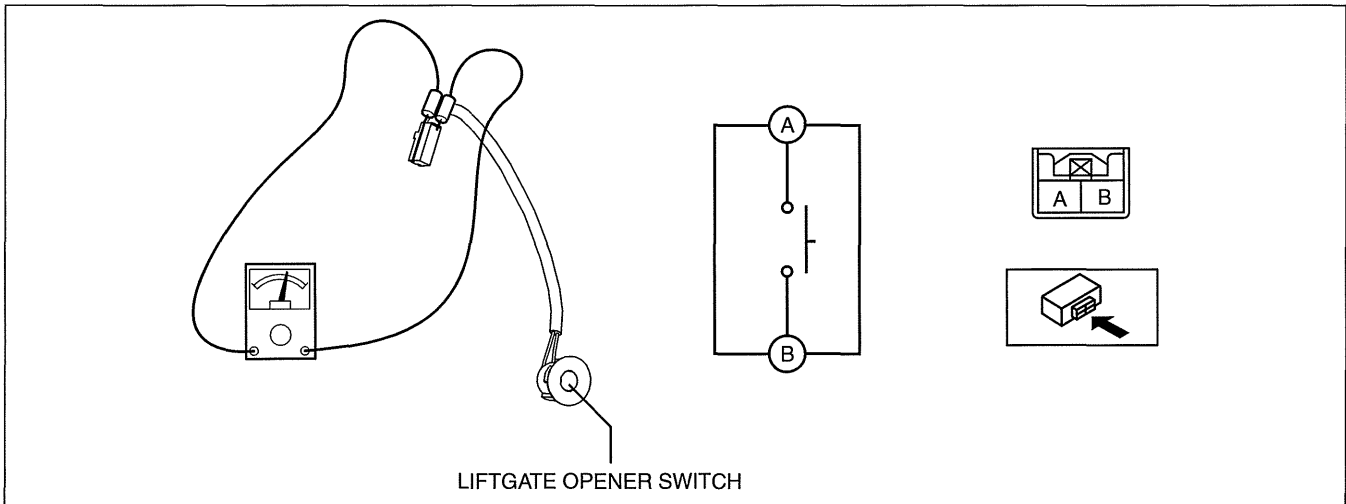
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LIFTGATE OPENER SWITCH INSPECTION

id091400516200

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (2) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate latch and lock actuator (See 09-14-60 LIFTGATE LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.)
 - (5) Liftgate opener switch (See 09-14-64 LIFTGATE OPENER SWITCH REMOVAL/INSTALLATION.)
3. Verify the continuity of liftgate opener switch terminals A and B.

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LIFTGATE OPENER SWITCH

am3uuw0000452

4. Verify that the continuity is as indicated in the table.

○—○: CONTINUITY

SWITCH POSITION	TERMINAL	
	A	B
ON (PUSH)	○—○	○—○
OFF (RELEASE)		

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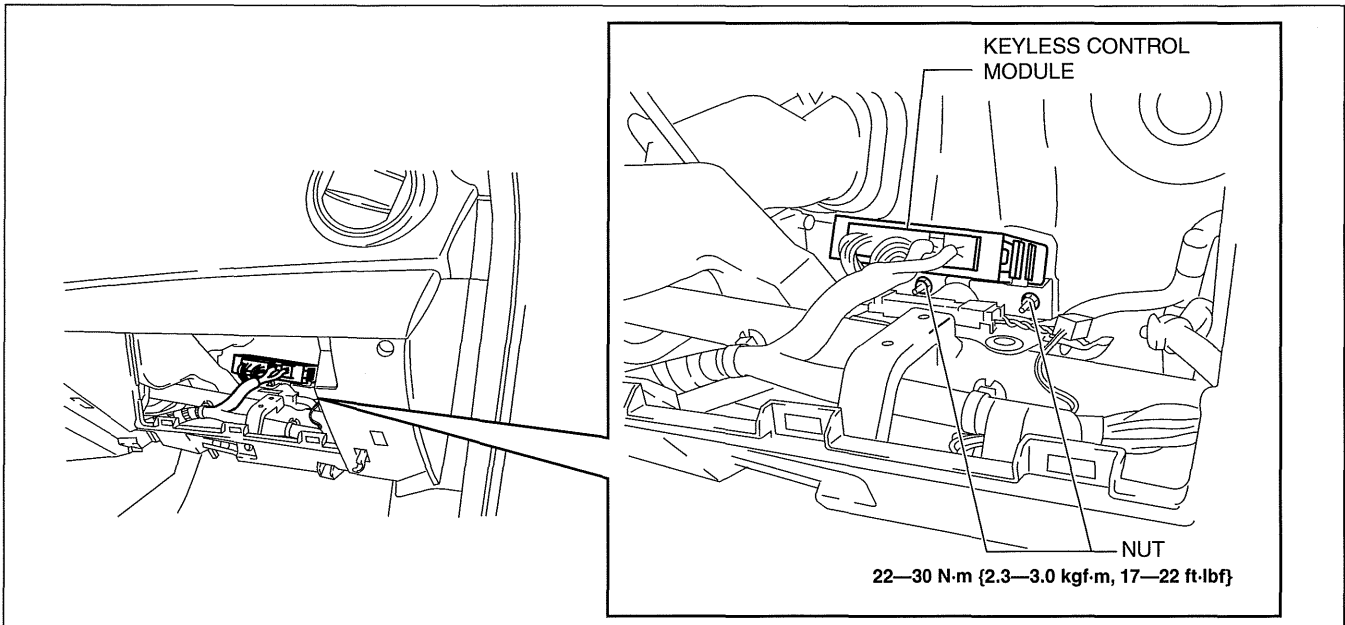
- If not as indicated in the table, replace the liftgate opener switch.

SECURITY AND LOCKS

id091400513800

KEYLESS CONTROL MODULE REMOVAL/INSTALLATION

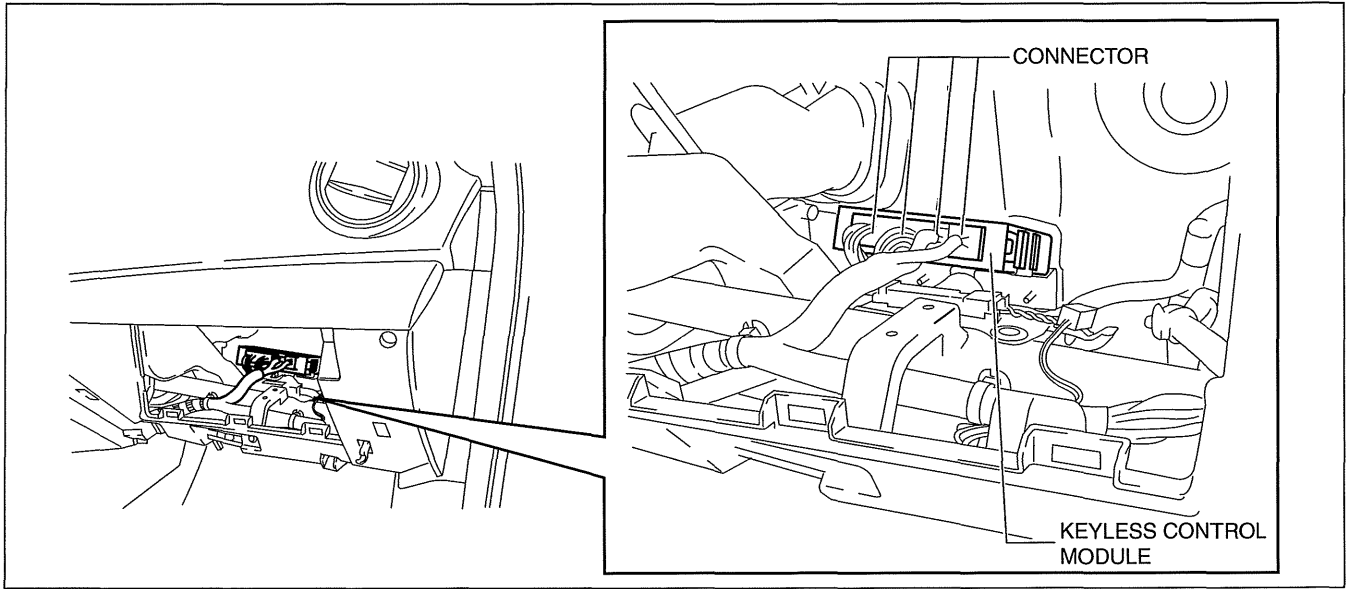
1. If the keyless control module is replaced, always perform the following procedure.
 - Vehicles with immobilizer system
 - Keyless Control Module Configuration (See 09-14-72 KEYLESS CONTROL MODULE CONFIGURATION.)
 - Immobilizer System-related Parts Programming [No.4 Programming Procedure Due to Keyless Control Module Replacement] (See 09-14-97 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - Vehicles without immobilizer system
 - Keyless Control Module Configuration (See 09-14-72 KEYLESS CONTROL MODULE CONFIGURATION.)
 - Advanced Key Id Code Registration (See 09-14-84 ADVANCED KEY ID CODE REGISTRATION.)
 - Steering Lock Unit Id Code Registration (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.)
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (4) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
4. Remove in the nuts.



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SECURITY AND LOCKS

5. Disconnect the connector.



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6. Remove the Keyless control module.
7. Install in the reverse order of removal.

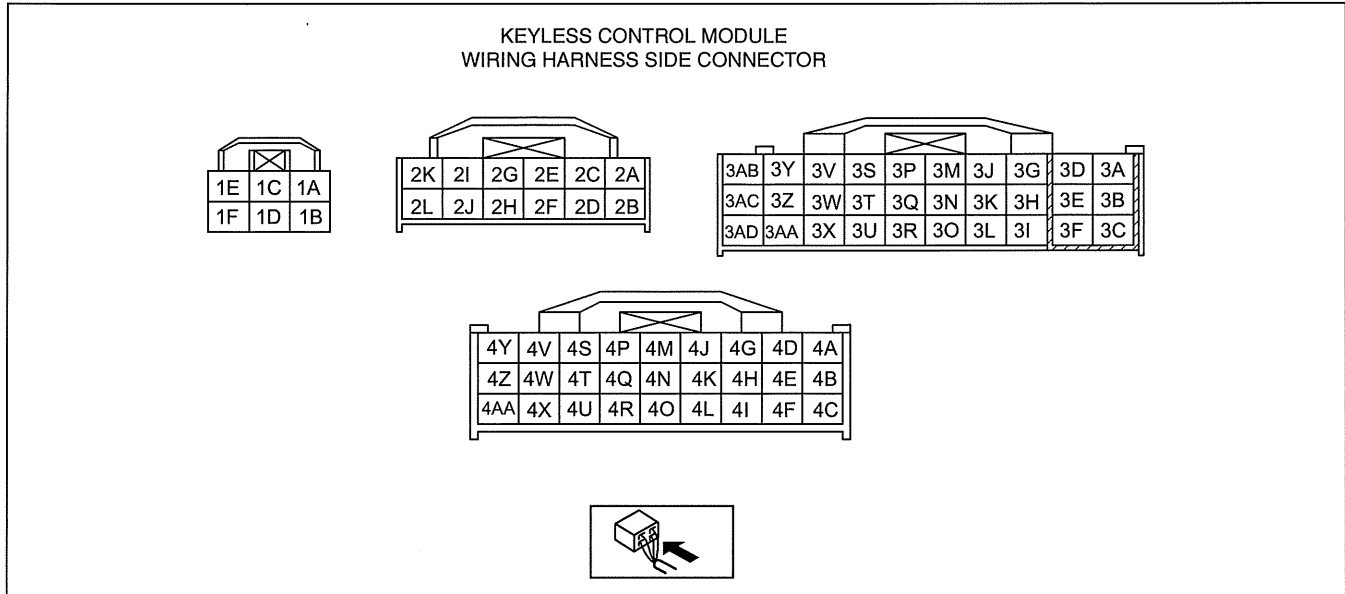
SECURITY AND LOCKS

KEYLESS CONTROL MODULE INSPECTION

id091400513900

1. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (4) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
2. Measure the voltage according to the terminal voltage table.
 - If the voltages cannot be verified as indicated in the terminal voltage table, inspect the parts under "Inspection item (s)".
 - If the system does not work normally even though the inspection items or related wiring harnesses do not have any malfunction, replace the keyless control module.

Terminal Voltage Table (Reference)



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Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
1A	Power supply	ESCL15 A fuse	Under any condition	B+	ESCL15 A fuse Battery
1B	GND	Body ground	Under any condition	1.0 or less	Body ground
1C	Power supply	Steering lock unit	Steering lock unit During lock/unlock control	B+	Steering lock unit
			Other	1.0 or less	
1D	Steering lock unit ground	Steering lock unit	Steering lock unit During lock/unlock control	1.0 or less	Steering lock unit
			Other	2.7 (Typical)	
1E	Power supply	ROOM 15 A fuse	Under any condition	B+	ROOM 15 A fuse Battery BCM
1F	Power supply	ENG+B 10 A fuse	Under any condition	B+	ENG+B 10 A fuse Battery
2A	Power supply	METER 15 A fuse	Switch the ignitions to ON	B+	IG1 relay METER 15 A fuse Battery
			Switch the ignitions to off or ACC	1.0 or less	
2B	Push button start	Push button start	Push button start is pushed	1.0 or less	Push button start
			Push button start is not pushed	B+	
2C	Power supply	MIRROR 10 A fuse	Switch the ignitions to ACC	B+	ACC relay MIRROR 10 A fuse Battery
			Switch the ignitions to off	1.0 or less	
2E	Power supply	HEATER 10 A fuse	Switch the ignitions to ON	B+	IG2 relay HEATER 10 A fuse Battery
			Switch the ignitions to off or ACC	1.0 or less	

SECURITY AND LOCKS

Terminal	Signal name	Connected to	Measurement condition		Voltage (V)	Inspection item (s)
2F	Starter monitor	Starter relay	Switch the ignitions to off	Clutch pedal is not depressed (MTX)	B+	Starter relay
				Shift position is not P or N range (ATX)		
				Clutch pedal is depressed (MTX)	6.0	
				Shift position is P or N range (ATX)		
			Switch the ignitions to ON	Clutch pedal is not depressed (MTX)	B+	
				Shift position is not P or N range (ATX)		
				Clutch pedal is depressed (MTX)	1.0 or less	
				Shift position is P or N range (ATX)		
2G	Tx-PATS	Coil antenna	Communication lines, cannot be determined by voltage only (B+ when not communicating)		B+	Coil antenna
2H	Rx-PATS	Coil antenna	Communication lines, cannot be determined by voltage only (B+ when not communicating)		B+	Coil antenna
2I	Steering lock unit communication	Steering lock unit	Terminal used for communication therefore determination based on terminal voltage inspection not possible.			
2K	HS-CAN+	-	Terminal used for communication therefore determination based on terminal voltage inspection not possible.			
2L	HS-CAN-	-	Terminal used for communication therefore determination based on terminal voltage inspection not possible.			
3B	Starter relay	Starter relay	Cranking		B+	Starter relay
			Switch the ignitions to off	Clutch pedal is depressed (MTX)	1.0 or less	
				Shift position is P or N range (ATX)		
			Switch the ignitions to ON	Clutch pedal is depressed (MTX)	1.0 or less	
Shift position is P or N range (ATX)						
3C	GND	Body ground	Under any condition		1.0 or less	Body ground
3D	IG 1 relay control	IG 1 Relay	Switch the ignitions to ON		B+	IG 1 Relay
			Switch the ignitions to off or ACC		1.0 or less	
3F	Push button illumination (ON)	Push button start	Switch the ignitions to off	Clutch pedal (MTX)/ Brake pedal (ATX) is depressed	1.0 or less	Push button start
				Push button start is pushed		
3G	IG 2 relay control	IG 2 Relay	Switch the ignitions to ON		B+	IG 2 Relay
			Switch the ignitions to off or ACC		1.0 or less	
3H	Push button illumination (Umber)	Push button start	System is malfunctioning		1.0 or less	Push button start
			Other		B+	
3I	Push button illumination (green)	Push button start	Engine start is available		1.0 or less	Push button start
			Other		B+	
3J	ACC relay control	ACC Relay	Switch the ignitions to ACC		B+	ACC Relay
			Switch the ignitions to off		1.0 or less	
3K	Push button illumination (ACC)	Push button start	In the case of ACC		1.0 or less	Push button start
			Case except the ACC		B+	

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SECURITY AND LOCKS

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
3M	Power supply	Coil antenna	Communication lines, cannot be determined by voltage only (B+ when not communicating)	B+	Coil antenna
3N	Ignition key illumination control	Coil antenna	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3O* 1	Starter interlock switch	Starter interlock switch	Clutch pedal is not depressed	B+	Starter interlock switch
			Clutch pedal is depressed	1.0 or less	
3Q	Push button start	Push button start	Push button start is pushed	1.0 or less	Push button start
			Push button start is not pushed	B+	
3R	Brake switch	Brake switch	Brake pedal is depressed	B+	Brake switch
			Brake pedal is not depressed	1.0 or less	
3S*2	P position	P position switch	Shift position is P	B+	P position switch
			Other	1.0 or less	
3T	Starter cut relay (MTX)	Starter cut relay	Clutch pedal is depressed	6.0	Starter cut relay
			Shift position is P or N range		
	TR switch (ATX)	TR switch	Clutch pedal is not depressed	1.0 or less	TR switch
			Shift position is not P or N range		
3U	Key reminder switch signal	Key reminder switch	Key inserted in steering lock	B+	Key reminder switch
			Other	1.0 or less	
3V	Power supply	Keyless receiver	Under any condition	B+	Keyless receiver
3W	Keyless entry communication	Keyless receiver	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3X	BCM communication	BCM	Communication lines, cannot be determined by voltage only (B+ when not communicating)	B+	BCM
3Y	Keyless antenna (interior, center)	Keyless antenna (interior, center)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3Z	Keyless antenna (interior, front)	Keyless antenna (interior, front)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3AA	Keyless entry communication	Keyless receiver	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3AB	Keyless antenna (interior, center)	Keyless antenna (interior, center)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3AC	Keyless antenna (interior, front)	Keyless antenna (interior, front)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3AD	GND	Body ground	Under any condition	1.0 or less	Body ground
4A	Keyless antenna (RF)	Keyless antenna (RF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4B	Keyless antenna (LF)	Keyless antenna (LF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4C	Keyless antenna (exterior, rear)	Keyless antenna (exterior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4D	Keyless antenna (RF)	Keyless antenna (RF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4E	Keyless antenna (LF)	Keyless antenna (LF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		

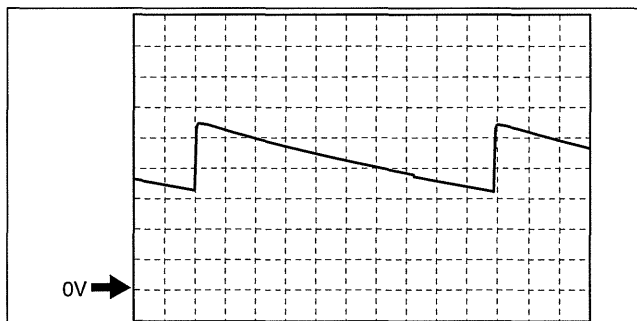
SECURITY AND LOCKS

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
4F	Keyless antenna (exterior, rear)	Keyless antenna (exterior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4G	Keyless antenna (interior, rear)	Keyless antenna (interior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4I	GND	Body ground	Under any condition	1.0 or less	Body ground
4J	Keyless antenna (interior, rear)	Keyless antenna (interior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
4L	Keyless beeper power supply	Keyless beeper	Exterior keyless beeper sounds	5.0 or more	Keyless beeper
			Other	1.0 or less	
4O	Request switch input (passenger's door)	Request switch (RF)	Passenger's side request switch ON	1.0 or less	Front outer handle (passenger's door)
			Passenger's side request switch OFF	4.0 or more	
4R	Request switch input (driver's door)	Request switch (LF)	Driver's side request switch ON	1.0 or less	Front outer handle (driver's door)
			Driver's side request switch OFF	4.0 or more	
4S	Trunk lid/liftgate release input	Trunk lid/liftgate opener switch	Trunk lid/liftgate opener switch pressed	3.0 or more	Trunk lid opener switch Liftgate opener switch
			Trunk lid/liftgate opener switch released	1.0 or less	
4T* ³	Request switch input (Liftgate)	Request switch (Liftgate)	Liftgate request switch ON	1.0 or less	Request switch (Liftgate)
			Liftgate request switch OFF	4.0 or more	
4U	Lock input	Door lock-link switch (driver's door)	Driver's side door lock switch at LOCK	1.0 or less	Door lock-link switch
			Driver's side door lock switch at UNLOCK	Wave pattern (See 09-14-71 Generated pulse (reference).)	
4V* ₁	Clutch pedal position switch	Clutch pedal position switch	Clutch pedal is depressed	1.0 or less	Clutch pedal position switch
			Clutch pedal is not depressed	B+	
4W	Brake switch	Brake switch	Brake pedal is depressed	B+	Brake switch
			Brake pedal is not depressed	1.0 or less	
4X* ₁	Neutral switch	Neutral switch	Shift lever is in neutral position	1.0 or less	Neutral switch
			Shift lever is not in neutral position	B+	
4Z	GND	Keyless beeper	Under any condition	1.0 or less	Keyless beeper
4AA	GND	Body ground	Under any condition	1.0 or less	Body ground

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- *1 : MTX
- *2 : ATX
- *3 : 5HB

Generated pulse (reference)



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- Terminal: 4U (+) ⇔ body ground (-)
- Oscilloscope setting: 2 V/DIV (Y), 1 ms/DIV (X), DC range

SECURITY AND LOCKS

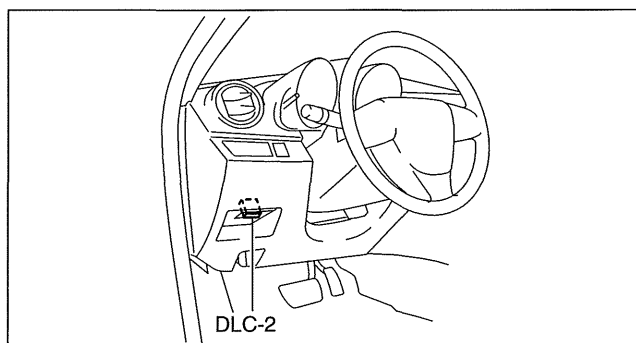
KEYLESS CONTROL MODULE CONFIGURATION

id091400514000

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the KEYLESS CONTROL MODULE CONFIGURATION.

1. Connect the M-MDS to DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "RKE".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See 09-02A-7 DTC TABLE [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)



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PERSONALIZATION FEATURES SETTING PROCEDURE

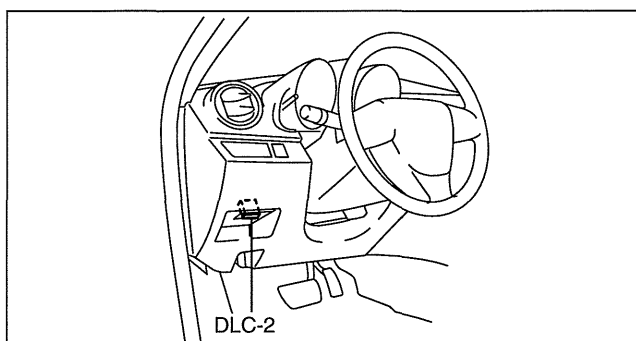
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Advanced Keyless Entry And Push Button Start System

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the CUSTOMIZED FUNCTION SETTING PROCEDURE.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 1. Select "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Parameters".
 2. Select "RKE".
4. Select the item name, and then select option.



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Mazda Modular Diagnostic System (M-MDS) display	Function	Initial setting	Setting content	Control unit
Advanced keyless function	Advanced keyless entry and push button start system function can be set to inoperable.	Enabled	Disabled/ Enabled	Keyless control module
Advanced key battery low warning	Advanced key remaining battery level/battery dead warning can be set.	Enabled	Disabled/ Enabled	Keyless control module
Auto Lock	Auto lock function can be set.	Disabled	Disabled/ Enabled	Keyless control module
2 stage door unlocking (with SKE)	The method for unlocking the doors using the request switch can be selected.	Enabled	Disabled/ Enabled	Keyless control module
Auto relock timer (with SKE)	Auto re-lock operation timing can be changed.	30 s	30s/ 60s/ 90s	Keyless control module
Answer back buzzer volume	Volume adjustment of the answer back buzzer can be set.	8	Disabled/ 1-10	Keyless control module
Warning buzzer volume	Volume adjustment of the warning buzzer can be set.	8	1-10	Keyless control module

SECURITY AND LOCKS

Keyless Entry Start System

- For the keyless entry system, refer to the control system personalization features setting. (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)

Power Door Lock System

- For the power door lock system, refer to the control system personalization features setting. (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)

Theft-deterrent System

- For the theft-deterrent system, refer to the control system personalization features setting. (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)

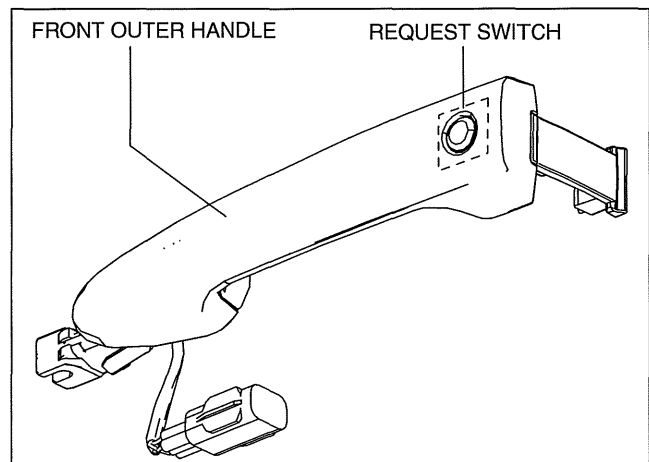
REQUEST SWITCH REMOVAL/INSTALLATION

id091400515200

Outer handle

Note

- The request switches are built into the front outer handles. (See 09-14-8 FRONT OUTER HANDLE REMOVAL/INSTALLATION.)

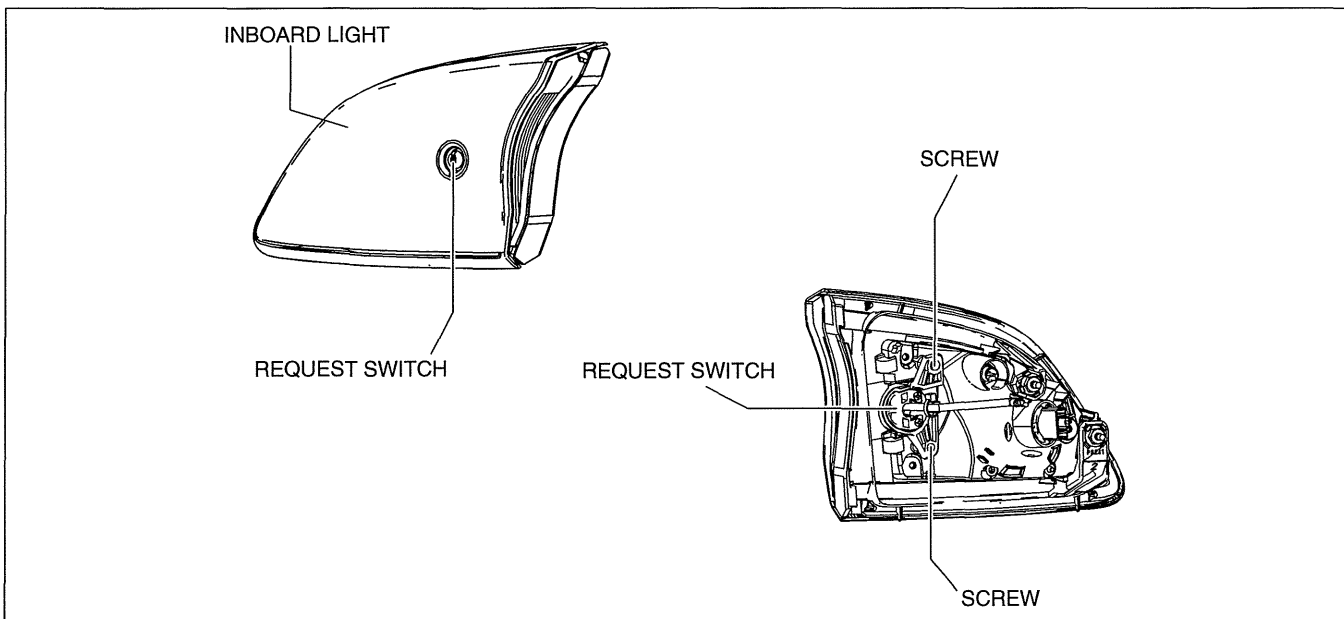


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Liftgate

1. Disconnect the negative battery cable.
2. Remove the inboard light. (See 09-18-40 INBOARD LIGHT REMOVAL/INSTALLATION.)
3. Remove the screw.



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4. Remove the request switch.
5. Install in the reverse order of removal.

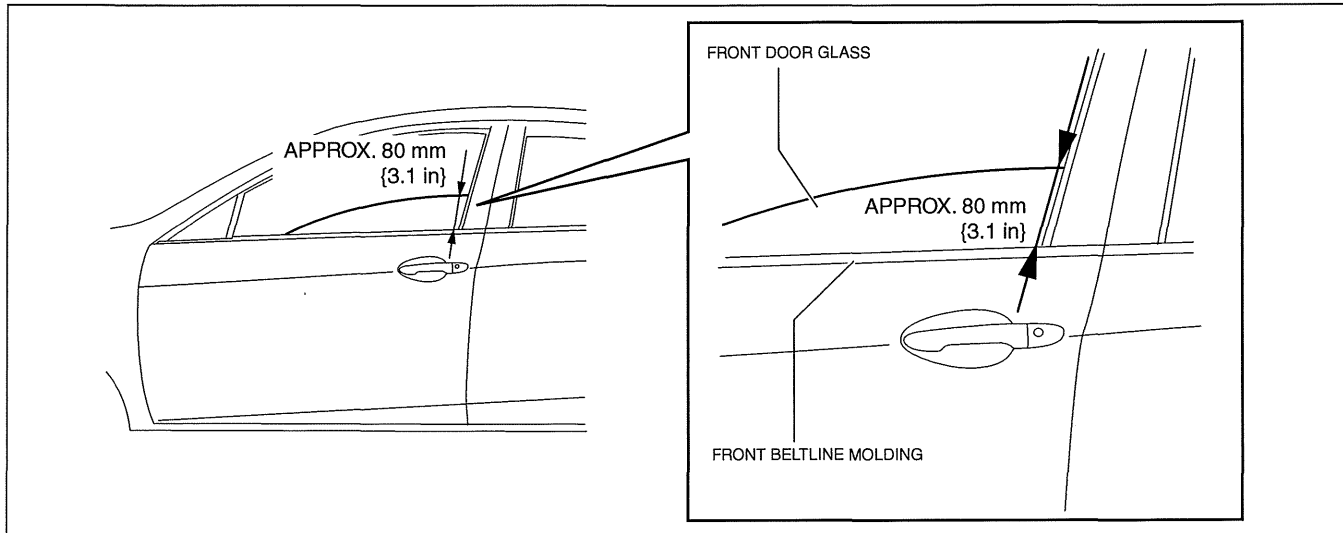
SECURITY AND LOCKS

REQUEST SWITCH INSPECTION

id091400515400

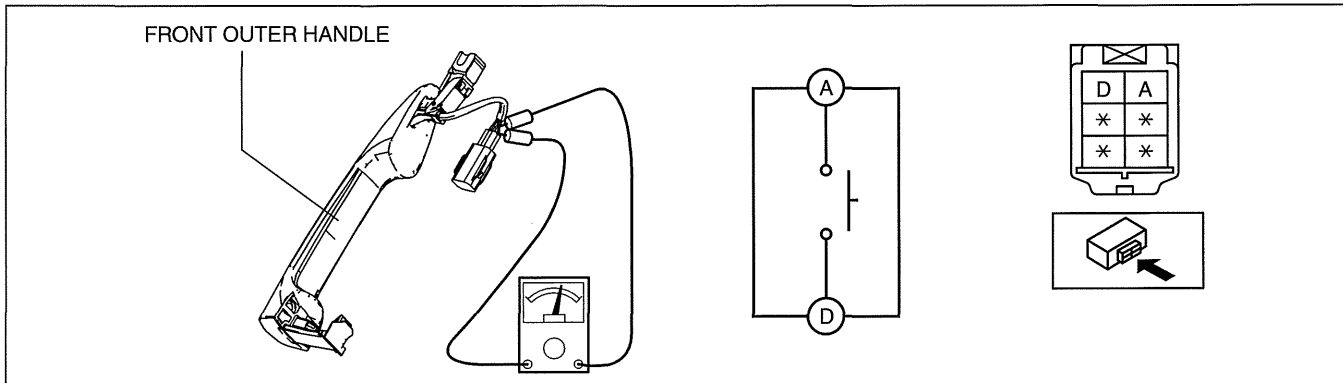
Outer handle

1. To access the glass installation bolt, position the front door glass so that the distance from the top of the front door glass to the upper part of the front beltline molding is **approx. 80 mm {3.1 in}**.



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2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (4) Front door glass (See 09-12-3 FRONT DOOR GLASS REMOVAL/INSTALLATION.)
 - (5) Front door module panel (See 09-11-4 FRONT DOOR MODULE PANEL REMOVAL/INSTALLATION.)
 - (6) Front door key cylinder (Driver's side) (See 09-14-28 FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION.)
 - (7) Front outer handle (See 09-14-8 FRONT OUTER HANDLE REMOVAL/INSTALLATION.)
4. Verify the continuity of request switch terminals A and D.



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5. Verify that the continuity is as indicated in the table.

○—○ CONTINUITY

REQUEST SWITCH	TERMINAL	
	A	D
PUSH (ON)	○—○	○—○
NOT PUSH (OFF)		

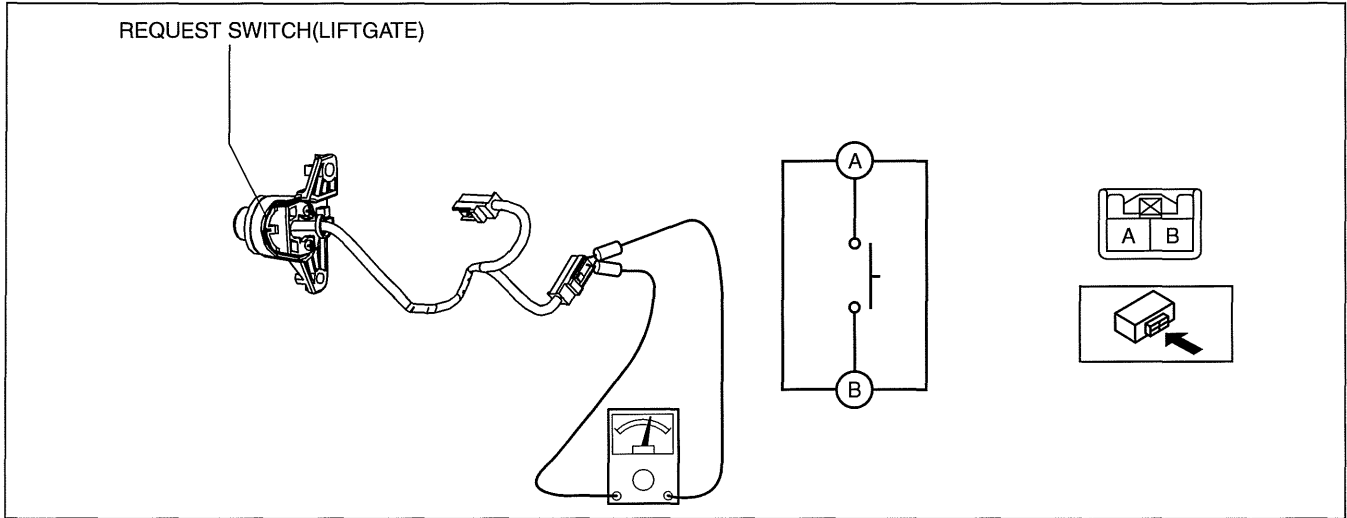
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- If not as indicated in the table, replace the front outer handle.

SECURITY AND LOCKS

Liftgate

1. Disconnect the negative battery cable.
2. Remove the inboard light. (See 09-18-40 INBOARD LIGHT REMOVAL/INSTALLATION.)
3. Remove the request switch (liftgate). (See 09-14-73 REQUEST SWITCH REMOVAL/INSTALLATION.)
4. Verify the continuity of request switch terminals A and B.



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5. Verify that the continuity is as indicated in the table.

○—○ CONTINUITY

REQUEST SWITCH	TERMINAL	
	A	B
PUSH (ON)	○—○	○—○
NOT PUSH (OFF)		

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- If not as indicated in the table, replace the request switch.

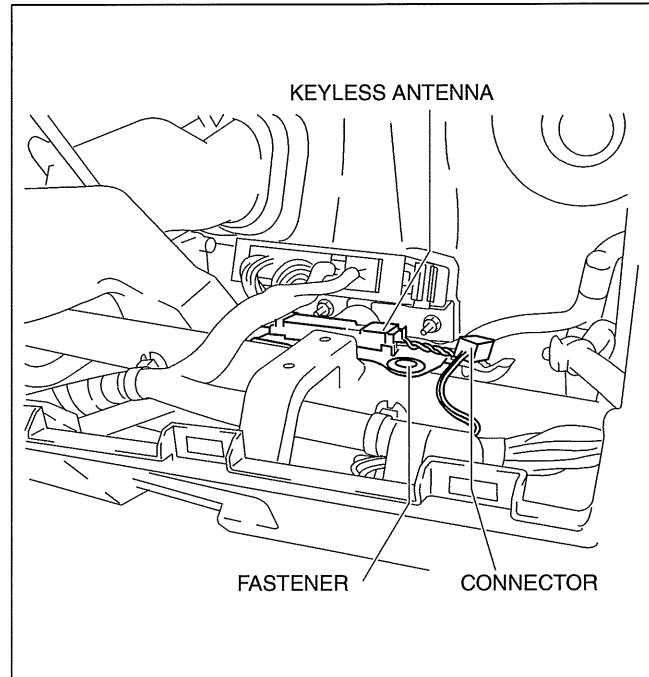
SECURITY AND LOCKS

KEYLESS ANTENNA REMOVAL/INSTALLATION

id091400514900

Vehicle Interior, Front

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (4) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
3. Remove the fastener.
4. Disconnect the connector.
5. Remove the keyless antenna.
6. Install in the reverse order of removal.



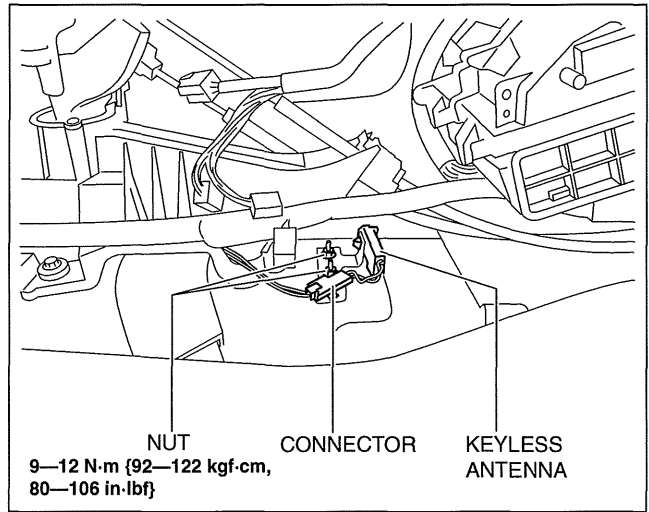
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Vehicle Interior, Center

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (8) Rear heat duct (1). (See 07-11-18 REAR HEAT DUCT REMOVAL/INSTALLATION.)

SECURITY AND LOCKS

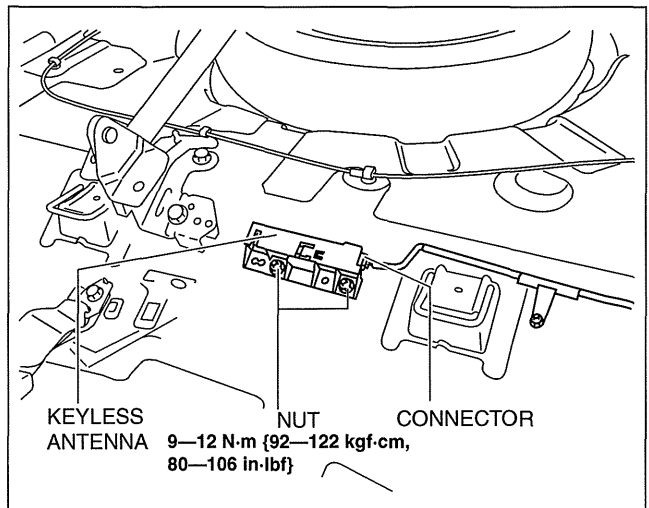
3. Disconnect the connector.
4. Remove the nuts.
5. Remove the keyless antenna.
6. Install in the reverse order of removal.



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Vehicle Interior, Rear

1. Disconnect the negative battery cable.
2. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the nuts.
5. Remove the keyless antenna.
6. Install in the reverse order of removal.



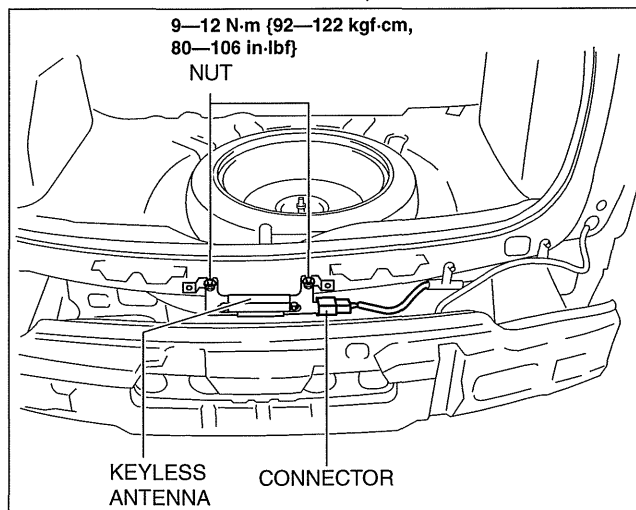
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SECURITY AND LOCKS

Vehicle Exterior, Rear

1. Disconnect the negative battery cable.
2. Remove the rear combination light. (See 09-18-32 REAR COMBINATION LIGHT REMOVAL/INSTALLATION)
3. Remove the rear bumper. (See 09-10-30 REAR BUMPER REMOVAL/INSTALLATION.)
4. Remove the nuts.
5. Disconnect the connector.
6. Remove the keyless antenna.
7. Install in the reverse order of removal.

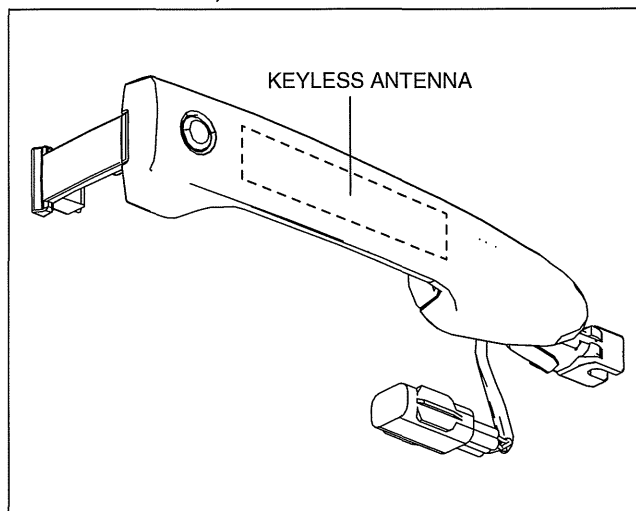


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Vehicle Exterior, Driver's Door/Passenger's Door

Note

- The keyless antenna (vehicle exterior, driver's door/passenger's door) is built into the front outer handle. (See 09-14-8 FRONT OUTER HANDLE REMOVAL/INSTALLATION.)



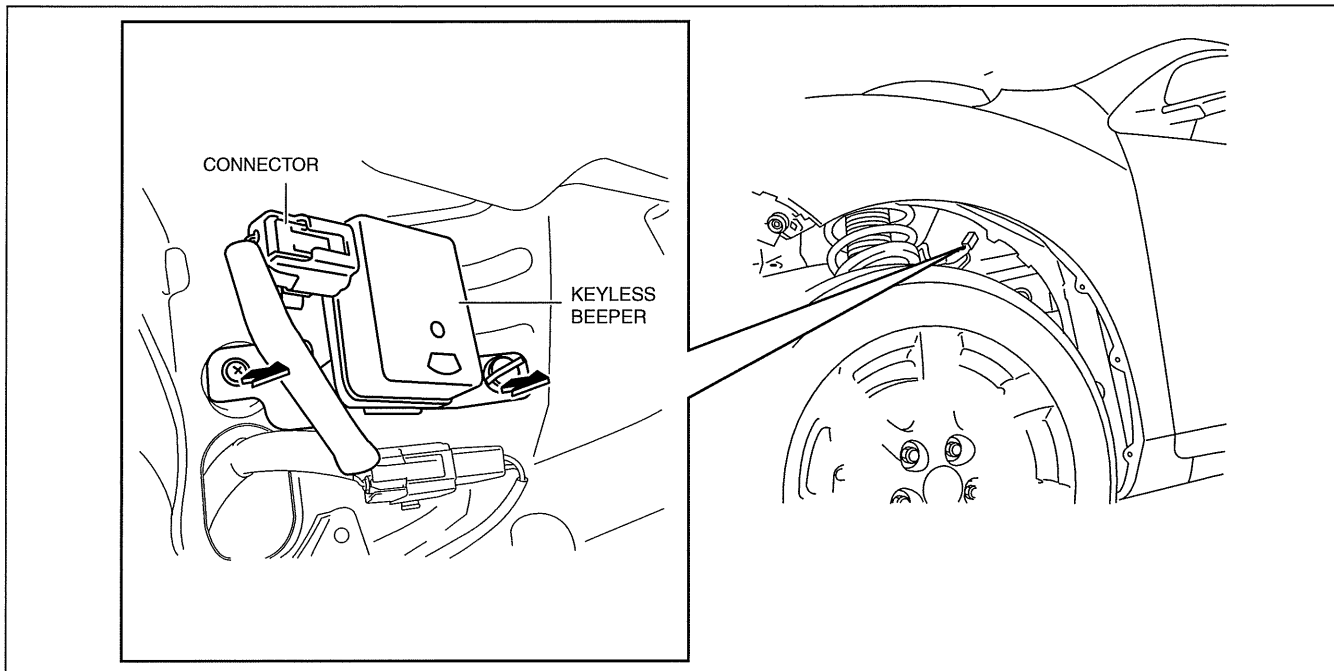
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SECURITY AND LOCKS

KEYLESS BEEPER REMOVAL/INSTALLATION

id091400515000

1. Disconnect the negative battery cable.
2. Slightly bend back the front mudguard. (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Disconnect the connector.



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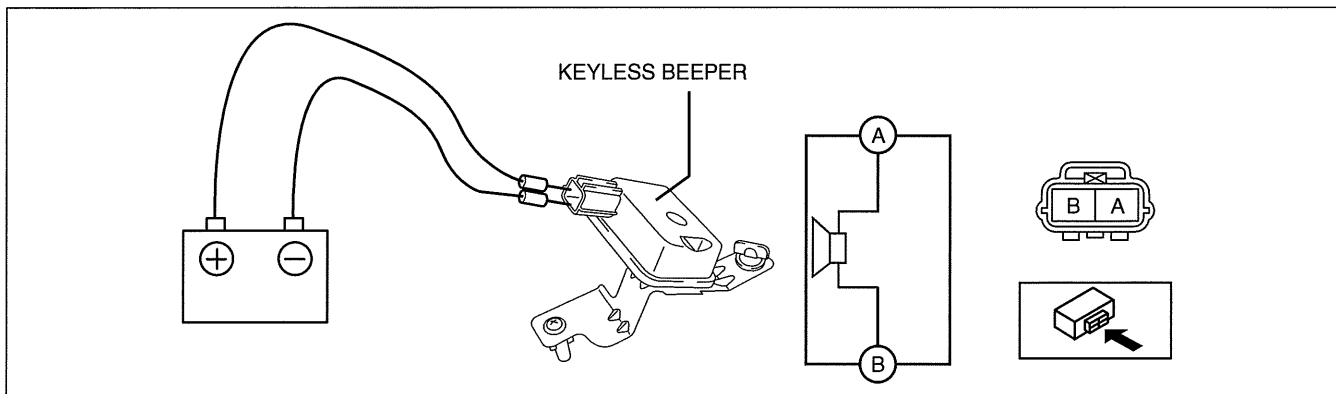
09-14

4. Remove the keyless beeper in the direction of the arrow shown in the figure.
5. Install in the reverse order of removal.

KEYLESS BEEPER INSPECTION

id091400515100

1. Disconnect the negative battery cable.
2. Remove the front mudguard. (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Remove the keyless beeper. (See 09-14-79 KEYLESS BEEPER REMOVAL/INSTALLATION.)
4. When applying battery positive voltage to the keyless beeper, verify that an electromagnetic sound is heard.
 - If the sound cannot be verified, replace the keyless beeper.



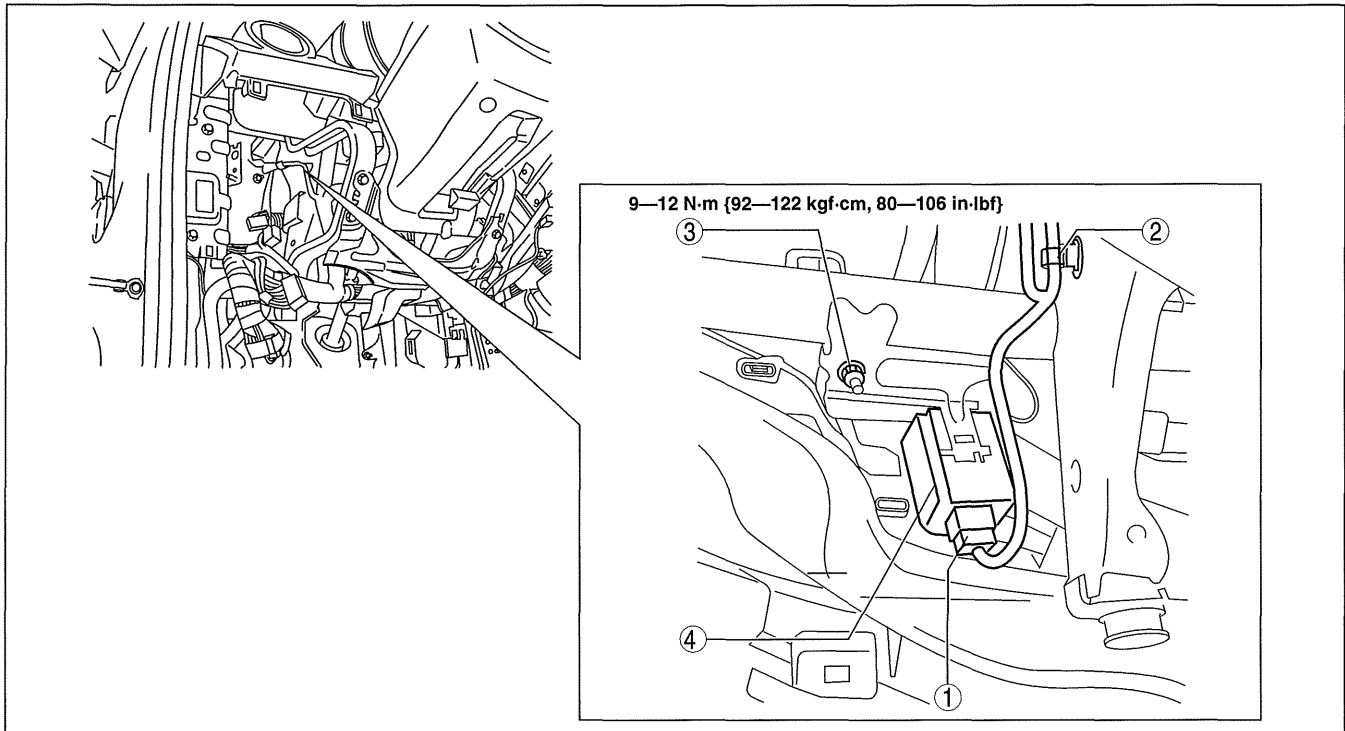
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SECURITY AND LOCKS

KEYLESS RECEIVER REMOVAL/INSTALLATION

id091400514300

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Remove the lower panel. (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
5. Remove in the order indicated in the table.



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1	Connector
2	Clip

3	Nut
4	Keyless receiver

6. Install in the reverse order of removal.

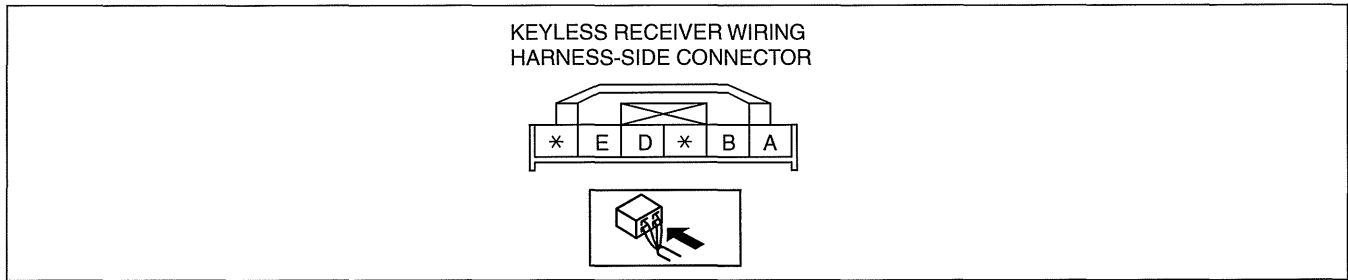
SECURITY AND LOCKS

KEYLESS RECEIVER INSPECTION [KEYLESS ENTRY SYSTEM]

id0914005144b3

1. Remove the following parts:
 - (1) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
2. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
3. Remove the lower panel. (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
4. Measure the voltage according to the terminal voltage table.
 - If the voltages cannot be verified as indicated in the terminal voltage table, inspect the parts under "Inspection item (s)".
 - If the system does not work normally even though the parts or related wiring harnesses do not have any malfunction, replace the keyless receiver.
5. Disconnect the negative battery cable.

Terminal Voltage Table (Reference)



09-14

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Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
A	Power supply	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> • ROOM 15 A fuse • Battery
B	IG1	METER 15 A fuse	Switch the ignition to ON	B+	<ul style="list-style-type: none"> • METER 15 A fuse • Battery
			Switch the ignition to Off	1.0 or less	
D	DATA	BCM	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		BCM
E	GND	Body ground	Under any condition	1.0 or less	Ground

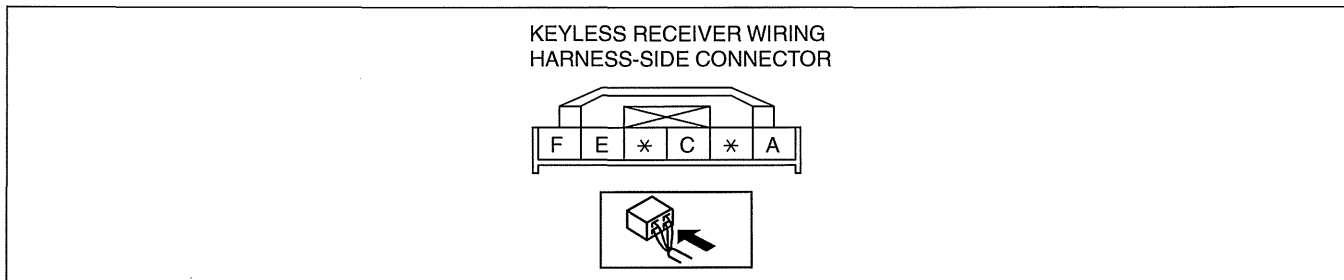
SECURITY AND LOCKS

KEYLESS RECEIVER INSPECTION [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0914005144z3

1. Remove the following parts:
 - (1) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
2. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
3. Remove the lower panel. (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
4. Measure the voltage according to the terminal voltage table.
 - If the voltages cannot be verified as indicated in the terminal voltage table, inspect the parts under "Inspection item (s)".
 - If the system does not work normally even though the parts or related wiring harnesses do not have any malfunction, replace the keyless receiver.
5. Disconnect the negative battery cable.

Terminal Voltage Table (Reference)



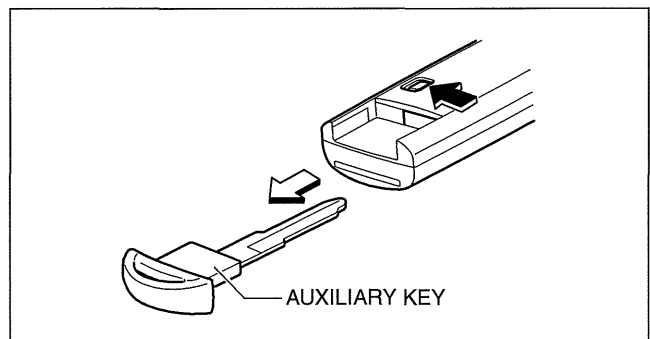
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Terminal	Signal name	Connected to	Measurement condition	Voltage (V)/	Inspection item (s)
A	Power supply	Keyless control module	Under any condition	B+	Keyless control module
C	DATA	Keyless control module	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		Keyless control module
E	GND	Body ground	Under any condition	1.0 or less	Ground
F	DATA	Keyless control module	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		Keyless control module

ADVANCED KEY DISASSEMBLY/ASSEMBLY

id091400515600

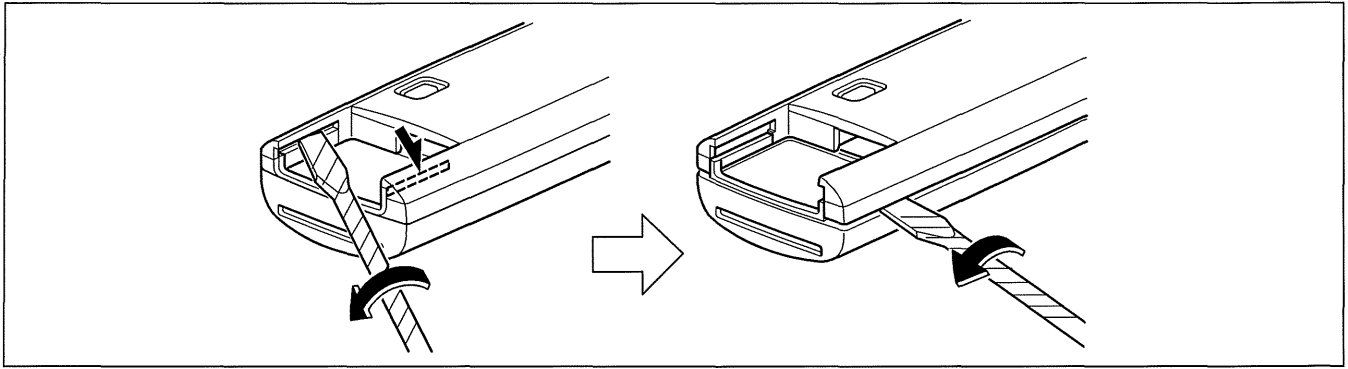
1. Pull out the auxiliary key.



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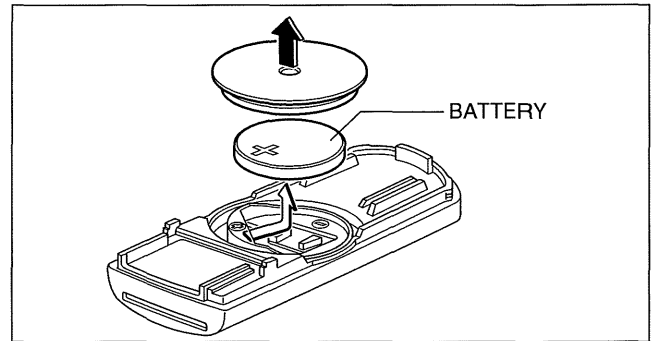
SECURITY AND LOCKS

2. Insert a tape-wrapped flathead screwdriver into the notch in the advanced key and rotate it in the direction shown in the figure to open the advanced key.



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3. Remove the battery.

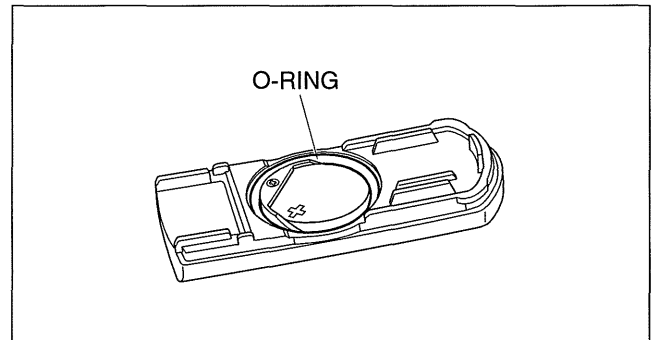


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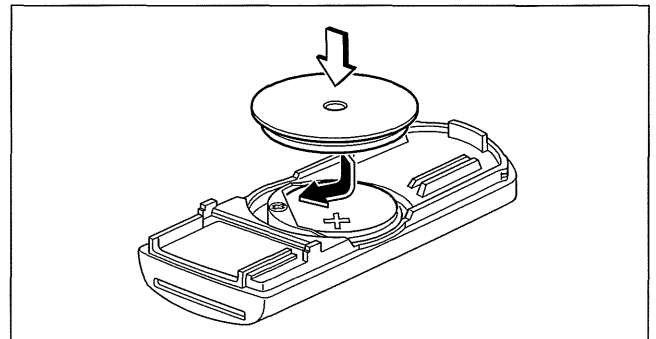
Note

If the O-ring has come off, put it back in place before installing the battery.



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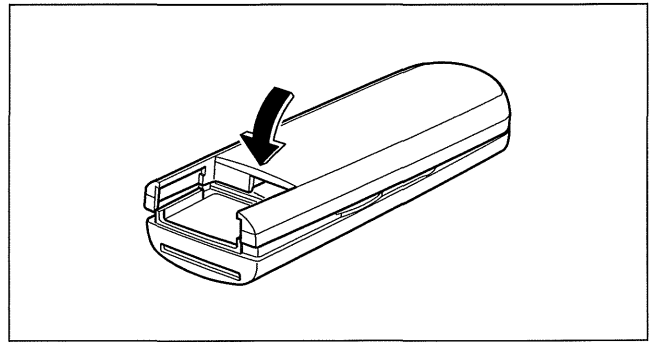
4. Install the new battery (CR1620) with the negative pole facing down.



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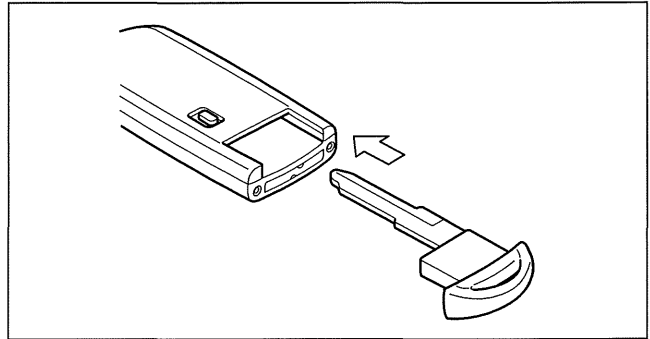
SECURITY AND LOCKS

5. Align the upper and lower covers and close the transmitter.



abatjw0000945

6. Insert the auxiliary key.



adejjw00001705

ADVANCED KEY ID CODE REGISTRATION

id091400515800

Note

- For a key that can start the engine, or no advanced key, the M-MDS can be used to force the ignition to switch is IG ON. (See 09-21-10 FORCED IGNITION ON [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)

1. Fully lower the driver-side door glass.
2. Connect the M-MDS to the DLC-2.
3. Set the M-MDS outside the vehicle with its cable passing through the door glass opening.

Caution

- **Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.**

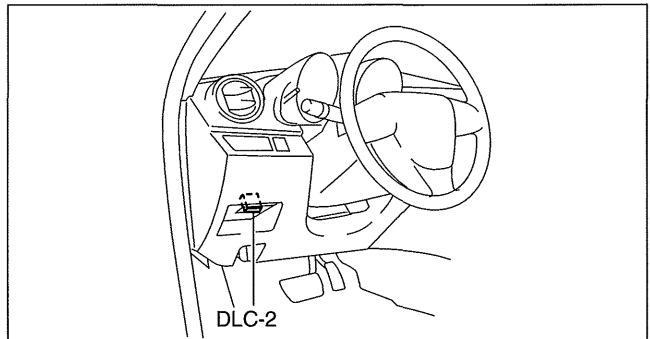
4. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- Using an IDS (laptop PC)
 1. Select "Body".
 2. Select "Security".
 3. Select "PATS Functions".
- Using a PDS (Pocket PC):
 1. Select "All Tests and Calibrations".
 2. Select "PATS Functions".

5. Select the following from the screen menu.

1. Select "Program Additional Advanced Key".

6. Perform the security access according to the directions on the M-MDS screen.



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SECURITY AND LOCKS

CLEARING ADVANCED KEY

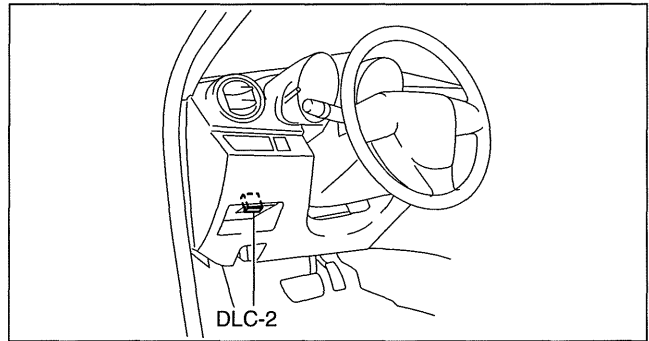
id091400515700

1. Fully lower the driver-side door glass.
2. Connect the M-MDS to the DLC-2.
3. Pull out the M-MDS cable from the door glass opening and set the M-MDS outside the vehicle.

Caution

- Protect the cable and body contact area with a clean rag, otherwise they could be damaged.

4. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Security".
 3. Select "PATS Functions".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
 2. Select "PATS Functions".
5. Then, select items from the screen menu in the following order.
 1. Select "Advanced Key Code Erase and Program".
6. Perform the security access according to the directions on the M-MDS screen.

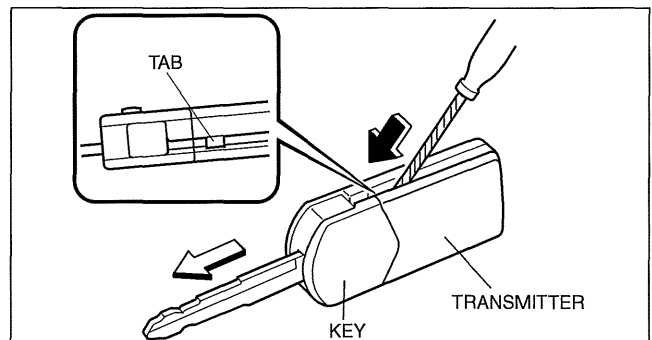


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TRANSMITTER DISASSEMBLY/ASSEMBLY

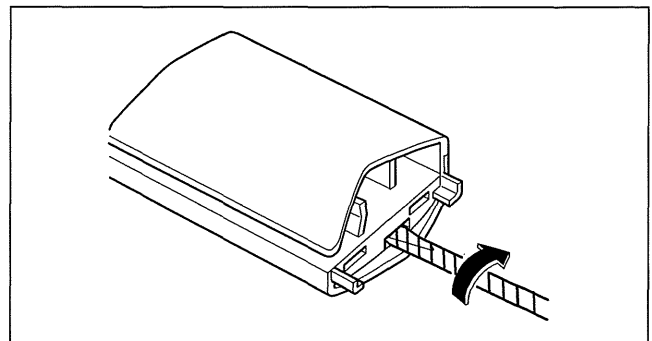
id091400514500

1. Insert a flathead screwdriver into the transmitter notch and remove the key from the transmitter by pressing the tab.



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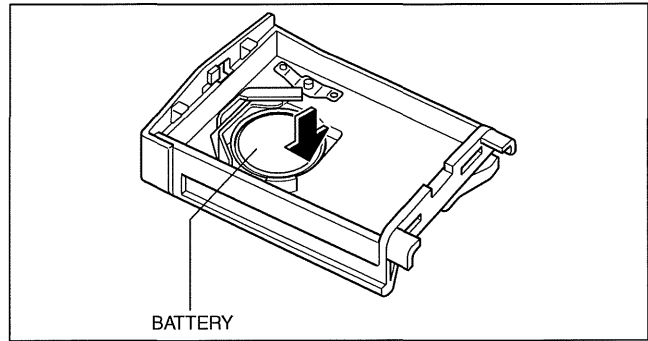
2. Insert a flathead screwdriver into the transmitter notch and open the transmitter.



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SECURITY AND LOCKS

- Remove the battery by pressing it in the direction of the arrow shown in the figure.



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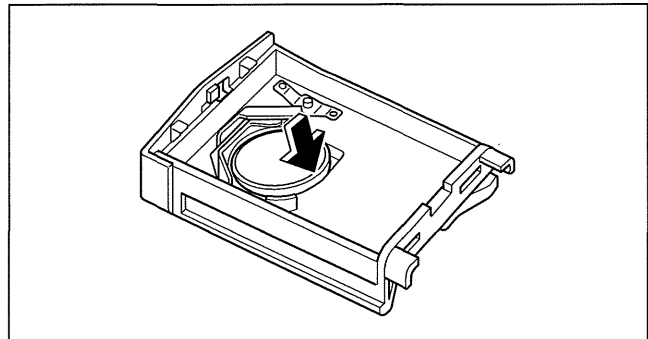
- Install the new battery (CR1620) with the plus pole facing down.
- Align the upper and lower covers and close the transmitter.

Battery type

Lithium battery CR1620

Battery life

Approx. 2 years (when used approx. 10 times/day)

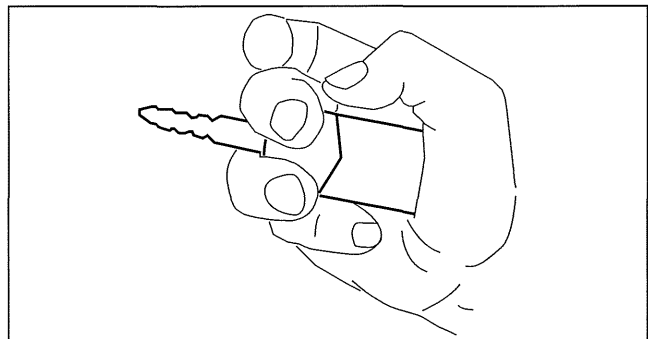


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- Install the key to the transmitter.

Note

- When connecting the key to the transmitter, grip the key and the transmitter as shown in the figure and connect until a click sound is heard.
- If the key is not completely connected to the transmitter, they may come apart.



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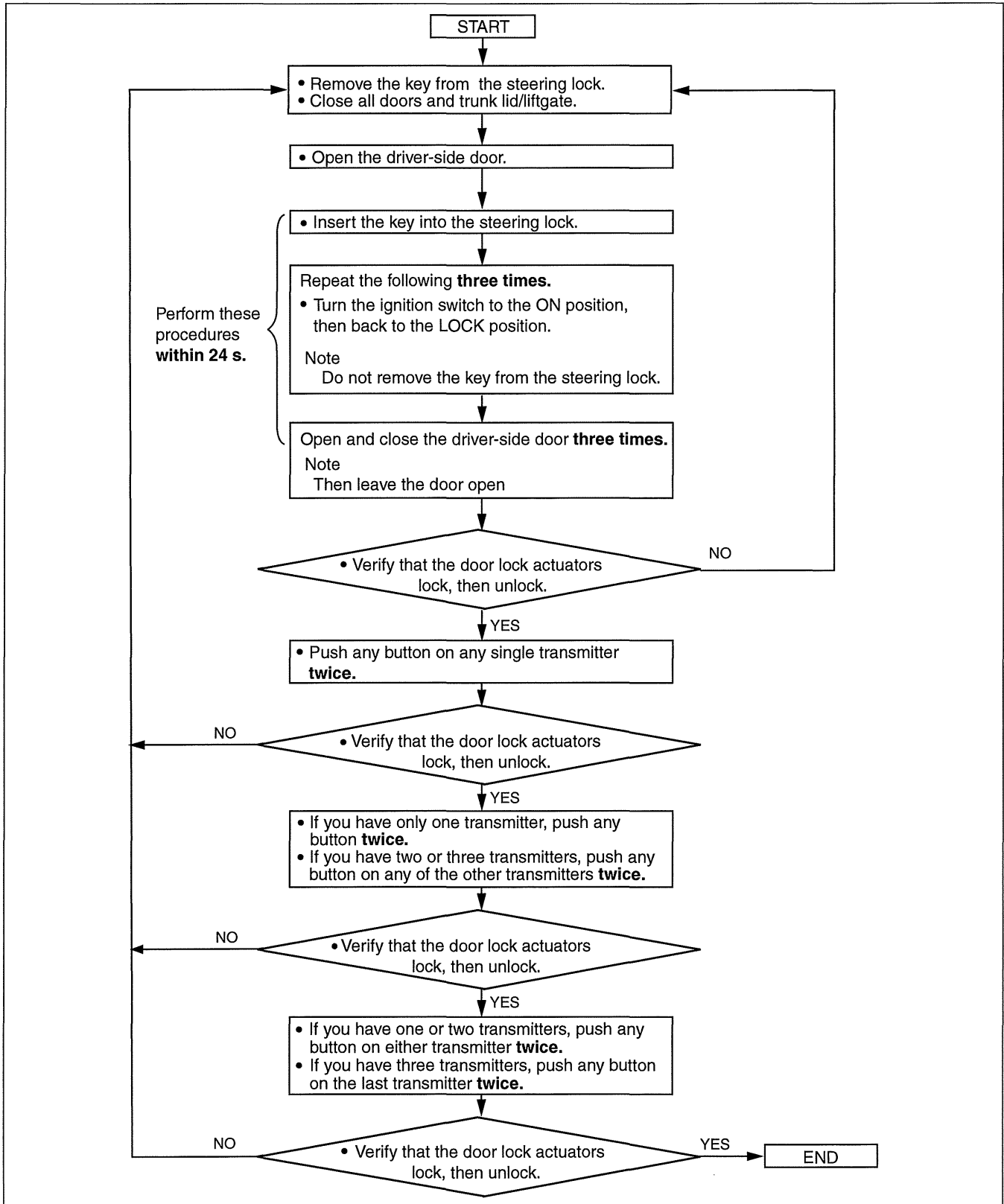
SECURITY AND LOCKS

TRANSMITTER ID CODE REGISTRATION

id091400514600

Note

- Verify that the other transmitter is not being operated around the servicing area while updating the ID code.
- After completing the work, remove the key from the steering lock and verify that all the door lock/unlock operation using the transmitter is correct.



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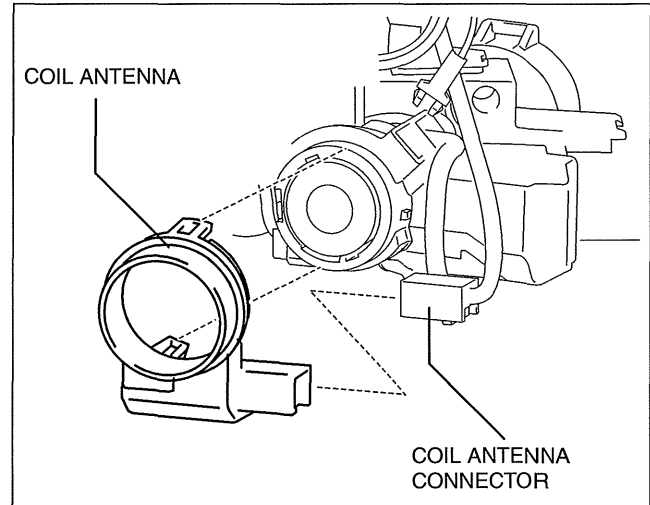
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SECURITY AND LOCKS

COIL ANTENNA REMOVAL/INSTALLATION

id091400515900

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Remove the key cylinder. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4. Disconnect the coil antenna connector.
5. Remove the screw.
6. Detach the coil antenna hooks and remove the coil antenna from the steering lock.
7. Install in the reverse order of removal.



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IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM]

id0914005147b3

Foreword

- When replacing immobilizer system-related parts or programming an additional key, program the immobilizer system-related parts so that the system operates normally. For immobilizer system-related parts programming, select the programming procedures according to the service. (See 09-14-88 Selection of Procedure for Immobilizer System-Related Parts Programming.)

Caution

- **The engine cannot be started if any step or procedure for each service operation is skipped. Perform all procedures in the order of the steps.**
- **If any metallic or magnetic object is near the key, communication between the key and the vehicle may be obstructed, resulting in a failure to program the immobilizer system-related parts. Remove any metallic or magnetic objects, such as key holders, from the key when programming immobilizer system-related parts.**
- **If any of the following devices are inside the vehicle, programming of immobilizer system-related parts may fail. Do not bring any of the following devices or similar products inside the vehicle when programming immobilizer system-related parts.**
 - M-MDS
 - Personal computer
 - Devices that can send/receive radio waves
- **If the engine is started during immobilizer system-related parts programming, the programming mode cancels. Therefore, do not start the engine unless indicated in the procedure. Repeat the procedure from the beginning if the engine is started during the immobilizer system-related parts programming.**

Note

- The "Valid key" referred to in this manual indicates the key that can start the engine.
- Two or more key ID numbers must be programmed for the engine to start.
- A maximum of eight key ID numbers can be programmed for one vehicle.
- The number of programmed key ID numbers can be verified using the M-MDS.
- Do not select any screen menu other than the ones indicated in the procedure during M-MDS operation.

Selection of Procedure for Immobilizer System-Related Parts Programming

1. Verify that the room fuse is equipped.
2. Select the applicable programming procedure from the service content of the immobilizer system-related parts.

SECURITY AND LOCKS

Immobilizer System-Related Parts Service and Programming Procedure Table

No.	Service	Programming procedure
1	Additional key programming	Have two or more valid keys (See 09-14-89 No.1 Additional Key Programming Procedure (Using Two Valid Keys).)
2		Have one valid key or none (See 09-14-90 No. 2 Additional Key Programming Procedure (Using the M-MDS).)
3	Additional key programming procedure setting	Disable programming using valid keys (See 09-14-92 No.3 Additional Key Programming Procedure Changing.)
		Enable programming using valid keys
4	Programming due to PCM replacement	(See 09-14-93 No.4 Programming Procedure Due to PCM Replacement.)
5	Programming due to instrument cluster replacement	(See 09-14-94 No.5 Programming Procedure Due to Instrument Cluster Replacement.)
6	Programming due to simultaneous replacement of immobilizer system-related parts <ul style="list-style-type: none"> • PCM • Instrument cluster 	(See 09-14-95 No.6 Programming Procedure Due to Simultaneous Replacement of Immobilizer System-related Parts (PCM and Instrument Cluster).)
7	Programming due to coil antenna replacement	Programming of immobilizer system-related parts is not necessary

M-MDS Connecting Procedure

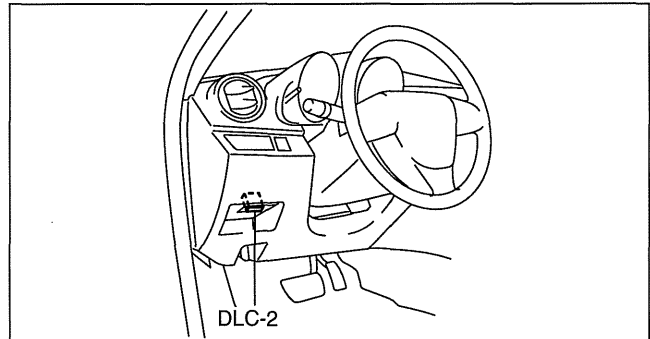
Note

- Do not place the M-MDS in the vehicle while programming the immobilizer system.

1. Fully lower the door glass.
2. Connect the M-MDS to the DLC-2.
3. Place the M-MDS outside the vehicle.

Caution

- **Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.**



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09-14

No.1 Additional Key Programming Procedure (Using Two Valid Keys)

Caution

- **The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.**

Conditions

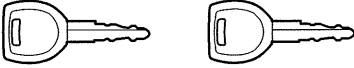

- Have two or more valid keys.

Note

- If a key ID number cannot be programmed and DTC 15 is displayed, the maximum number of programmed keys may have been reached. Verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.
- If "Customer spare key programming disable" is selected, perform additional key programming using the M-MDS. (See 09-14-90 No. 2 Additional Key Programming Procedure (Using the M-MDS).)

SECURITY AND LOCKS

Procedure

VALID KEY	 KEY 1 KEY 2
KEY FOR RESISTRATION	 KEY 3

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Step	Procedure	Action after procedure	
1	LAUNCH PROGRAMMING MODE <ol style="list-style-type: none"> 1. Switch the ignition to ON using key 1. 2. After verifying that the security light illuminates for approx. 3 s and turns off, switch the ignition off within approx. 4 s using key 1. 3. Remove key 1. 4. Switch the ignition to ON using key 2. 5. After verifying that the security light illuminates for approx. 3 s and turns off, switch the ignition off within approx. 4 s using key 2. 6. Remove key 2. 	Go to the next step.	
2	PERFORM ADDITIONAL KEY PROGRAMMING <ol style="list-style-type: none"> 1. Switch the ignition to ON using key 3. 2. Verify that the security light illuminates for approx. 3 s, and then turns off. 3. Remove key 3. 4. Are there other keys to be programmed? 	Yes	Go back to Step 1.
		No	Go to the next step.
3	VERIFY THAT ANY KEY IS PROGRAMMED <ul style="list-style-type: none"> • Verify that the engine can start and run for 5 s or more using all the programmed keys. <p>Note</p> <ul style="list-style-type: none"> • When verifying that the engine starts, wait at least 5 s or more before starting the engine using the next key. 	Procedure is completed	

No. 2 Additional Key Programming Procedure (Using the M-MDS)

Caution

- **The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.**

Conditions

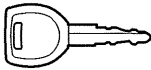
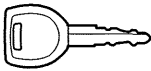
- There is only one valid key, or none.

Note

- If a key ID number cannot be programmed and DTC 15 is displayed, the maximum number of programmed keys may have been reached. Verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.

SECURITY AND LOCKS

Procedure

VALID KEY	 KEY 1
KEY FOR RESISTRATION	 KEY 1

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Step	Procedure		Action after procedure
1	<p>PERFORM ADDITIONAL KEY PROGRAMMING</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-89 M-MDS Connecting Procedure) 2. Switch the ignition to ON using key 1. <p>Note</p> <ul style="list-style-type: none"> • Although the security light starts flashing and DTC 15 is displayed after approx. 1 min, this does not indicate an improper procedure. Continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select “Body”. 2. Select “Security”. 3. Select “PATS Functions”. — Using a PDS (Pocket PC): <ol style="list-style-type: none"> 1. Select “All Tests and Calibrations”. 2. Select “PATS Functions”. 4. Then, select an item from the screen menu. <p>item</p> <ul style="list-style-type: none"> • Program Additional Ignition Key. 5. Perform the security access according to the directions on the M-MDS screen. <p>Note</p> <ul style="list-style-type: none"> • After executing the above menu, “This operation is successful” is displayed. This indicates that the programming of the key that currently has the ignition switched on is completed. <ol style="list-style-type: none"> 6. After verifying that the PATS function menu is displayed again on the M-MDS screen, switch the ignition off. 7. Remove key 1. 8. Are there other keys to be programmed? 	Yes	<p>Change the key and repeat Step 1.</p> <p>Note</p> <ul style="list-style-type: none"> • Additional key programming can be performed using the procedure in No.1 Additional Key Programming Procedure (Using Two Valid Keys).
		No	<p>Go to the next step.</p>
2	<p>CLOSE THE M-MDS</p> <ol style="list-style-type: none"> 1. After verifying that the PATS function menu is displayed again on the M-MDS screen, select “Finish (this menu)”. 2. Switch the ignition to off. 		<p>Go to the next step.</p>
3	<p>VERIFY THAT ANY KEY IS PROGRAMMED</p> <p>Verify that the engine can be started with the programmed key.</p> <p>Note</p> <ul style="list-style-type: none"> • When verifying that the engine starts, wait at least 5 s or more before starting the engine using the next key. 		<p>Procedure is completed</p>

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No.3 Additional Key Programming Procedure Changing

Note

- This procedure is performed for disabling the No.1 Additional Key Programming Procedure (Using Two Valid Keys).
- The setting is “Customer spare key programming enable” when the vehicle is new or the keyless control module is replaced with a new one.

Procedure

Step	Procedure	Action after procedure
1	<p>CHANGE CUSTOMER SPARE KEY PROGRAMMING PROCEDURE</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-89 M-MDS Connecting Procedure.) 2. Switch the ignition ON using a key (the key can be either the valid key or an unprogrammed key). <p>Note</p> <ul style="list-style-type: none"> • If an unprogrammed key is used, the security light starts flashing and DTC 15 is displayed after approx. 1 min. However, this does not indicate an improper procedure. Continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select “Body”. 2. Select “Security”. 3. Select “PATS Functions”. — Using a PDS (Pocket PC): <ol style="list-style-type: none"> 1. Select “All Tests and Calibrations”. 2. Select “PATS Functions”. 4. Select either of the following from the M-MDS menu to change the additional key programming procedure. <ul style="list-style-type: none"> — When “Customer Spare Key Programming Enable” is selected: The additional key programming procedure using valid keys is enabled. — When “Customer Spare Key Programming Disable” is selected: The additional key programming procedure using valid keys is disabled. 5. Perform the security access according to the directions on the M-MDS screen. 6. After verifying that the PATS function menu is displayed again on the M-MDS screen, select “Finish (this menu)”. 7. Switch the ignition to off. 	<p>Procedure is completed</p>

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No.4 Programming Procedure Due to PCM Replacement

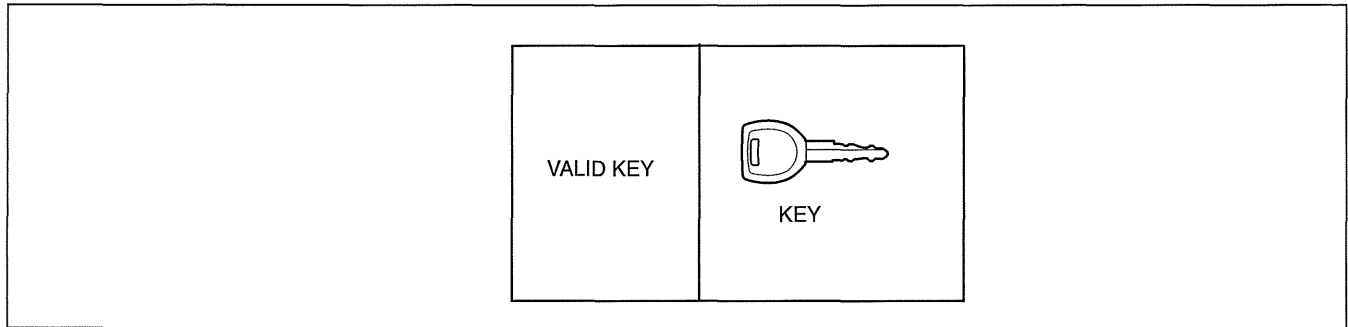
Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

Conditions

- Have two or more valid keys.

Procedure



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Step	Procedure	Action after procedure	
1	REPLACE PCM Refer to PCM removal/installation to perform PCM replacement and configuration. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)	Go to the next step.	
2	PERFORM PARAMETER RESET <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-89 M-MDS Connecting Procedure.) 2. Turn the ignition switch to the ON position using a key (The key can be either the valid key) <p>Note</p> <ul style="list-style-type: none"> • Although the security light remains illuminated and DTC 23 is displayed after approx. 1 min, continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select "Body". 2. Select "Security". 3. Select "PATS Functions". — Using a PDS (Pocket PC): <ol style="list-style-type: none"> 1. Select "All Tests and Calibrations". 2. Select "PATS Functions". 4. Then, select an item from the screen menu. <p>item</p> <ul style="list-style-type: none"> • Parameter Reset 5. Perform the security access according to the directions on the M-MDS screen. 6. Select the replaced parts "PCM" according to the directions on the M-MDS screen. <p>Caution</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. 7. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 8. Switch the ignition to off. 9. Switch the ignition to ON. 10. Verify that the security light illuminates for approx. 3 s, and then turns off. 11. Switch the ignition to off. 	Go to the next step.	
3	VERIFY THAT THE KEY IS PROGRAMMED TO THE PCM <ol style="list-style-type: none"> 1. Verify that the engine can be started with all the keys. 2. Can the engine be started? 	Yes	Procedure is completed
		No	Perform the corresponding DTC inspection to repair the malfunctioning part.

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No.5 Programming Procedure Due to Instrument Cluster Replacement

Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

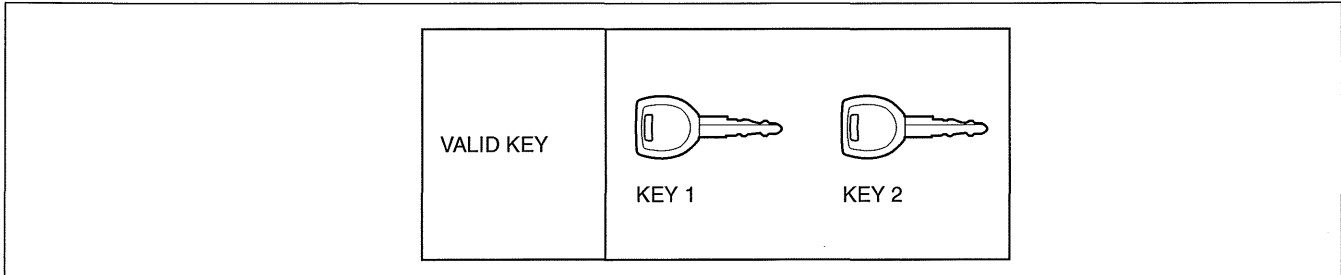
Note

- Since two or more keys need to be programmed to start the engine, program two or more keys after the replacement.

Conditions

- Have two or more keys to be programmed after the replacement.

Procedure



am6zzw0000265

Step	Procedure	Action after procedure
1	<p>REPLACE INSTRUMENT CLUSTER. Refer to instrument cluster removal/installation to perform instrument cluster replacement and configuration. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)</p>	Go to the next step.
2	<p>PERFORM PARAMETER RESET</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-89 M-MDS Connecting Procedure.) 2. Turn the ignition switch to the ON position using a key (The key can be either the valid key) <p>Note</p> <ul style="list-style-type: none"> • Although the security light remains illuminated and DTC 15 is displayed after approx. 1 min, continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select “Body”. 2. Select “Security”. 3. Select “PATS Functions”. — Using a PDS (Pocket PC): <ol style="list-style-type: none"> 1. Select “All Tests and Calibrations”. 2. Select “PATS Functions”. 4. Then, select an item from the screen menu. <p>item</p> <ul style="list-style-type: none"> • Parameter Reset 5. Perform the security access according to the directions on the M-MDS screen. 6. Select the replaced parts “IC” according to the directions on the M-MDS screen. <p>Caution</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. <ol style="list-style-type: none"> 7. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
3	<p>CLEAR IGNITION KEY ID NUMBERS</p> <ol style="list-style-type: none"> 1. Select “Ignition Key Code Erase and Program” from the M-MDS screen menu. 2. Clear the ignition key code according to the directions on the M-MDS. 	Go to the next step.

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Step	Procedure	Action after procedure	
4	PERFORM IGNITION KEY ID NUMBER PROGRAMMING 1. Program two keys according to the directions on the M-MDS. 2. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 3. Switch the ignition to off. 4. Switch the ignition to ON. 5. Verify that the security light illuminates for approx. 3 s , and then turns off. 6. Switch the ignition to off. 7. Disconnect the M-MDS from the DLC-2.	Go to the next step.	
5	VERIFY THAT ANY KEY IS PROGRAMMED 1. Verify that the engine can be started with all the keys. 2. Can the engine be started?	Yes	Procedure is completed
		No	Perform the corresponding DTC inspection to repair the malfunctioning part.

No.6 Programming Procedure Due to Simultaneous Replacement of Immobilizer System-related Parts (PCM and Instrument Cluster)

Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

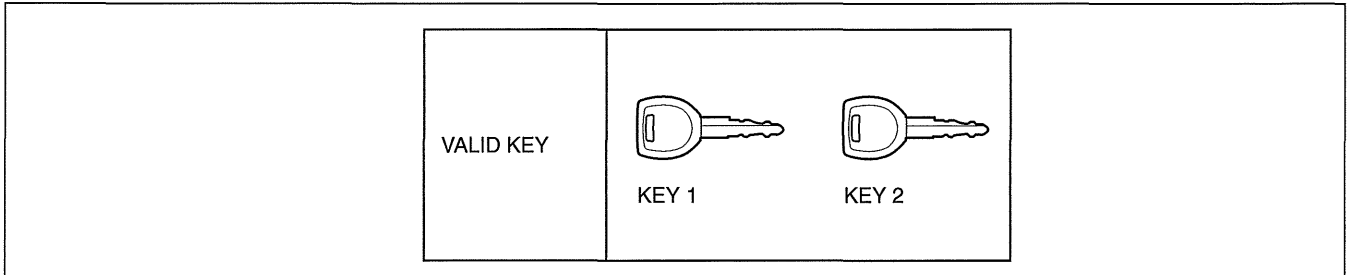
Note

- Since two or more keys need to be programmed to start the engine, program two or more keys after the replacement.

Conditions

- Have two or more keys to be programmed after the replacement.

Procedure



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Step	Procedure	Action after procedure
1	REPLACE INSTRUMENT CLUSTER. Refer to instrument cluster removal/installation to perform instrument cluster replacement and configuration. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)	Go to the next step.
2	REPLACE PCM Refer to PCM removal/installation to perform PCM replacement and configuration. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)	Go to the next step.

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Step	Procedure	Action after procedure	
3	<p>PERFORM PARAMETER RESET</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-89 M-MDS Connecting Procedure.) 2. Switch the ignition to ON using a valid key. <p>Note</p> <ul style="list-style-type: none"> • Although the security light remains illuminated and DTC 15 is displayed after approx. 1 min, continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select “Body”. 2. Select “Security”. 3. Select “PATS Functions”. — Using a PDS (Pocket PC): <ol style="list-style-type: none"> 1. Select “All Tests and Calibrations”. 2. Select “PATS Functions”. 4. Then, select an item from the screen menu. <p>item</p> <ul style="list-style-type: none"> • Parameter Reset 5. Perform the security access according to the directions on the M-MDS screen. 6. Select the replaced parts according to the directions on the M-MDS screen. <ul style="list-style-type: none"> — If the instrument cluster is replaced: Select “IC”. — If the PCM is replaced: Select “PCM”. <p>Caution</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. 7. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.	
4	<p>CLEAR IGNITION KEY ID NUMBERS</p> <ol style="list-style-type: none"> 1. Select “Ignition Key Code Erase and Program” from the M-MDS screen menu. 2. Clear the ignition key code according to the directions on the M-MDS. 	Go to the next step.	
5	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ol style="list-style-type: none"> 1. Program two keys according to the directions on the M-MDS. 2. After verifying that the PATS function menu is displayed again on the M-MDS screen, select “Finish (this menu)”. 3. Switch the ignition to off. 4. Switch the ignition to ON. 5. Verify that the security light illuminates for approx. 3 s, and then turns off. 6. Switch the ignition to off. 7. Disconnect the M-MDS from the DLC-2. 	Go to the next step.	
6	<p>VERIFY THAT ANY KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Verify that the engine can be started with all the keys. 2. Can the engine be started? 	Yes	Procedure is completed
		No	Perform the corresponding DTC inspection to repair the malfunctioning part.

SECURITY AND LOCKS

IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0914005147z3

Note

- For a key that can start the engine, or no advanced key, the M-MDS can be used to force the ignition to switch to IG ON.

Foreword

- When replacing immobilizer system-related parts or programming an additional key, program the immobilizer system-related parts so that the system operates normally. For immobilizer system-related parts programming, select the programming procedures according to the service. (See 09-14-97 Selection of Procedure for Immobilizer System-Related Parts Programming.)

Caution

- **The engine cannot be started if any step or procedure for each service operation is skipped. Perform all procedures in the order of the steps.**
- **If any metallic or magnetic object is near the key, communication between the key and the vehicle may be obstructed, resulting in a failure to program the immobilizer system-related parts. Remove any metallic or magnetic objects, such as key holders, from the key when programming immobilizer system-related parts.**
- **If any of the following devices are inside the vehicle, programming of immobilizer system-related parts may fail. Do not bring any of the following devices or similar products inside the vehicle when programming immobilizer system-related parts.**
 - Advanced key
 - M-MDS
 - Personal computer
 - Devices that can send/receive radio waves
- **If the engine is started during immobilizer system-related parts programming, the programming mode cancels. Therefore, do not start the engine unless indicated in the procedure. Repeat the procedure from the beginning if the engine is started during the immobilizer system-related parts programming.**
- **If an advanced key is near the vehicle during immobilizer system-related parts programming, it may be programmed mistakenly. Keep advanced keys 1 m away from the vehicle unless indicated in the procedure.**

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Note

- The “Valid key” or “Valid advanced key” referred to in this manual indicates the key that can start the engine.
- Two or more key ID numbers must be programmed for the engine to start.
- A maximum of eight key ID numbers can be programmed for one vehicle.
- The number of programmed key ID numbers can be verified using the M-MDS.
- Do not select any screen menu other than the ones indicated in the procedure during M-MDS operation.

Selection of Procedure for Immobilizer System-Related Parts Programming

1. Verify that the ROOM fuse, EGI fuse, STEERING LOCK fuse are equipped.
2. Select the applicable programming procedure from the service content of the immobilizer system-related parts.

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Immobilizer System-Related Parts Service and Programming Procedure Table

No.	Service	Programming procedure
1	Additional key programming Have one valid key or valid advanced key	(See 09-14-98 No.1 Additional Key Programming Procedure (Using the M-MDS).)
2	Programming due to PCM replacement	(See 09-14-101 No.2 Programming Procedure After PCM Replacement.)
3	Programming due to steering lock unit replacement	(See 09-14-103 No.3 Programming Procedure After Steering Lock Unit Replacement.)
4	Programming due to keyless control module replacement	(See 09-14-105 No.4 Programming Procedure After Keyless Control Module Replacement.)
5	Programming due to simultaneous replacement of immobilizer system-related parts <ul style="list-style-type: none"> • PCM • Keyless control module • Steering lock unit 	(See 09-14-109 No.5 Programming Procedure After Simultaneous Replacement of Immobilizer System-related Parts (PCM, Keyless Control Module, Steering Lock Unit, and Key).)
6	Key replacement	(See 09-14-113 No.6 Replacing Only Key.)
7	Programming due to coil antenna replacement	Programming of immobilizer system-related parts is not necessary
8	Programming after keyless receiver replacement	Programming of immobilizer system-related parts is not necessary

M-MDS Connecting Procedure

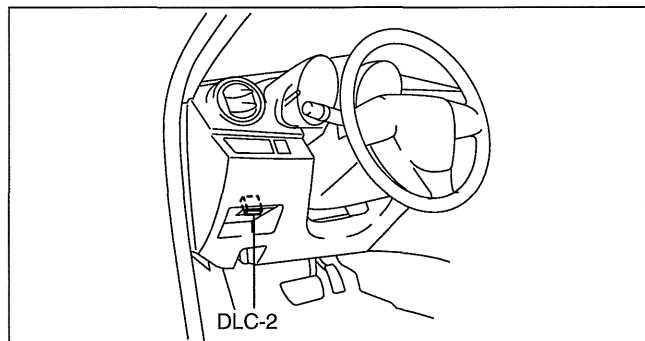
Note

- Do not place the M-MDS in the vehicle while programming the immobilizer system.

1. Fully lower the door glass.
2. Connect the M-MDS to the DLC-2.
3. Place the M-MDS outside the vehicle.

Caution

- **Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.**



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No.1 Additional Key Programming Procedure (Using the M-MDS)

Caution

- **The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.**

Conditions

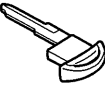
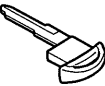
- There is only one valid key.

Note

- If a key ID number cannot be programmed, verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.

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Procedure

VALID KEY	 KEY 1
KEY FOR RESISTRATION	 KEY 2

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STEP	Procedure	Action after procedure
1	<p>VERIFY KEY 1 VALIDITY</p> <p>1. Start the engine using key 1.</p> <p>Caution</p> <ul style="list-style-type: none"> • Remove the advanced key from the vehicle. <p>2. Verify that the security light illuminates for approx. 3 s, and then turns off.</p> <p>3. Switch the ignition off (LOCK).</p>	Go to the next step.

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STEP	Procedure	Action after procedure	
2	<p>PERFORM ADDITIONAL KEY PROGRAMMING</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-98 M-MDS Connecting Procedure.) 2. Insert key 1 into the key slot and depress the clutch (MTX)/brake (ATX) pedal. <p>Note</p> <ul style="list-style-type: none"> • The keyless indicator light (green) illuminates for approx. 5 s and then turns off. <ol style="list-style-type: none"> 3. Within 5 s after verifying that the keyless indicator light (green) illuminates, release the clutch (MTX)/brake (ATX) pedal and switch the ignition to off (LOCK)→ACC→ON. 4. Remove key 1 from the key slot and insert key 2 into the key slot. <p>Note</p> <ul style="list-style-type: none"> • After key 1 is removed, continue to perform the procedure as indicated even though the advanced key system warning alarm sounds and the keyless indicator light (red) starts to flash. <ol style="list-style-type: none"> 5. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select "Body". 2. Select "Security". 3. Select "PATS "Functions". — Using a PDS (pocket PC): <ol style="list-style-type: none"> 1. Select "All Tests and Calibrations". 2. Select "PATS Functions". 6. Then, select the following from the screen menu. <p>Item</p> <ul style="list-style-type: none"> • "Program Additional Ignition Key" <ol style="list-style-type: none"> 7. Perform the security access according to the directions on the M-MDS screen. <p>Note</p> <ul style="list-style-type: none"> • After executing the above menu, "This operation is successful" is displayed. At this stage, the programming for the key switching the ignition ON is completed. • If an additional key is to be programmed, continue to perform the procedure according to the directions on the M-MDS screen. To finish the key programming, go to the next step. 	Yes	Change the key and repeat Step 2.
		No	Go to the next step.
3	<p>FINISH THE M-MDS</p> <ol style="list-style-type: none"> 1. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 2. Switch the ignition off (LOCK). 	Go to the next step.	
4	<p>VERIFY THAT KEY IS PROGRAMMED</p> <p>Verify that the engine can be started with the programmed key.</p> <p>Note</p> <ul style="list-style-type: none"> • When verifying that the engine starts, wait approx. 5 s or more before starting the engine using the next key. 	Procedure is completed.	

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No.2 Programming Procedure After PCM Replacement

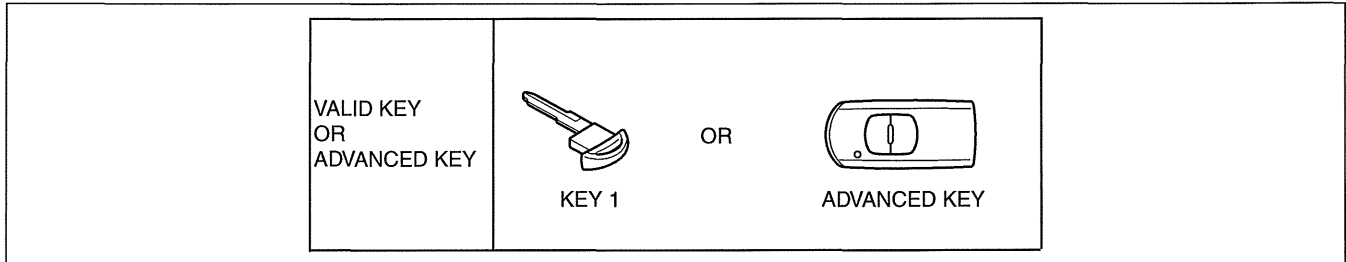
Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

Conditions

- Prepare a valid key or an advanced key that can start the engine.

Procedure



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STEP	Procedure	Action after procedure
1	REPLACE PCM Refer to PCM removal/installation to perform PCM replacement and configuration. (See 01-40A-7 PCM REMOVAL/INSTALLATION [LF, L5].) (See 01-40B-7 PCM REMOVAL/INSTALLATION [L3 WITH TC].)	Go to the next step.

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STEP	Procedure	Action after procedure	
2	<p>PERFORM PARAMETER RESET</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-98 M-MDS Connecting Procedure.) 2. Insert a valid key into the key slot and depress the clutch (MTX)/brake (ATX) pedal. <p>Note</p> <ul style="list-style-type: none"> • Although the security light remains illuminated and DTC 23 is displayed after approx. 1 min, continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. The keyless indicator light (green) illuminates for approx. 5 s. <p>Note</p> <ul style="list-style-type: none"> • When a valid advanced key is used, the keyless indicator light (green) illuminates. <ol style="list-style-type: none"> 4. Within 5 s after verifying that the keyless indicator light (green) illuminates, release the clutch (MTX)/brake (ATX) pedal and switch the ignition ON. <p>Caution</p> <ul style="list-style-type: none"> • When a valid advanced key is used, release the clutch (MTX)/brake (ATX) pedal and switch the ignition ON after verifying that the keyless indicator light (green) illuminates. <ol style="list-style-type: none"> 5. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select "Body". 2. Select "Security". 3. Select "PATS Functions". — Using a PDS (pocket PC): <ol style="list-style-type: none"> 1. Select "All Tests and Calibrations". 2. Select "PATS Functions". 6. Then, select the following from the screen menu. <p>Item</p> <ul style="list-style-type: none"> • "Parameter Reset" <ol style="list-style-type: none"> 7. Perform the security access according to the directions on the M-MDS screen. 8. Select "PCM" from the replaced parts according to the directions on the M-MDS screen. <p>Caution</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. <ol style="list-style-type: none"> 9. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 10. Switch the ignition off (LOCK). 11. Switch the ignition ON. 12. Verify that the security light illuminates for approx. 3 s, and then turns off. 13. Switch the ignition off (LOCK). 14. Disconnect the M-MDS from the DLC-2. 	Go to the next step.	
3	<p>VERIFY THAT KEY IS PROGRAMMED TO PCM</p> <ol style="list-style-type: none"> 1. Verify that the engine can be started with all the keys. 2. Can the engine be started? 	Yes	Procedure is completed.
		No	Perform the corresponding DTC inspection to repair the malfunctioning part.

SECURITY AND LOCKS

No.3 Programming Procedure After Steering Lock Unit Replacement

Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

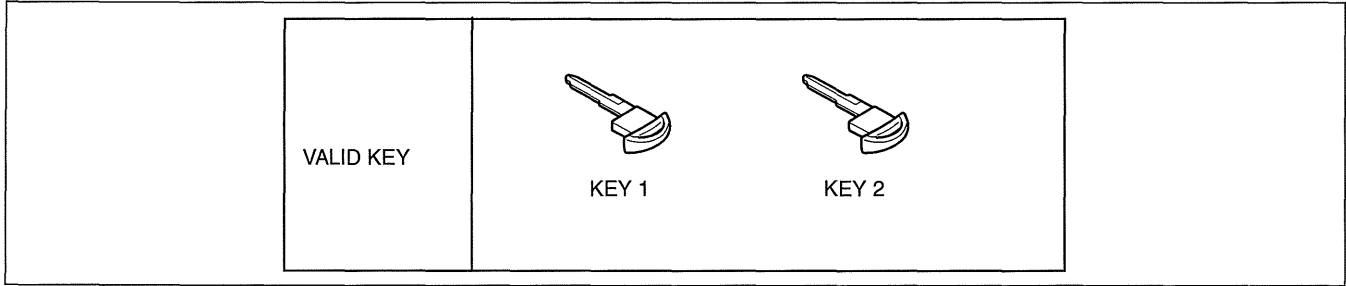
Note

- Since two or more keys need to be programmed to start the engine, program two or more keys after the replacement.

Conditions

- Have two or more keys to be programmed after the replacement.

Procedure



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STEP	Procedure	Action after procedure
1	REPLACE STEERING LOCK UNIT Replace the steering lock unit. (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)	Go to the next step.
2	CONNECT THE M-MDS <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-98 M-MDS Connecting Procedure.) 2. Remove the valid keys and the valid advanced keys from the vehicle (keep them 1 m or more from the vehicle) and switch the ignition ON according to the directions on the M-MDS screen. Select, "There is no programmed ignition key and programmed advanced key" from the M-MDS screen. Caution <ul style="list-style-type: none"> • If the ignition is switched ON by selecting "FORCED IGNITION ON", the engine cannot be started. • Although the security light or the keyless warning light illuminates or flashes, this does not indicate an improper procedure. Continue to perform the procedure as indicated. 	Go to the next step.
3	PROGRAM STEERING LOCK UNIT <ol style="list-style-type: none"> 1. Select "Steering Lock Unit Programming" from the M-MDS screen menu. 2. Bring the advanced keys into the vehicle. 3. Complete the security access procedure and the steering lock unit programming according to the directions on the M-MDS screen. (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.) 4. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 5. Switch the ignition off (LOCK). 6. Disconnect the M-MDS from the DLC-2. 7. Remove the programmed advanced keys from the vehicle. 	Go to the next step.

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SECURITY AND LOCKS

STEP	Procedure	Action after procedure								
4	<p>SET UP IMMOBILIZER SYSTEM WITH KEY 1</p> <p>Note</p> <ul style="list-style-type: none"> By starting the engine, the immobilizer system is set up and key programming is finished. <ol style="list-style-type: none"> Start the engine using key 1. Verify that the security light and keyless warning light operate as shown in the following figure. Switch the ignition off (LOCK) and remove key 1. <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <p style="text-align: center;">DISPLAY METHOD</p> </div> <div style="width: 45%;"> <p>EXAMPLE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="text-align: center; font-size: small;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		Go to the next step.
NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD									
1										
2										
3										
5	<p>VERIFY THAT KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> Start the engine using key 2. Verify that the security light and keyless warning light operate as shown in the following figure. Switch the ignition off (LOCK) and remove key 2. Are there other keys to be programmed? <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <p style="text-align: center;">DISPLAY METHOD</p> </div> <div style="width: 45%;"> <p>EXAMPLE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="text-align: center; font-size: small;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		<p style="text-align: center;">Yes</p> <p style="text-align: center;">Repeat Step 5 using each programmed key.</p> <hr/> <p style="text-align: center;">No</p> <p style="text-align: center;">Go to the next step.</p>
NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD									
1										
2										
3										

SECURITY AND LOCKS

STEP	Procedure	Action after procedure
6	<p>VERIFY THAT ADVANCED KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Bring the advanced key into the vehicle. 2. Close all doors. 3. Remove the key from the key slot and place it on the front passenger's seat. 4. Start the engine using the advanced key. 5. Verify that the security light and keyless warning light operate as shown in the following figure. 6. After verifying that the keyless warning light turns off, switch the ignition off (LOCK). <div style="text-align: center; margin-top: 10px;"> </div>	<p style="text-align: center;">Procedure is completed.</p>

No.4 Programming Procedure After Keyless Control Module Replacement

Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

Note

- Before beginning the procedure, verify that the customer has turned in all of the advanced keys and keys for the vehicle.
- The engine cannot be started unless an advanced key and two or more keys are programmed after the replacement.

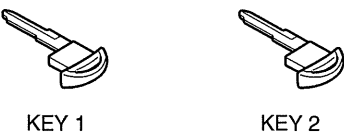
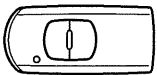
Conditions

- Have two or more keys to be programmed after the replacement.
- Have one or more advanced keys to be programmed after the replacement.

09-14

SECURITY AND LOCKS

Procedure

VALID KEY	
KEY FOR RESISTRATION	

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STEP	Procedure	Action after procedure
1	<p>REPLACE KEYLESS CONTROL MODULE</p> <p>Refer to keyless control module removal/installation to perform keyless control module replacement and configuration. (See 09-14-66 KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p>	Go to the next step.
2	<p>PERFORM PARAMETER RESET</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-98 M-MDS Connecting Procedure.) 2. Remove the valid keys and the valid advanced keys from the vehicle (keep them 1 m or more from the vehicle) and switch the ignition ON according to the directions on the M-MDS screen. Select, "There is no programmed ignition key and programmed advanced key" from the M-MDS screen. <p>Caution</p> <ul style="list-style-type: none"> • If the ignition is switched ON by selecting "FORCED IGNITION ON", the engine cannot be started. • Although the security light or the keyless warning light illuminates or flashes, this does not indicate an improper procedure. Continue to perform the procedure as indicated. <p>Note</p> <ul style="list-style-type: none"> • Although the security light flashes, this does not indicate an improper procedure. Continue to perform the procedure as indicated. <ol style="list-style-type: none"> 3. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select "Body". 2. Select "Security". 3. Select "PATS Functions". — Using a PDS (pocket PC): <ol style="list-style-type: none"> 1. Select "All Tests and Calibrations". 2. Select "PATS Functions". 4. Then, select the following from the screen menu. <p>Item</p> <ul style="list-style-type: none"> • "Parameter Reset" 5. Perform the security access according to the directions on the M-MDS screen. 6. Select "RKE" from the replaced parts according to the directions on the M-MDS screen. <p>Caution</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. 	Go to the next step.
3	<p>PERFORM IGNITION KEY ID NUMBER CLEARING</p> <ol style="list-style-type: none"> 1. Select "Ignition Key Code Erase and Program" from the M-MDS screen menu. 2. Clear the ignition key ID number according to the directions on the M-MDS. 	Go to the next step.
4	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ol style="list-style-type: none"> 1. Program two keys according to the directions on the M-MDS. 2. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.

SECURITY AND LOCKS

STEP	Procedure	Action after procedure								
5	<p>PERFORM ADVANCED KEY PROGRAMMING</p> <ol style="list-style-type: none"> 1. Select "Program Additional Advanced Key" from the M-MDS screen menu. 2. Program the advanced key according to the directions on the M-MDS. 3. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.								
6	<p>PERFORM STEERING LOCK UNIT PROGRAMMING</p> <ol style="list-style-type: none"> 1. Select "Steering Lock Unit Programming" from the M-MDS screen menu. 2. Complete the steering lock unit programming according to the directions on the M-MDS. (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.) 3. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 4. Switch the ignition off (LOCK). 5. Disconnect the M-MDS from the DLC-2. 6. Remove the programmed advanced key from the vehicle. 	Go to the next step.								
7	<p>SET UP IMMOBILIZER SYSTEM WITH KEY 1</p> <p>Note</p> <ul style="list-style-type: none"> • By starting the engine, the immobilizer system is set up and key programming is finished. <ol style="list-style-type: none"> 1. Start the engine using key 1. 2. Verify that the security light and keyless warning light operate as shown in the following figure. 3. Switch the ignition off (LOCK) and remove key 1. <div style="display: flex; align-items: flex-start; margin-top: 10px;"> <div style="margin-right: 20px;"> <p>IGNITION SWITCH</p> </div> <div style="margin-right: 20px;"> <p>SECURITY LIGHT</p> </div> <div style="margin-right: 20px;"> <p>KEYLESS WARNING LIGHT</p> </div> <div style="margin-right: 20px;"> <p>EXAMPLE</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		Go to the next step.
NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD									
1										
2										
3										

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SECURITY AND LOCKS

STEP	Procedure	Action after procedure									
8	<p>VERIFY THAT KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Start the engine using key 2. 2. Verify that the security light and keyless warning light operate as shown in the following figure. 3. Switch the ignition off (LOCK) and remove key 2. 4. Are there other keys to be programmed? <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> <p>EXAMPLE</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		Yes	Repeat Step 8 using each programmed key.
NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD										
1											
2											
3											
		No	Go to the next step.								
9	<p>VERIFY THAT ADVANCED KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Bring the advanced key into the vehicle. 2. Close all doors. 3. Remove the key from the key slot and place it on the front passenger's seat. 4. Start the engine using the advanced key. 5. Verify that the security light and keyless warning light operate as shown in the following figure. 6. After verifying that the keyless warning light turns off, switch the ignition off (LOCK). <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> </div> </div>	Procedure is completed.									

SECURITY AND LOCKS

No.5 Programming Procedure After Simultaneous Replacement of Immobilizer System-related Parts (PCM, Keyless Control Module, Steering Lock Unit, and Key)

Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

Note

- If the keyless control module is replaced, complete the configuration before performing the following menu.
- If the PCM is replaced, complete the configuration before performing the following menu.
- When replacing the keyless control module or the steering lock unit, remove the valid keys and the valid advanced keys from the vehicle (keep them 1 m or more from the vehicle) and switch the ignition ON according to the directions on the M-MDS screen. Select, "There is no programmed ignition key and programmed advanced key" from the M-MDS screen.

Caution

- If the ignition is switched ON by selecting "FORCED IGNITION ON", the engine cannot be started.
- Although the security light or the keyless warning light illuminates or flashes, this does not indicate an improper procedure. Continue to perform the procedure as indicated.

Caution

M-MDS menu


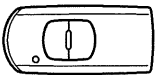
- (1): Parameter Reset
- (2): Ignition Key Code Erase and Program
- (3): Program Additional Advanced Key
- (4): Steering Lock Unit Programming

Replacement part	M-MDS execution menu/ sequence	Conditions
Keyless control module and PCM	(1) → (2) → (3) → (4)	<ul style="list-style-type: none"> • Have two or more keys to be programmed after the replacement. • Have one or more advanced keys to be programmed after the replacement.
Keyless control module and steering lock unit		
Keyless control module, PCM, and steering lock unit		
PCM and steering lock unit	(1) → (4)	Have two or more keys to be programmed after the replacement.

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SECURITY AND LOCKS

Procedure

VALID KEY	
KEY FOR RESISTRATION	

am3uuw0000451

STEP	Procedure	Action after procedure
1	<p>REPLACE UNIT OR PARTS Replace the unit or parts.</p>	Go to the next step.
2	<p>PERFORM PARAMETER RESET</p> <ol style="list-style-type: none"> 1. Connect the M-MDS to the DLC-2. (See 09-14-98 M-MDS Connecting Procedure.) 2. Switch the ignition off (LOCK) using key 1. <p>Note</p> <ul style="list-style-type: none"> • Although the security light flashes or illuminates and DTC 15 or 23 is displayed after approx. 1 min, continue to perform the procedure. <ol style="list-style-type: none"> 3. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select "Body". 2. Select "Security". 3. Select "PATS Functions". — Using a PDS (pocket PC): <ol style="list-style-type: none"> 1. Select "All Tests and Calibrations". 2. Select "PATS Functions". 4. Then, select the following from the screen menu. <p>Item</p> <ul style="list-style-type: none"> • "Parameter Reset" 5. Perform the security access according to the directions on the M-MDS screen. 6. Select the replaced part according to the directions on the M-MDS screen. <ul style="list-style-type: none"> — If the PCM is replaced: Select "PCM". — If the keyless control module is replaced: Select "RKE". <p>Caution</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. 	Go to the next step.
3	<p>PERFORM IGNITION KEY ID NUMBER CLEARING</p> <ol style="list-style-type: none"> 1. Select "Ignition Key Code Erase and Program" from the M-MDS screen menu. 2. Clear the ignition key ID number according to the directions on the M-MDS. 	Go to the next step.
4	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ol style="list-style-type: none"> 1. Program two keys according to the directions on the M-MDS. 2. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
5	<p>PERFORM ADVANCED KEY PROGRAMMING</p> <ol style="list-style-type: none"> 1. Select "Program Additional Advanced Key" from the M-MDS screen menu. 2. Program the advanced key according to the directions on the M-MDS. 3. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.

SECURITY AND LOCKS

STEP	Procedure	Action after procedure																							
6	<p>PERFORM STEERING LOCK UNIT PROGRAMMING</p> <ol style="list-style-type: none"> 1. Select "Steering Lock Unit Programming" from the M-MDS screen menu. 2. Complete the steering lock unit programming according to the directions on the M-MDS. (See 09-14-115 STEERING LOCK UNIT ID CODE REGISTRATION.) 3. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 4. Switch the ignition off (LOCK). 5. Disconnect the M-MDS from the DLC-2. 6. Remove the programmed advanced key from the vehicle. 	Go to the next step.																							
7	<p>SET UP IMMOBILIZER SYSTEM WITH KEY 1</p> <p>Note</p> <ul style="list-style-type: none"> • By starting the engine, the immobilizer system is set up and key programming is finished. <ol style="list-style-type: none"> 1. Start the engine using key 1. 2. Verify that the security light and keyless warning light operate as shown in the following figure. 3. Switch the ignition off (LOCK) and remove key 1. <div style="display: flex; align-items: flex-start; margin-top: 10px;"> <div style="flex: 1;"> <table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="width: 15%; text-align: center;">IGNITION SWITCH</td> <td style="width: 10%; text-align: center;">START (ENGINE START)</td> <td style="width: 10%; text-align: center;">ON</td> <td style="width: 10%; text-align: center;">off</td> <td style="width: 55%;"></td> </tr> <tr> <td style="text-align: center;">SECURITY LIGHT</td> <td style="text-align: center;">ON</td> <td style="text-align: center;">OFF</td> <td style="text-align: center;">Approx. 3 s</td> <td></td> </tr> <tr> <td style="text-align: center;">KEYLESS WARNING LIGHT</td> <td style="text-align: center;">ON</td> <td style="text-align: center;">OFF</td> <td style="text-align: center;">Approx. 1 s</td> <td></td> </tr> </table> </div> <div style="flex: 1; margin-left: 10px;"> <p>EXAMPLE</p> <table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	IGNITION SWITCH	START (ENGINE START)	ON	off		SECURITY LIGHT	ON	OFF	Approx. 3 s		KEYLESS WARNING LIGHT	ON	OFF	Approx. 1 s		NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		Go to the next step.
IGNITION SWITCH	START (ENGINE START)	ON	off																						
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3																									

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SECURITY AND LOCKS

STEP	Procedure	Action after procedure									
8	<p>VERIFY THAT KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Start the engine using key 2. 2. Verify that the security light and keyless warning light operate as shown in the following figure. 3. Switch the ignition off (LOCK) and remove key 2. 4. Are there other keys to be programmed? <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> <p>EXAMPLE</p> <table border="1" style="border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 80%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="font-size: small;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		Yes	Repeat Step 8 using each programmed key.
NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD										
1											
2											
3											
		No	Go to the next step.								
9	<p>VERIFY THAT ADVANCED KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Bring the programmed key into the vehicle. 2. Close all doors. 3. Remove the key from the key slot and place it on the front passenger's seat. 4. Start the engine using the advanced key. 5. Verify that the security light and keyless warning light operate as shown in the following figure. 6. After verifying that the keyless warning light turns off, switch the ignition off (LOCK). <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> </div> </div>	Procedure is completed.									

SECURITY AND LOCKS

No.6 Replacing Only Key

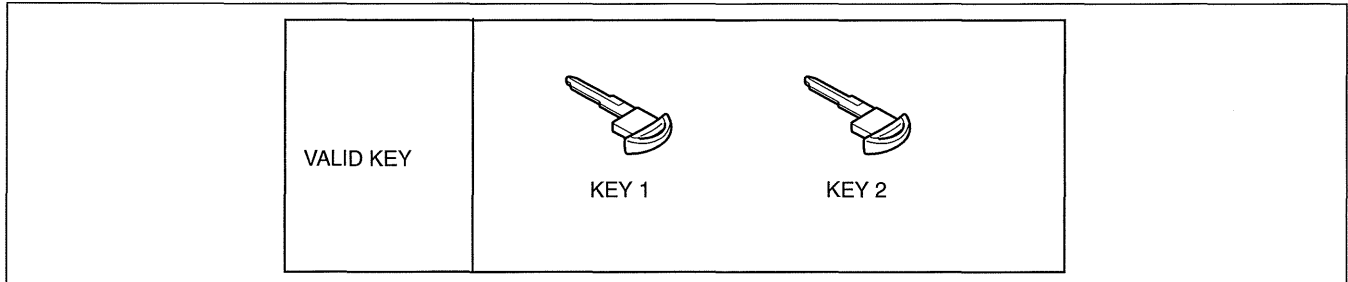
Caution

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

Conditions

- Have two or more keys to be programmed after the replacement.

Procedure



am3uuw000451

STEP	Procedure	Action after procedure
1	<p>REPLACE THE KEY Replace the key.</p>	Go to the next step.
2	<p>PROGRAM/CLEAR AUXILIARY KEY</p> <ol style="list-style-type: none"> 1. Remove the valid keys and the valid advanced keys from the vehicle (keep them 1 m or more from the vehicle) and switch the ignition ON according to the directions on the M-MDS screen. Select, "There is no programmed ignition key and programmed advanced key" from the M-MDS screen. <p>Caution</p> <ul style="list-style-type: none"> • If the ignition is switched ON by selecting "FORCED IGNITION ON", the engine cannot be started. • Although the security light or the keyless warning light illuminates or flashes, this does not indicate an improper procedure. Continue to perform the procedure as indicated. <ol style="list-style-type: none"> 2. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> — Using an IDS (laptop PC): <ol style="list-style-type: none"> 1. Select "Body". 2. Select "Security". 3. Select "PATS Functions". — Using a PDS (pocket PC): <ol style="list-style-type: none"> 1. Select "All Tests and Calibrations". 2. Select "PATS Functions". 3. Perform the security access according to the directions on the M-MDS screen. 	Go to the next step.
3	<p>PERFORM IGNITION KEY ID NUMBER CLEARING</p> <ol style="list-style-type: none"> 1. Select "Ignition Key Code Erase and Program" from the M-MDS screen menu. 2. Clear the ignition key ID number according to the directions on the M-MDS. 	Go to the next step.
4	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ol style="list-style-type: none"> 1. Program two keys according to the directions on the M-MDS. 2. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". 3. Switch the ignition off (LOCK). 4. Disconnect the M-MDS from the DLC-2. 	Go to the next step.

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SECURITY AND LOCKS

STEP	Procedure	Action after procedure												
5	<p>ESTABLISH IMMOBILIZER SYSTEM WITH KEY 1</p> <p>Note</p> <ul style="list-style-type: none"> By starting the engine, the immobilizer system is established and key programming is finished. <ol style="list-style-type: none"> Start the engine using key 1. Verify that the security light and keyless warning light operate as shown in the following figure. Switch the ignition off (LOCK) and remove key 1. <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> <p>EXAMPLE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="font-size: small;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		<p>Go to the next step.</p>				
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2														
3														
6	<p>VERIFY THAT KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> Start the engine using key 2. Verify that the security light and keyless warning light operate as shown in the following figure. Switch the ignition off (LOCK) and remove key 2. Are there other keys to be programmed? <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> <p>EXAMPLE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">NUMBER OF PROGRAMMED KEYS</th> <th style="width: 70%;">DISPLAY METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </tbody> </table> <p style="font-size: small;">a : Approx. 0.3 s b : Approx. 0.9 s</p> </div> </div>	NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD	1		2		3		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; text-align: center;">Yes</td> <td>Change the key and repeat Step 6.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to the next step.</td> </tr> </table>	Yes	Change the key and repeat Step 6.	No	Go to the next step.
NUMBER OF PROGRAMMED KEYS	DISPLAY METHOD													
1														
2														
3														
Yes	Change the key and repeat Step 6.													
No	Go to the next step.													

SECURITY AND LOCKS

STEP	Procedure	Action after procedure
7	<p>VERIFY THAT ADVANCED KEY IS PROGRAMMED</p> <ol style="list-style-type: none"> 1. Bring the advanced key into the vehicle. 2. Close all doors. 3. Remove the key from the key slot and place it on the front passenger's seat. 4. Start the engine using the advanced key. 5. Verify that the security light and keyless warning light operate as shown in the following figure. 6. After verifying that the keyless warning light turns off, switch the ignition off (LOCK). <div style="text-align: center;"> <p>The diagram shows three horizontal timelines. The top timeline is labeled 'START (ENGINE START)' and shows a pulse. The middle timeline is 'IGNITION SWITCH', showing a pulse corresponding to the engine start. The bottom timeline is 'SECURITY LIGHT', showing a pulse that starts when the ignition is turned ON and lasts for 'Approx. 3 s'. The 'KEYLESS WARNING LIGHT' timeline shows a pulse that starts when the ignition is turned ON and lasts for 'Approx. 1 s'. Vertical dashed lines indicate the start and end of the engine start pulse.</p> </div>	<p>Procedure is completed.</p>

STEERING LOCK UNIT ID CODE REGISTRATION

id091400514800

Caution

- Do not place the following devices in the vehicle while programming, otherwise programming cannot be performed:
 - M-MDS
 - Personal computer
 - Devices that can send/receive radio waves

09-14

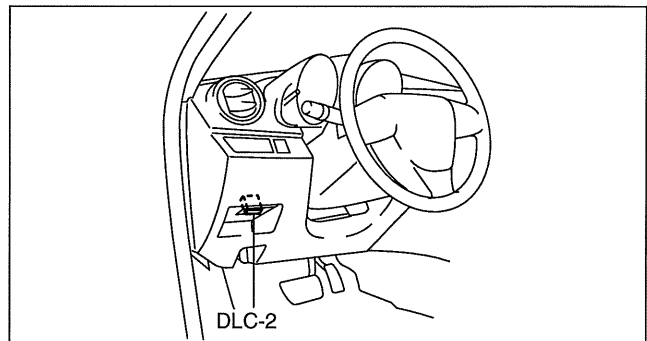
Note

- The steering lock unit and steering lock component are a single unit. Therefore, replace the steering lock component when replacing steering lock unit. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM])(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM])
- For this procedure, a programmed advanced key is necessary. If there is no programmed advanced key, perform the steering lock unit programming after the advanced key programming.

1. Bring the programmed advanced key into the vehicle.
2. Fully lower the driver-side door glass.
3. Connect the M-MDS to the DLC-2.
4. Pull out the M-MDS cable from the door glass opening and set the M-MDS outside the vehicle.

Caution

- Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.



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5. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Security".
 3. Select "PATS Functions".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
 2. Select "PATS Functions".
6. Then, select items from the screen menu in the following order.
 1. Select "Steering Lock Unit Programming".
7. Perform the security access according to the directions on the M-MDS screen.

SECURITY AND LOCKS

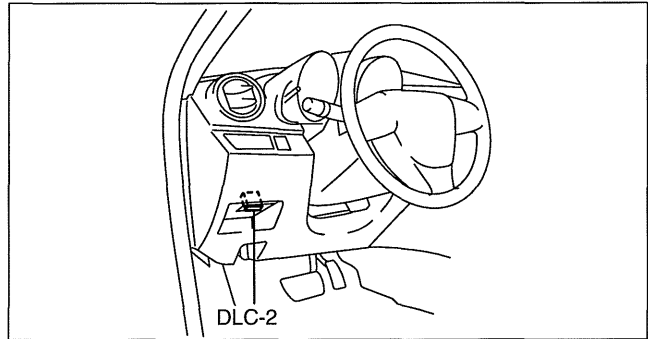
THEFT-DETERRENT SYSTEM READING FREEZE FRAME DATA

id091400514100

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the READING FREEZE FRAME DATA.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Burglar Service Functions".
3. Then, select the following item from the screen menu.
 1. Select "Read FFD".
4. Read the record according to the directions on the screen.



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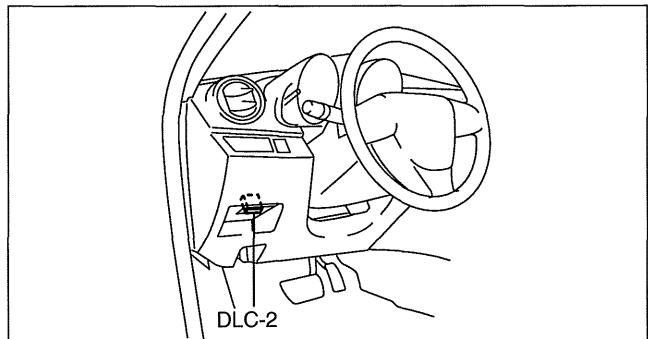
THEFT-DETERRENT SYSTEM CLEARING FREEZE FRAME DATA

id091400514200

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the CLEARING FREEZE FRAME DATA.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Burglar Service Functions".
3. Then, select the following item from the screen menu.
 1. Select "Clear FFD".
4. Clear the record according to the directions on the screen.



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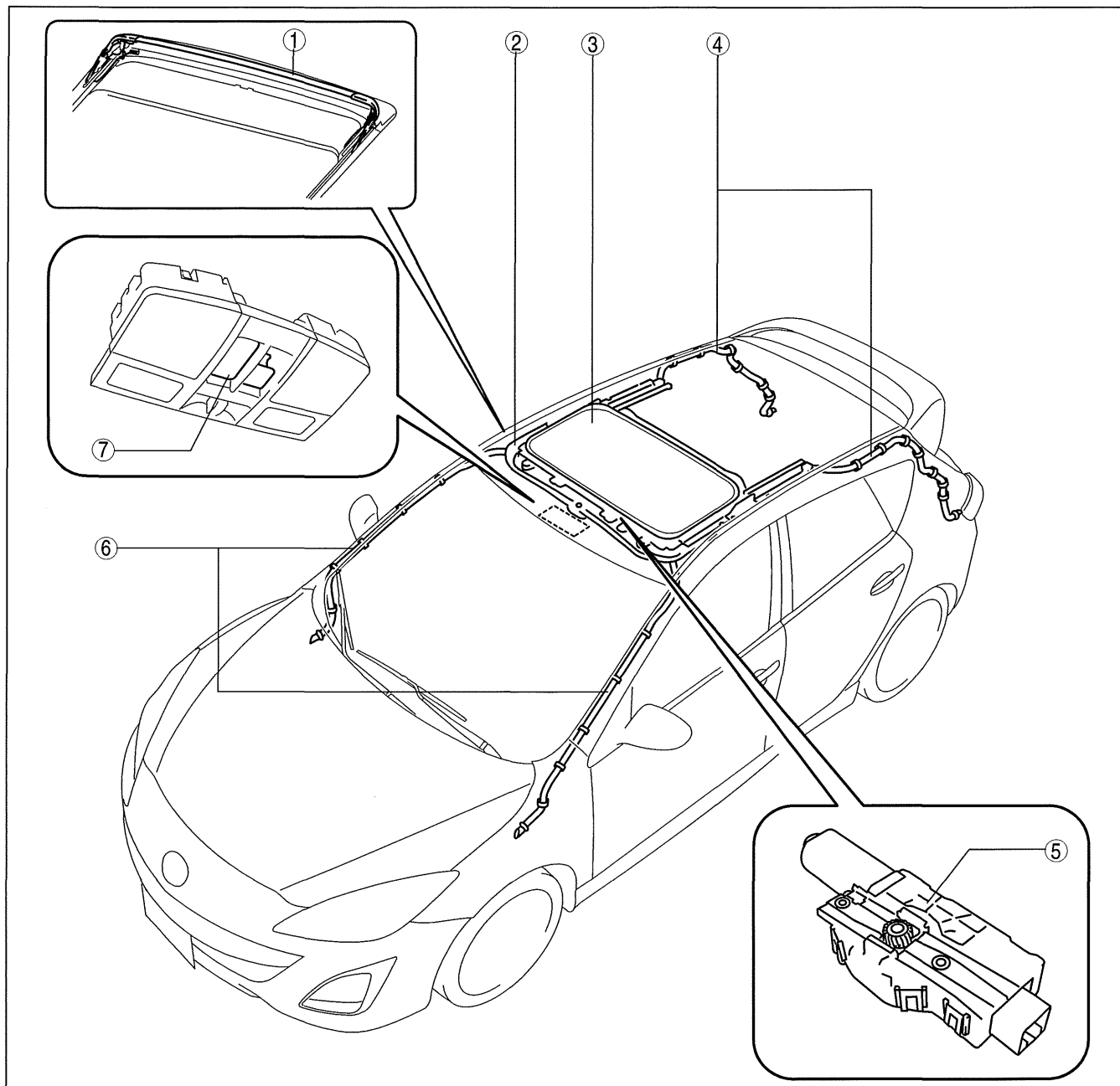
09-15 SUNROOF

SUNROOF LOCATION INDEX	09-15-2	Decoration Link Assembly Note	09-15-8
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REMOVAL/INSTALLATION	09-15-3	FRONT DRAIN HOSE	
GLASS PANEL		INSTALLATION	09-15-10
REMOVAL/INSTALLATION	09-15-3	REAR DRAIN HOSE REMOVAL	09-15-12
GLASS PANEL ADJUSTMENT	09-15-4	REAR DRAIN HOSE	
SUNROOF UNIT		INSTALLATION	09-15-14
REMOVAL/INSTALLATION	09-15-4	SUNROOF MOTOR	
SUNROOF UNIT		REMOVAL/INSTALLATION	09-15-15
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Guide Assembly Note	09-15-8	SUNROOF SWITCH INSPECTION	09-15-16

SUNROOF

SUNROOF LOCATION INDEX

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1	Deflector (See 09-15-3 DEFLECTOR REMOVAL/ INSTALLATION.)
2	Sunroof unit (See 09-15-4 SUNROOF UNIT REMOVAL/ INSTALLATION.) (See 09-15-6 SUNROOF UNIT DISASSEMBLY/ ASSEMBLY.)
3	Glass panel (See 09-15-3 GLASS PANEL REMOVAL/ INSTALLATION.) (See 09-15-4 GLASS PANEL ADJUSTMENT.)
4	Rear drain hose (See 09-15-12 REAR DRAIN HOSE REMOVAL.) (See 09-15-14 REAR DRAIN HOSE INSTALLATION.)

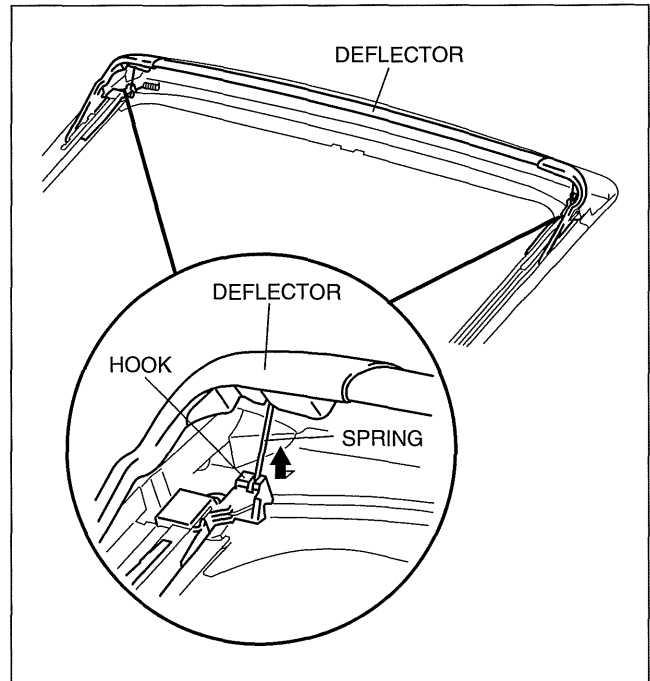
5	Sunroof motor (See 09-15-15 SUNROOF MOTOR REMOVAL/ INSTALLATION.) (See 09-15-16 SUNROOF MOTOR INSPECTION.)
6	Front drain hose (See 09-15-8 FRONT DRAIN HOSE REMOVAL.) (See 09-15-10 FRONT DRAIN HOSE INSTALLATION.)
7	Sunroof switch (See 09-15-16 SUNROOF SWITCH REMOVAL/ INSTALLATION.) (See 09-15-16 SUNROOF SWITCH INSPECTION.)

SUNROOF

DEFLECTOR REMOVAL/INSTALLATION

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1. Fully open the glass panel.
2. Press the spring in the direction shown by the arrow and remove it from the hook.
3. Remove the deflector.
4. Install in the reverse order of removal.



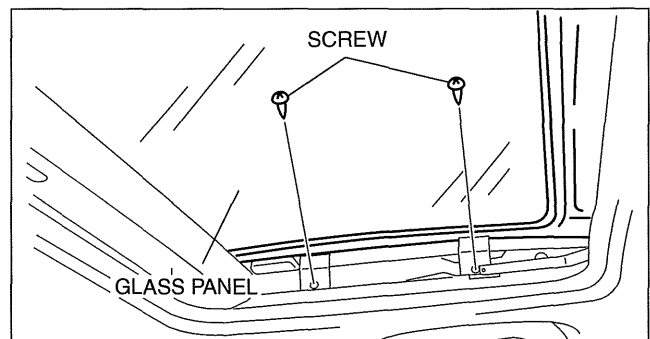
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GLASS PANEL REMOVAL/INSTALLATION

id091500800500

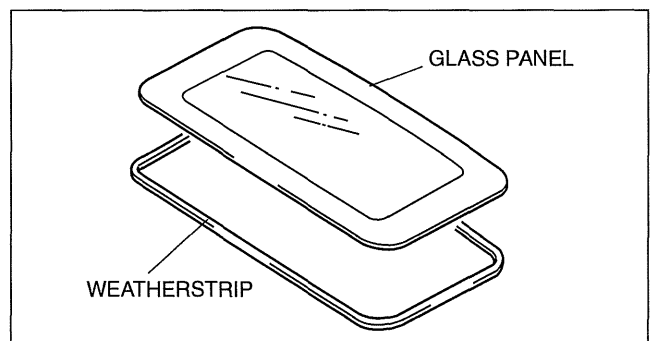
09-15

1. Fully close the glass panel.
2. Fully open the sunshade.
3. Remove the screws, and then remove the glass panel.



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4. Peel the weatherstrip off the glass panel.
5. Install in the reverse order of removal.
6. Adjust the glass panel. (See 09-15-4 GLASS PANEL ADJUSTMENT.)



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SUNROOF

GLASS PANEL ADJUSTMENT

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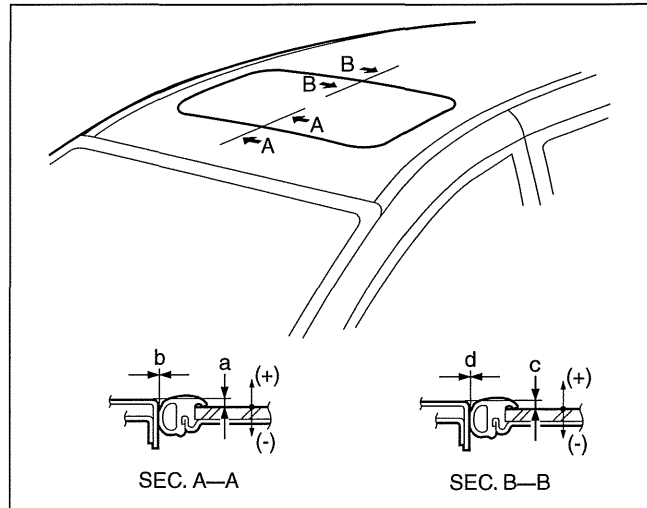
1. Fully close the glass panel.
2. Measure the gap and height between the glass panel and body.
 - If not as specified, loosen the glass panel installation screws and reposition the glass panel.

Clearance (4SD)

- a: -2.4—0.2 mm {-0.09—0.01 in}
- b: 0 mm {0 in}
- c: -2.2—0.4 mm {-0.08—0.01 in}
- d: 0 mm {0 in}

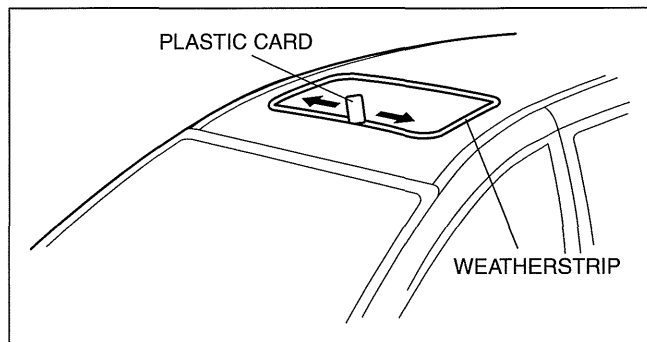
Clearance (5HB)

- a: -2.3—0.3 mm {-0.09—0.01 in}
- b: 0 mm {0 in}
- c: -2.3—0.3 mm {-0.09—0.01 in}
- d: 0 mm {0 in}



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3. Tighten the installation screws.
4. Insert a plastic card between the weatherstrip and the body of the vehicle. Verify that the sunroof is shut tightly (there is resistance when the plastic card is moved).
 - If the sunroof is not shut tightly, readjust by performing Steps 2 and 3.



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SUNROOF UNIT REMOVAL/INSTALLATION

id091500800700

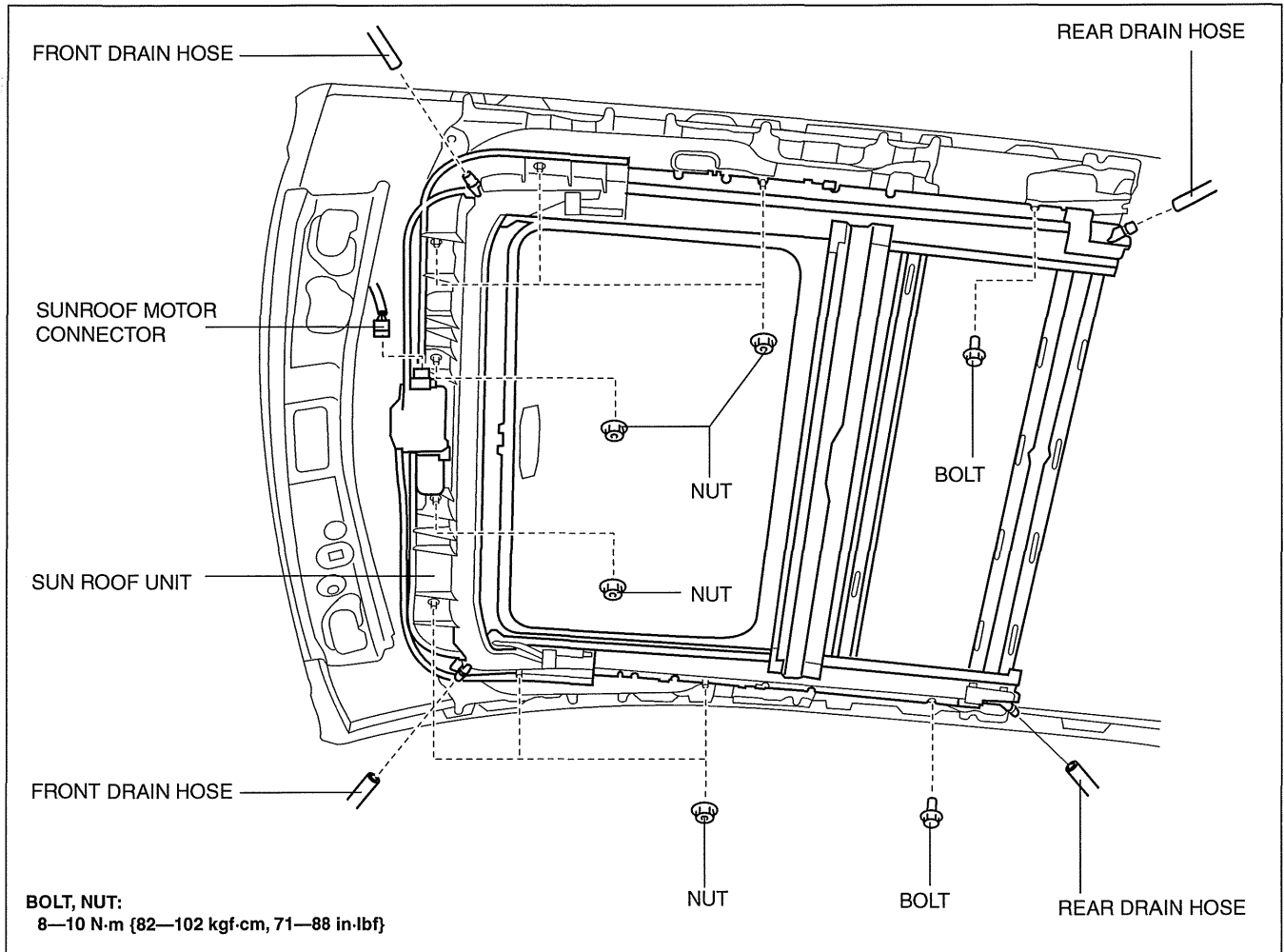
Caution

- If the sunshade is forced close while the sunroof is open, the sunshade could be damaged.

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (6) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (11) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (12) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (13) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (14) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (15) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (16) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (17) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Disconnect the front and rear drain hose from the sunroof frame.
4. Disconnect the sunroof motor connector.

SUNROOF

5. Remove the bolts.



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6. Remove the nuts, and then remove the sunroof unit.

7. Install in the reverse order of removal.

8. Adjust the glass panel. (See 09-15-4 GLASS PANEL ADJUSTMENT.)

SUNROOF

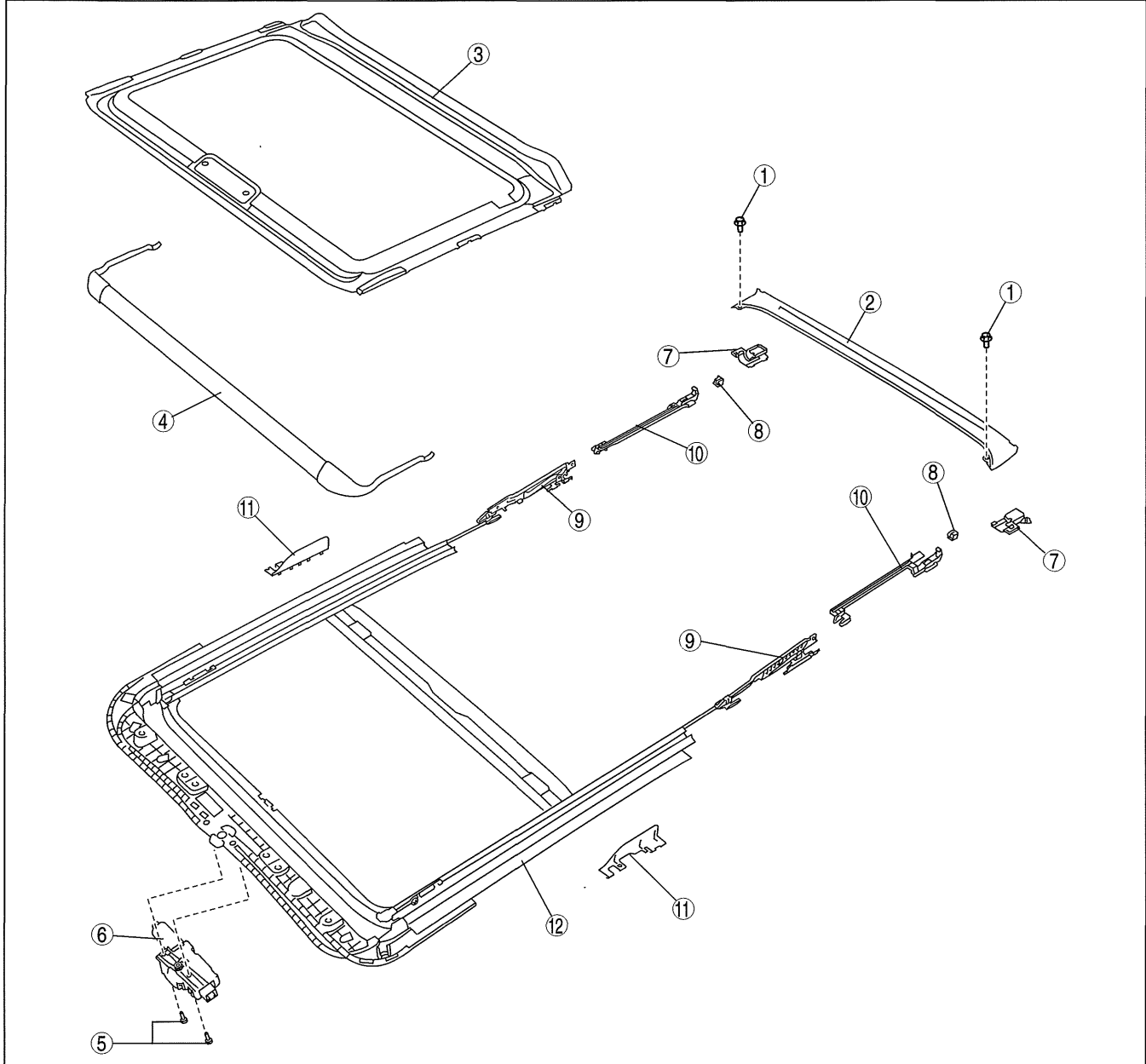
SUNROOF UNIT DISASSEMBLY/ASSEMBLY

id091500800800

Note

- If the guide or sunroof motor is removed, the glass panel will not be positioned properly after the re-installation. To ensure proper positioning of the glass panel, place alignment marks on the guide pin and frame before removing the guide or sunroof motor.

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



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1	Screw A
2	Drip rail
3	Sunshade
4	Deflector
5	Screw C
6	Sunroof motor (See 09-15-7 Sunroof Motor Assembly Note.)
7	Rear drip (See 09-15-7 Rear Drip Assembly Note.)

8	Guide stopper
9	Guide (See 09-15-7 Guide Disassembly Note.) (See 09-15-8 Guide Assembly Note.)
10	Decoration link (See 09-15-8 Decoration Link Assembly Note.)
11	Bracket
12	Frame

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Sunroof Motor Assembly Note

Note

- If the guide or sunroof motor is removed, the sunroof motor initial position setting has to be performed. After installing the sunroof unit, perform the initial position setting using the following procedure.

1. The initialization mode starts after **approx. 13 s** from when the tilt up switch has been pressed and held. The glass stops after it has moved **approx. 30 mm {1.2 in}** towards the closed position.

Note

- Only the tilt up switch is available during the initialization mode.
- The initialization may finish at the first inching operation depending on the glass position when the motor is installed.
- If the glass position is between the closed and semi-tilt positions when the motor is removed, the glass moves in the tilt up direction (to the full tilt position stored in the motor). However, if the tilt up switch is pressed and held, the initialization mode starts.

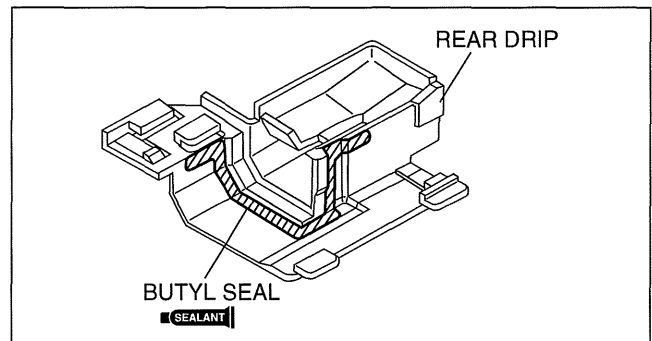
2. When the tilt up switch is pressed again, the glass continues to move **approx. 30 mm {1.2 in}** and stops.
3. Repeat this procedure several times so that the glass moves to the fully closed, full tilt (normal operation position), and full tilt (mechanical stopper position) positions.
4. After the glass is moved to the full tilt position (mechanical stopper position), it returns to the tilt down direction slightly and the initialization is completed.

Rear Drip Assembly Note

Note

- If the rear drip is removed, butyl seal must be applied when re-installing.

1. Apply a **6.0—8.0 mm {0.24—0.31 in}** wide line of butyl seal to the area shown in the figure.

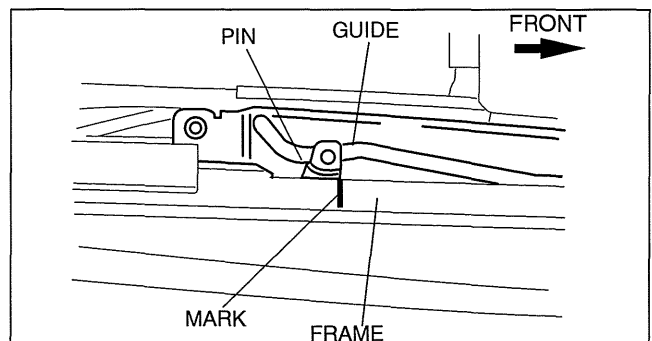


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09-15

Guide Disassembly Note

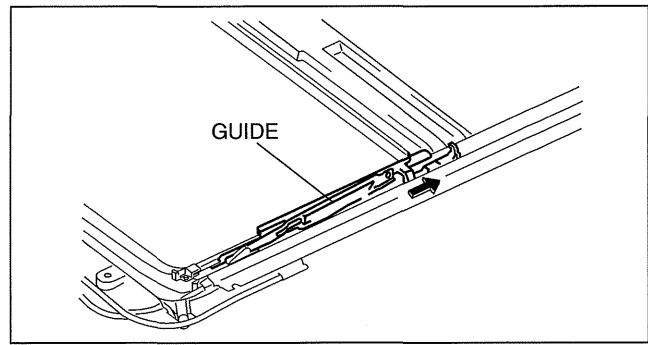
1. Place an alignment mark on the guide pin and frame.



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SUNROOF

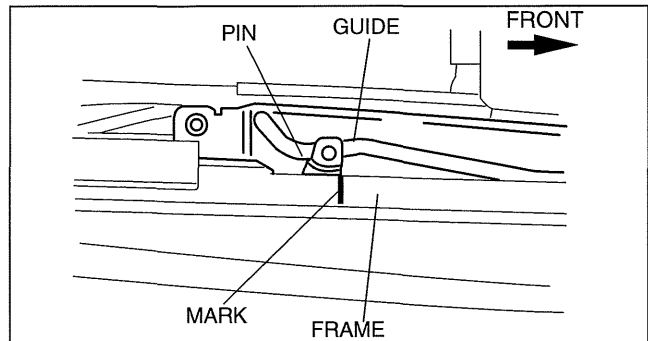
- Slide the guide to the rear of the sunroof frame, and remove the guide and decoration link as a single unit.



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Guide Assembly Note

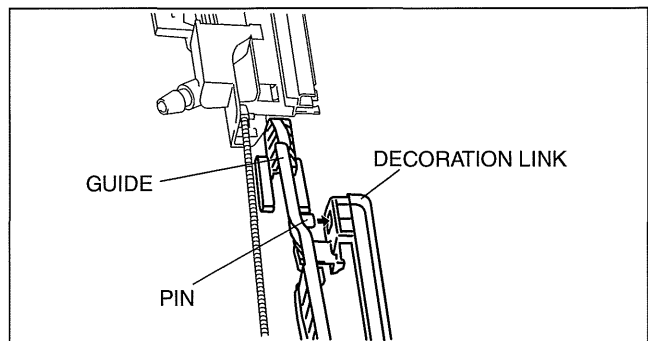
- Move the pin to the position shown in the figure.



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Decoration Link Assembly Note

- Set the guide pin to the decoration link.



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FRONT DRAIN HOSE REMOVAL

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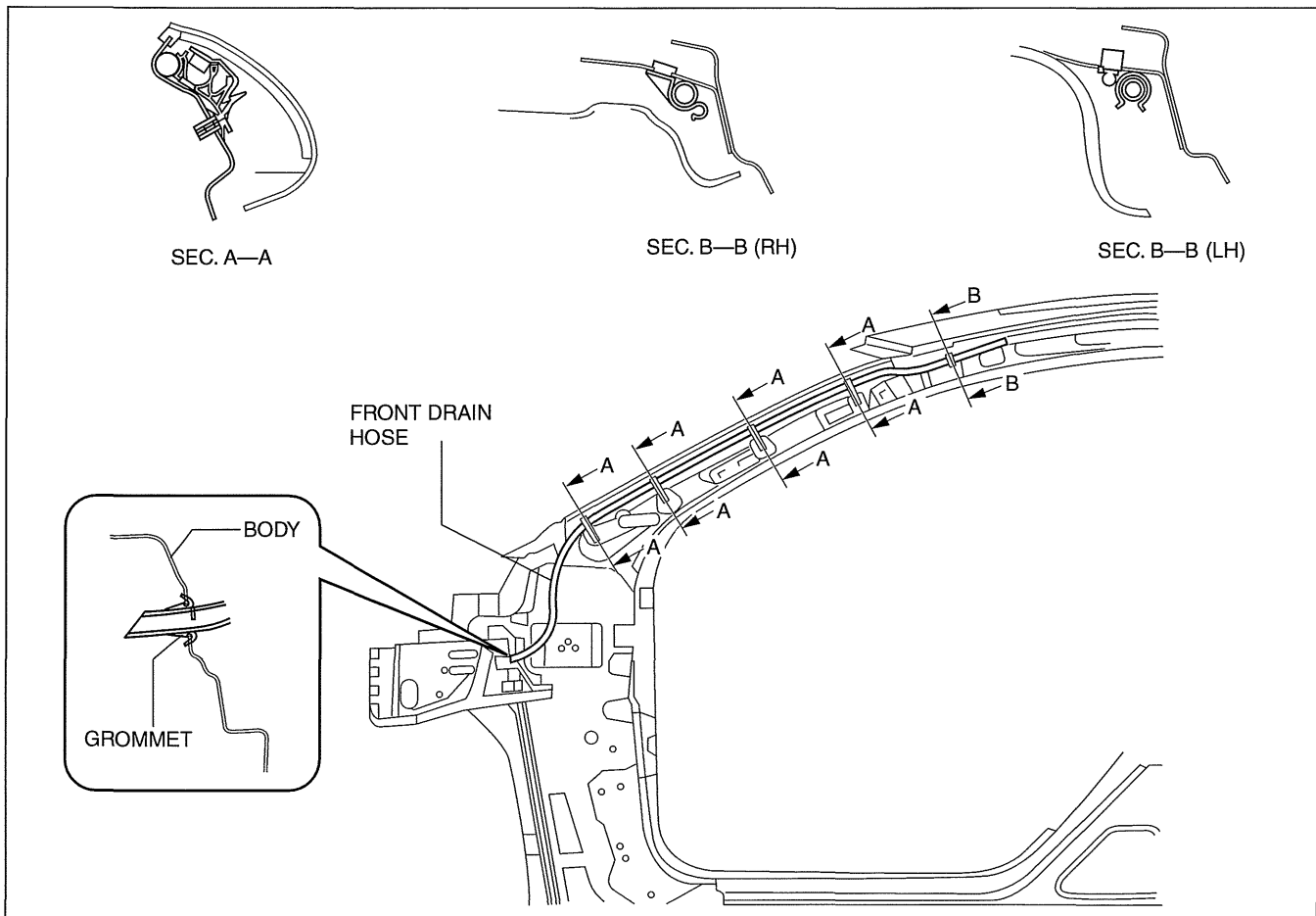
- Set the air intake mode to FRESH.
- Set the air mix mode to MAX COLD.
- Disconnect the negative battery cable.
- Partially peel back the seaming welt.
- Remove the rain sensor cover. (Vehicles with auto light / wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
- Disconnect the rain sensor connector. (Vehicles with auto light / wiper system)
- Remove the following parts:
 - Front doors (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
 - Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)

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- (11) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
- (12) Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (13) Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (14) Hood release lever from the lower panel
- (15) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
- (16) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
- (17) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
- (18) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (19) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
- (20) Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
- (21) Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (22) Steering shaft (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (23) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
- (24) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
- (25) Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
- (26) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
- (27) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
- (28) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
- (29) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
- (30) Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
- (31) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (32) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
- (33) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- (34) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- (35) Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
- (36) Dashboard (See 09-17-5 DASHBOARD REMOVAL/INSTALLATION.)
- (37) Sunroof seaming welt (vehicles with sunroof)
- (38) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (39) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
- (40) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
- (41) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
- (42) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
- (43) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (44) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
- (45) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
- (46) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
- (47) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
- (48) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
- (49) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
- (50) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

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8. Disconnect the auto-dimming mirror connector. (vehicles with auto-dimming mirror)
9. Disconnect the roof harness connector, remove the clip, and remove the connector.
10. Disconnect the front drain hose from the sunroof frame.
11. Remove the front drain hose from the clips.
12. Pull the front drain hose into the room side.
13. Remove the front drain hose.



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FRONT DRAIN HOSE INSTALLATION

id091500801400

Caution

- If the front drain hose is pinched or bent anywhere, the water in the hose may not discharge and enter the inside of the vehicle. During and after installation of the trims and the headliner, always make sure there is no interference with the front drain hose. Fix any problem if found.

1. Apply soapy water to the front drain hose inserting area.
2. Insert one end (the wider end) of the front drain hose into the sunroof frame.
3. Install the front drain hose to the clips, parallel to the pillar and free of slack.
4. Insert the front drain hose joint into the hinge pillar inner hole.
5. Connect the auto-dimming mirror connector. (vehicles with auto-dimming mirror)
6. Install the following parts:
 - (1) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
 - (2) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (3) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (4) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (5) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (7) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (10) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (11) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)

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- (12)Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
- (13)A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (14)Sunroof seaming welt (vehicles with sunroof)
- (15)Dashboard (See 09-17-5 DASHBOARD REMOVAL/INSTALLATION.)
- (16)Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
- (17)Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- (18)Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
- (19)Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
- (20)A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (21)Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
- (22)Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
- (23)Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
- (24)Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
- (25)Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
- (26)Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
- (27)Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
- (28)Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
- (29)Steering shaft (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (30)Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (31)Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
- (32)Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
- (33)Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- (34)Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
- (35)Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
- (36)Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
- (37)Hood release lever from the lower panel
- (38)Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (39)Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (40)Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
- (41)Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
- (42)Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
- (43)Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (44)Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
- (45)Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
- (46)Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
- (47)Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
- (48)Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
- (49)Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
- (50)Front doors (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
7. Connect the rain sensor connector. (Vehicles with auto light / wiper system)
8. Install the rain sensor cover. (Vehicles with auto light / wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.)
9. Install the seaming welt.

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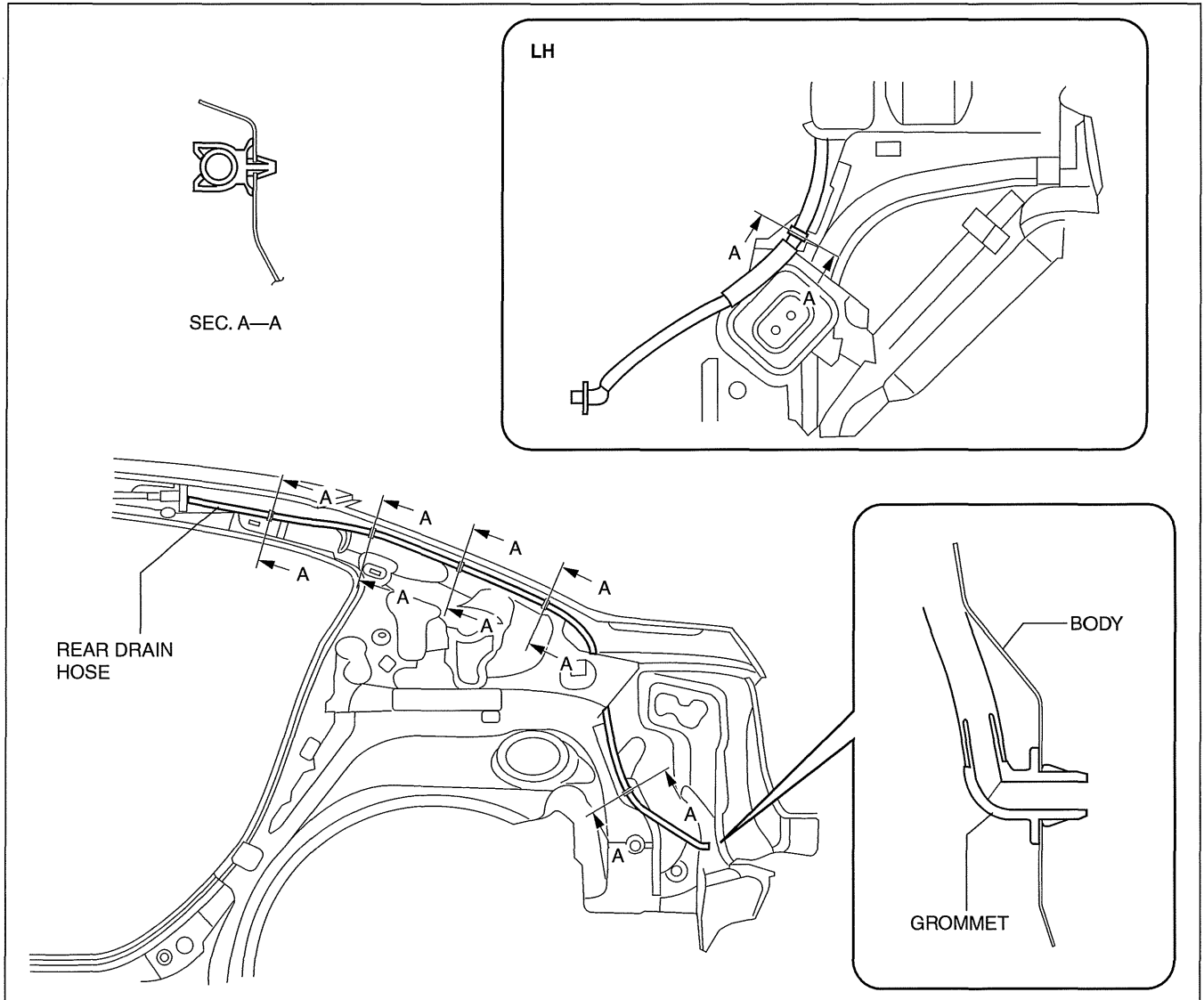
REAR DRAIN HOSE REMOVAL

id091500801500

1. Disconnect the negative battery cable.
2. Partially peel back the seaming welt.
3. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (11) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (12) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (13) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (14) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (15) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (16) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (17) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
4. Disconnect the dimming mirror connector. (vehicles with dimming mirror)
5. Disconnect the rain sensor connector. (vehicles with rain sensor)
6. Disconnect the rear drain hose from the sunroof frame.
7. Remove the rear drain hose from the clips.
8. Pull the rear drain hose into the room side.
9. Remove the rear drain hose.

SUNROOF

4SD

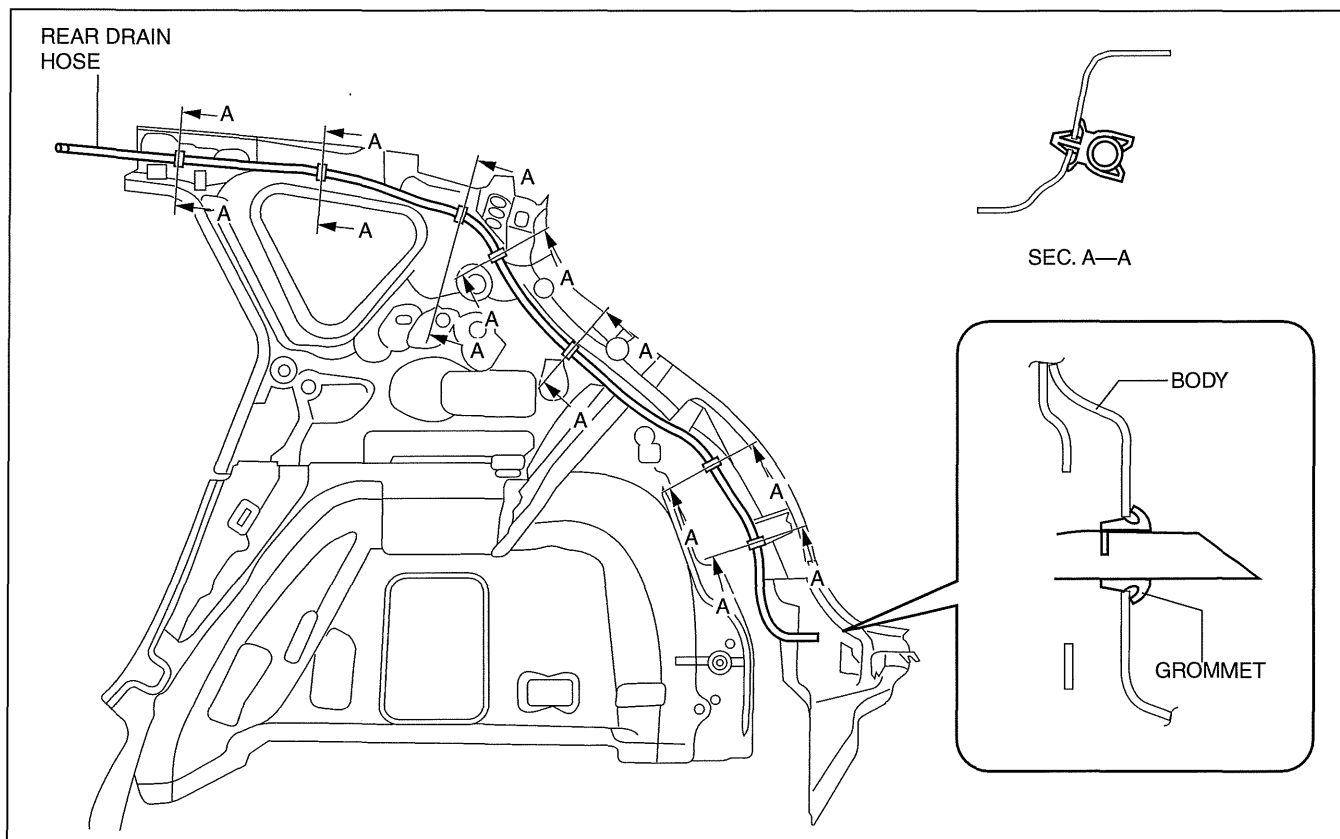


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09-15

SUNROOF

5HB



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REAR DRAIN HOSE INSTALLATION

id091500801600

Caution

- If the rear drain hose is pinched or bent anywhere, the water in the hose may not discharge and enter the inside of the vehicle. During and after installation of the trims and the headliner, always make sure there is no interference with the rear drain hose. Fix any problem if found.

1. Apply soapy water to the rear drain hose inserting area.
2. Insert one end (the wider side) of the rear drain hose into the sunroof frame.
3. Install the rear drain hose to the clips parallel to the pillar and free of slack.
4. Insert the rear drain hose joint into the rear pillar inner hole.
5. Connect the rain sensor connector. (vehicles with rain sensor)
6. Connect the dimming mirror connector. (vehicles with dimming mirror)
7. Install the following parts:
 - (1) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
 - (2) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (3) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (4) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (5) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (7) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (11) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (12) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (13) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (14) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (15) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (16) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (17) Sunroof seaming welt (vehicles with sunroof)
8. Install the seaming welt.

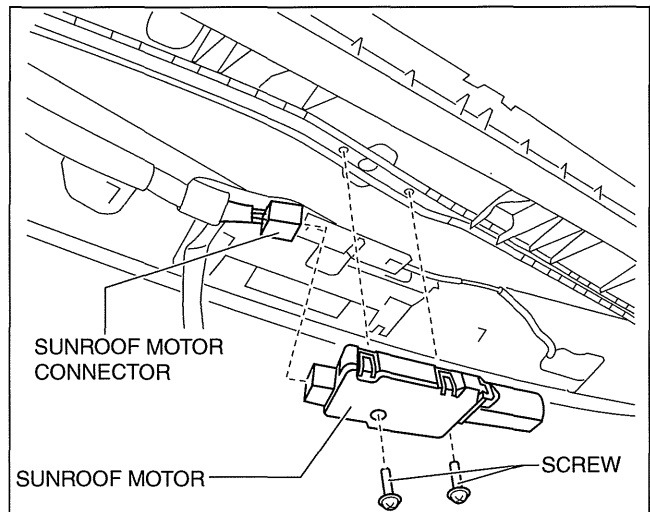
SUNROOF MOTOR REMOVAL/INSTALLATION

id091500805000

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Disconnect the sunroof motor connector.
4. Remove the screws, and then remove the sunroof motor.
5. Install in the reverse order of removal.

Note

- If the glass panel or the sunroof motor is moved with the sunroof motor removed, initial position setting of the sunroof motor will be required. Perform initial position setting referring to the Sunroof Motor Assembly Note. (See 09-15-6 SUNROOF UNIT DISASSEMBLY/ASSEMBLY.)



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09-15

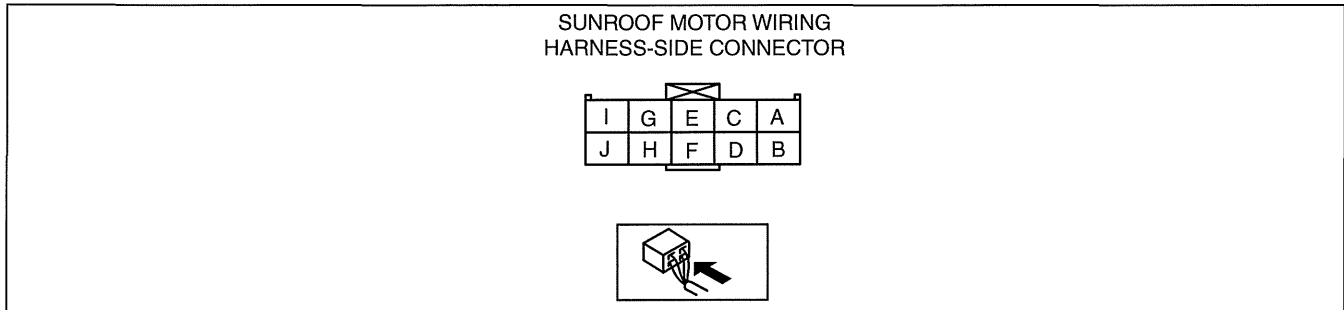
SUNROOF

SUNROOF MOTOR INSPECTION

id091500801100

1. Measure the voltage at each terminal.
 - If not as specified, inspect the parts listed under "Inspection item" and the related wiring harnesses.
 - If the parts and wiring harnesses are normal but the system still does not work properly, replace the sunroof motor.

Terminal Voltage Table (Reference)



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Terminal	Signal	Connected to	Test condition	Voltage (V)	Inspection item
A	Slide open	Sunroof switch	Sunroof is fully opening.	B+	Sunroof switch
			Other	1.0 or less	
B	Slide close/tilt down	Sunroof switch	Sunroof is closing/tilting down.	B+	Sunroof switch
			Other	1.0 or less	
C	Tilt up	Sunroof switch	Sunroof is tilting up.	B+	Sunroof switch
			Other	1.0 or less	
D	—	—	—	—	—
E	IG2	HEATER 10 A fuse	Switch the ignition ON.	B+	HEATER 10 A fuse
			Other	1.0 or less	
F	—	—	—	—	—
G	GND	GND	Under any condition	1.0 or less	GND
H	—	—	—	—	—
I	—	—	—	—	—
J	Power supply	SUNROOF 15 A fuse	Under any condition	B+	SUNROOF 15 A fuse

SUNROOF SWITCH REMOVAL/INSTALLATION

id091500800200

Note

- The sunroof switch is together with the front map light.

1. Disconnect the negative battery cable.
2. Remove the map light from the headliner. (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
3. Install in the reverse order of removal.

SUNROOF SWITCH INSPECTION

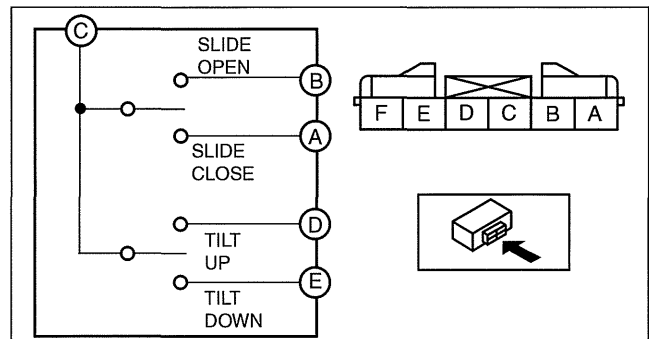
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1. Inspect for continuity between the sunroof switch terminals using an ohmmeter.
 - If not as specified, replace the sunroof switch.

○—○ : Continuity

Switch position	Terminal				
	A	B	C	D	E
Slide open		○—○			
Slide close	○—○				
Tilt up			○—○		
Tilt down			○—○	○—○	
Off					

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EXTERIOR TRIM

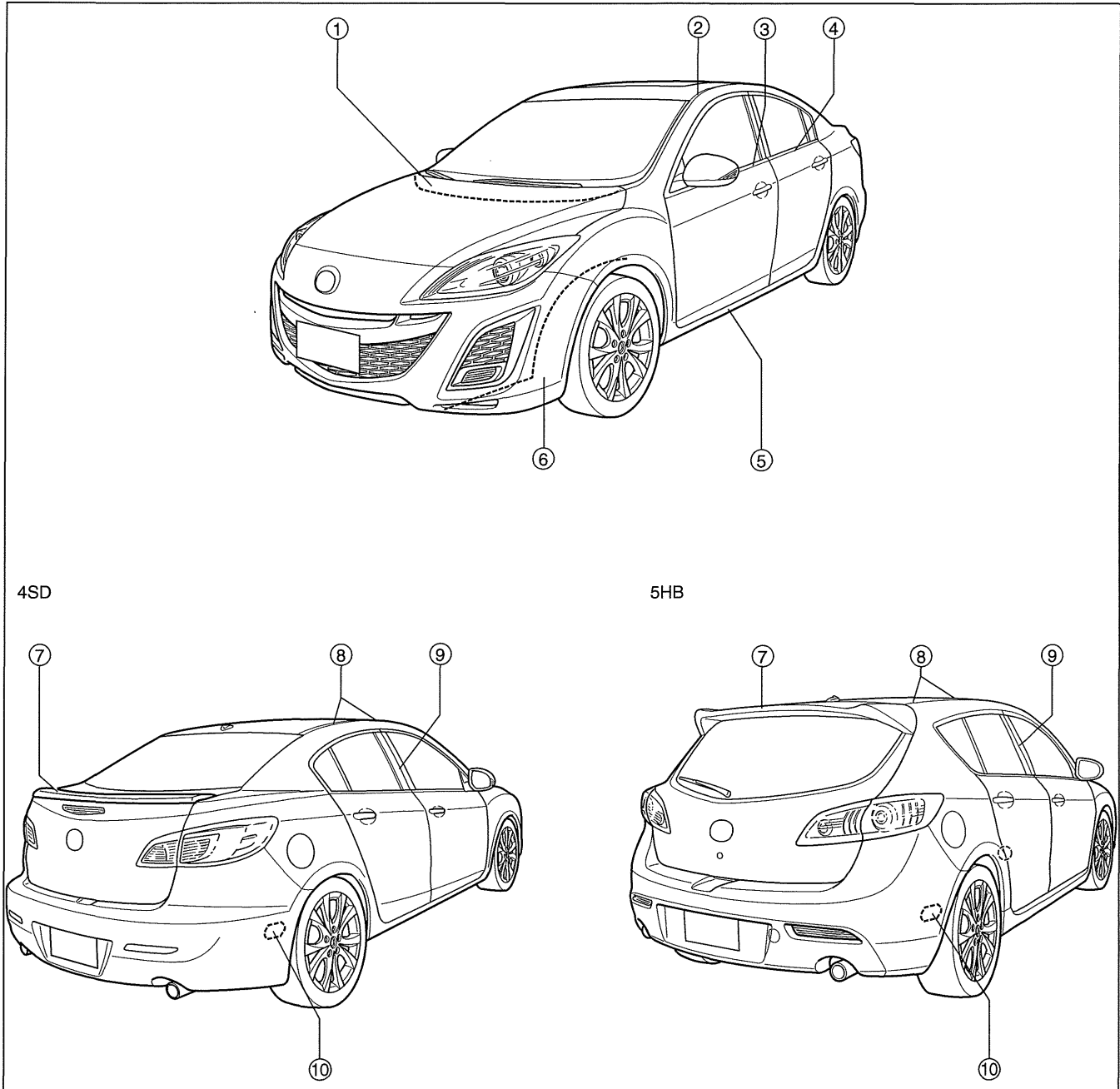
09-16 EXTERIOR TRIM

EXTERIOR TRIM LOCATION INDEX . . .	09-16-2	4SD	09-16-18
COWL GRILLE		5HB	09-16-19
REMOVAL/INSTALLATION	09-16-4	REAR SPOILER	
SIDE STEP MOLDING REMOVAL	09-16-7	REMOVAL/INSTALLATION	09-16-21
SIDE STEP MOLDING		4SD	09-16-21
INSTALLATION	09-16-10	5HB	09-16-24
EXTRACTOR CHAMBER		AERODYNAMIC UNDER COVER	
REMOVAL/INSTALLATION	09-16-13	NO.1 REMOVAL/INSTALLATION	09-16-28
FRONT BELTLINE MOLDING		AERODYNAMIC UNDER COVER	
REMOVAL/INSTALLATION	09-16-14	NO.2 REMOVAL/INSTALLATION	09-16-29
REAR BELTLINE MOLDING		SPLASH SHIELD	
REMOVAL/INSTALLATION	09-16-15	REMOVAL/INSTALLATION	09-16-30
ROOF MOLDING REMOVAL	09-16-16	Front Splash Shield	09-16-30
ROOF MOLDING INSTALLATION	09-16-16	Rear Splash Shield	09-16-31
FRONT MUDGUARD		DOOR SASH FILM REMOVAL	09-16-33
REMOVAL/INSTALLATION	09-16-17	DOOR SASH FILM INSTALLATION	09-16-33
ROOF CARRIER BRACKET			
REMOVAL/INSTALLATION	09-16-18		

EXTERIOR TRIM

EXTERIOR TRIM LOCATION INDEX

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4SD

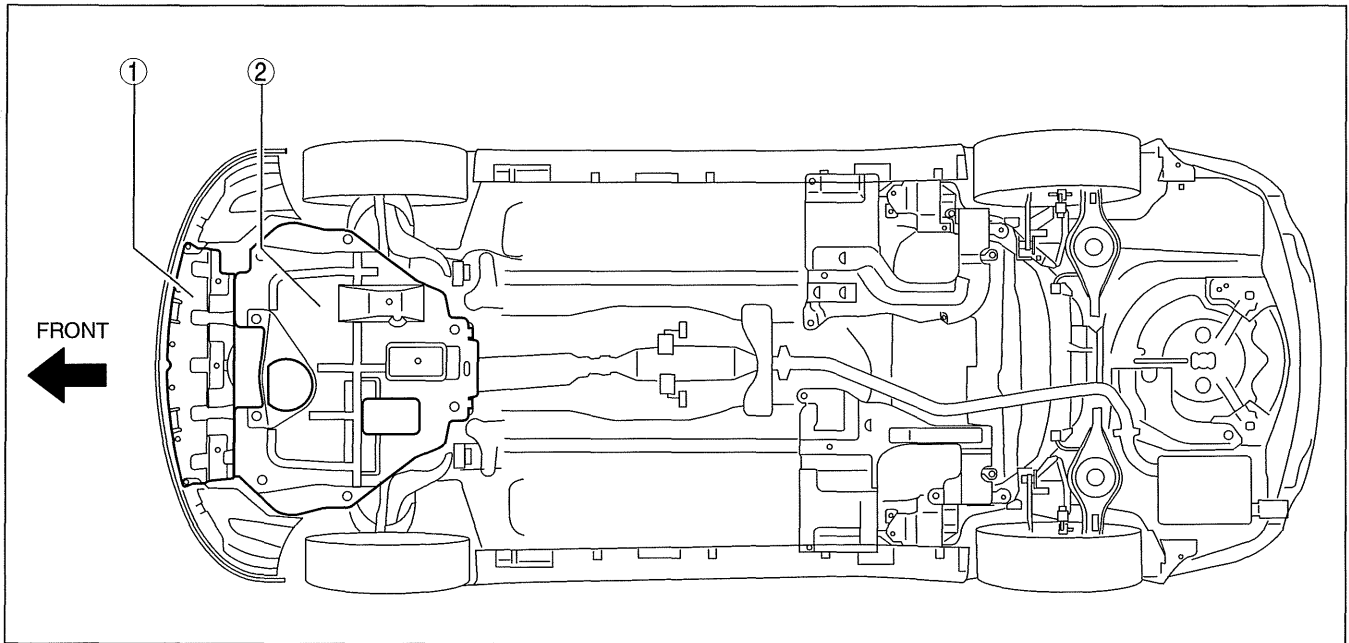
5HB

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1	Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/ INSTALLATION.)
2	Roof molding (See 09-16-16 ROOF MOLDING REMOVAL.) (See 09-16-16 ROOF MOLDING INSTALLATION.)
3	Front beltline molding (See 09-16-14 FRONT BELTLINE MOLDING REMOVAL/INSTALLATION.)
4	Rear beltline molding (See 09-16-15 REAR BELTLINE MOLDING REMOVAL/INSTALLATION.)
5	Side step molding (See 09-16-7 SIDE STEP MOLDING REMOVAL.) (See 09-16-10 SIDE STEP MOLDING INSTALLATION.)

6	Front mudguard (See 09-16-17 FRONT MUDGUARD REMOVAL/ INSTALLATION.)
7	Rear spoiler (See 09-16-21 REAR SPOILER REMOVAL/ INSTALLATION.)
8	Roof carrier bracket (See 09-16-18 ROOF CARRIER BRACKET REMOVAL/INSTALLATION.)
9	Door sash film (See 09-16-33 DOOR SASH FILM REMOVAL.) (See 09-16-33 DOOR SASH FILM INSTALLATION.)
10	Extractor chamber (See 09-16-13 EXTRACTOR CHAMBER REMOVAL/INSTALLATION.)

EXTERIOR TRIM



am3uuw0000430

1	Aerodynamic under cover NO.1 (See 09-16-28 AERODYNAMIC UNDER COVER NO.1 REMOVAL/INSTALLATION.)
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2	Aerodynamic under cover NO.2 (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION.)
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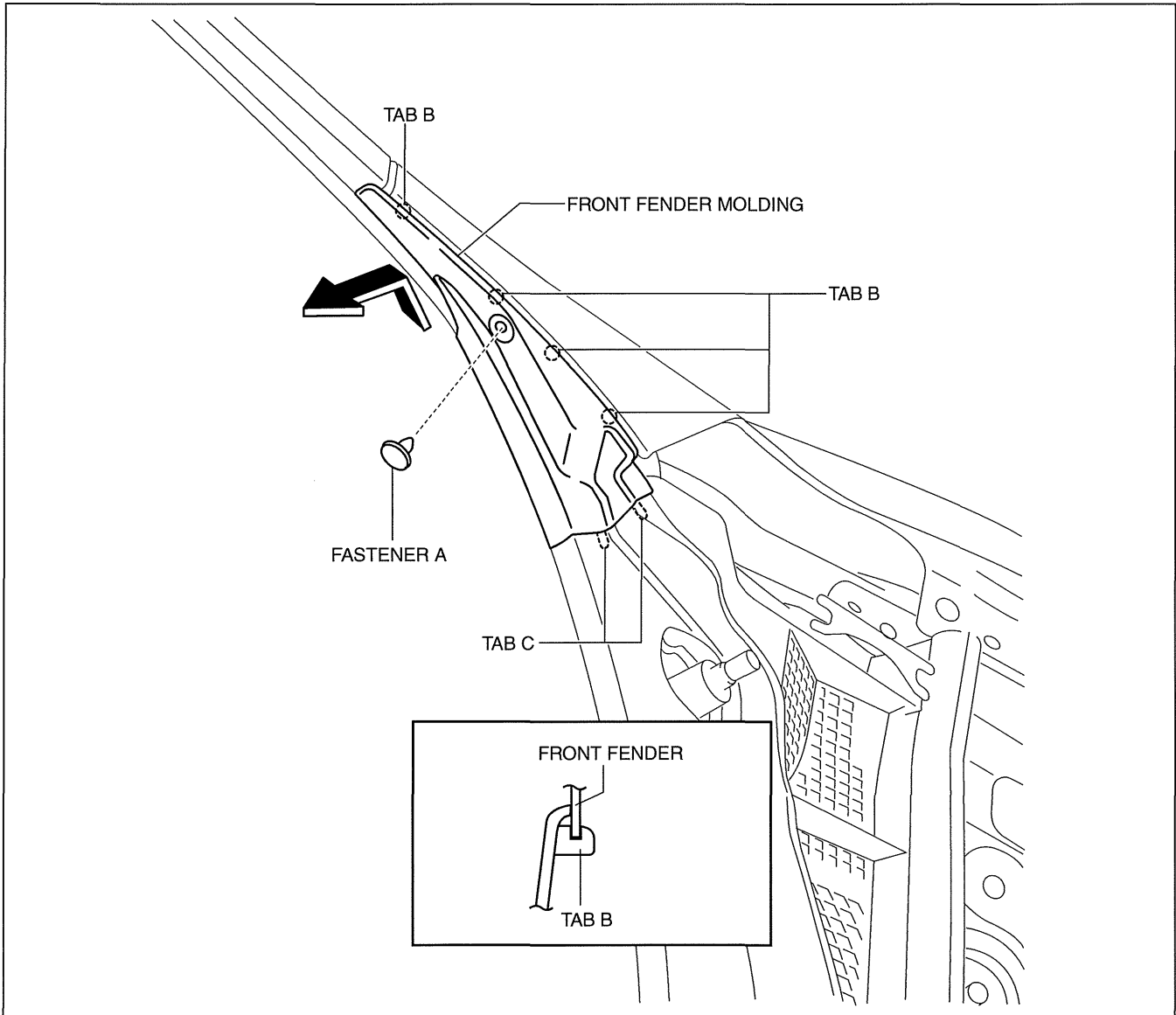
09-16

EXTERIOR TRIM

COWL GRILLE REMOVAL/INSTALLATION

id091600801000

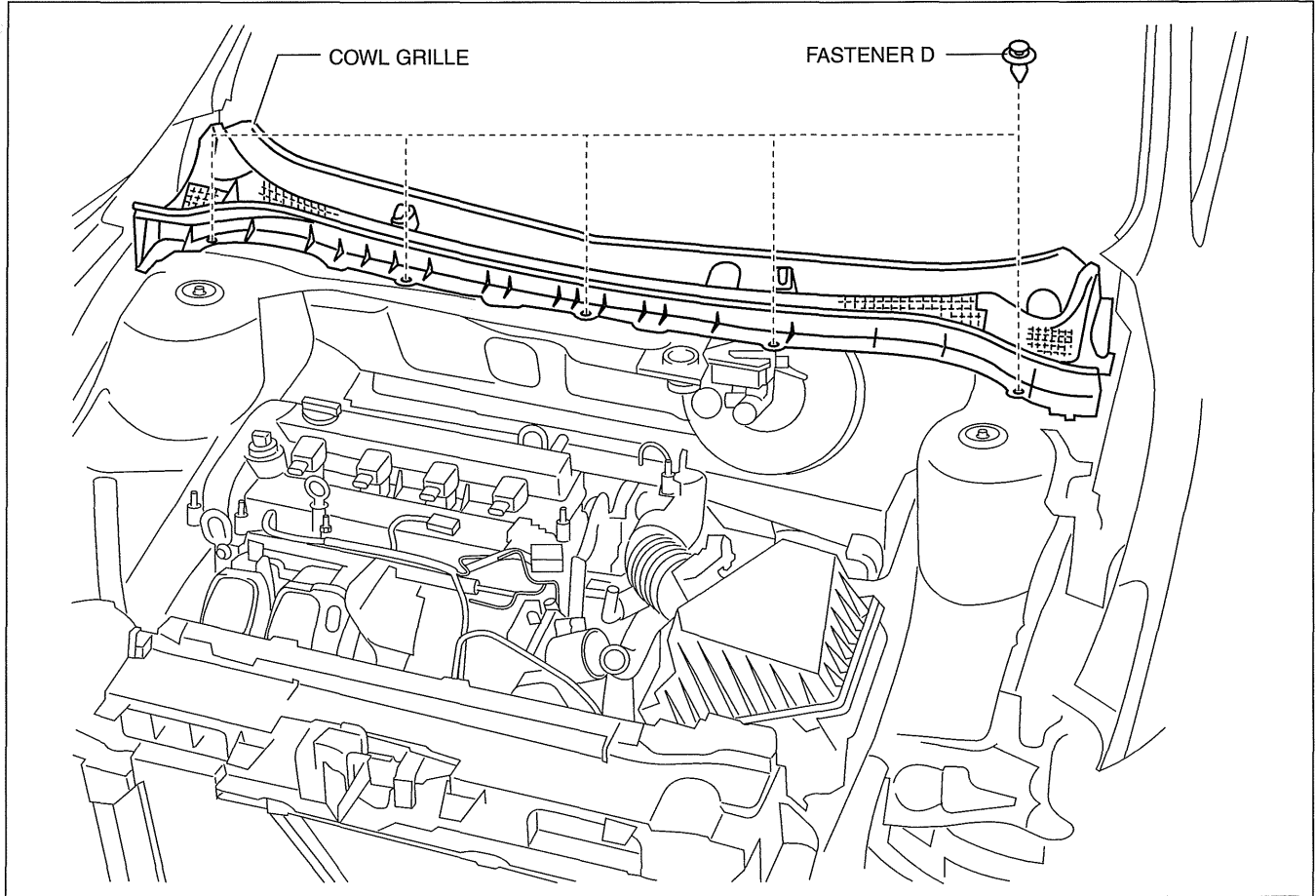
1. Remove the windshield wiper arm and blade. (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION)
2. Remove the fastener A.
3. Pull the front fender molding in the direction of the arrow shown in the figure and remove it while remove the tab B and tab C.



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EXTERIOR TRIM

4. Disconnect the windshield washer hose from the joint pipe A. (See 09-19-13 WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION)
5. Remove the fasteners D.

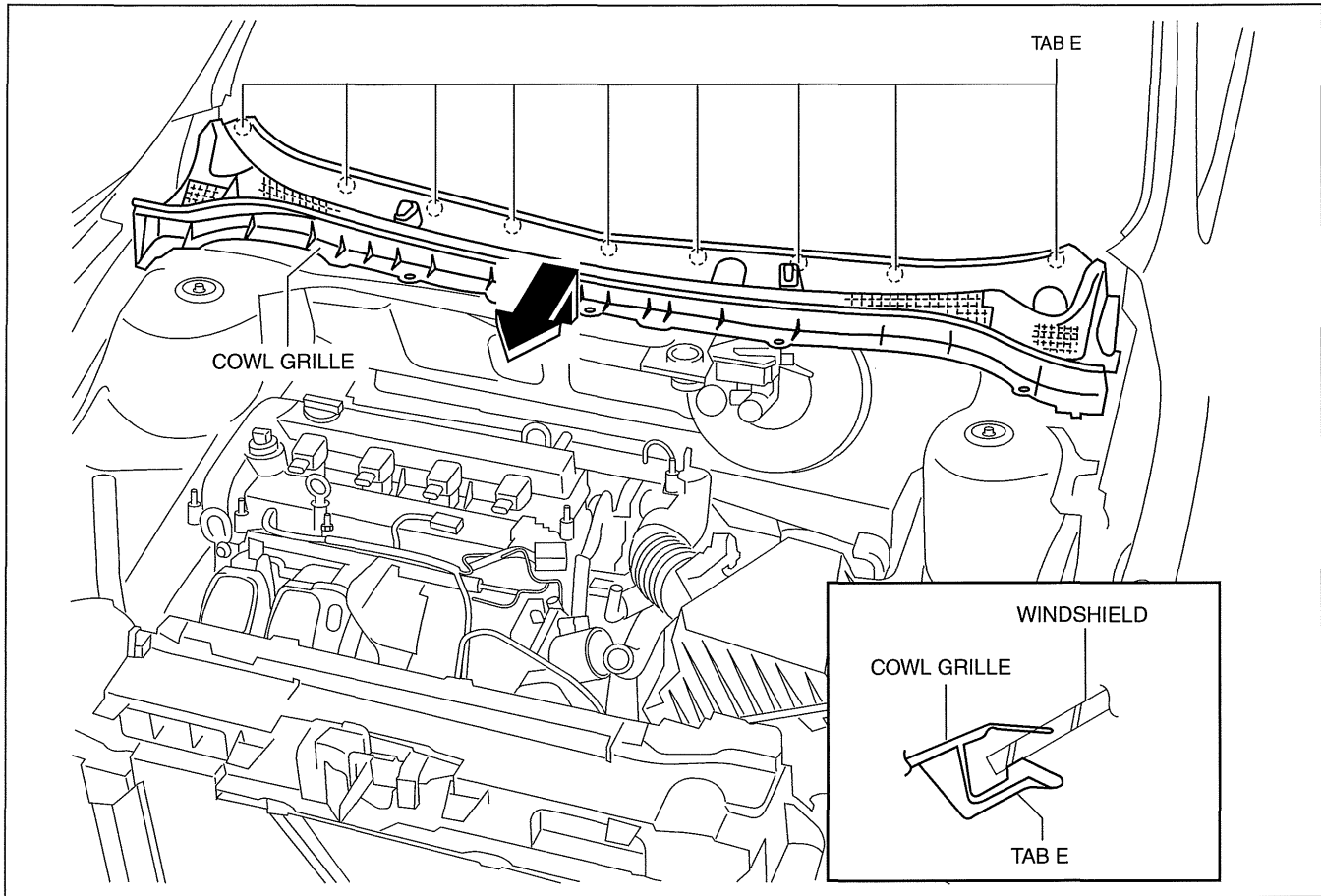


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09-16

EXTERIOR TRIM

6. Pull the cowl grille in the direction of arrow, then remove the tabs E from the windshield.



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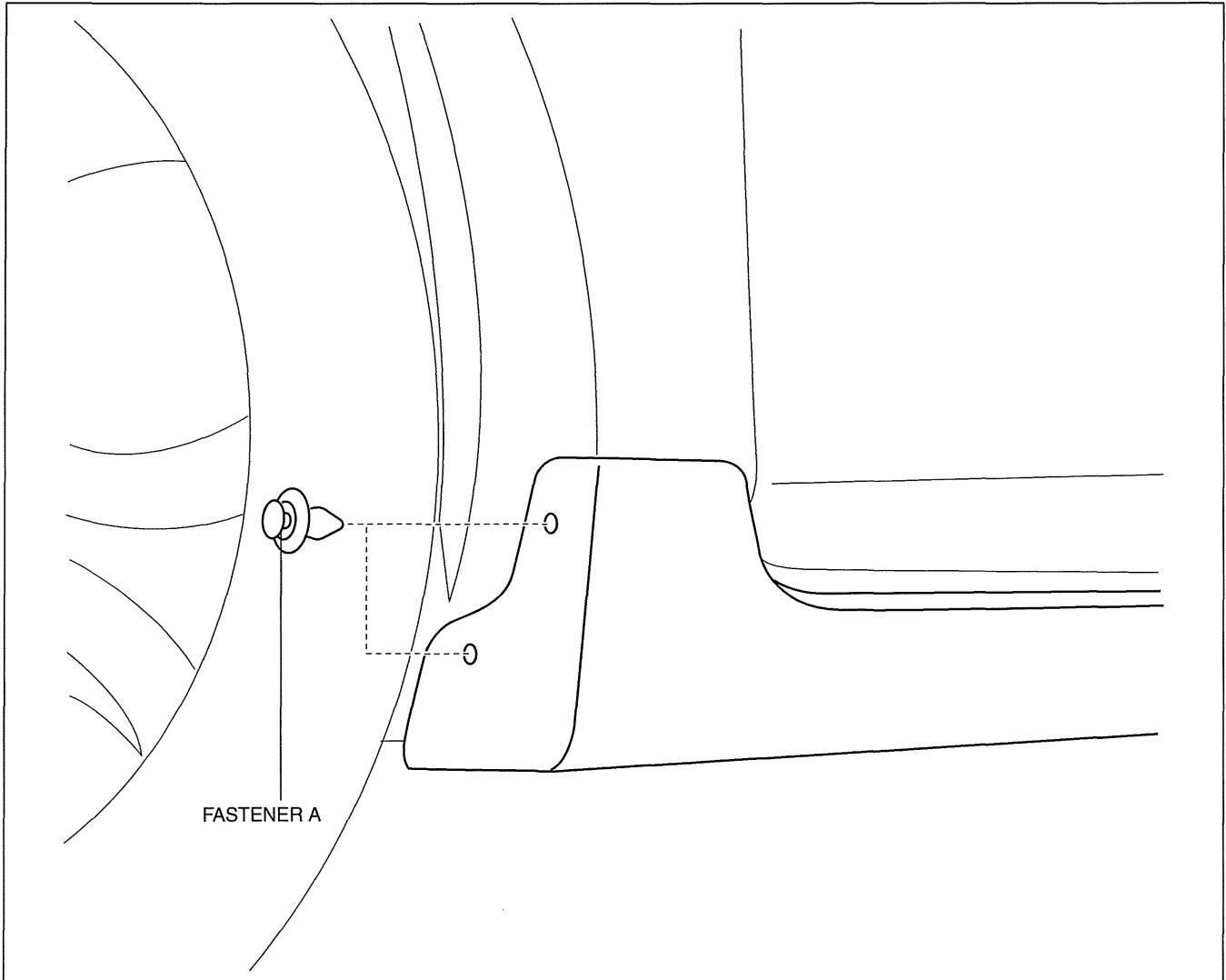
7. Remove the cowl grille.
8. Install in the reverse order of removal.

EXTERIOR TRIM

SIDE STEP MOLDING REMOVAL

id091600804400

1. Remove the fasteners A.



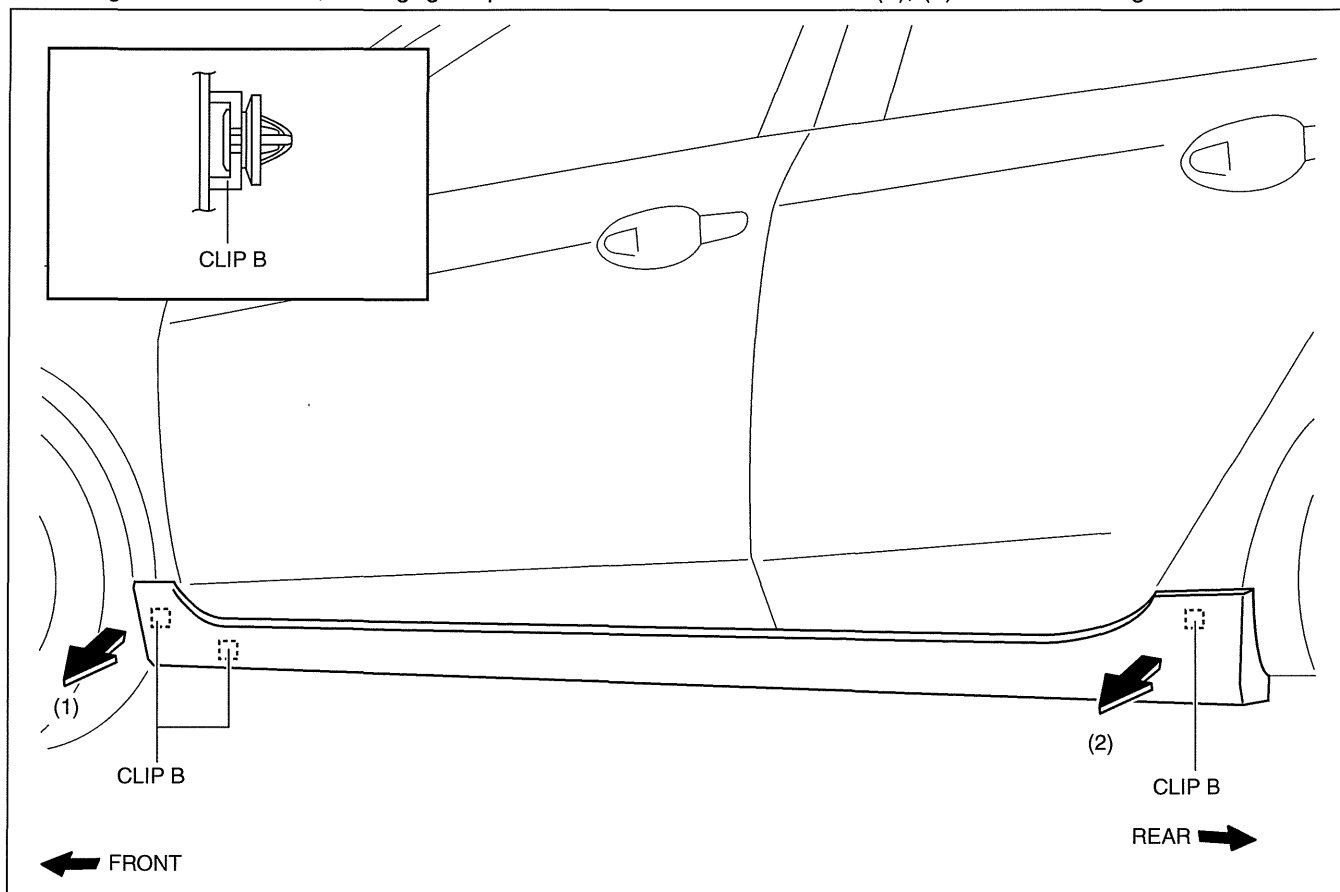
FASTENER A

09-16

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EXTERIOR TRIM

2. Using the removal tool, disengage clips B in the direction of the arrow (1), (2) shown in the figure.



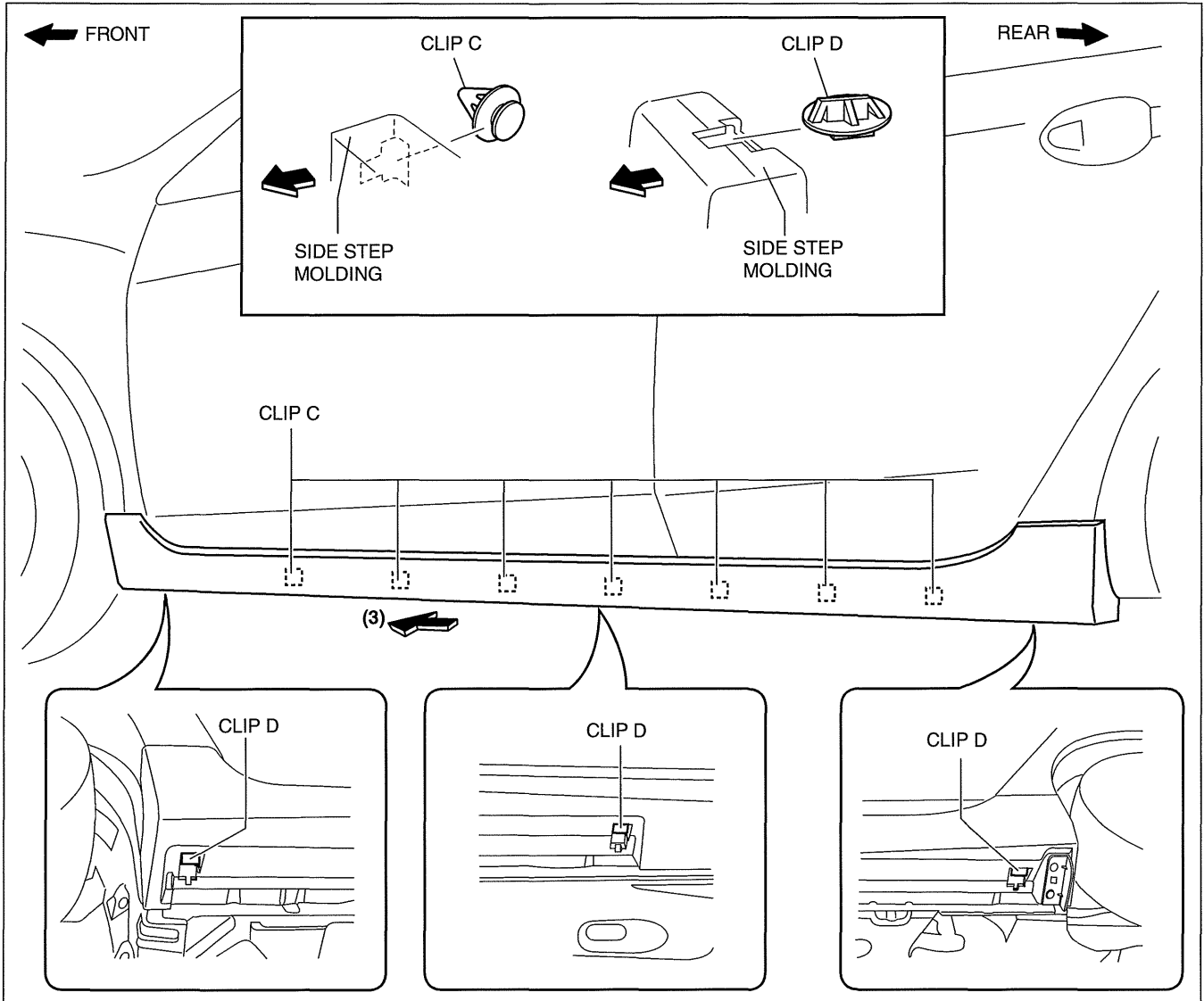
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Note

- Leave the disengaged clip B in place in consideration of the servicing.

EXTERIOR TRIM

3. Slide the side step molding in the direction of the arrow (3) shown in the figure and remove the side step molding from clips C and D.



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4. After removing the side step molding, remove clips C and D from the body using a fastener remover.

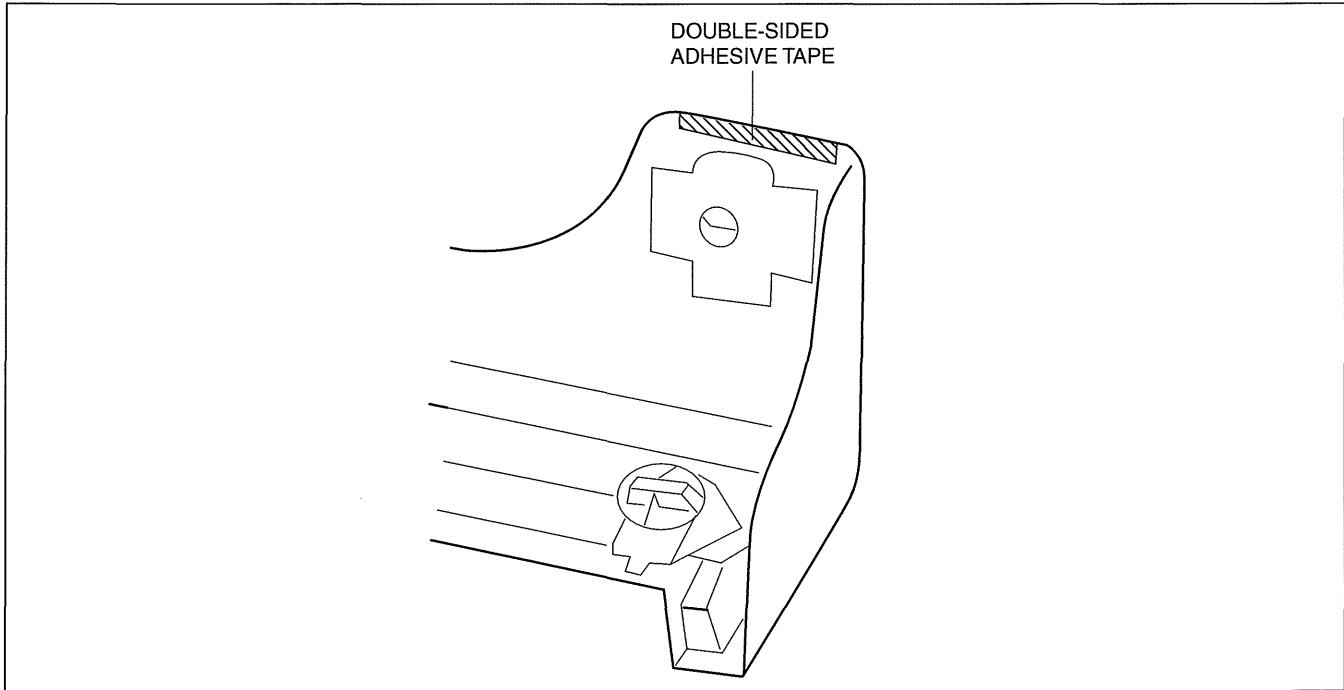
EXTERIOR TRIM

SIDE STEP MOLDING INSTALLATION

id091600804300

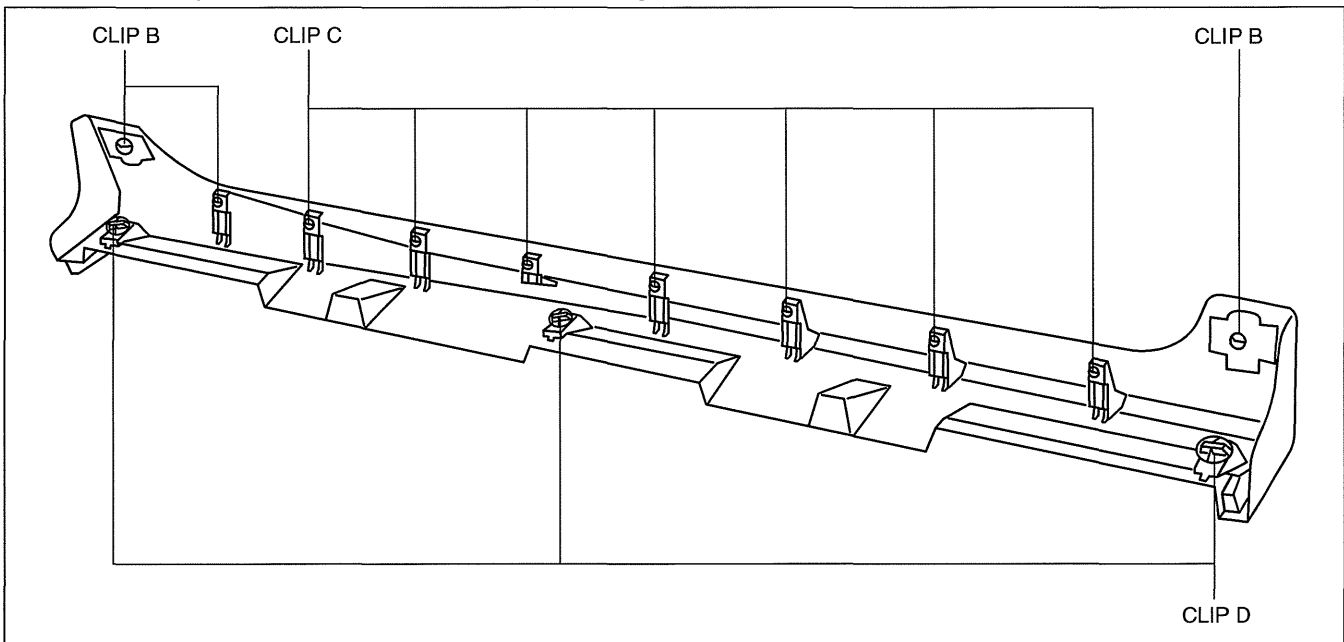
Note

- Double-sided adhesive tape has already been adhered to a new side step molding for installation.
- When a side step molding is to be reused, perform the following procedure:
 1. Remove any grease or dirt from the affixing surface of the side step molding.
 2. Affix double-sided adhesive tape to the position shown in the figure.



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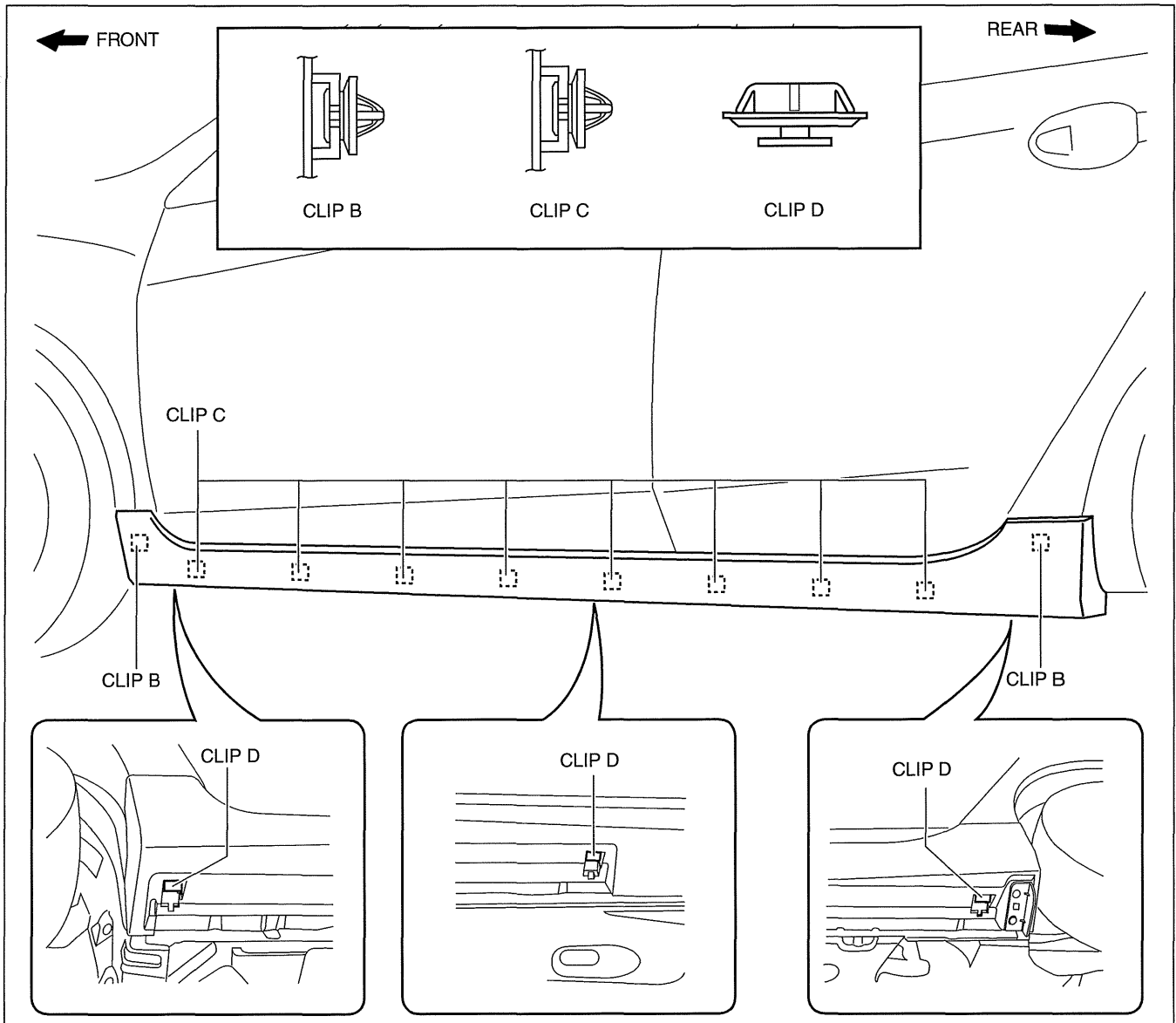
1. Install the clips B, C and D to the side step molding.



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EXTERIOR TRIM

2. Install the side step molding while pushing the clips B, C, and D installation area shown in the figure.

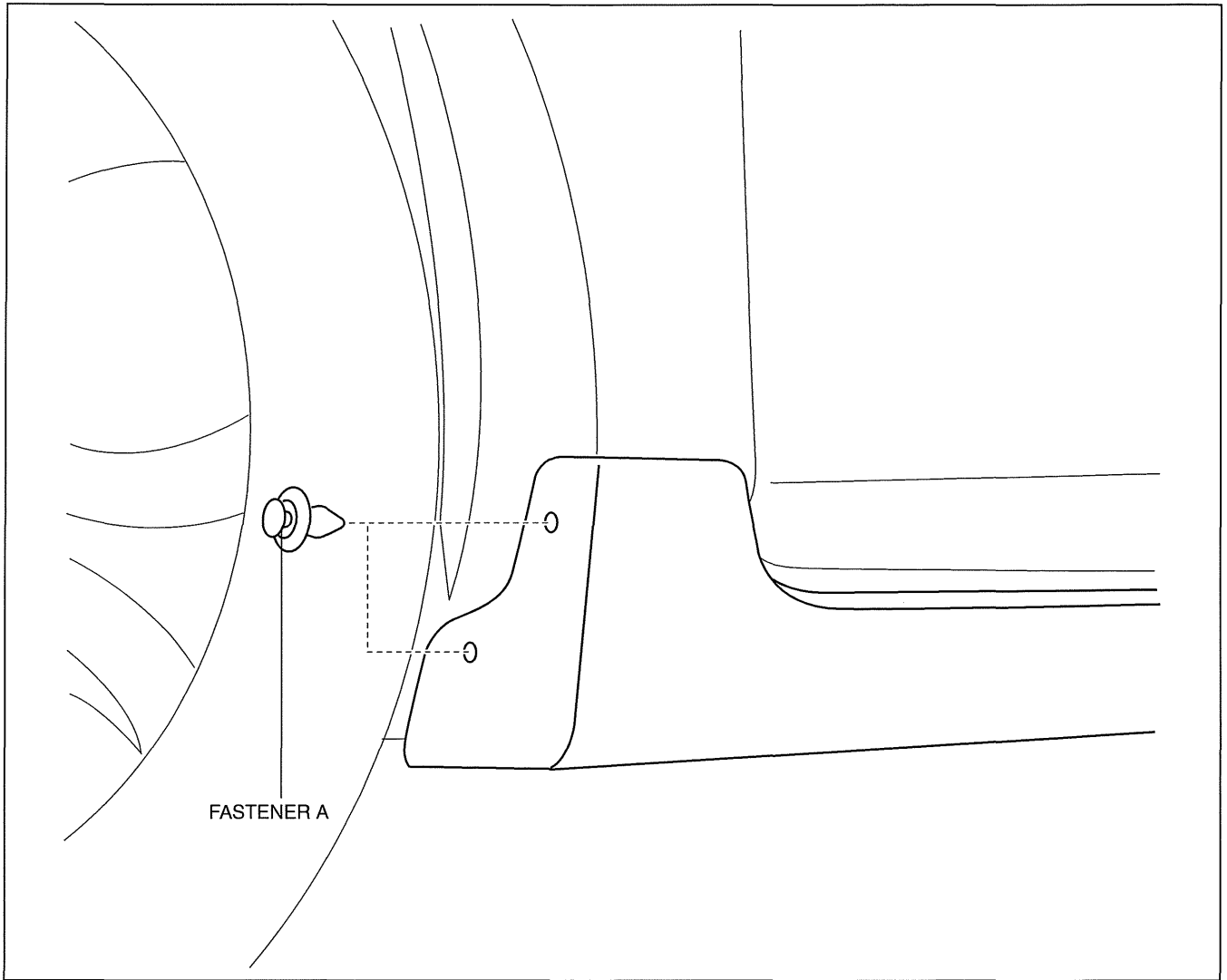


09-16

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EXTERIOR TRIM

3. Install the fasteners A.



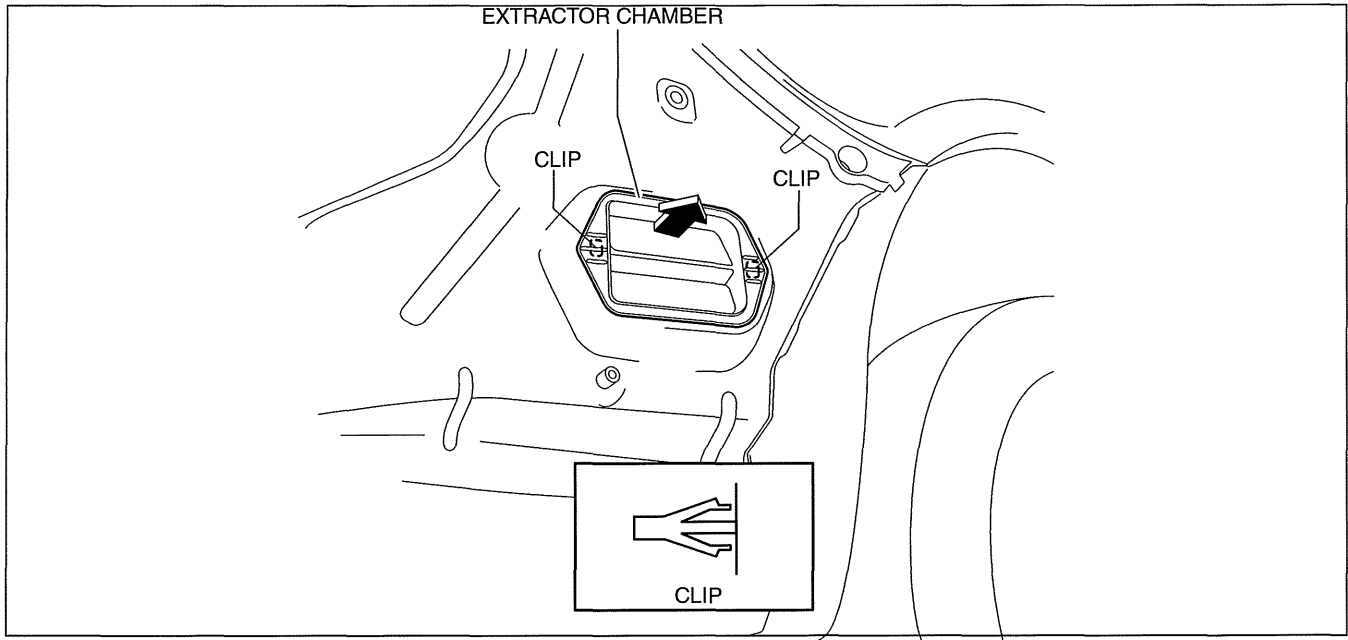
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EXTERIOR TRIM

EXTRACTOR CHAMBER REMOVAL/INSTALLATION

id091600801500

1. Disconnect the negative battery cable.
2. Remove the rear combination light. (See 09-18-32 REAR COMBINATION LIGHT REMOVAL/INSTALLATION.)
3. Remove the rear bumper. (See 09-10-30 REAR BUMPER REMOVAL/INSTALLATION.)
4. Remove the clips.



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5. Install in the reverse order of removal.

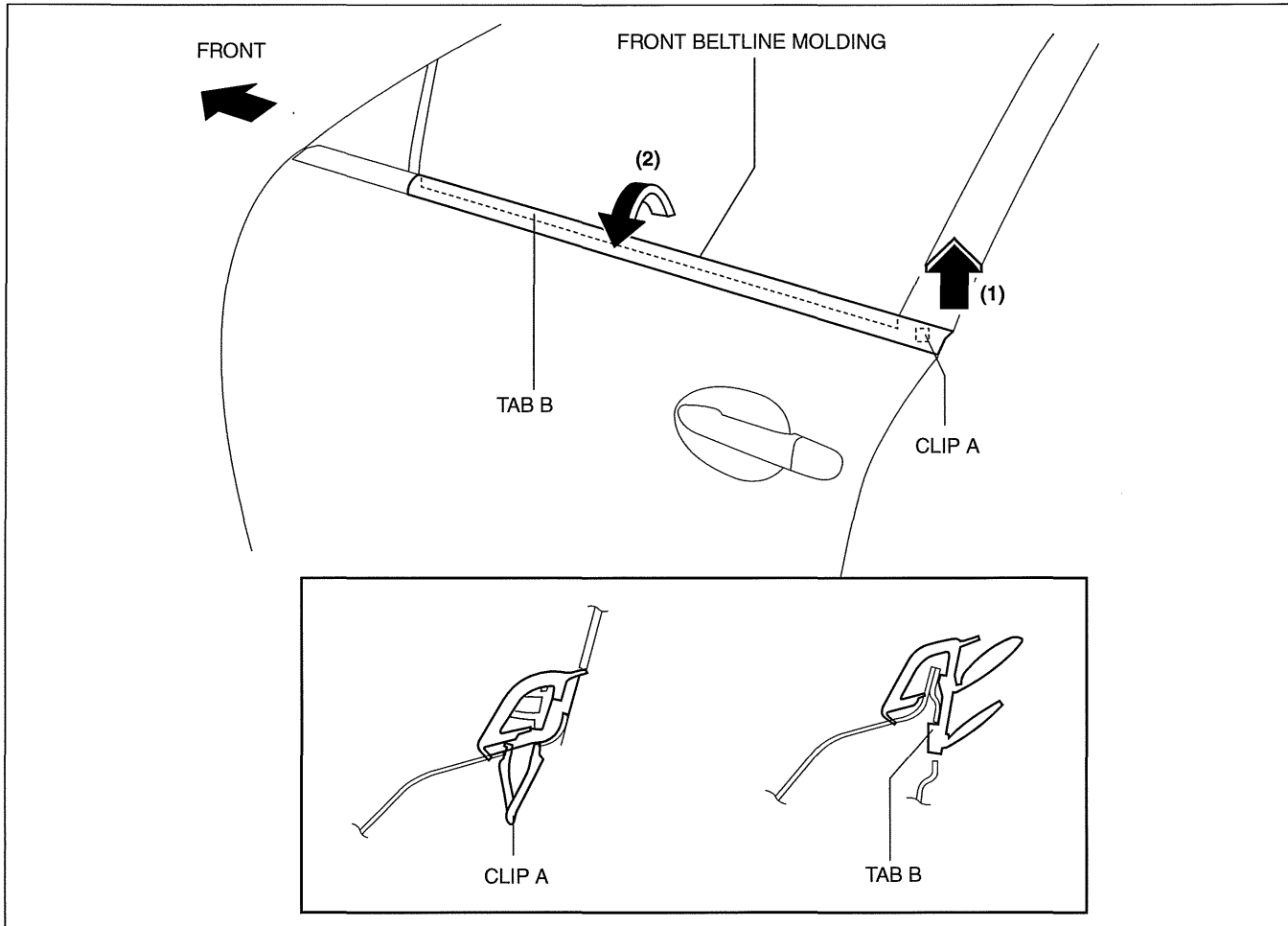
09-16

EXTERIOR TRIM

FRONT BELTLINE MOLDING REMOVAL/INSTALLATION

id091600804800

1. Fully open the front door glass.
2. Disconnect the negative battery cable.
3. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION)
4. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION)
5. Remove the power outer mirror. (See 09-12-41 POWER OUTER MIRROR REMOVAL/INSTALLATION)
6. Remove clip A using a fastener remover and pull the front beltline molding in the direction of the arrow (1) shown in the figure.
7. Rotate the front beltline molding in the direction of the arrow (2) shown in the figure and remove it while detaching tab B.



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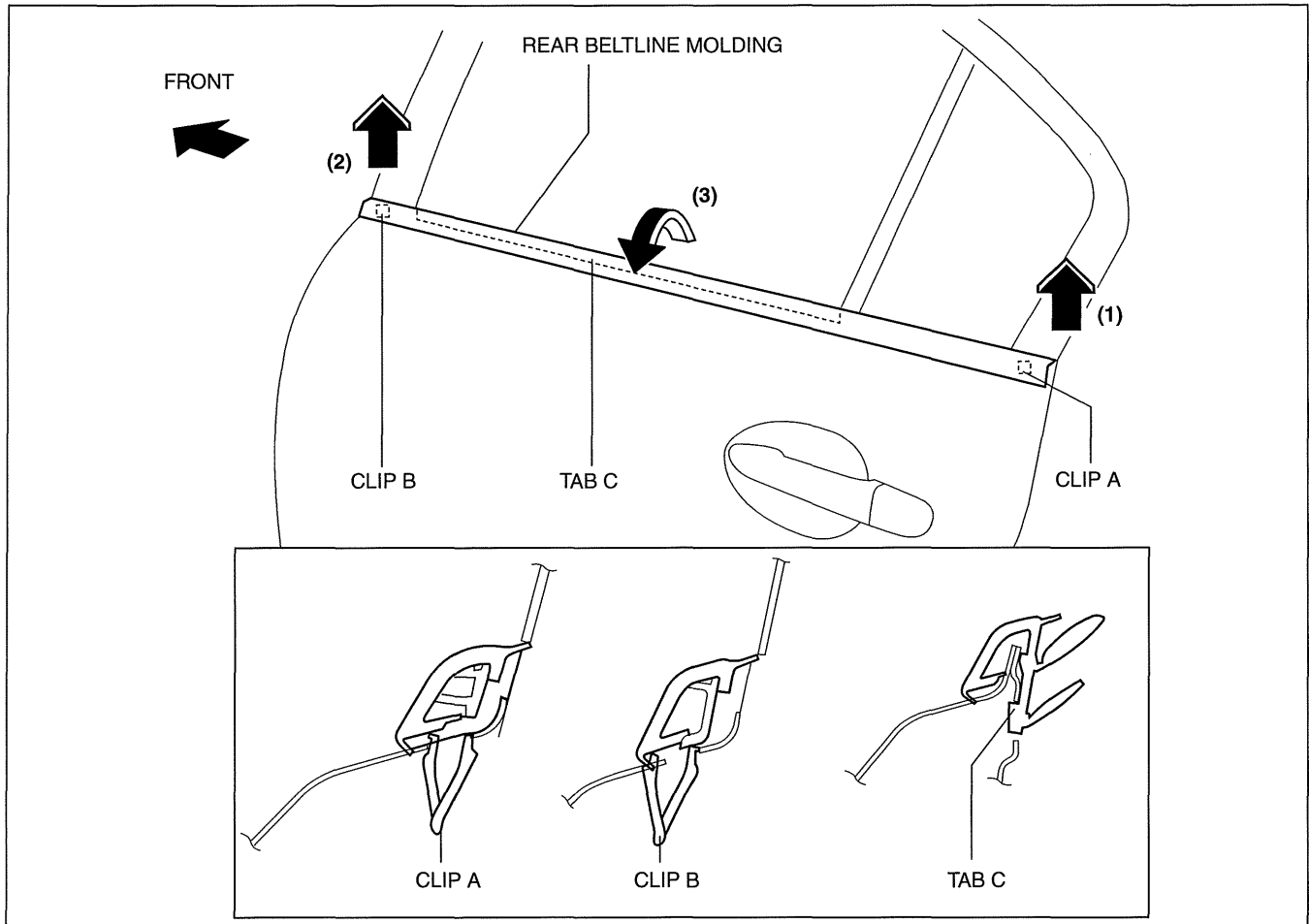
8. Install in the reverse order of removal.

EXTERIOR TRIM

REAR BELTLINE MOLDING REMOVAL/INSTALLATION

id091600804700

1. Fully open the rear door glass.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Remove clip A using a fastener remover and pull up the rear beltline molding in the direction of the arrow (1) shown in the figure.
4. Remove clip B using a fastener remover and pull up the rear beltline molding in the direction of the arrow (2) shown in the figure.
5. Rotate the rear beltline molding in the direction of the arrow (3) shown in the figure and remove it while detaching tabs C.



09-16

am3zzw0000833

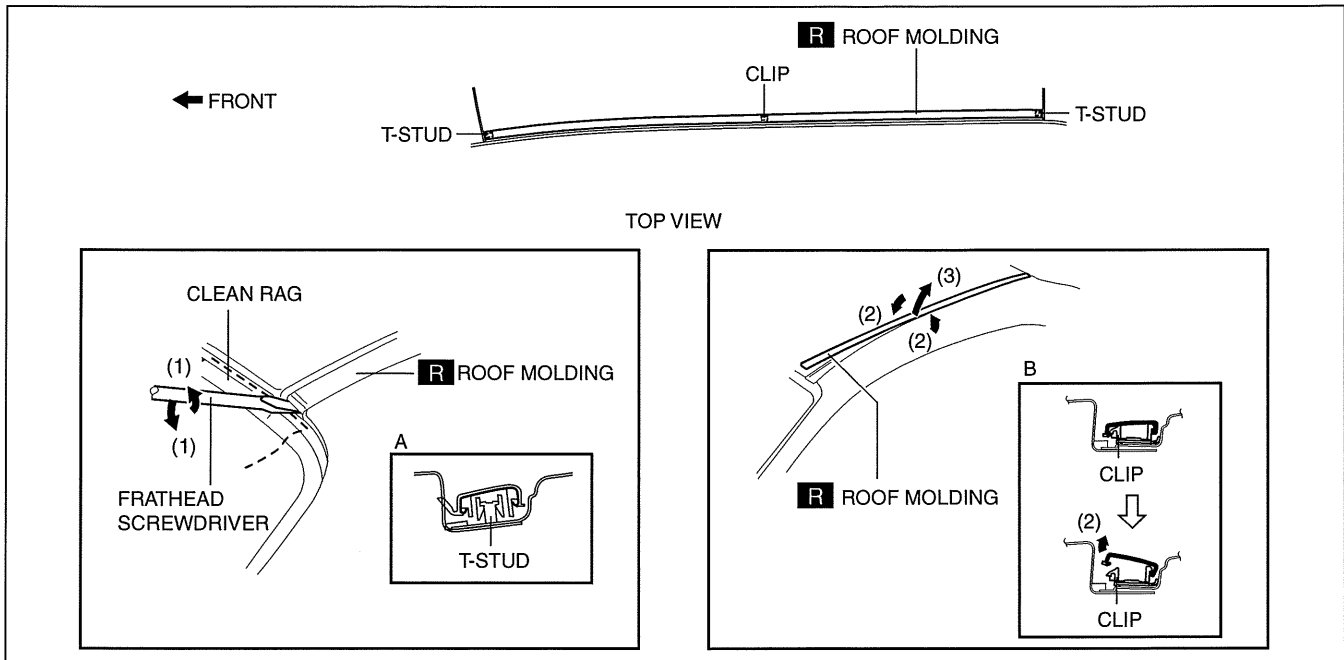
6. Install in the reverse order of removal.

EXTERIOR TRIM

ROOF MOLDING REMOVAL

id091600447800

1. Insert a fastener remover in the position shown in the figure.
2. Rotate the flathead screwdriver in the direction of the arrow (1) shown in the figure and remove the roof molding from the T-stud (figure A);
3. Rotate the roof molding in the direction of the arrow (2) shown in the figure, pull up the roof molding in the direction of the arrow (3) while detaching it from the clip (figure B), and then remove the roof molding.

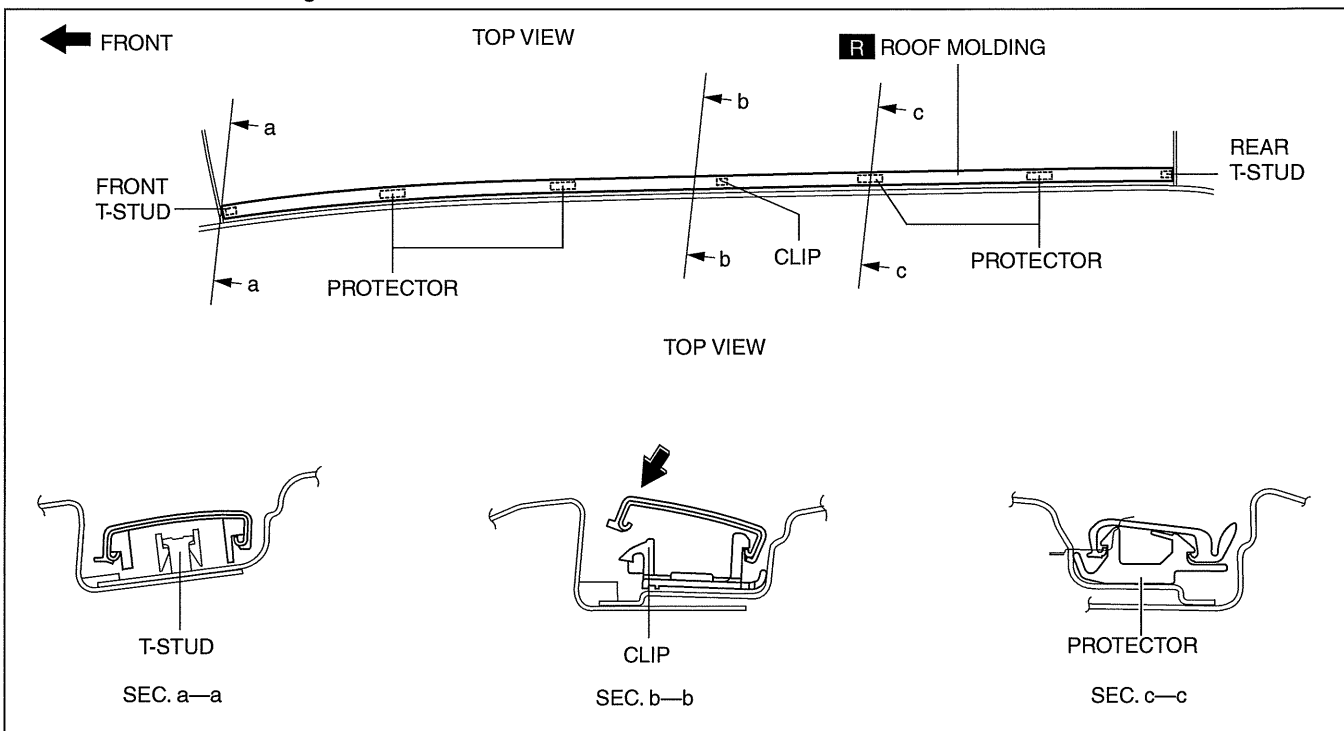


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ROOF MOLDING INSTALLATION

id091600447600

1. Install the roof molding to the front T-stud.



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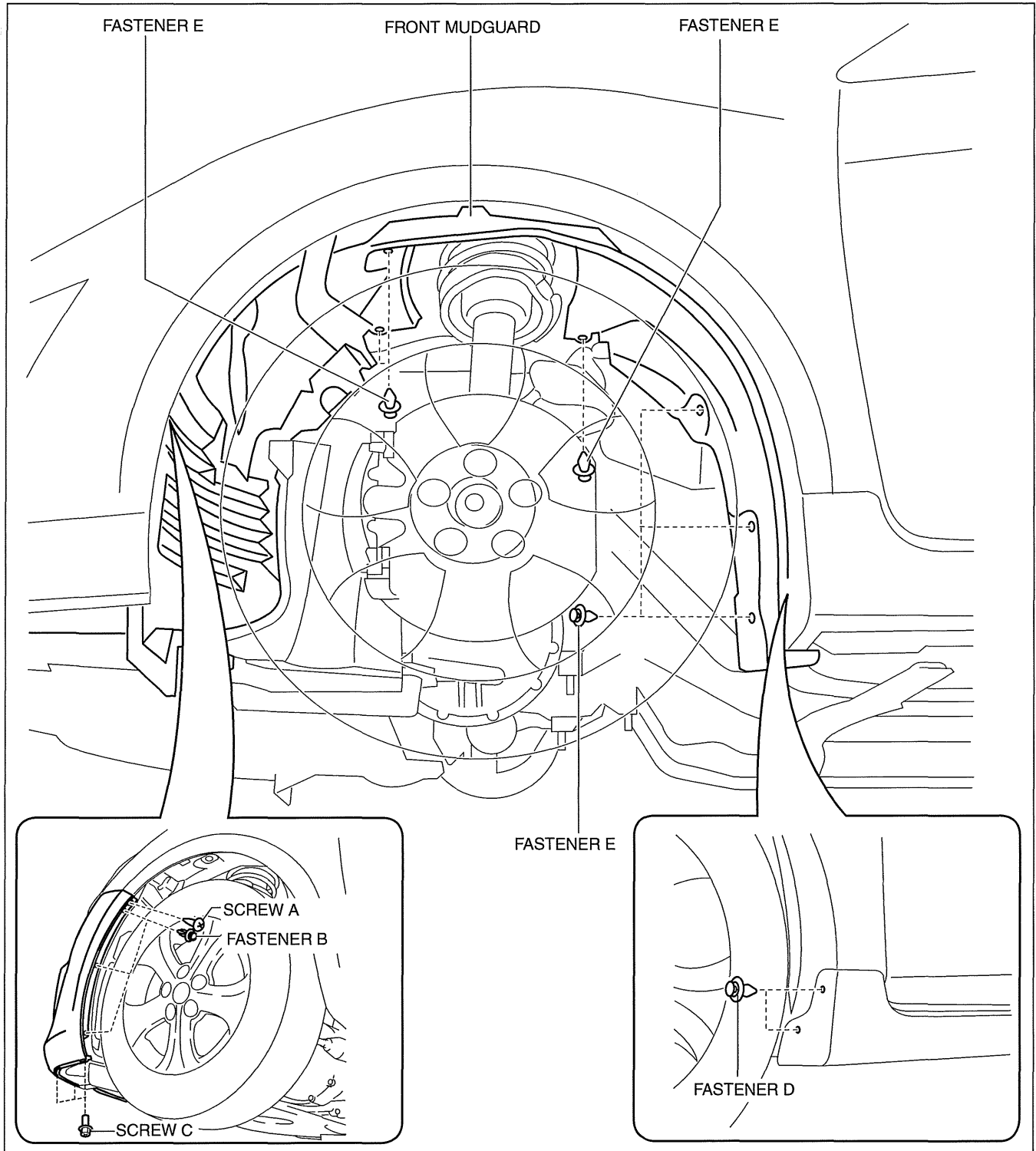
2. Hook the roof molding to the clip and attach the roof molding while pressing it in the direction of the arrow shown in the figure.
3. Install the roof molding to the rear T-stud.
4. Press in the protector installation positions shown in the figure and firmly adhere them to the body.

EXTERIOR TRIM

FRONT MUDGUARD REMOVAL/INSTALLATION

id091600812300

1. Remove screw A, fasteners B, screws C, fasteners D, and E.

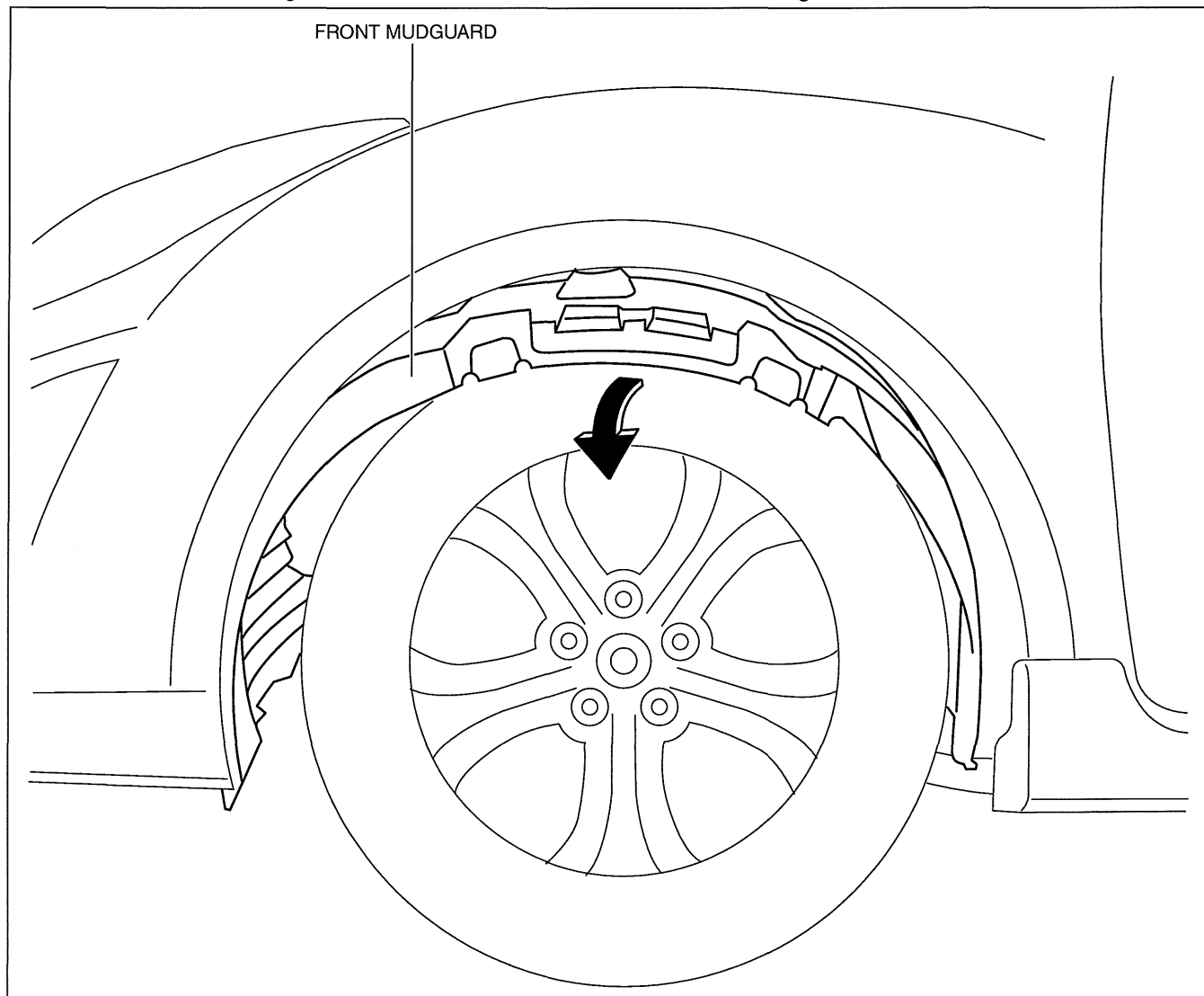


09-16

am3uuw0000393

EXTERIOR TRIM

2. Remove the front mudguard in the direction of the arrow shown in the figure.



am3uuw000393

3. Install in the reverse order of removal.

ROOF CARRIER BRACKET REMOVAL/INSTALLATION

id091600801700

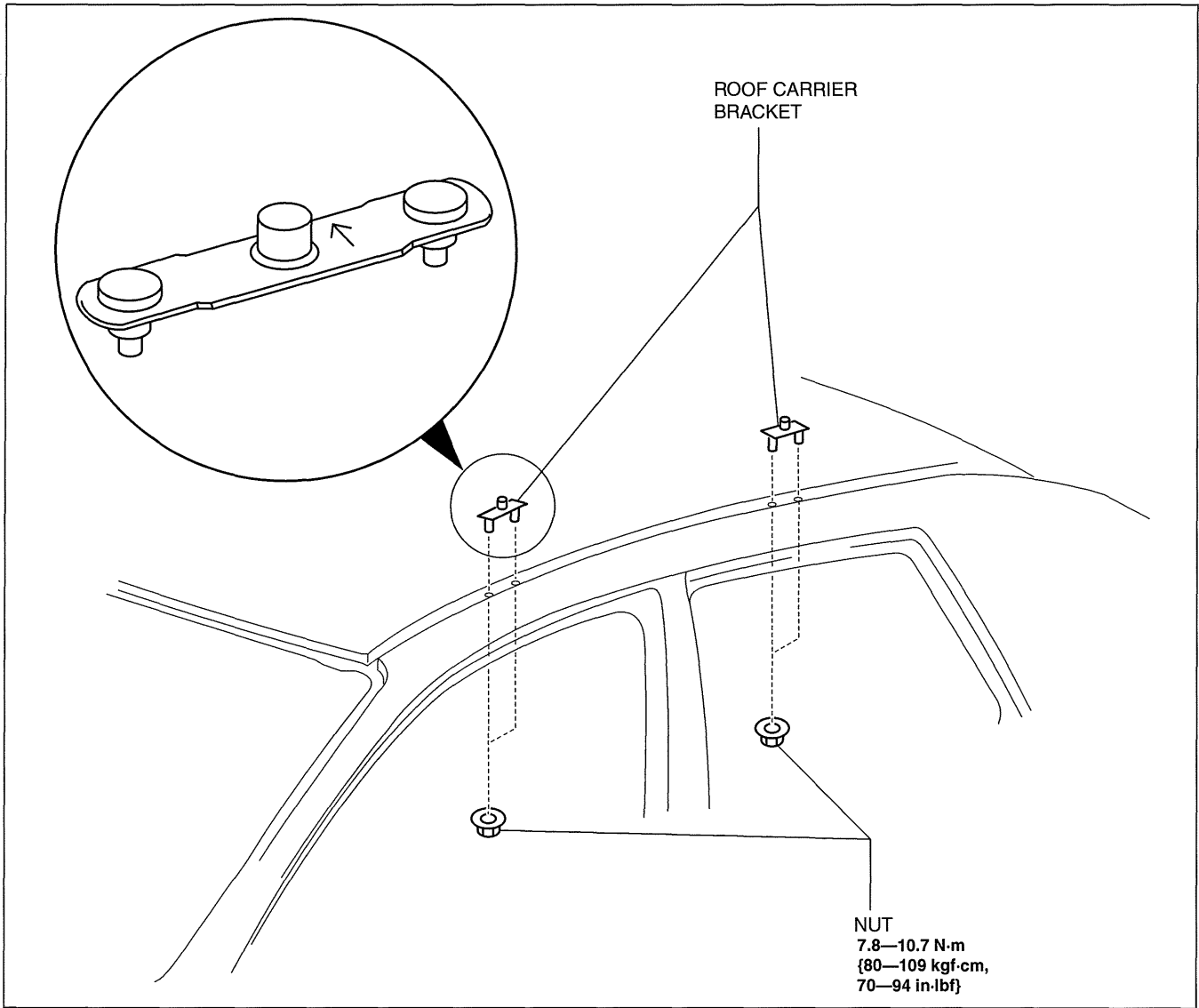
4SD

1. Remove the following parts:

- (1) Sunroof seaming welt (vehicles with sunroof)
- (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
- (3) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
- (4) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
- (6) Upper anchor of the front seat belt installation bolt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
- (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
- (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
- (10) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
- (11) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
- (12) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
- (13) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
- (14) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

EXTERIOR TRIM

2. Remove the nuts.



09-16

3. Remove the roof carrier bracket.

4. Install in the reverse order of removal.

Note

- Install the roof carrier bracket so that the arrow on it faces inward.

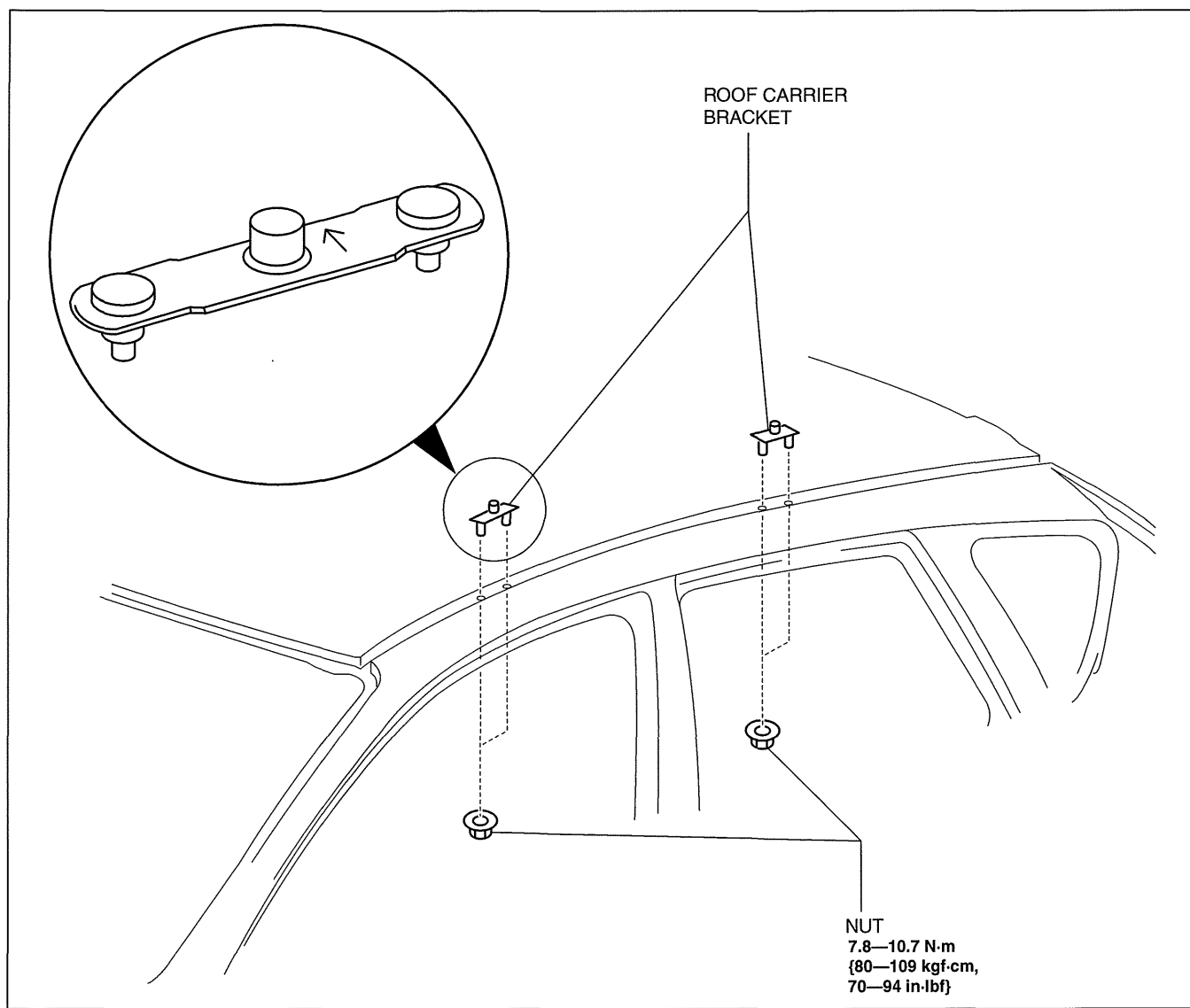
5HB

1. Remove the following parts:

- (1) Sunroof seaming welt (vehicles with sunroof)
- (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
- (3) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
- (4) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
- (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
- (6) Upper anchor of the front seat belt installation bolt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
- (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
- (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
- (10) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
- (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
- (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
- (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
- (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
- (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

EXTERIOR TRIM

2. Remove the nuts.



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3. Remove the roof carrier bracket.
4. Install in the reverse order of removal.

Note

- Install the roof carrier bracket so that the arrow on it faces inward.

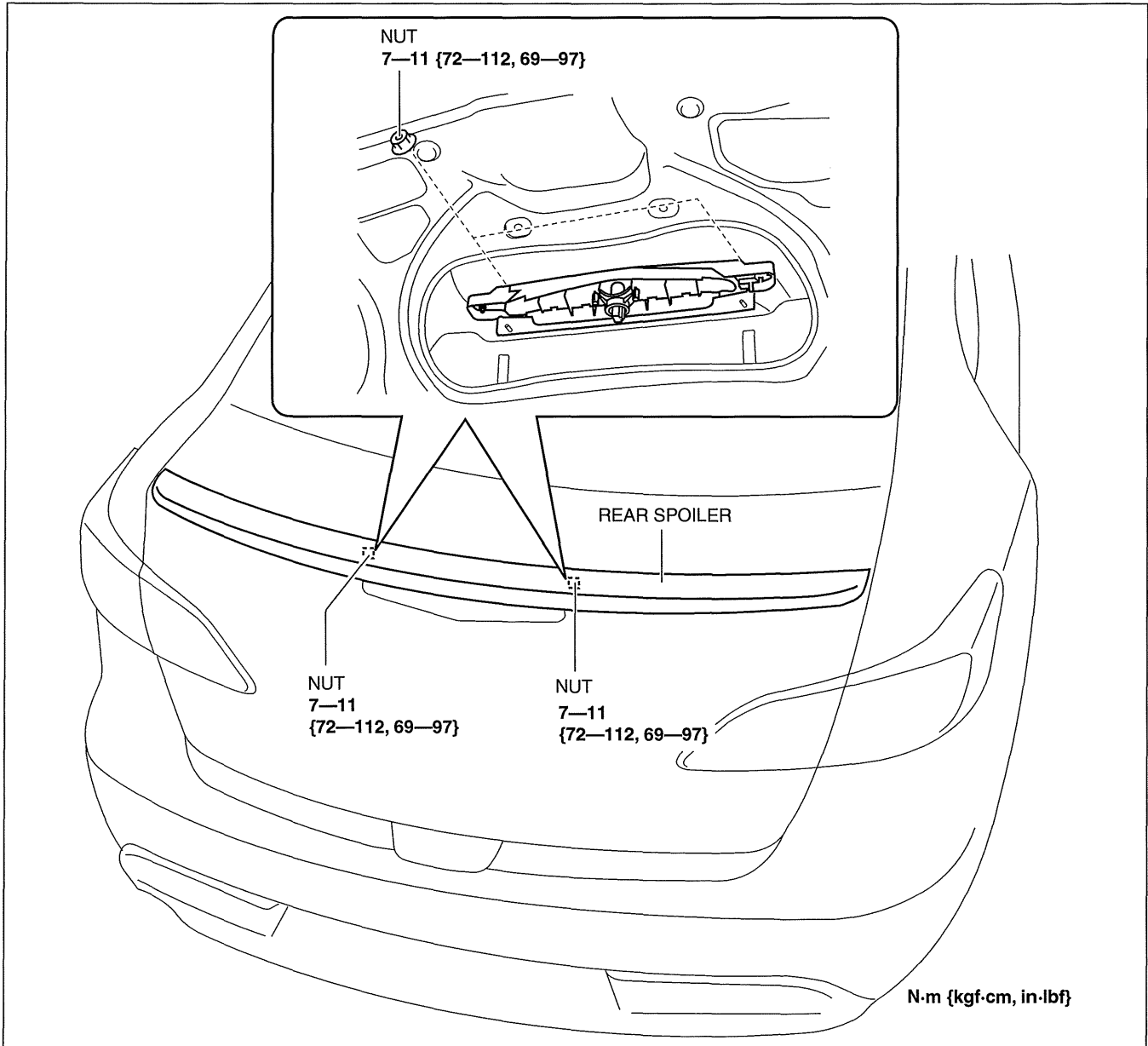
EXTERIOR TRIM

REAR SPOILER REMOVAL/INSTALLATION

id091600801600

4SD

1. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION)
2. Remove the nuts.

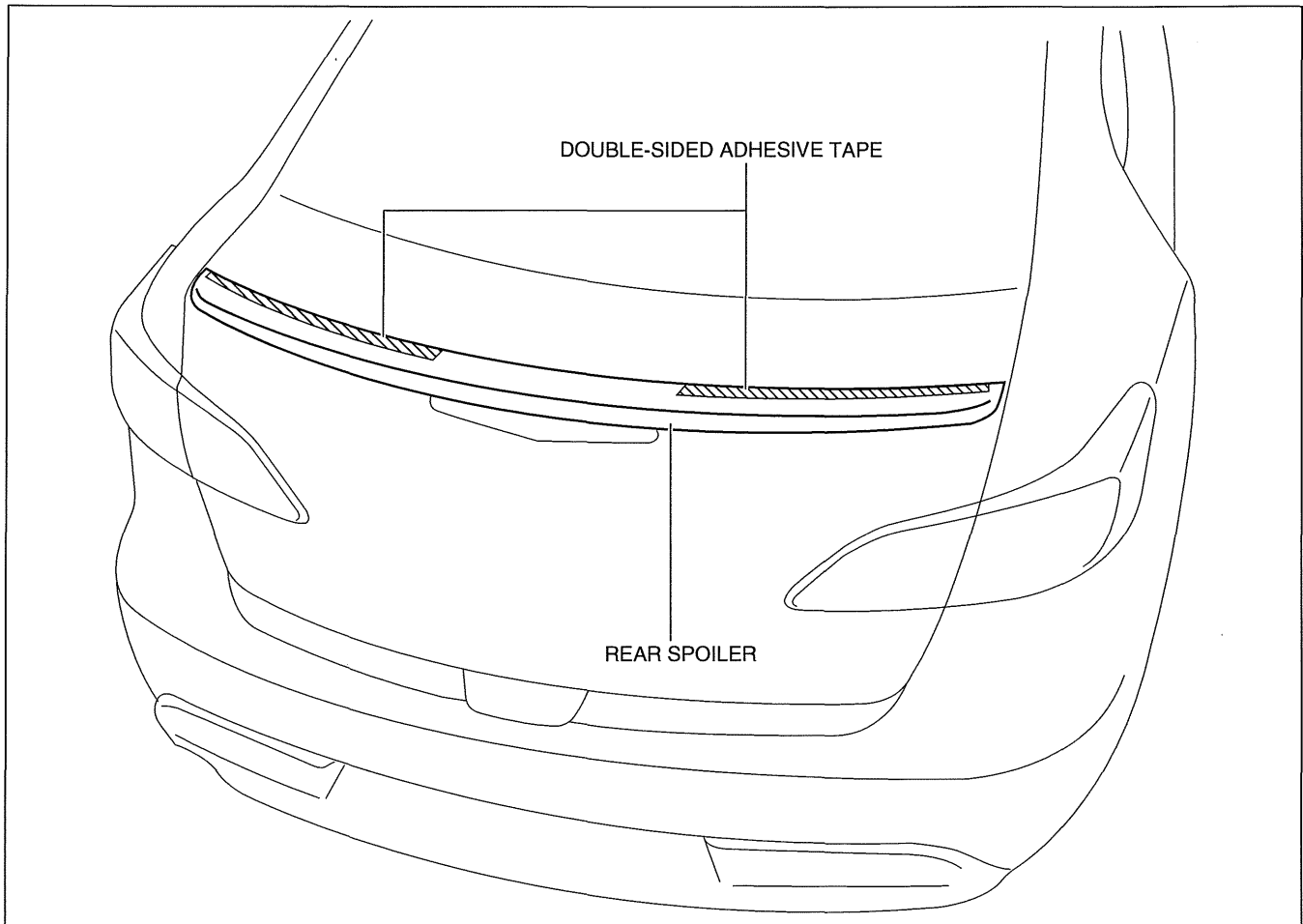


09-16

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EXTERIOR TRIM

3. While cutting the double-sided adhesive tape using a flathead screwdriver or a razor, separate the rear spoiler from the trunk lid.



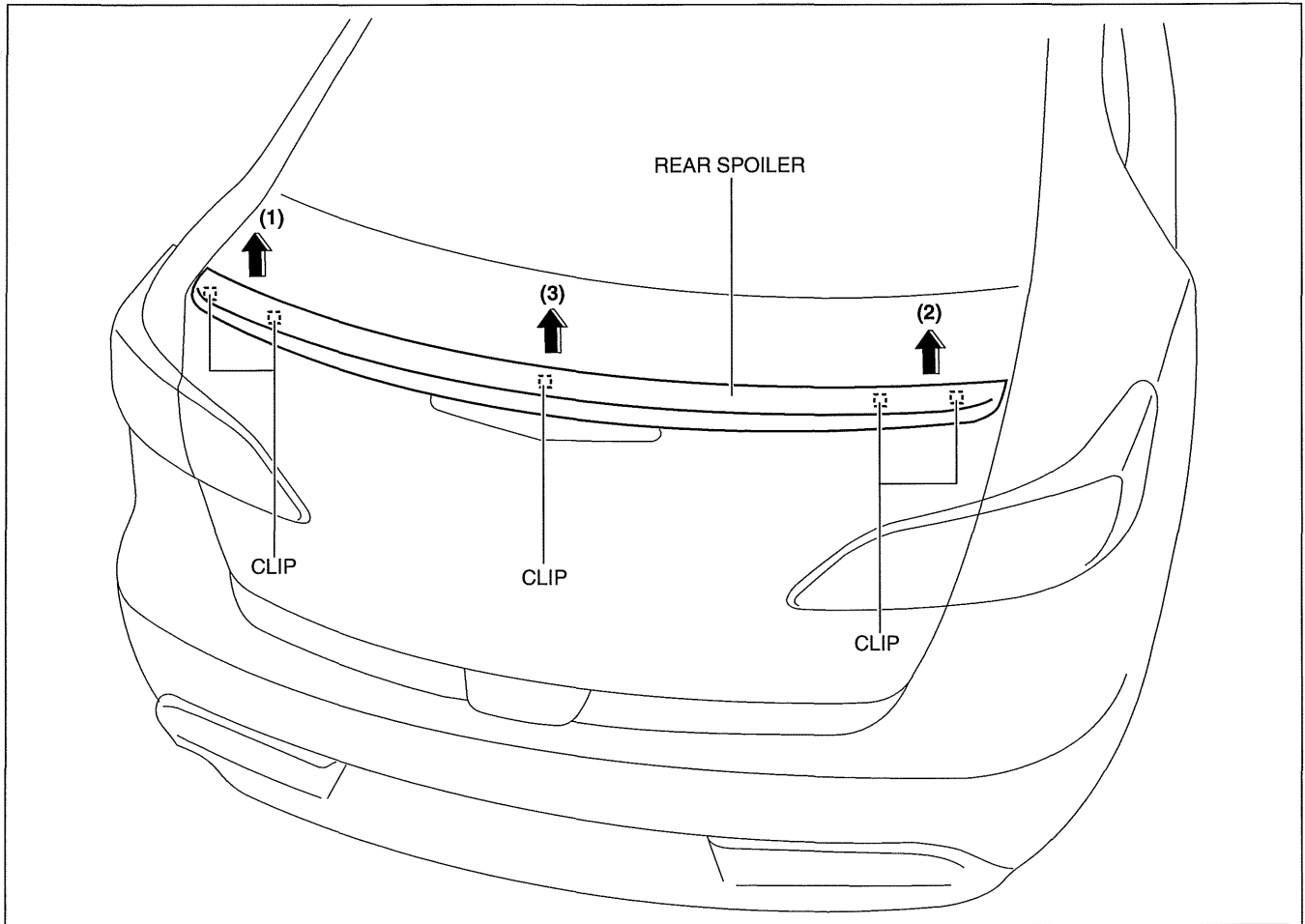
am3uuw0000351

Warning

- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

EXTERIOR TRIM

4. Pull the rear spoiler in the direction of arrow in the order of (1), (2) and (3), then remove the clips from the trunk lid.

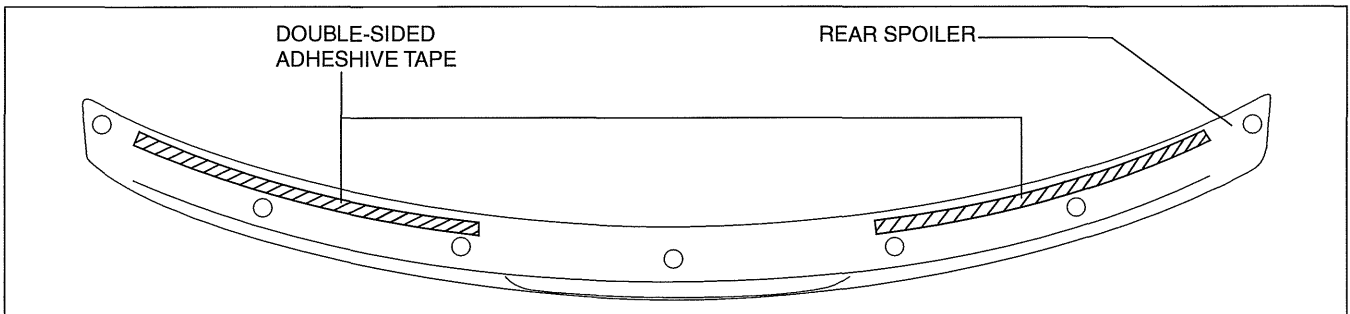


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5. Remove the rear spoiler.
6. Install in the reverse order of removal.

Note

- Attach double-sided adhesive tape to the rear spoiler as shown in the figure.



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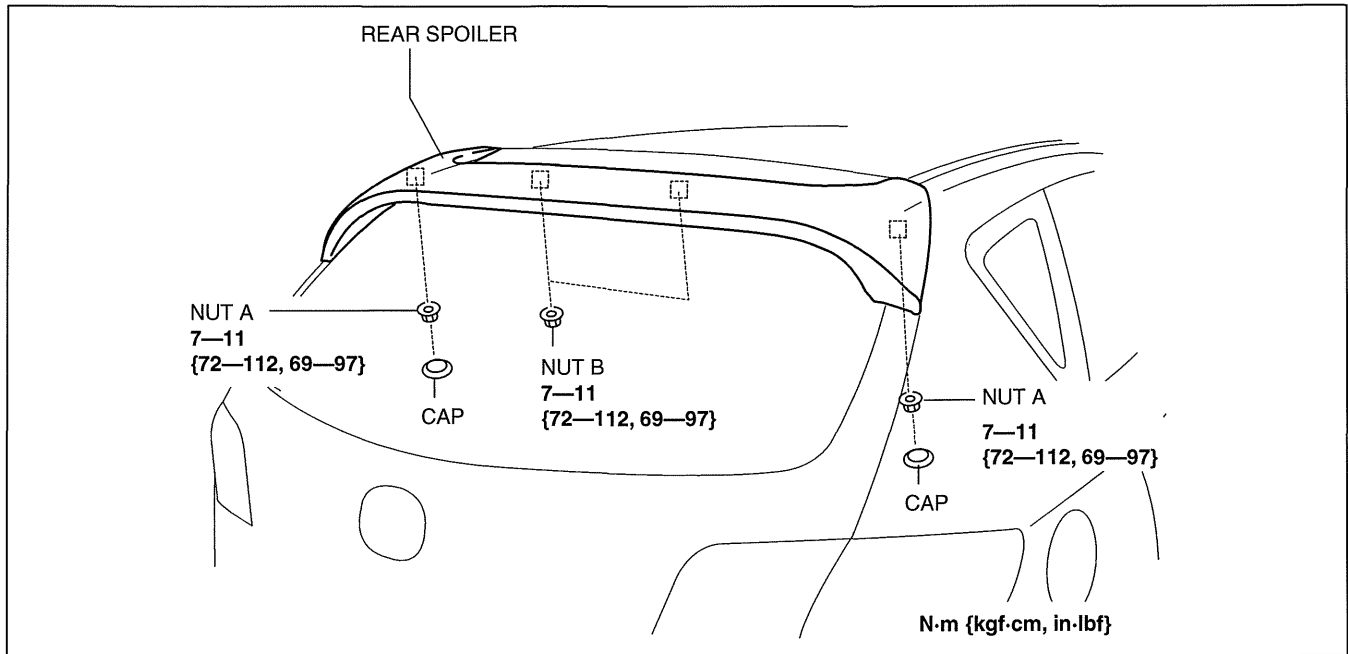
09-16

EXTERIOR TRIM

5HB

Except Mazdaspeed 3

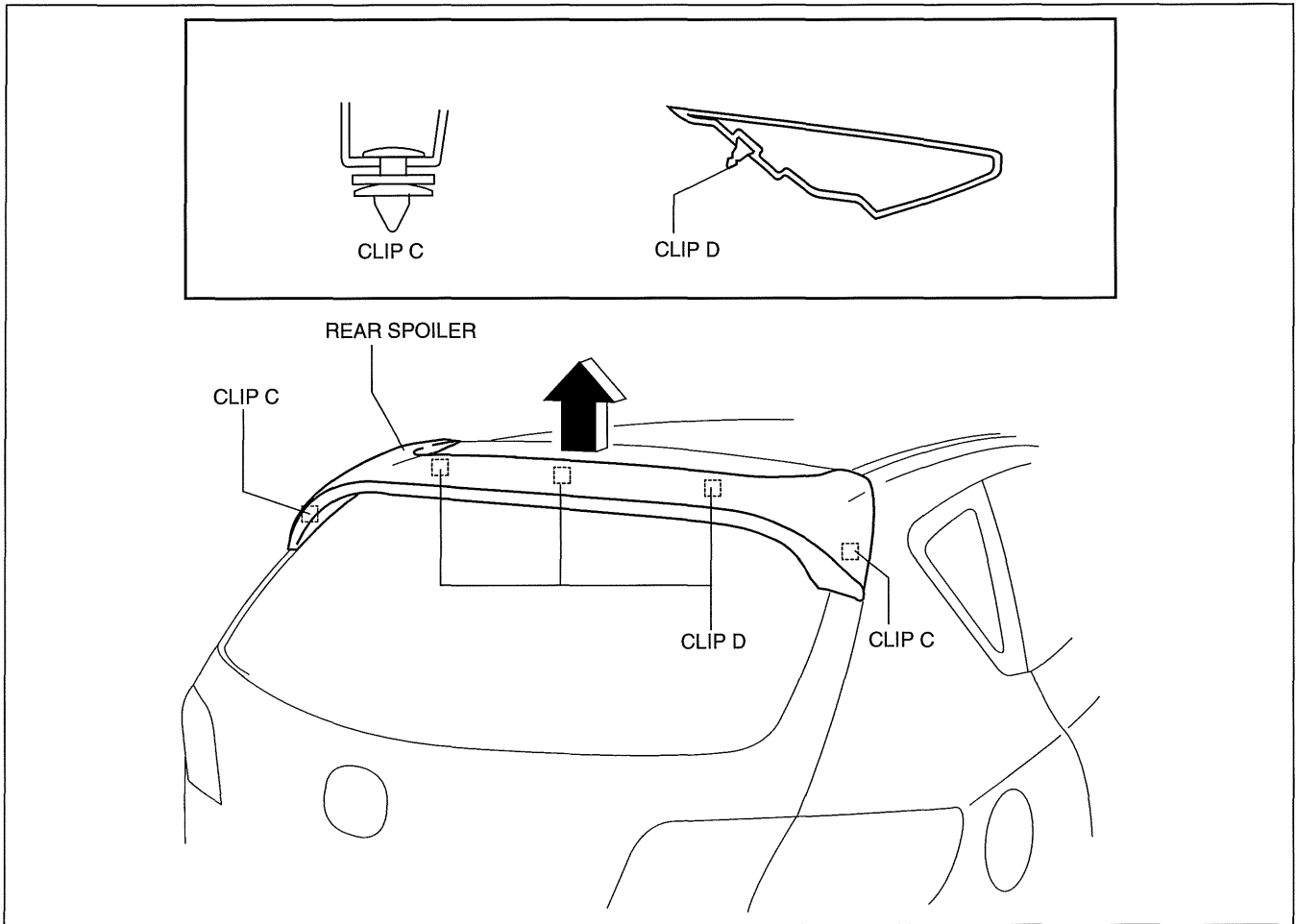
1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. Remove the caps.
4. Remove the nut A and B.



am3uuw0000351

EXTERIOR TRIM

5. Pull the rear spoiler in the direction of arrow, then remove the clips C and D from the liftgate.



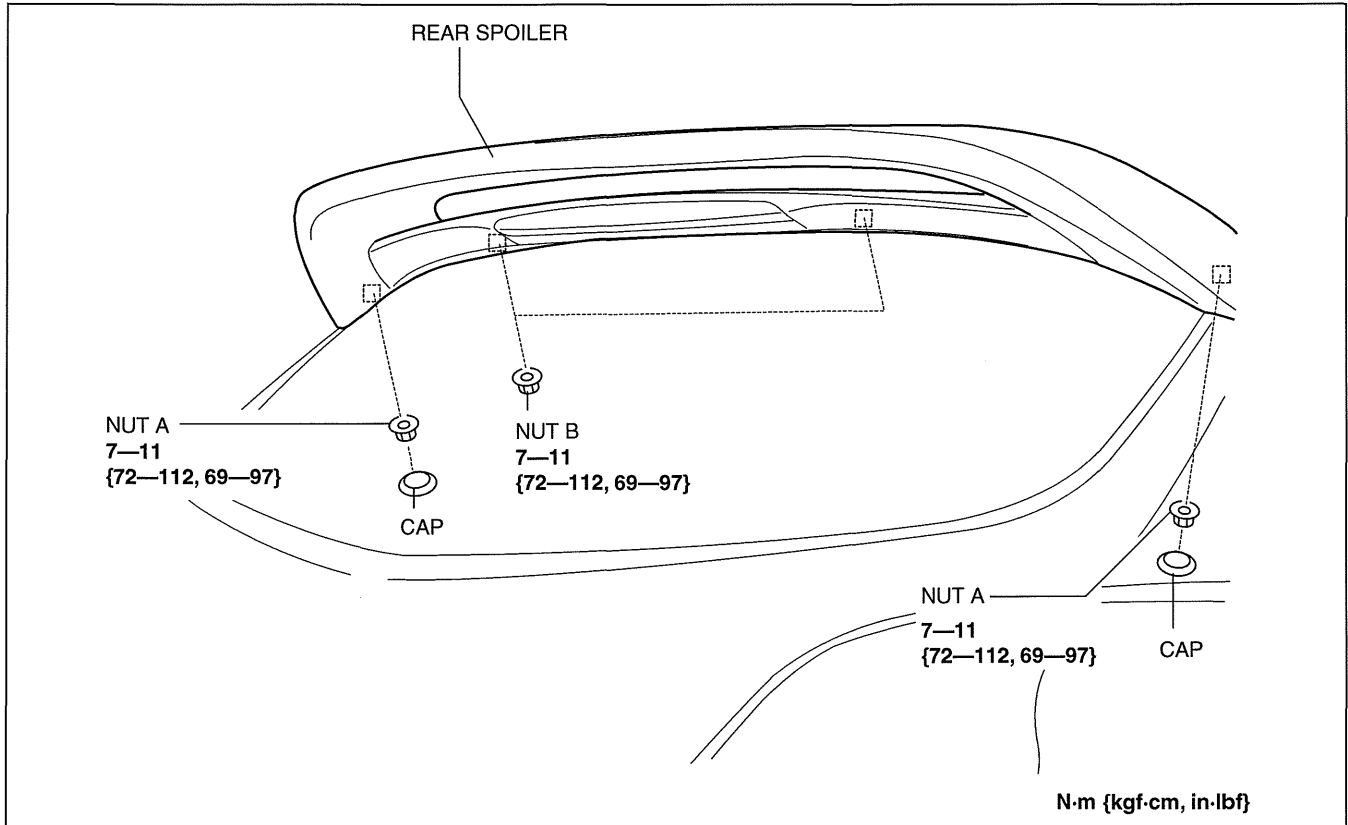
am3zzw0000610

6. Remove the rear spoiler.
7. Install in the reverse order of removal.

EXTERIOR TRIM

Mazdaspeed 3

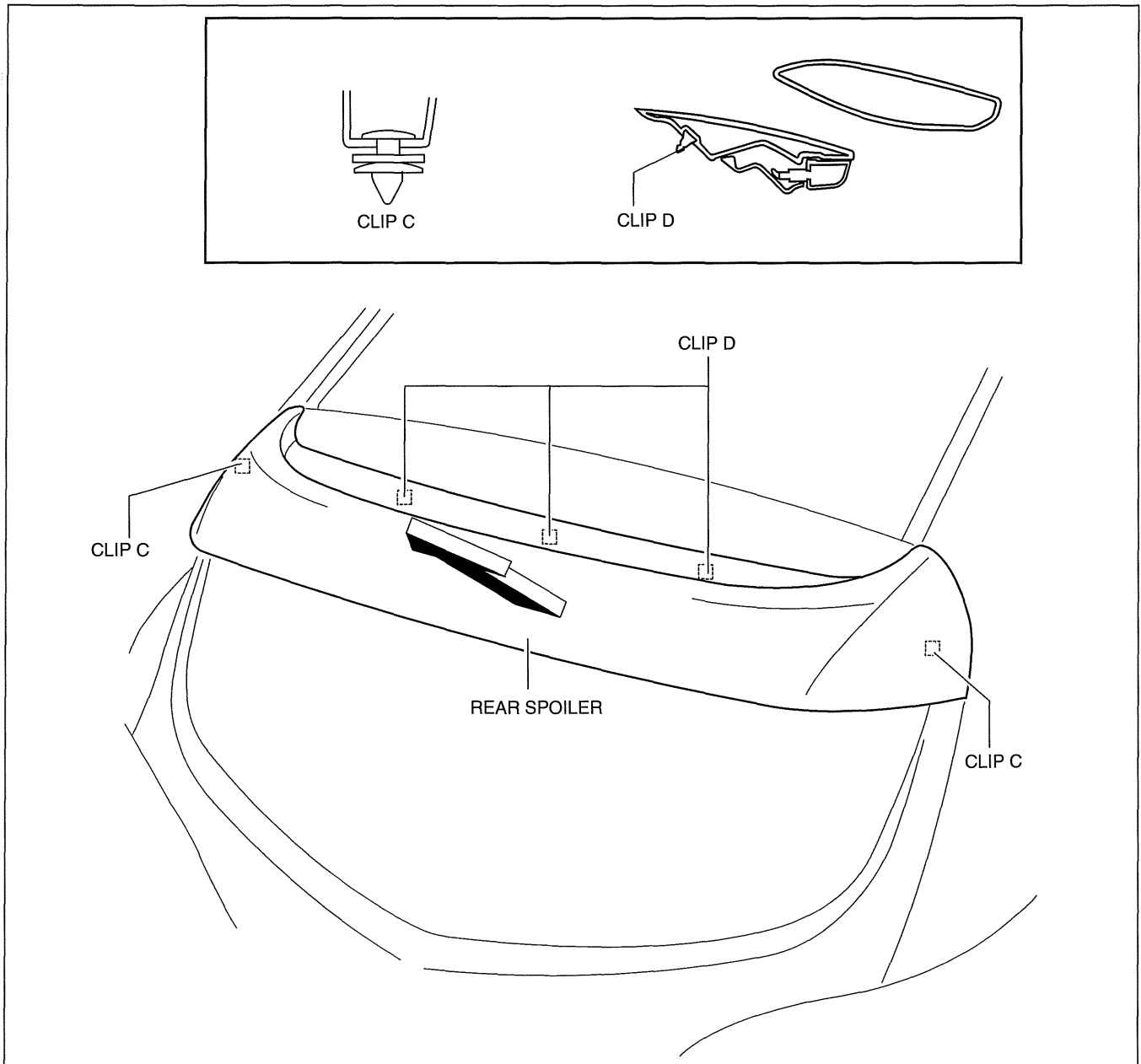
1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. Remove the caps.
4. Remove the nut A and B.



am3uuw0000597

EXTERIOR TRIM

5. Pull the rear spoiler in the direction of arrow, then remove the clips C and D from the liftgate.



6. Remove the rear spoiler.
7. Install in the reverse order of removal.

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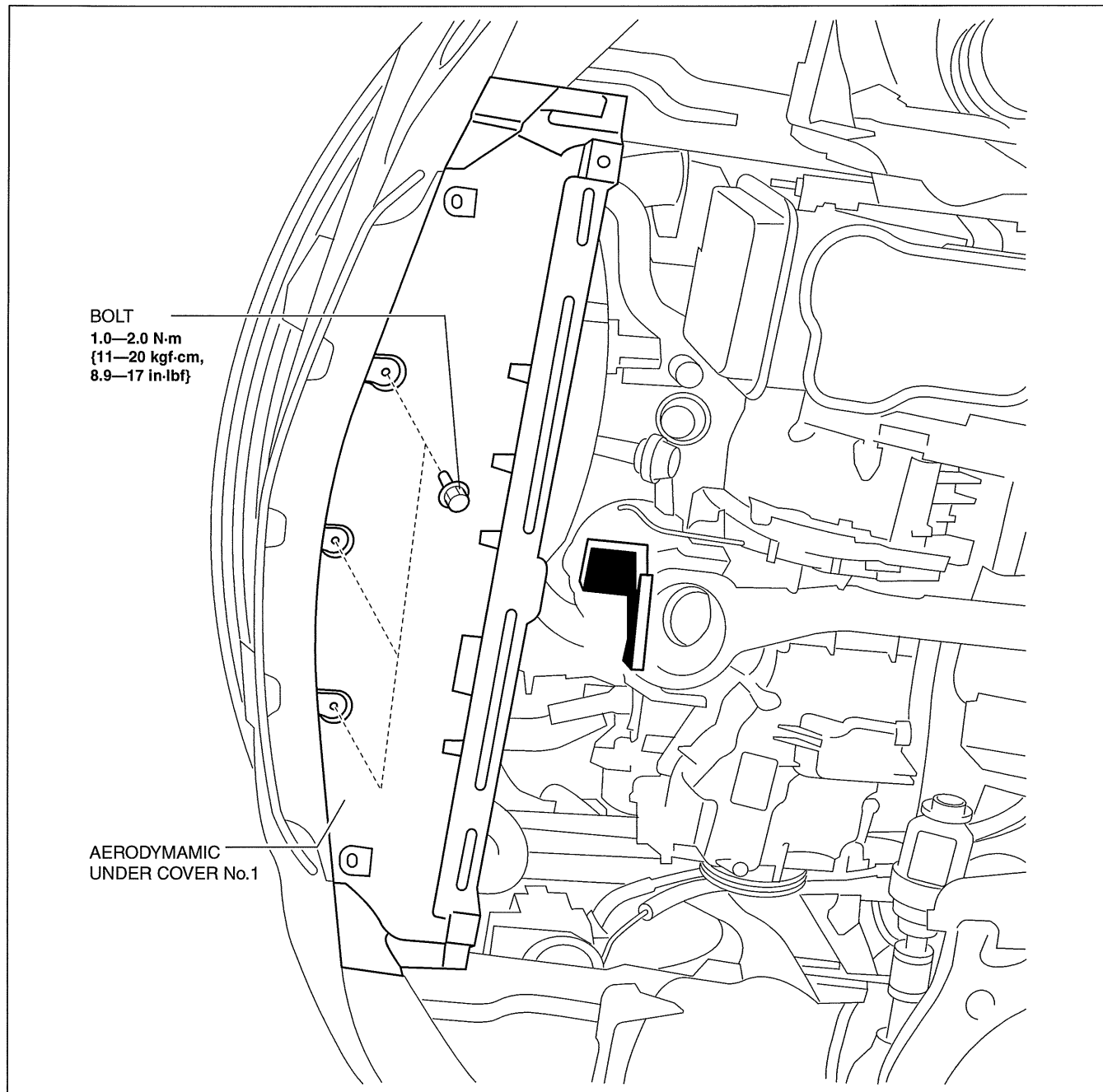
09-16

EXTERIOR TRIM

AERODYNAMIC UNDER COVER NO.1 REMOVAL/INSTALLATION

id091600820300

1. Remove the aerodynamic under cover No.2. (See 09-16-29 AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION)
2. Remove the bolts.



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3. Remove the aerodynamic under cover No.1 in the direction of the arrow shown in the figure.

Caution

- Be careful not to damage the aerodynamic under cover No.1 during removal.

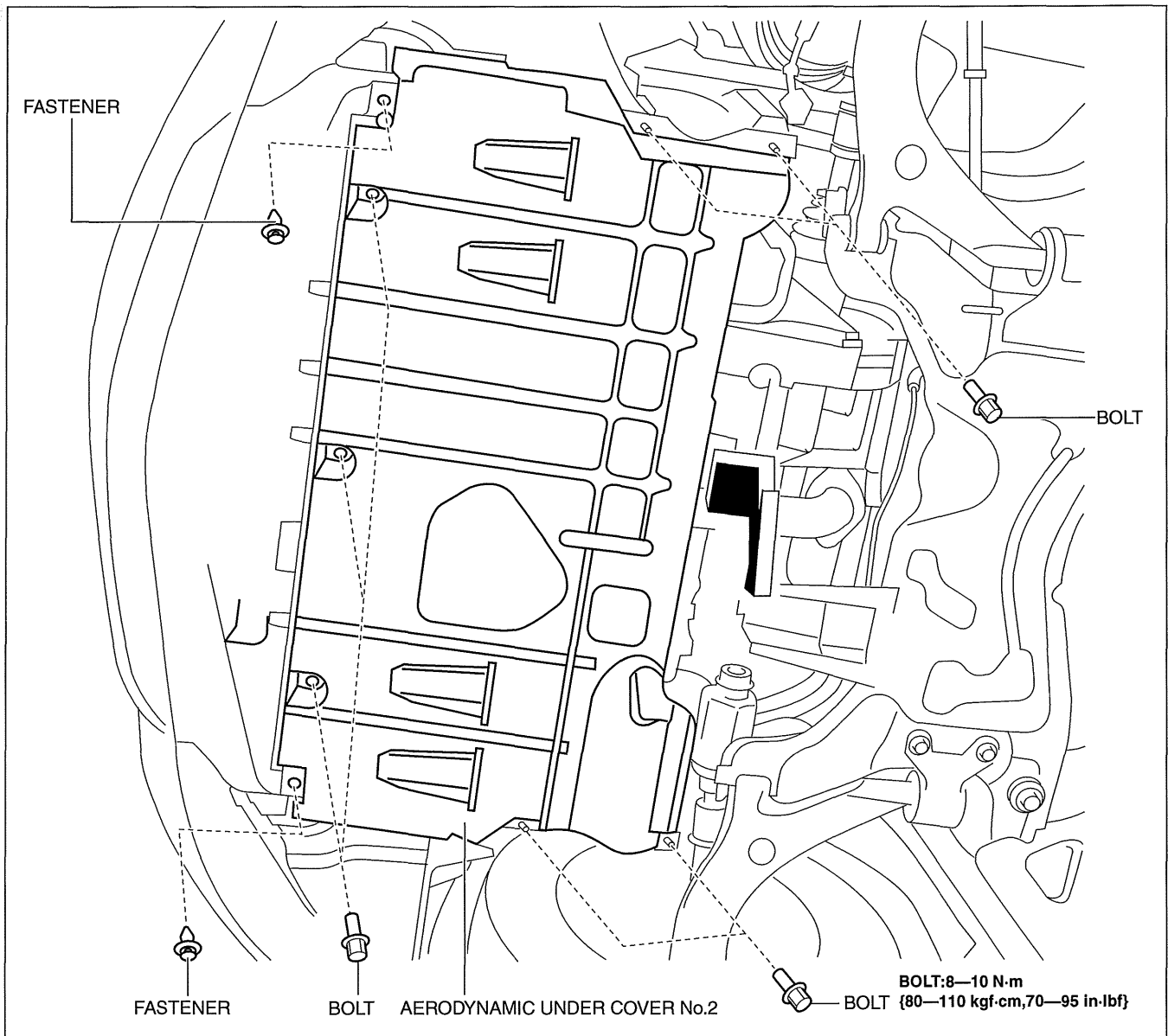
4. Install in the reverse order of removal.

EXTERIOR TRIM

AERODYNAMIC UNDER COVER NO.2 REMOVAL/INSTALLATION

id091600820400

1. Lift up the vehicle.
2. Remove the fasteners and bolts.



09-16

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3. Move the aerodynamic under cover No.2 in the direction of the arrow shown in the figure.

Caution

- Be careful not to damage the aerodynamic under cover No.2 during removal.

4. Install in the reverse order of removal.

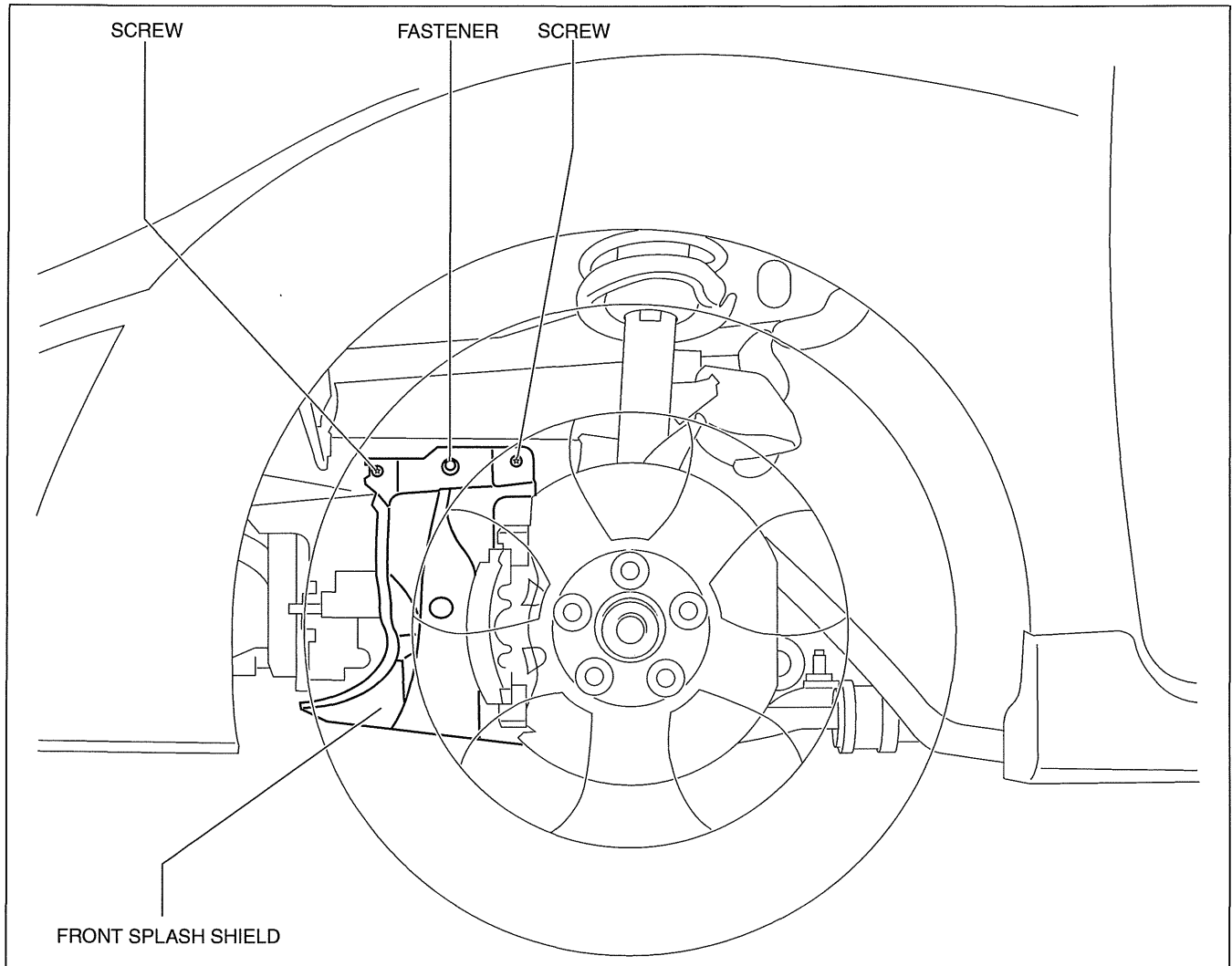
EXTERIOR TRIM

SPLASH SHIELD REMOVAL/INSTALLATION

id091600808400

Front Splash Shield

1. Remove the screws and fastener then remove the front splash shield.



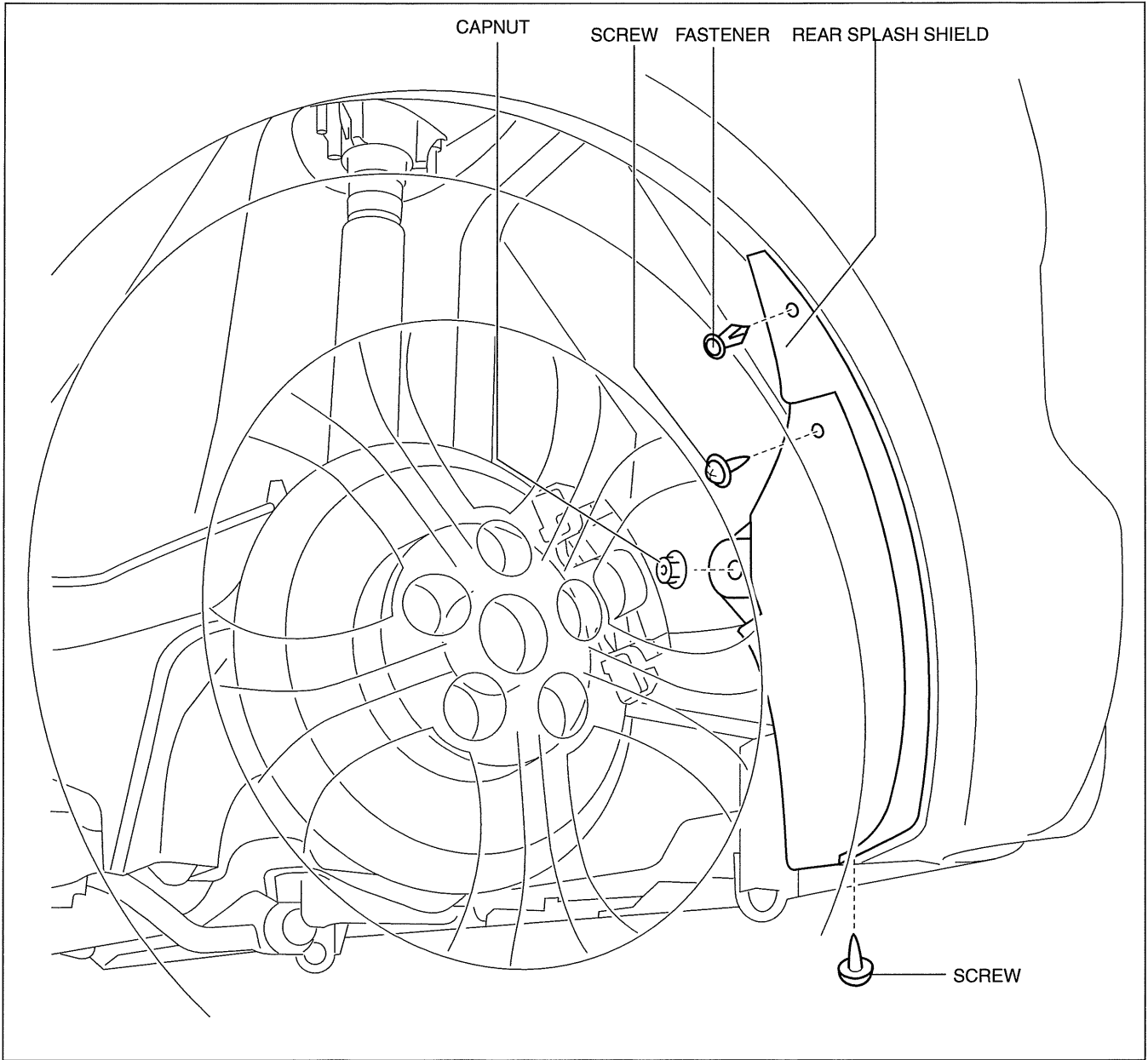
am3uuw0000412

2. Install in the reverse order of removal.

EXTERIOR TRIM

Rear Splash Shield

1. Remove the fastener, screws and capnut .

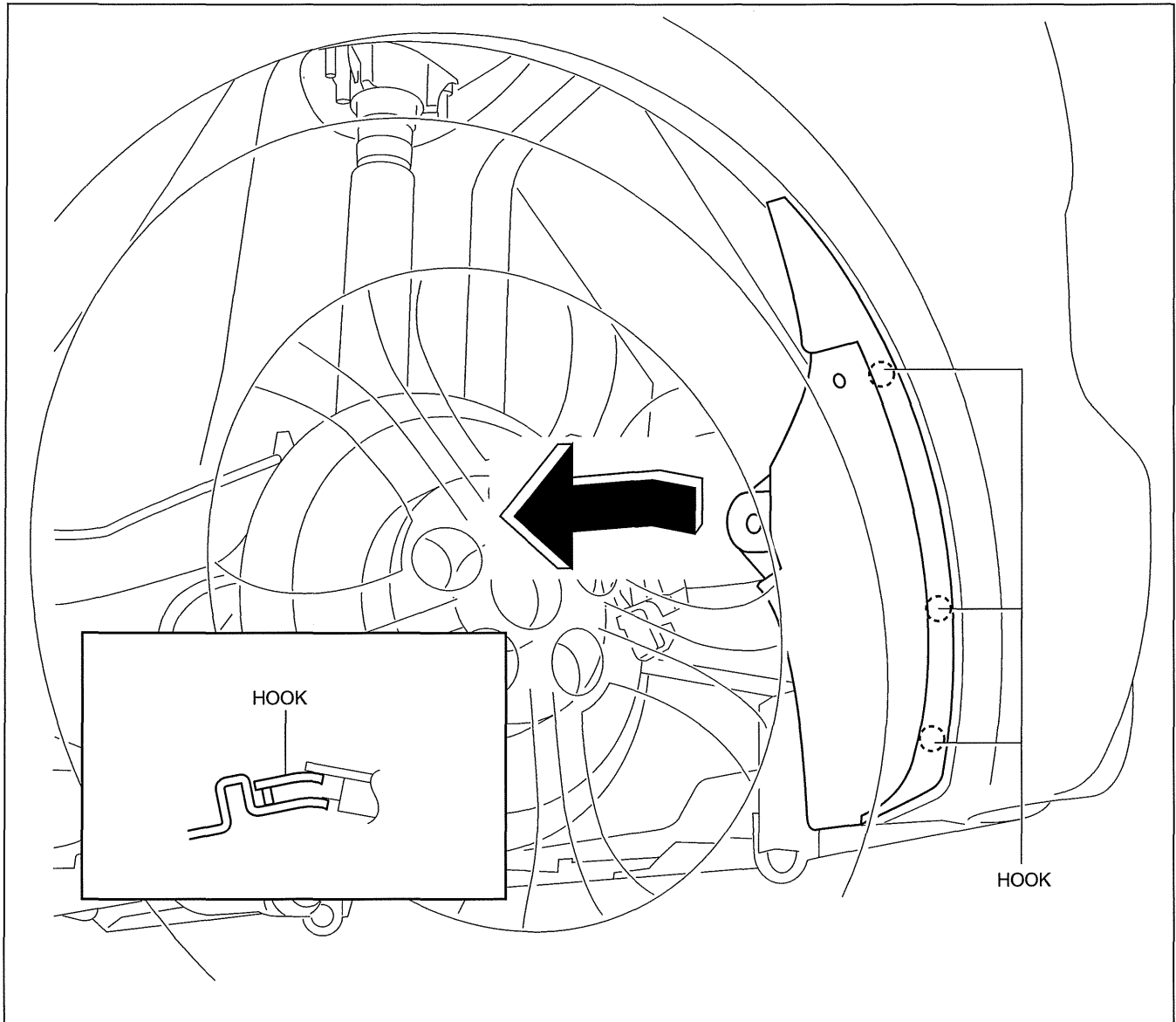


09-16

am3zzw0000610

EXTERIOR TRIM

2. Pull the rear splash shield in the direction of the arrow shown in the figure, then remove the hooks.



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3. Install in the reverse order of removal.

EXTERIOR TRIM

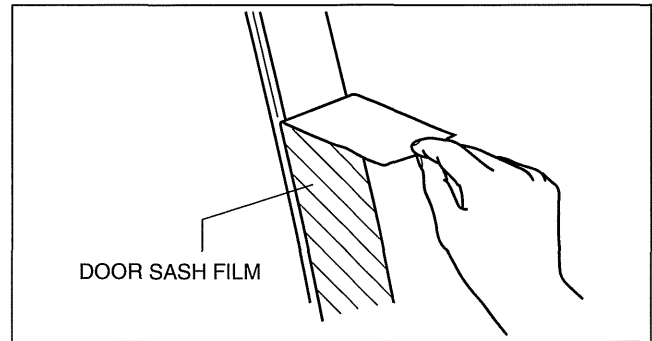
DOOR SASH FILM REMOVAL

id091600805200

1. Partially peel back the glass run channel.
2. Partially peel back the door weatherstrip.
3. Remove the following parts:
 - (1) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
 - (2) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
 - (3) Power outer mirror (See 09-12-41 POWER OUTER MIRROR REMOVAL/INSTALLATION.)
 - (4) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
 - (5) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
 - (6) Rear door quarter glass (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)
 - (7) Front beltline molding (See 09-16-14 FRONT BELTLINE MOLDING REMOVAL/INSTALLATION.)
 - (8) Rear beltline molding (See 09-16-15 REAR BELTLINE MOLDING REMOVAL/INSTALLATION.)
4. Peel off the rear sash film by pulling it outward from one end.

Note

- Slowly remove the door sash film since it may tear easily.

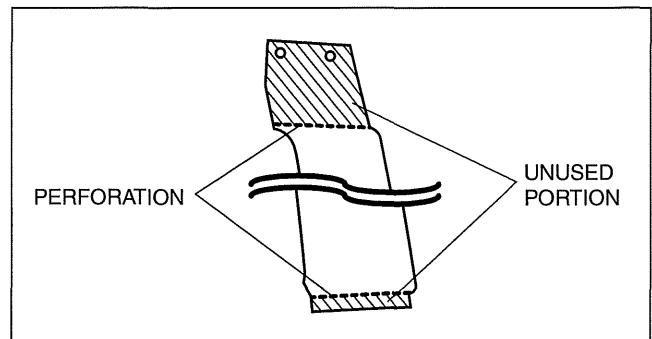


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DOOR SASH FILM INSTALLATION

id091600805300

1. Remove any grease or dirt from the affixing surface of the door.
2. Cut away the unused portion along the dotted lines.

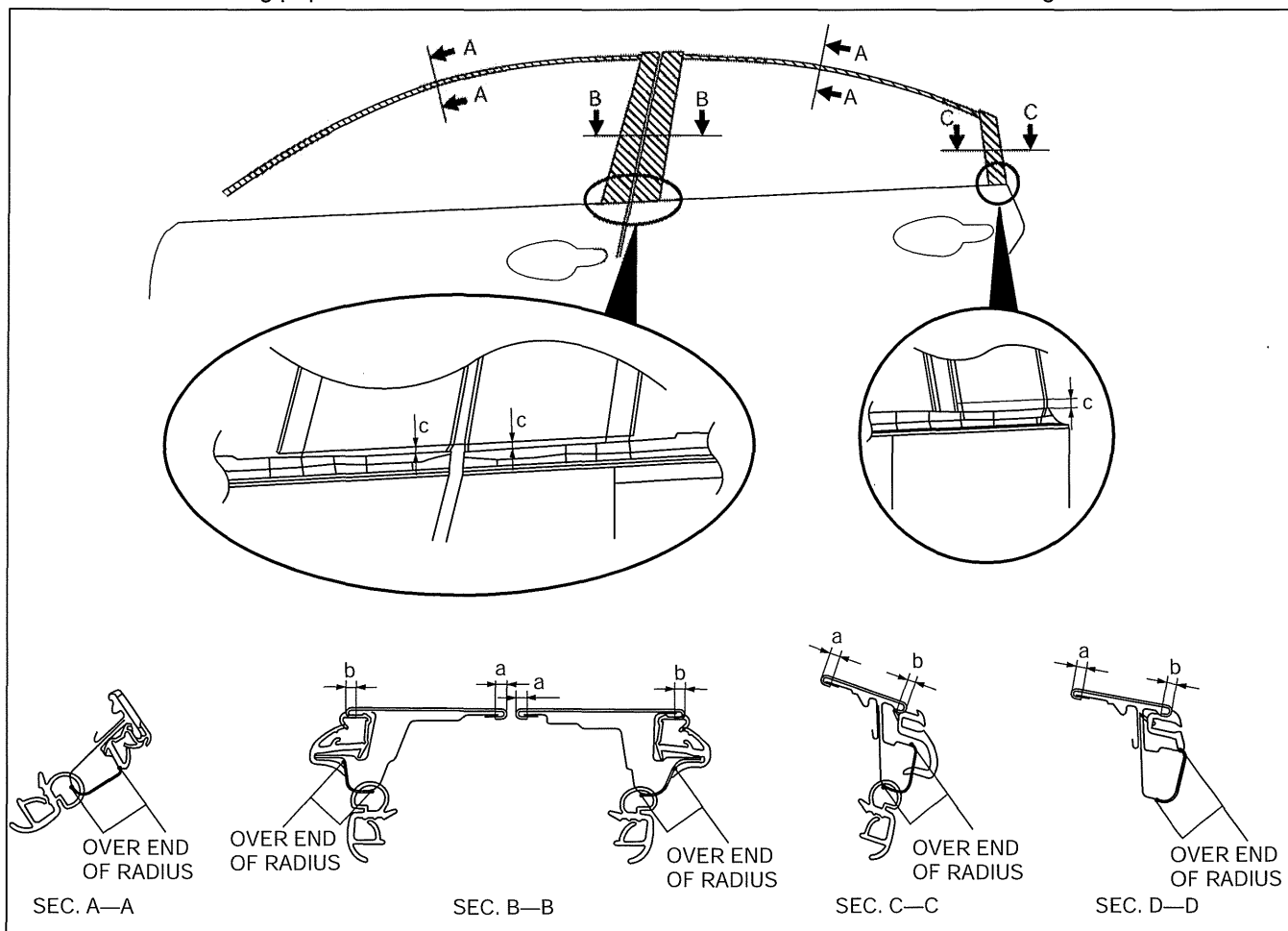


acxuuw00000915

09-16

EXTERIOR TRIM

3. Peel off the backing paper and attach the door sash film onto the door as shown in the figure.



am6xuw0000174

Standard clearance

a: 3.0—5.0 mm {0.12—0.19 in}

b: 3.0 mm or more {0.12 in or more}

c: 4.0—6.0 mm {0.16—0.23 in}

4. Peel off the transparent protective film on the door sash film.

5. Install the following parts:

- (1) Rear beltline molding (See 09-16-15 REAR BELTLINE MOLDING REMOVAL/INSTALLATION.)
- (2) Front beltline molding (See 09-16-14 FRONT BELTLINE MOLDING REMOVAL/INSTALLATION.)
- (3) Rear door quarter glass (See 09-12-6 REAR DOOR QUARTER GLASS REMOVAL/INSTALLATION.)
- (4) Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
- (5) Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
- (6) Power outer mirror (See 09-12-41 POWER OUTER MIRROR REMOVAL/INSTALLATION.)
- (7) Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
- (8) Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)

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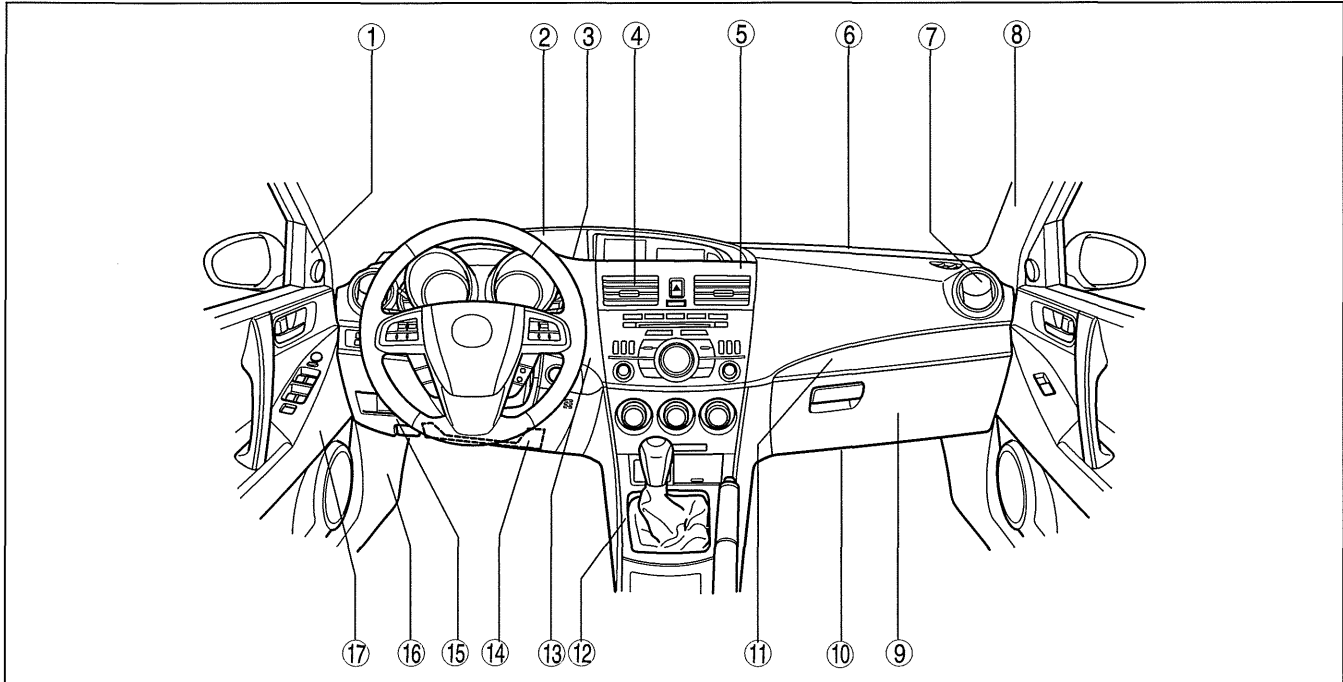
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INTERIOR TRIM

INTERIOR TRIM LOCATION INDEX

id091700800200



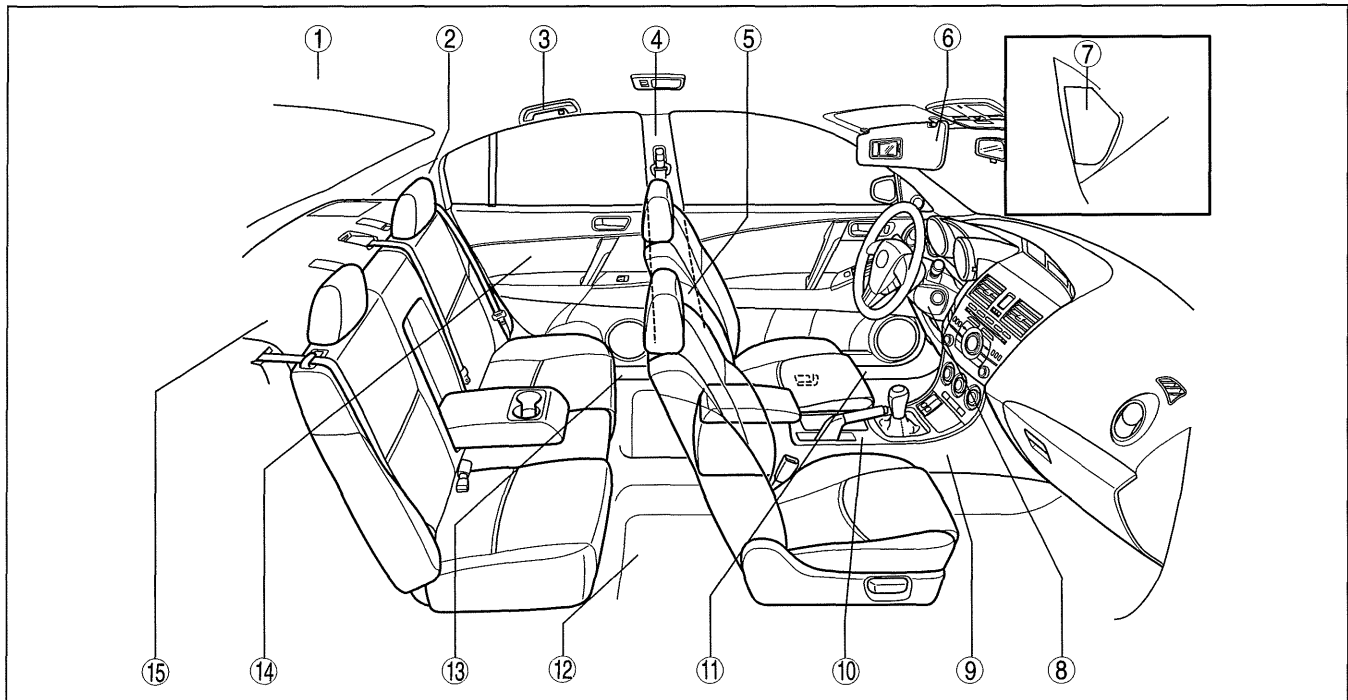
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1	Inner garnish (See 09-17-69 INNER GARNISH REMOVAL/ INSTALLATION.)
2	Hole cover (See 09-17-25 HOLE COVER REMOVAL/ INSTALLATION.)
3	Dash board upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
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14	Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/ INSTALLATION.)
15	Lower panel (See 09-17-27 LOWER PANEL REMOVAL/ INSTALLATION.)
16	Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/ INSTALLATION.)
17	Front door trim (See 09-17-79 FRONT DOOR TRIM REMOVAL/ INSTALLATION.) (See 09-17-86 FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY.)

INTERIOR TRIM

4SD



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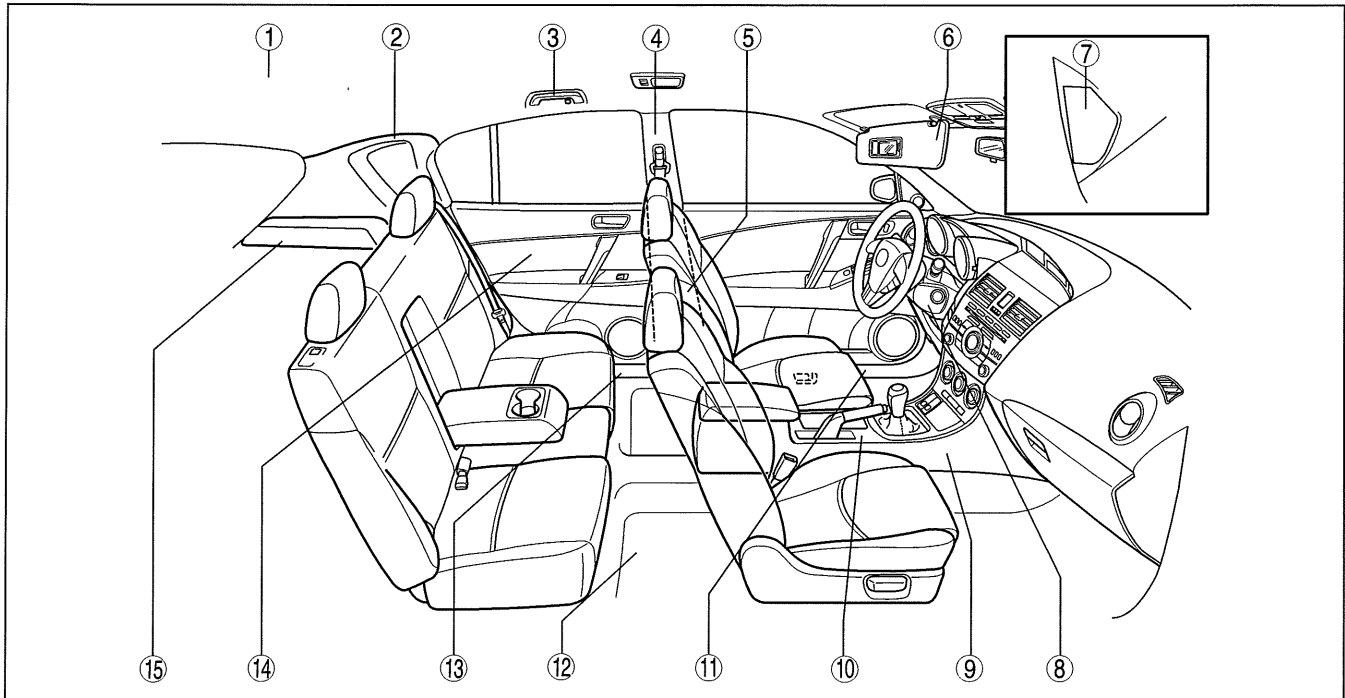
1	Headliner (See 09-17-107 HEADLINER REMOVAL/ INSTALLATION.)
2	C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/ INSTALLATION.)
3	Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/ INSTALLATION.)
4	B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/ INSTALLATION.)
5	B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/ INSTALLATION.)
6	Sunvisor (See 09-17-106 SUNVISOR REMOVAL/ INSTALLATION.)
7	Side panel (See 09-17-31 SIDE PANEL REMOVAL/ INSTALLATION.)
8	Column cover (See 09-17-22 COLUMN COVER REMOVAL/ INSTALLATION.)

9	Console (See 09-17-45 CONSOLE REMOVAL/ INSTALLATION.)
10	Upper panel (See 09-17-40 UPPER PANEL REMOVAL/ INSTALLATION.)
11	Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/ INSTALLATION.)
12	Floor covering (See 09-17-110 FLOOR COVERING REMOVAL/ INSTALLATION.)
13	Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/ INSTALLATION.)
14	Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/ INSTALLATION.) (See 09-17-71 REAR DOOR TRIM DISASSEMBLY/ ASSEMBLY.)
15	Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/ INSTALLATION.)

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INTERIOR TRIM

5HB

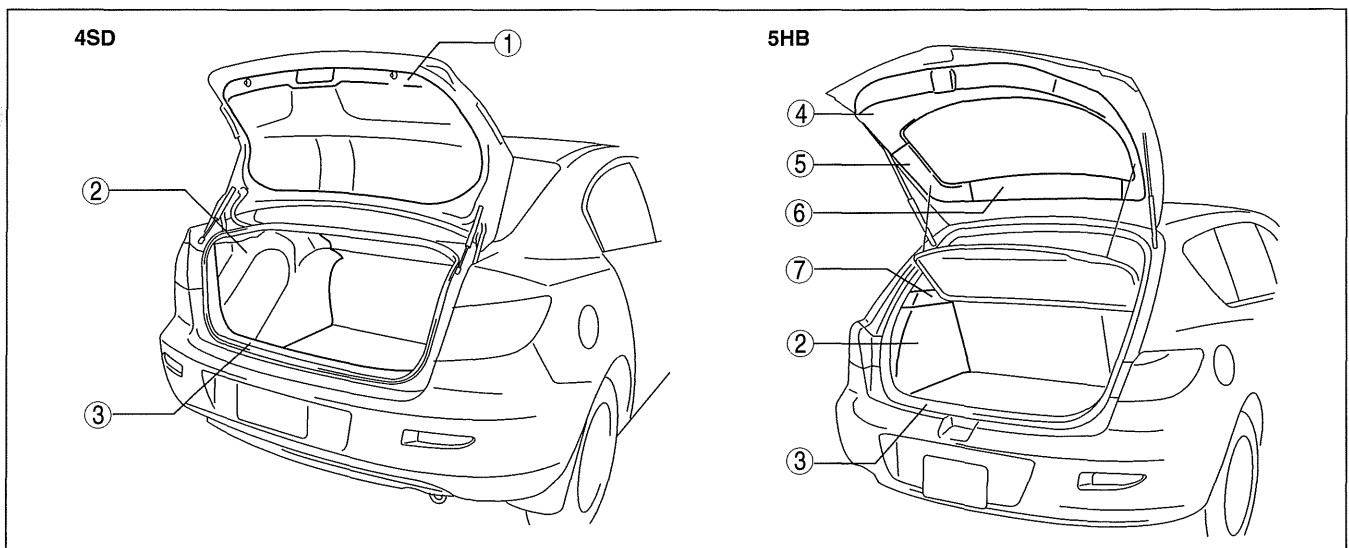


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1	Headliner (See 09-17-107 HEADLINER REMOVAL/ INSTALLATION.)
2	C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/ INSTALLATION.)
3	Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/ INSTALLATION.)
4	B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/ INSTALLATION.)
5	B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/ INSTALLATION.)
6	Sunvisor (See 09-17-106 SUNVISOR REMOVAL/ INSTALLATION.)
7	Side panel (See 09-17-31 SIDE PANEL REMOVAL/ INSTALLATION.)
8	Column cover (See 09-17-22 COLUMN COVER REMOVAL/ INSTALLATION.)

9	Console (See 09-17-45 CONSOLE REMOVAL/ INSTALLATION.)
10	Upper panel (See 09-17-40 UPPER PANEL REMOVAL/ INSTALLATION.)
11	Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/ INSTALLATION.)
12	Floor covering (See 09-17-110 FLOOR COVERING REMOVAL/ INSTALLATION.)
13	Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/ INSTALLATION.)
14	Rear door trim (See 09-17-88 REAR DOOR TRIM REMOVAL/ INSTALLATION.) (See 09-17-71 REAR DOOR TRIM DISASSEMBLY/ ASSEMBLY.)
15	Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)

INTERIOR TRIM



am3uuw0000497

1	Trunk lid trim (See 09-17-104 TRUNK LID TRIM REMOVAL/ INSTALLATION.)
2	Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/ INSTALLATION.)
3	Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/ INSTALLATION.)
4	Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)

5	Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/ INSTALLATION.)
6	Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/ INSTALLATION.)
7	Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)

09-17

DASHBOARD REMOVAL/INSTALLATION

id091700800300

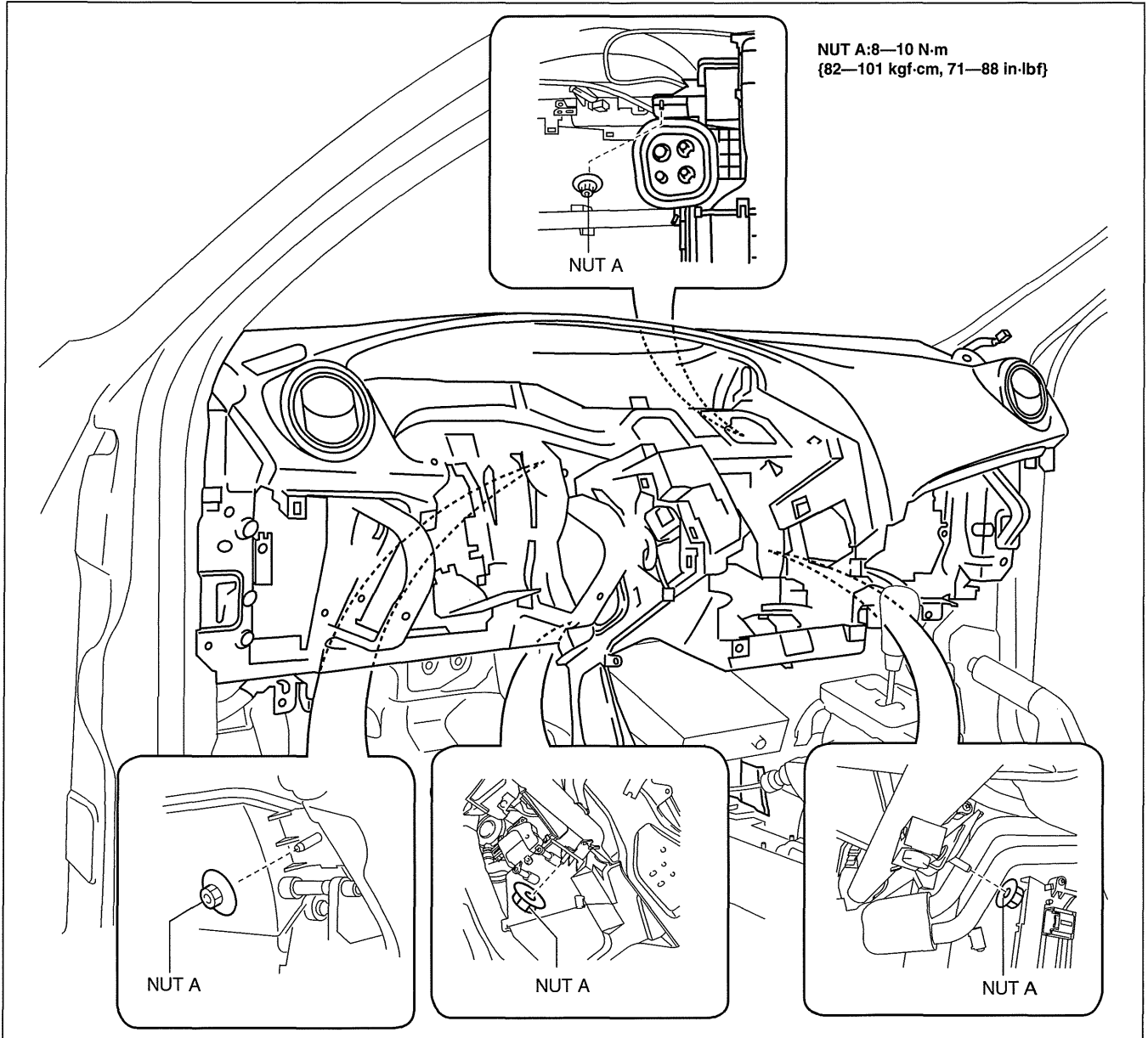
1. Set the air intake mode to FRESH.
2. Set the air mix mode to MAX COLD.
3. Disconnect the negative battery cable.
4. Remove the following parts:
 - (1) Front doors (See 09-11-3 FRONT DOOR REMOVAL/INSTALLATION.)
 - (2) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (4) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (5) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (6) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (7) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (8) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (9) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (10) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (11) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (12) Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (13) Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (14) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (15) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (16) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
 - (17) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)

INTERIOR TRIM

- (18)Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (19)Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (20)Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
 - (21)Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (22)Steering shaft (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (23)Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (24)Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (25)Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
 - (26)Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (27)Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (28)Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (29)Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
 - (30)Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.)
 - (31)A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (32)Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (33)Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (34)Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (35)Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)
5. Disconnect The blower motor connector. (See 07-40A-9 BLOWER MOTOR REMOVAL [FULL-AUTO AIR CONDITIONER].) (See 07-40A-13 BLOWER MOTOR INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-4 BLOWER MOTOR REMOVAL [MANUAL AIR CONDITIONER].) (See 07-40B-7 BLOWER MOTOR INSTALLATION [MANUAL AIR CONDITIONER].)
 6. Disconnect the dashboard harness connectors.
 7. Remove the shower duct. (See 07-11-4 A/C UNIT REMOVAL/INSTALLATION)

INTERIOR TRIM

8. Remove the nuts A.

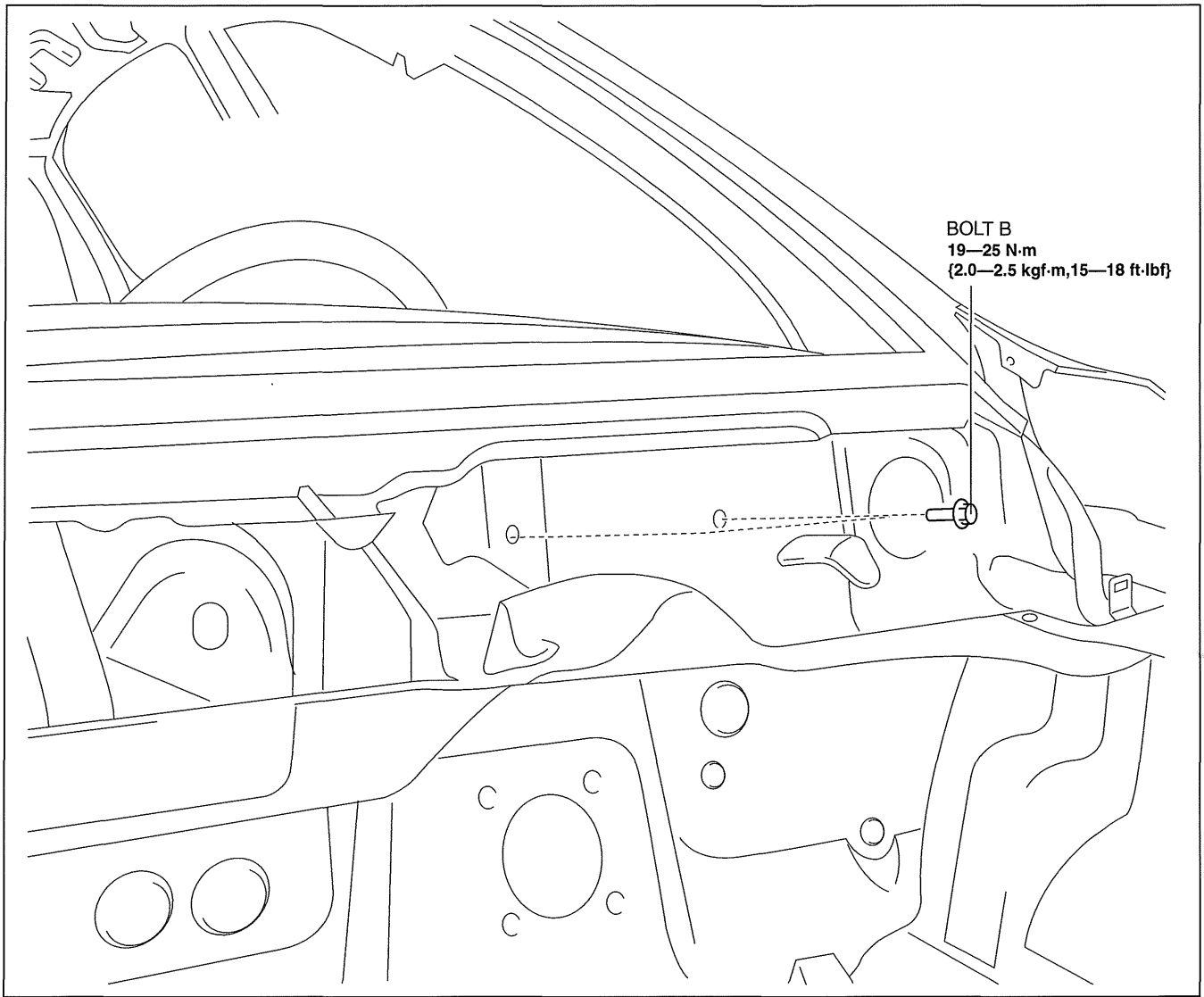


09-17

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9. Remove the bolts B.

INTERIOR TRIM

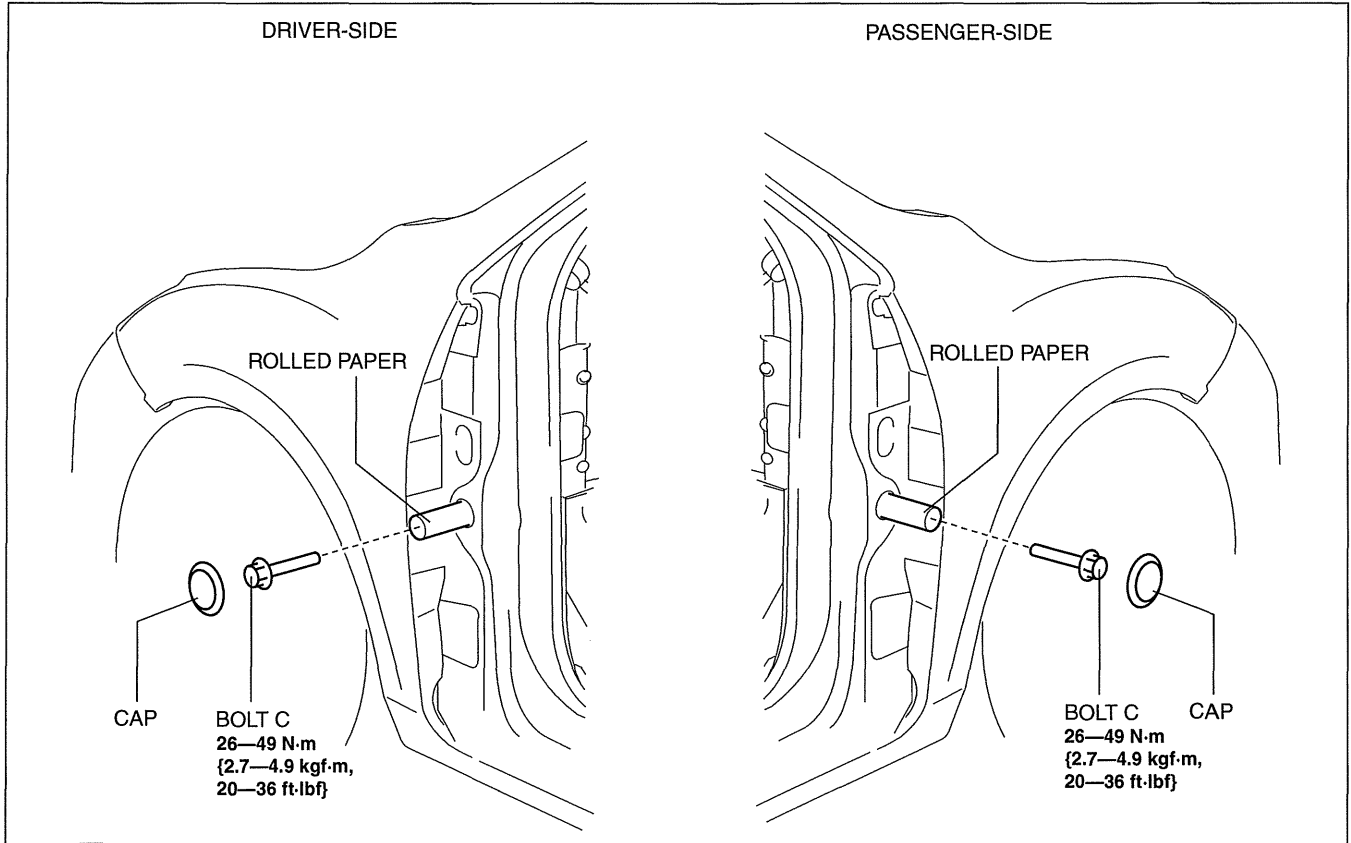


BOLT B
19—25 N·m
{2.0—2.5 kgf·m, 15—18 ft·lbf}

am3uuw0000546

INTERIOR TRIM

10. Remove the caps then set the rolled paper.
11. Remove the bolts C.

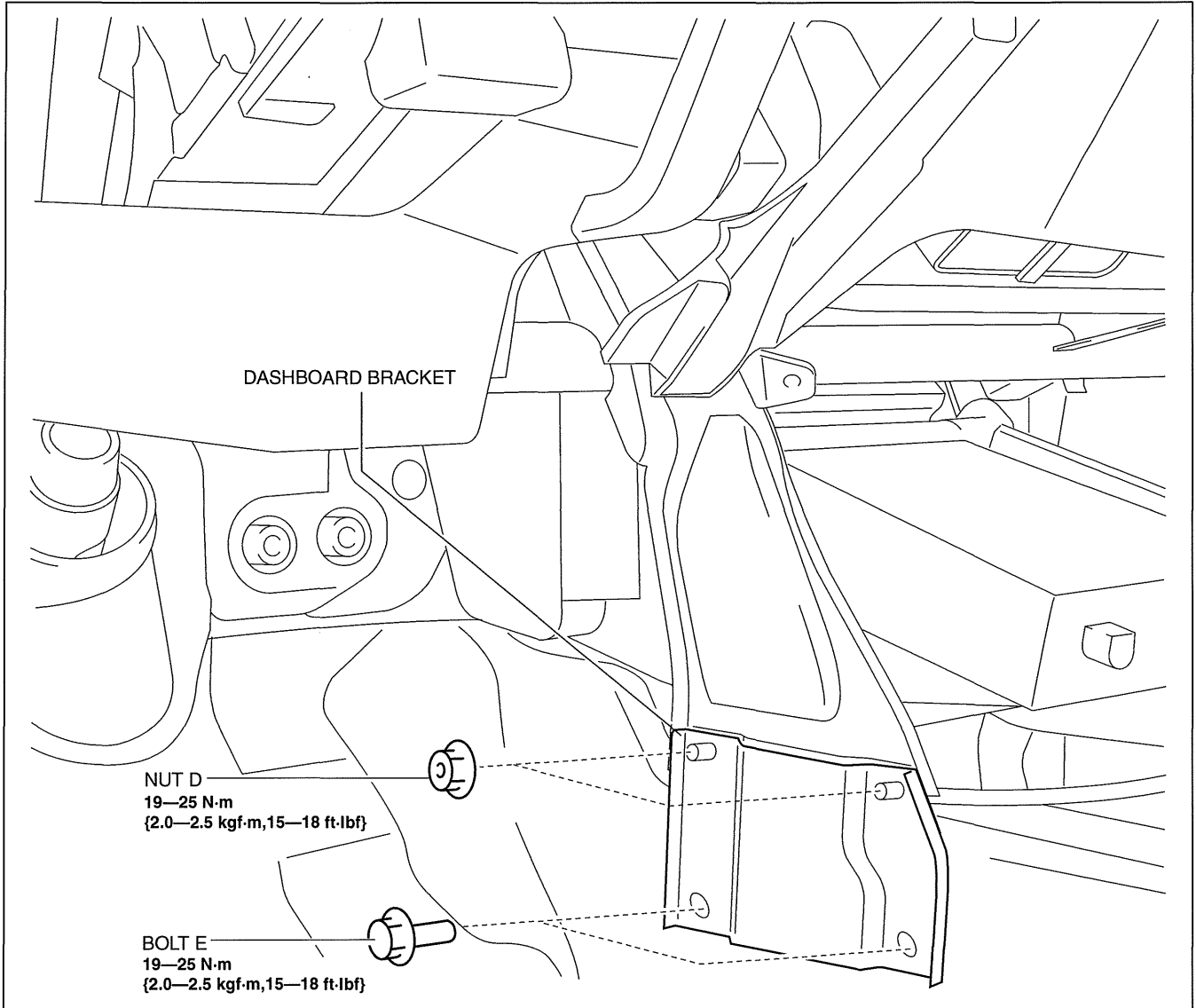


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09-17

INTERIOR TRIM

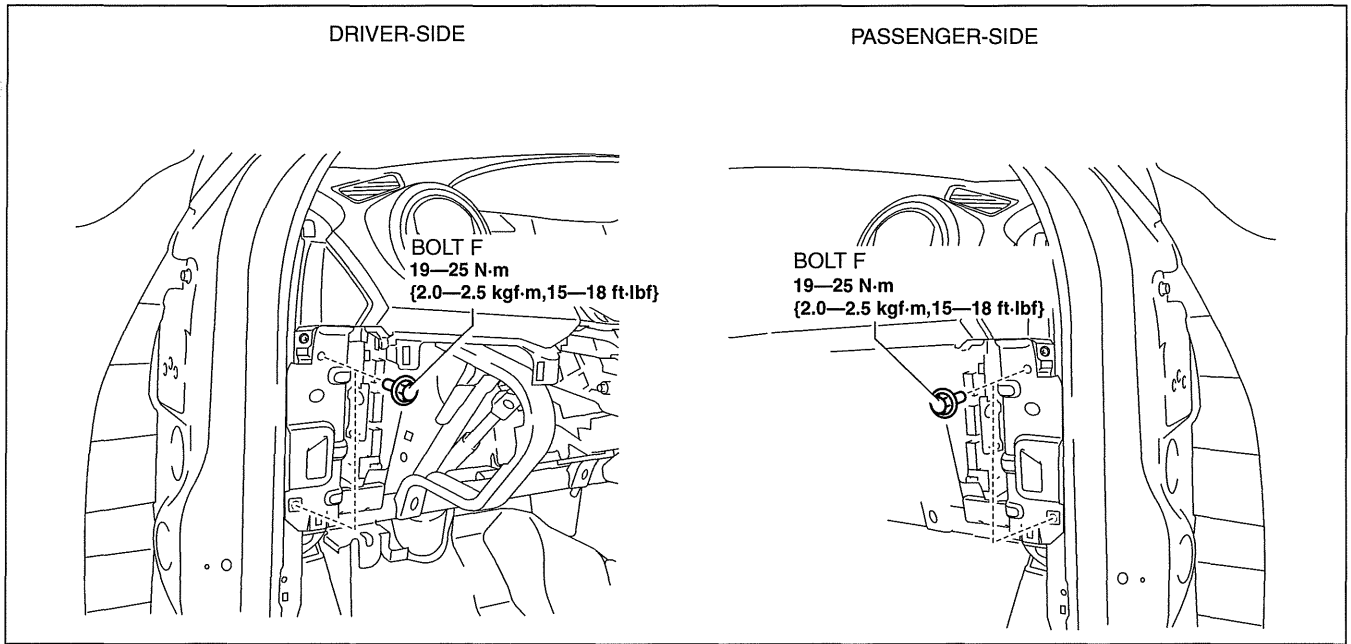
12. Remove the nuts D and bolts E then remove the dashboard bracket.



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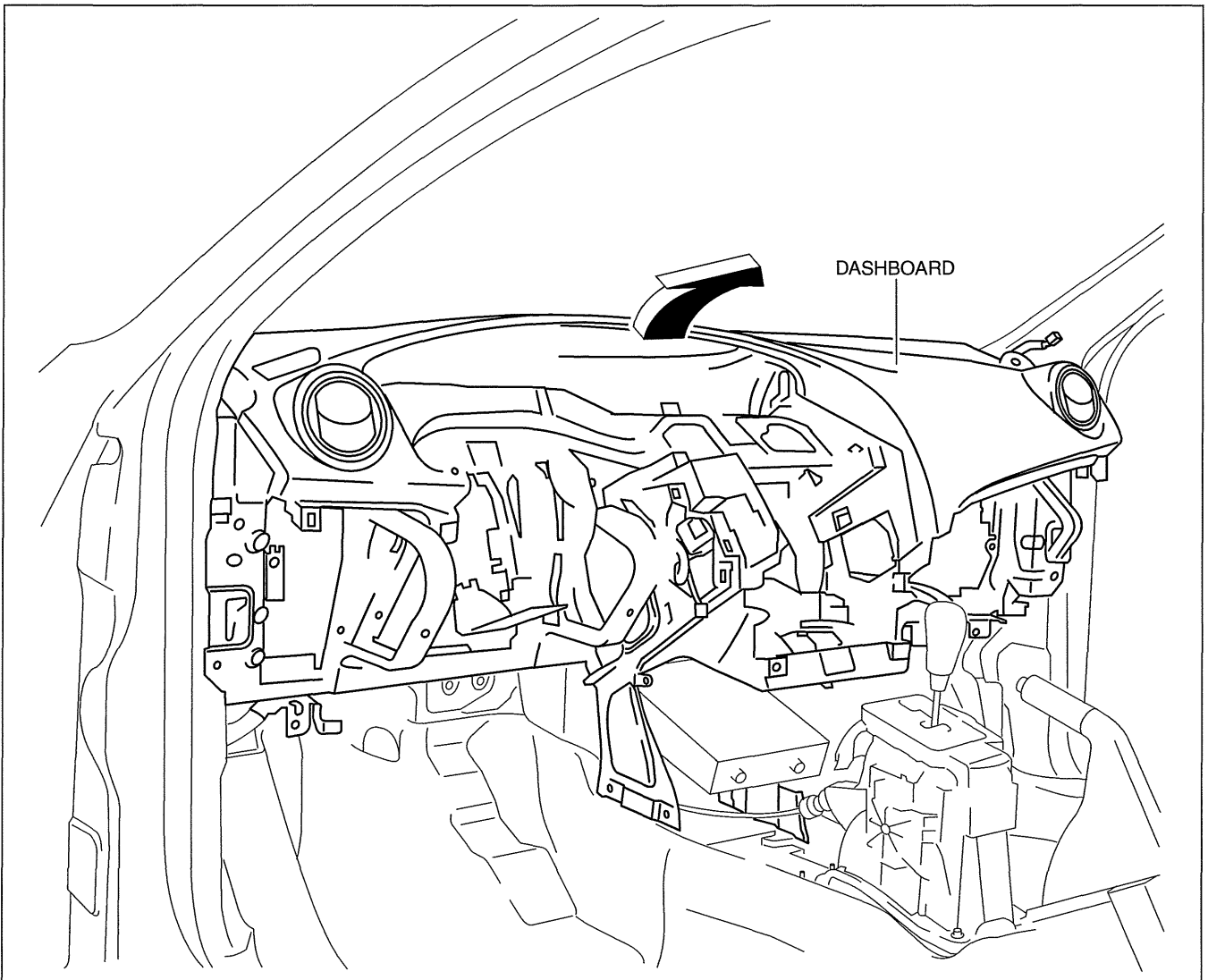
INTERIOR TRIM

13. Remove the bolts F. (See 09-17-12 Bolt F Installation Note)



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14. Raise the back side of the dashboard rotate it in the direction of the arrow shown in the figure.



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09-17

INTERIOR TRIM

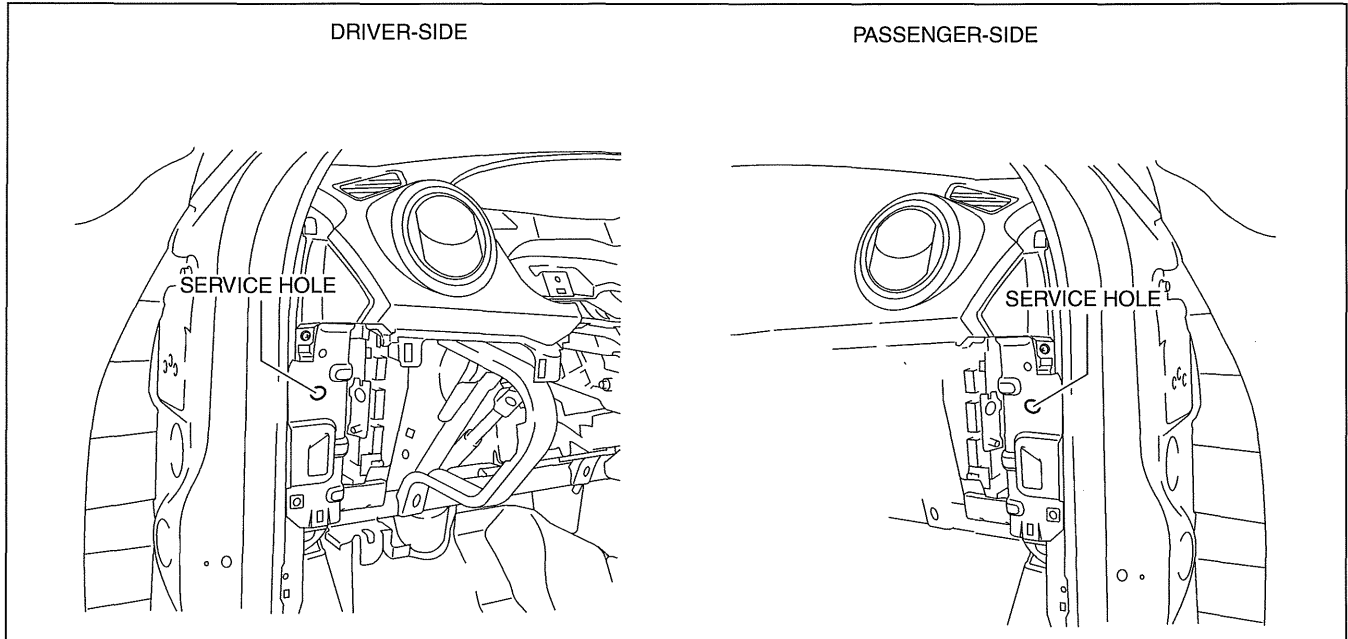
Warning

- Removing the dashboard without supporting it can be dangerous. The dashboard may fall and injure you. Always perform the following procedure with at least another person.

15. Remove the dashboard.
16. Take the dashboard off from the front driver-side door opening.
17. Install in the reverse order of removal.

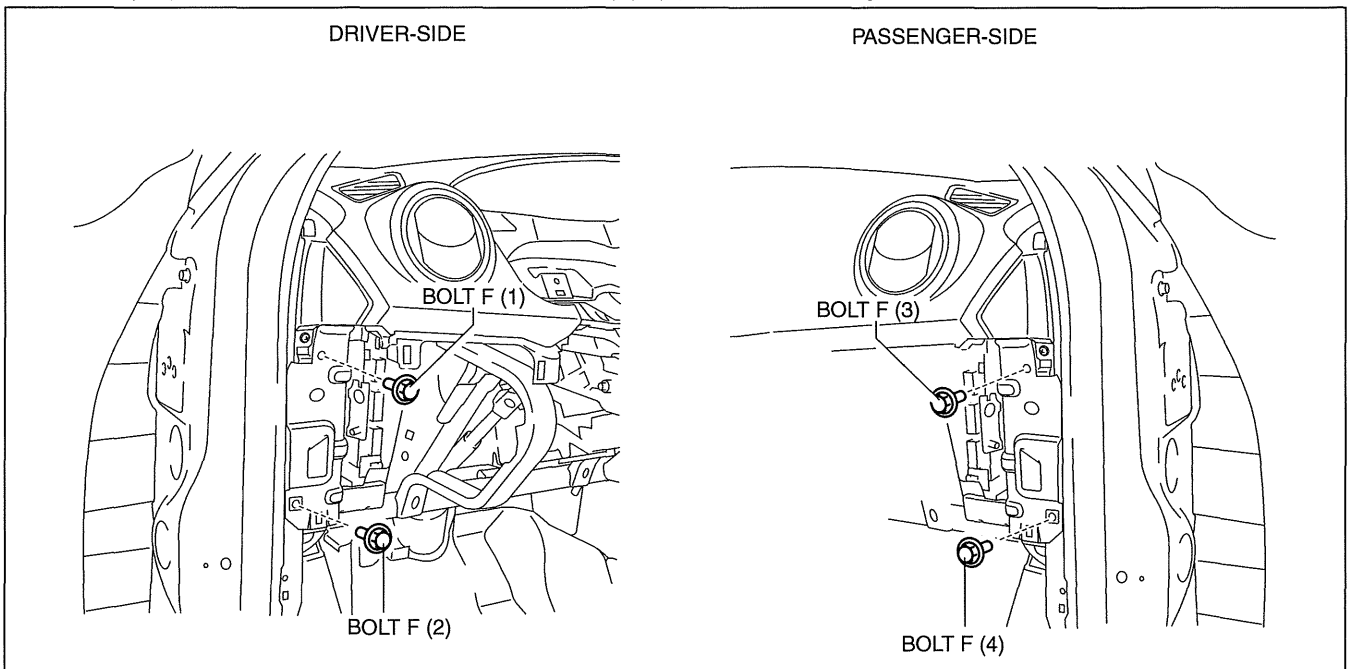
Bolt F Installation Note

1. Fit the service hole of dashboard and hinge pillar inner shown in the figure.



am3uuw0000491

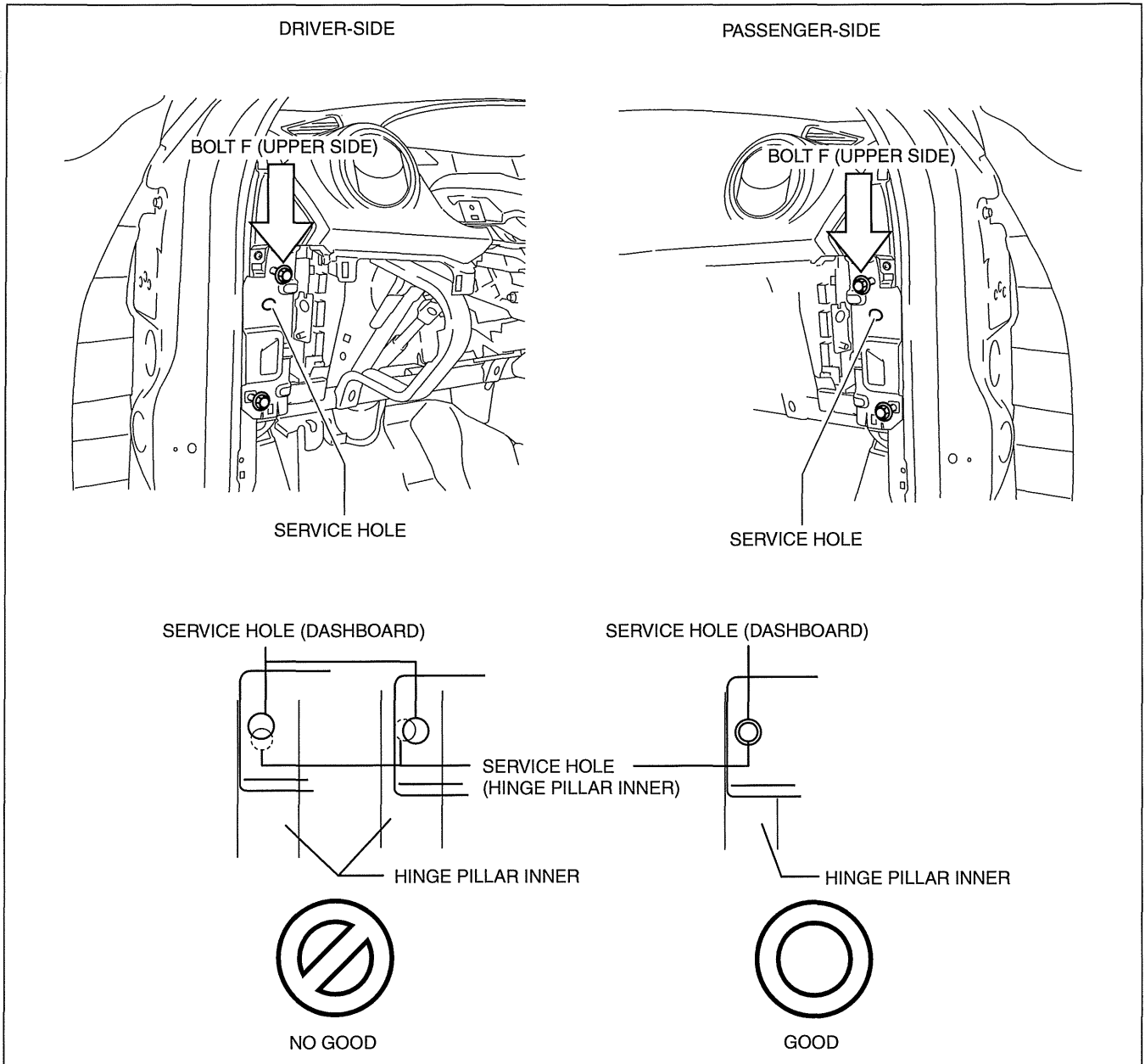
2. Partially tighten the bolts F in the order (1), (2), (3), (4) shown in the figure.



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INTERIOR TRIM

3. Reconfirms fit the service hole of dashboard and hinge pillar inner, then tighten the upper side bolt F.



09-17

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4. Tighten the all of bolts F.

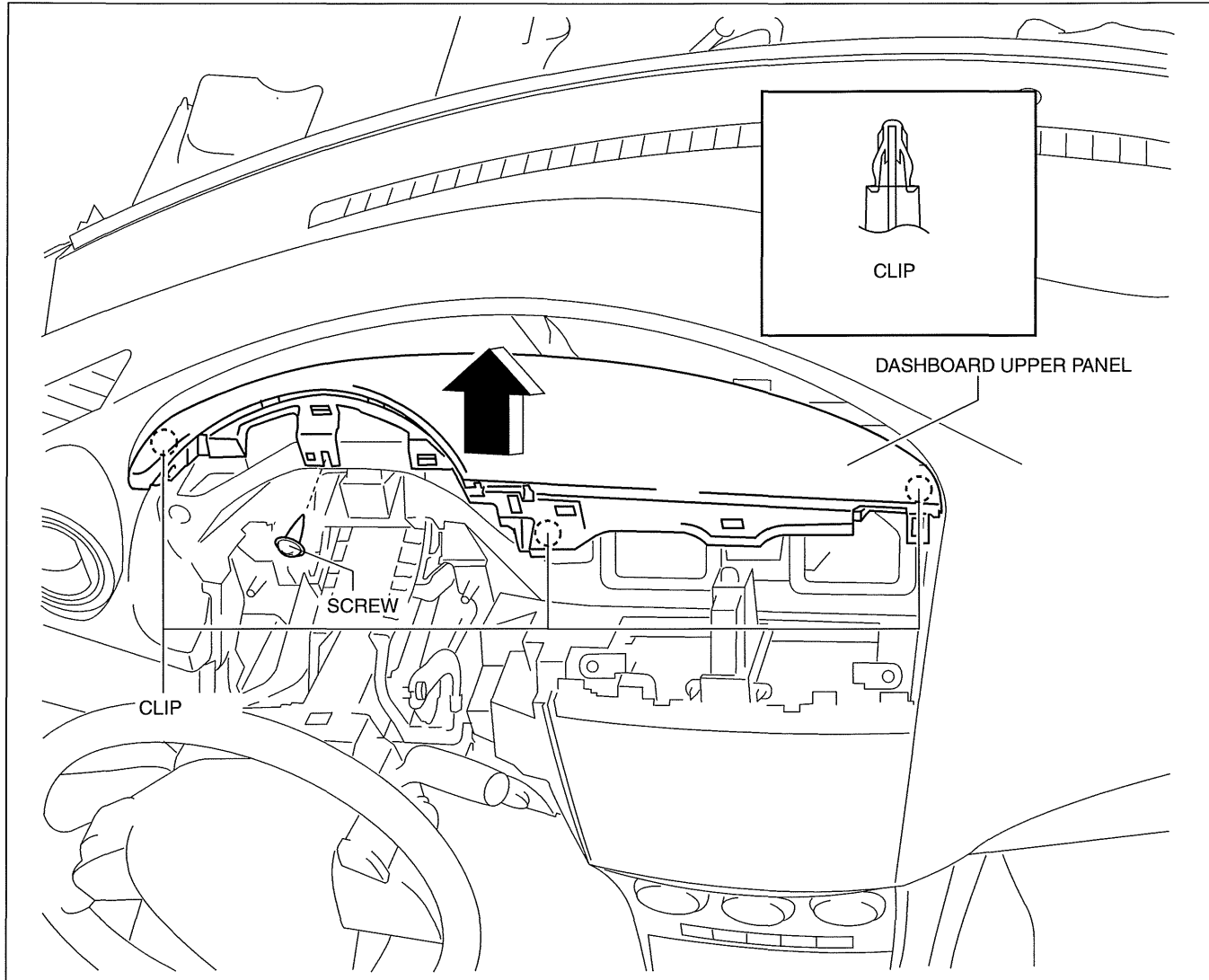
INTERIOR TRIM

DASHBOARD UPPER PANEL REMOVAL/INSTALLATION

id091700989100

Vehicles Without Bose®

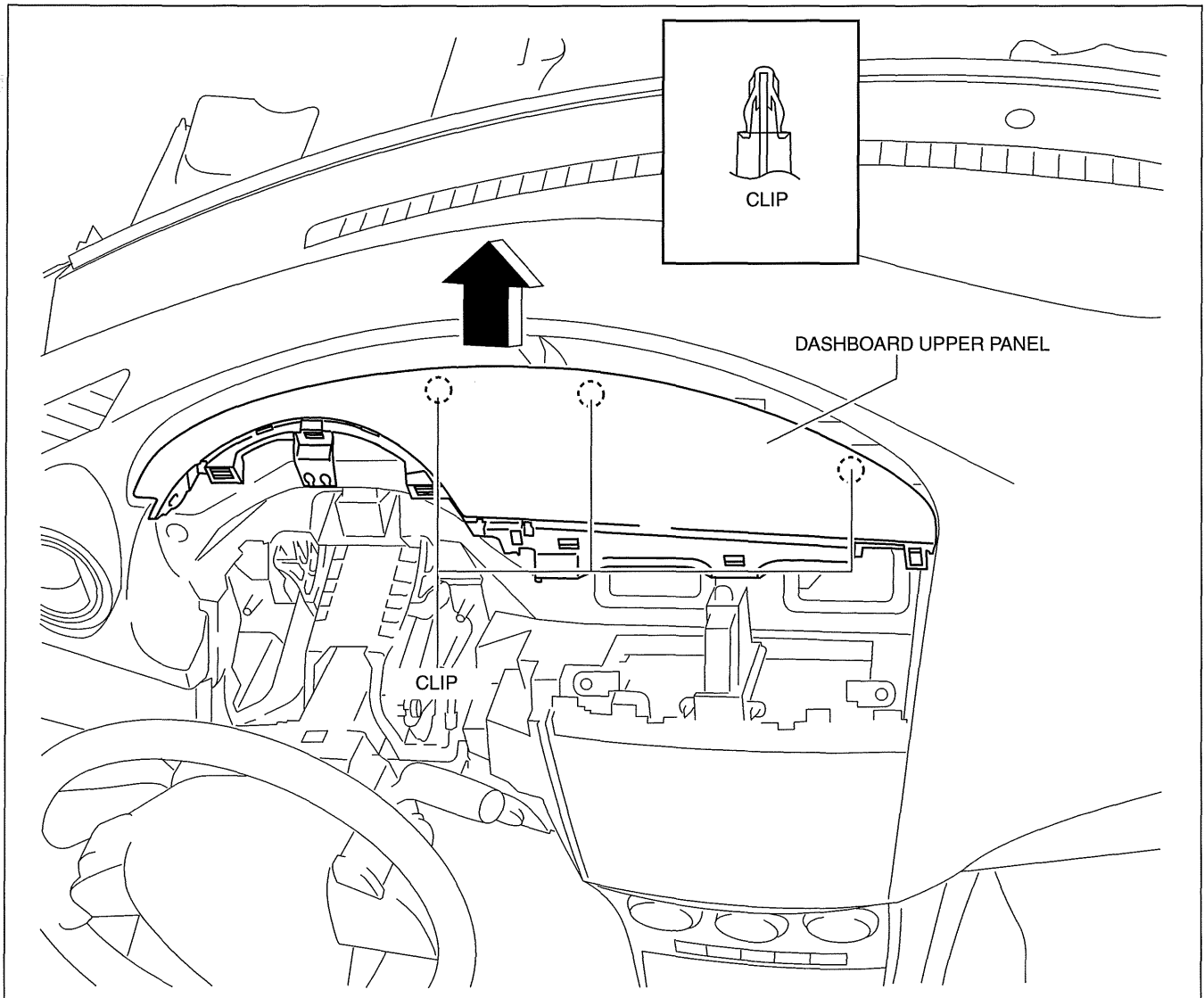
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
3. Remove the screw.
4. Pull up the dashboard upper panel in the direction of arrow shown in the figure, then remove the clips.



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INTERIOR TRIM

5. Pull up the dashboard upper panel in the direction of arrow shown in the figure, then remove the clips.



am3uuw0000465

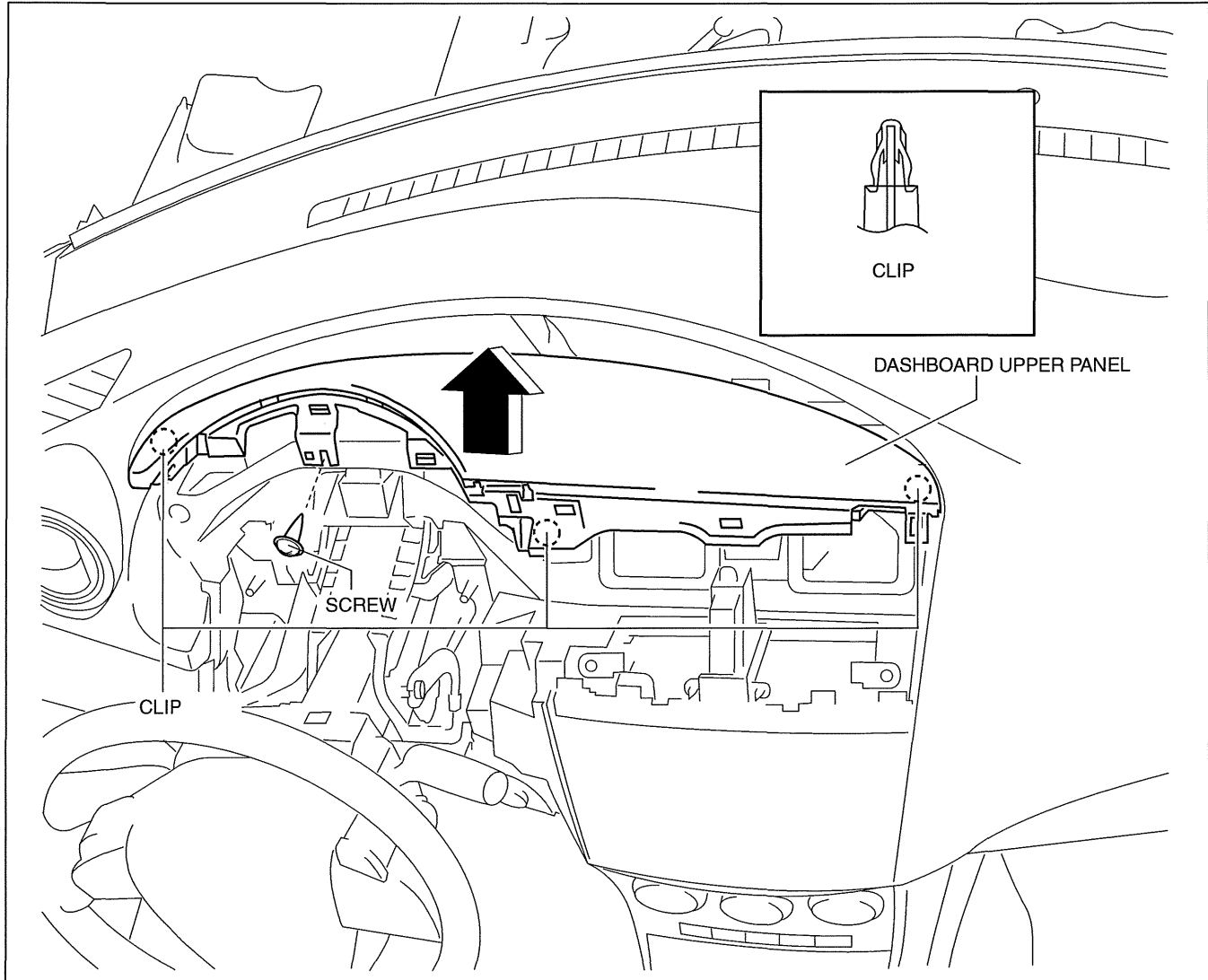
6. Remove the dashboard upper panel.
7. Install in the reverse order of removal.

09-17

INTERIOR TRIM

Vehicles With Bose®

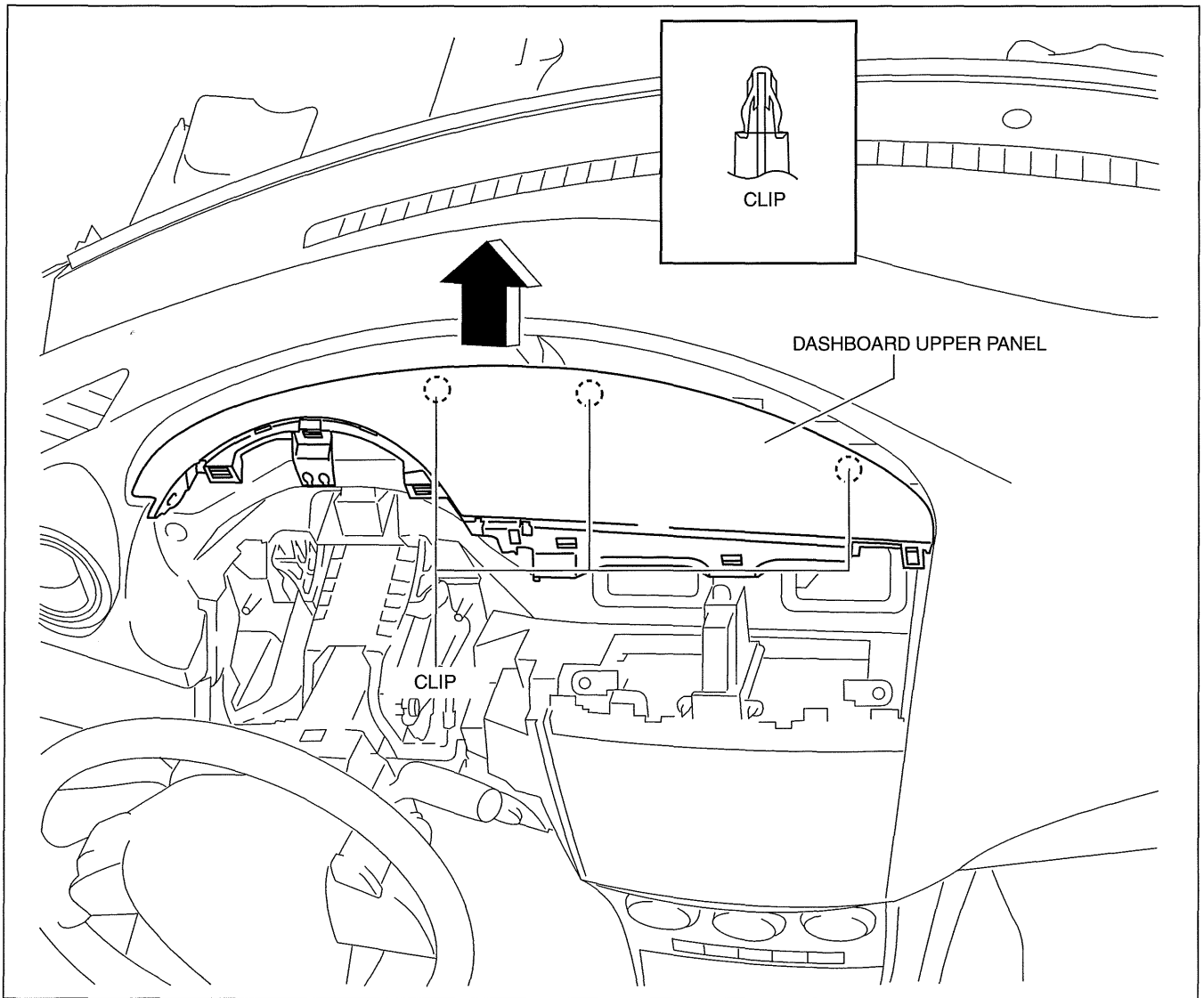
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
3. Remove the screw.
4. Pull up the dashboard upper panel in the direction of arrow shown in the figure, then remove the clips.



am3uuw0000465

5. Pull up the dashboard upper panel in the direction of arrow shown in the figure, then remove the clips.

INTERIOR TRIM

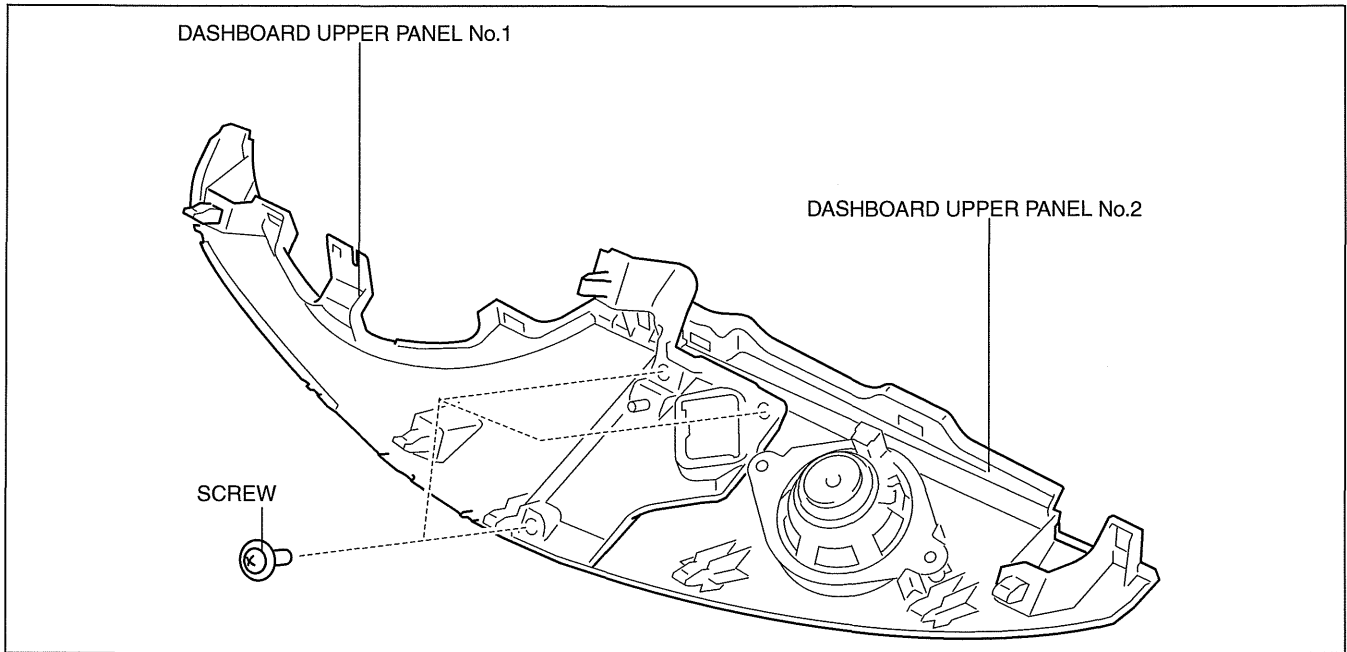


09-17

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INTERIOR TRIM

6. Remove the dashboard upper panel.
7. Disconnect the center speaker connector.
8. Disconnect the microphone connector.
9. Remove the screws then remove the dashboard upper panel No.2 from the dashboard upper panel No.1.



am3uuw0000550

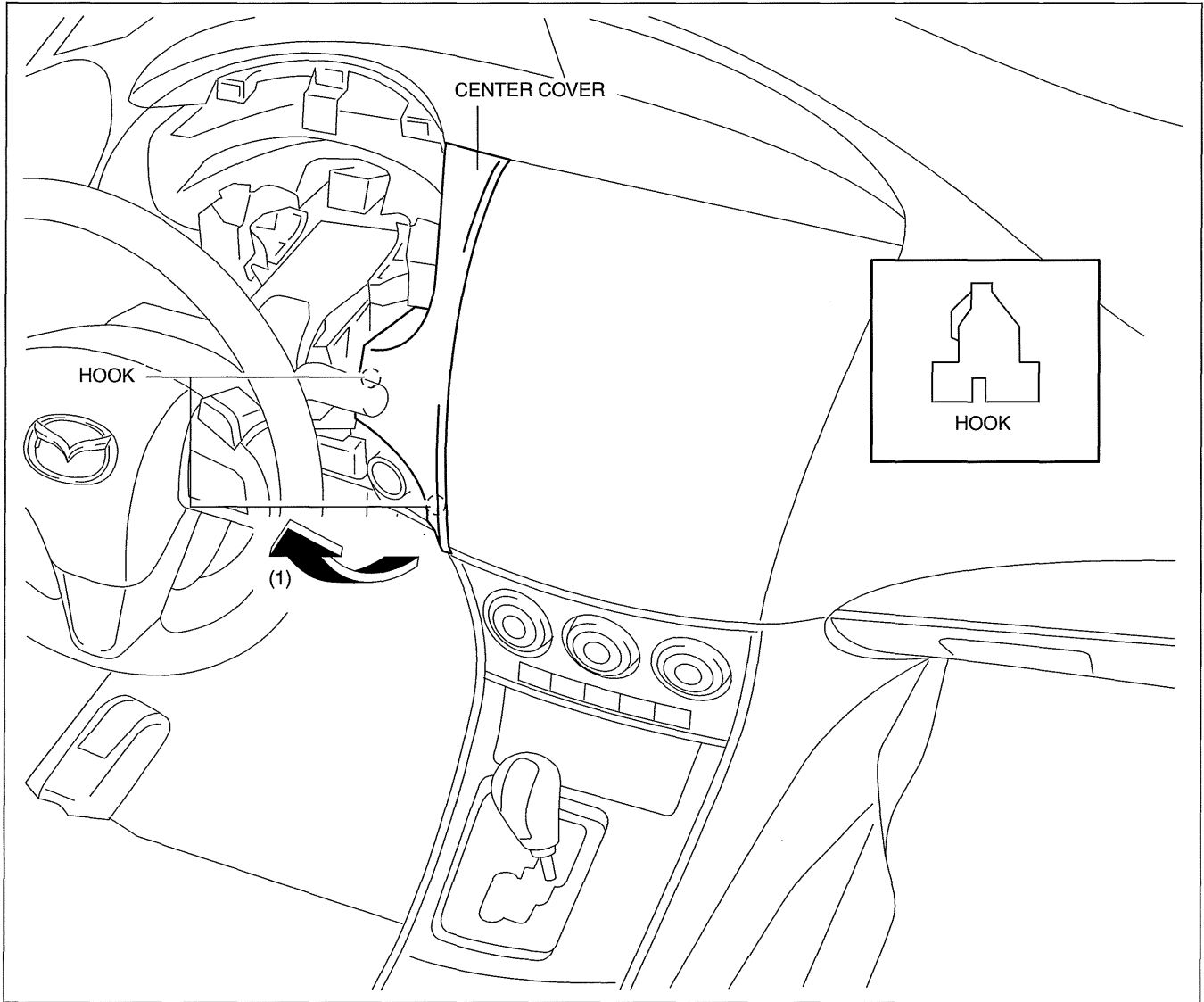
10. Install in the reverse order of removal.

INTERIOR TRIM

CENTER COVER REMOVAL/INSTALLATION

id091700989200

1. Disconnect the negative battery cable.
2. Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION)
3. Remove the upper column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION)
4. Remove the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION)
5. Pull the center cover in the direction of arrow (1) shown in the figure, then remove the hooks.

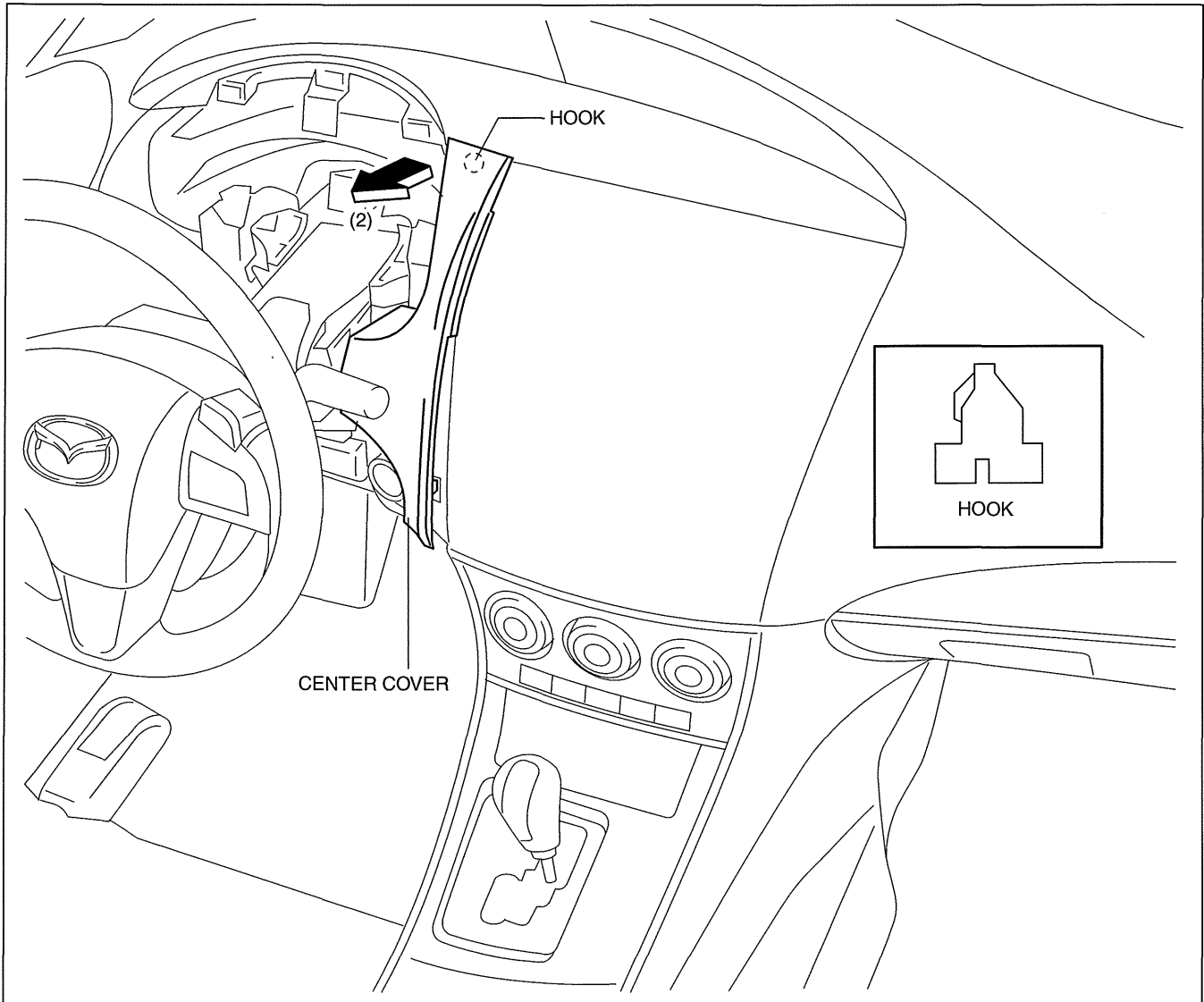


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09-17

INTERIOR TRIM

6. Pull the center cover in the direction of arrow (2) shown in the figure, then remove the hook.



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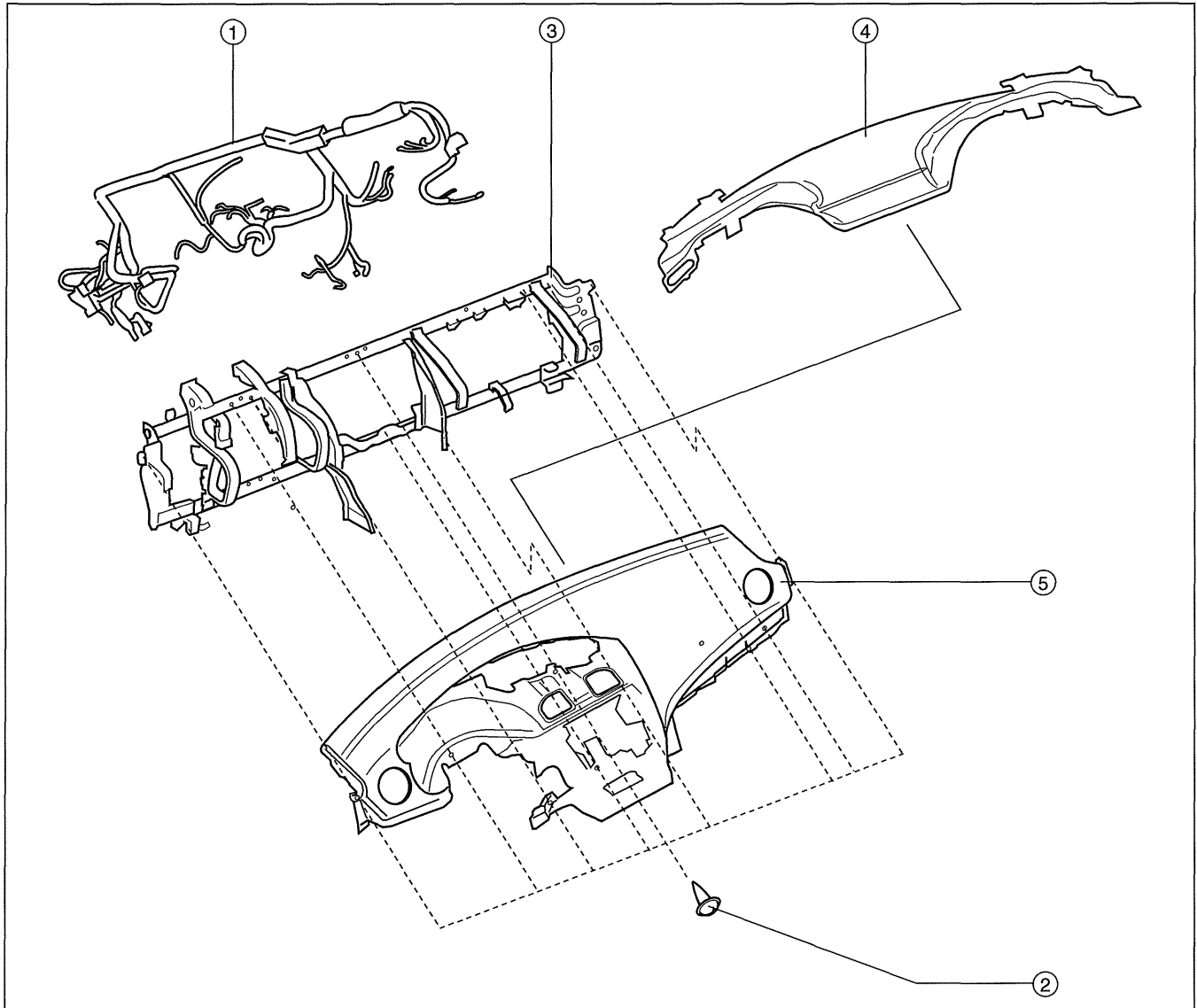
7. Remove the center cover.
8. Install in the reverse order of removal.

INTERIOR TRIM

DASHBOARD DISASSEMBLY/ASSEMBLY

id091700800400

1. Remove the ventilator grilles. (See 09-17-34 VENTILATOR GRILLE REMOVAL/INSTALLATION)
2. Remove the Passenger-side air bag module. (See 08-10-8 PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION)
3. Disassemble in the order indicated in the table.
4. Assemble in the reverse order of disassembly.



am6xuw0000162

1	Wiring harness
2	Screw
3	Dashboard frame

4	Center duct
5	Dashboard

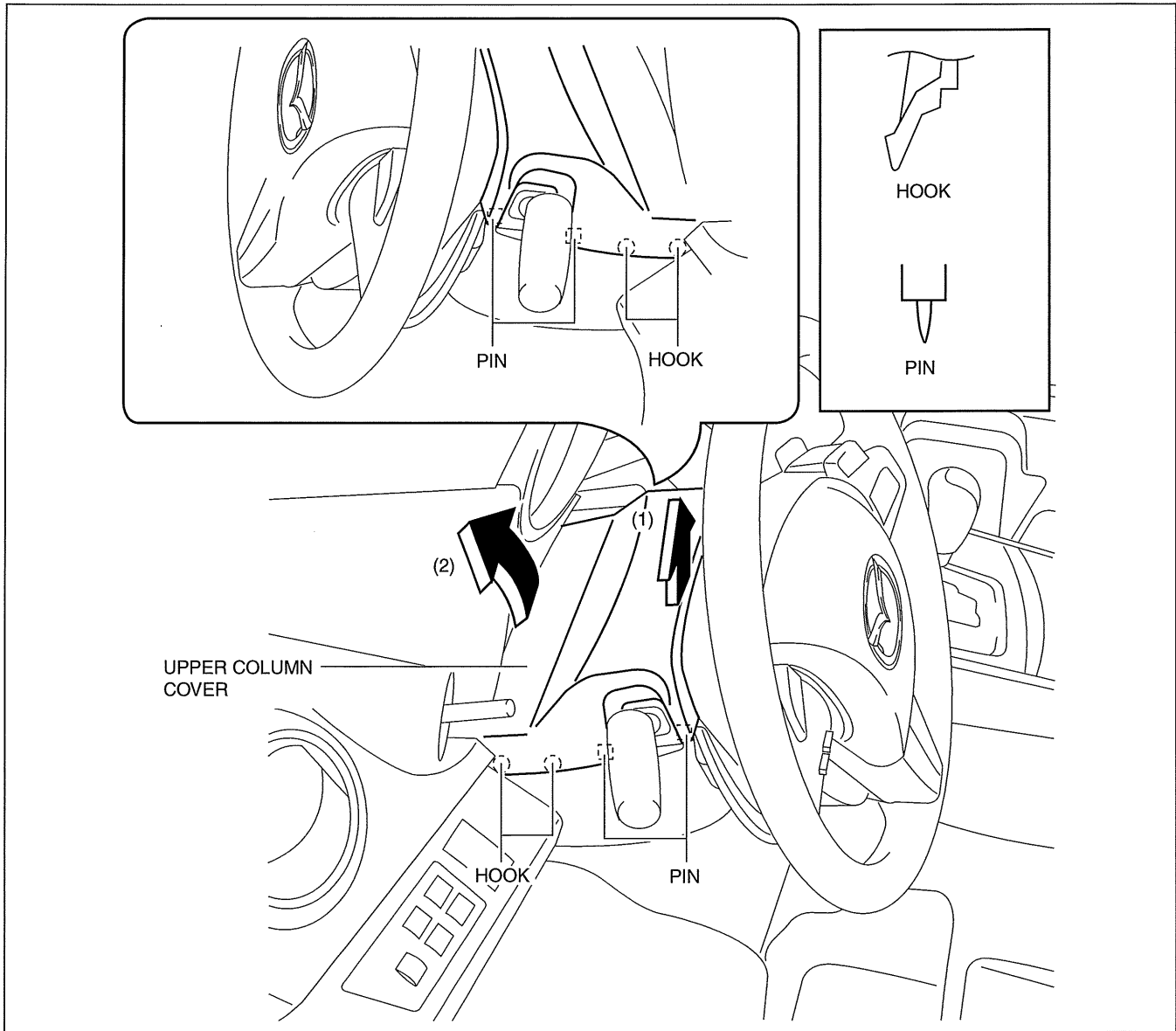
09-17

INTERIOR TRIM

COLUMN COVER REMOVAL/INSTALLATION

id091700800800

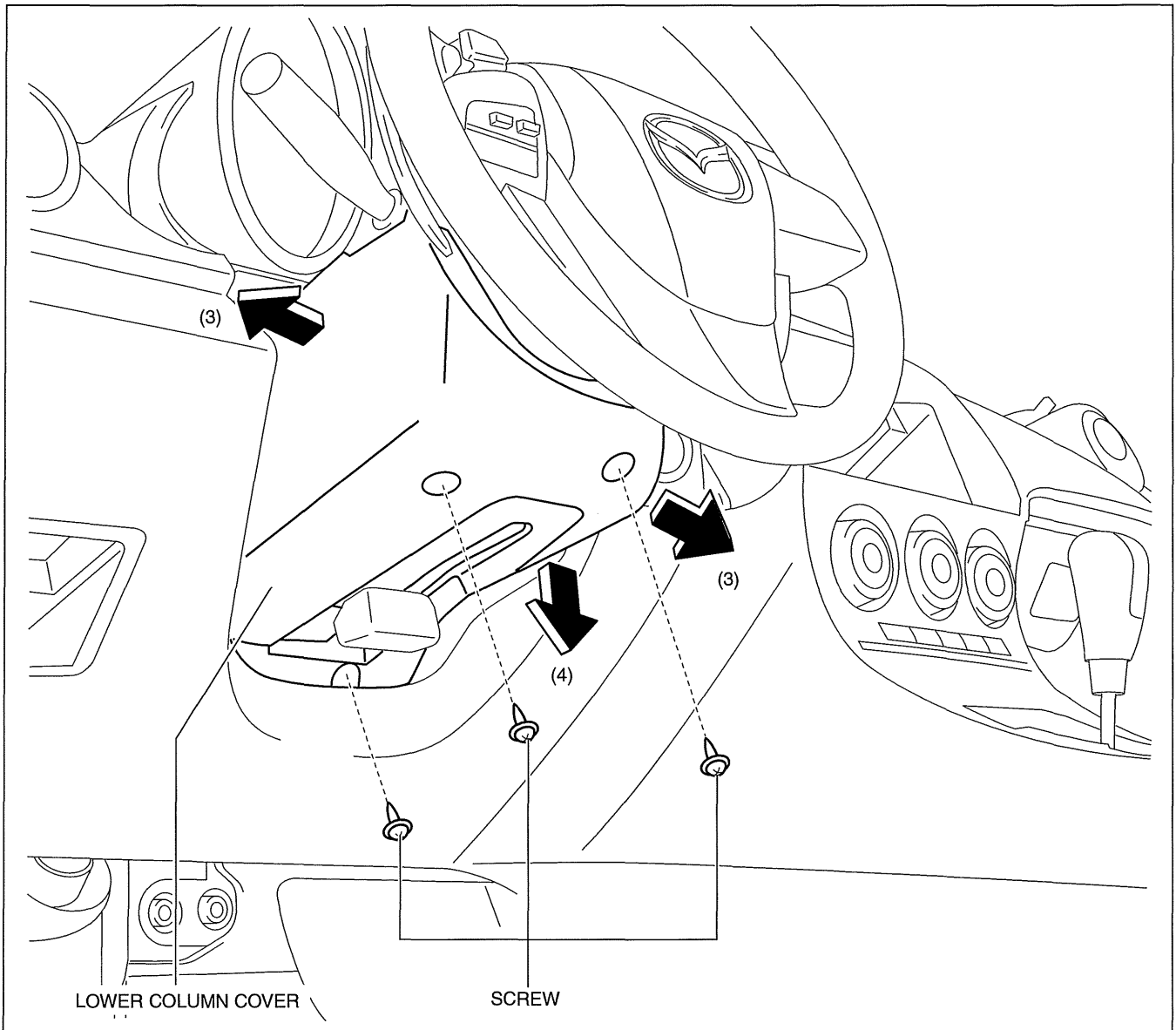
1. Pull down the steering wheel.
2. Pull the upper column cover in the direction of the arrow in the order of (1) and (2), then remove the upper column cover while detaching the hooks and pins.



am3uuw0000547

INTERIOR TRIM

3. Pull up the steering wheel.
4. Remove the ignition key illumination. (See 09-18-72 IGNITION KEY ILLUMINATION REMOVAL/INSTALLATION)
5. Remove the screws.
6. Remove the lower column cover in the direction of the arrow (4) while keeping it open in the direction of the arrow (3) shown in the figure.



09-17

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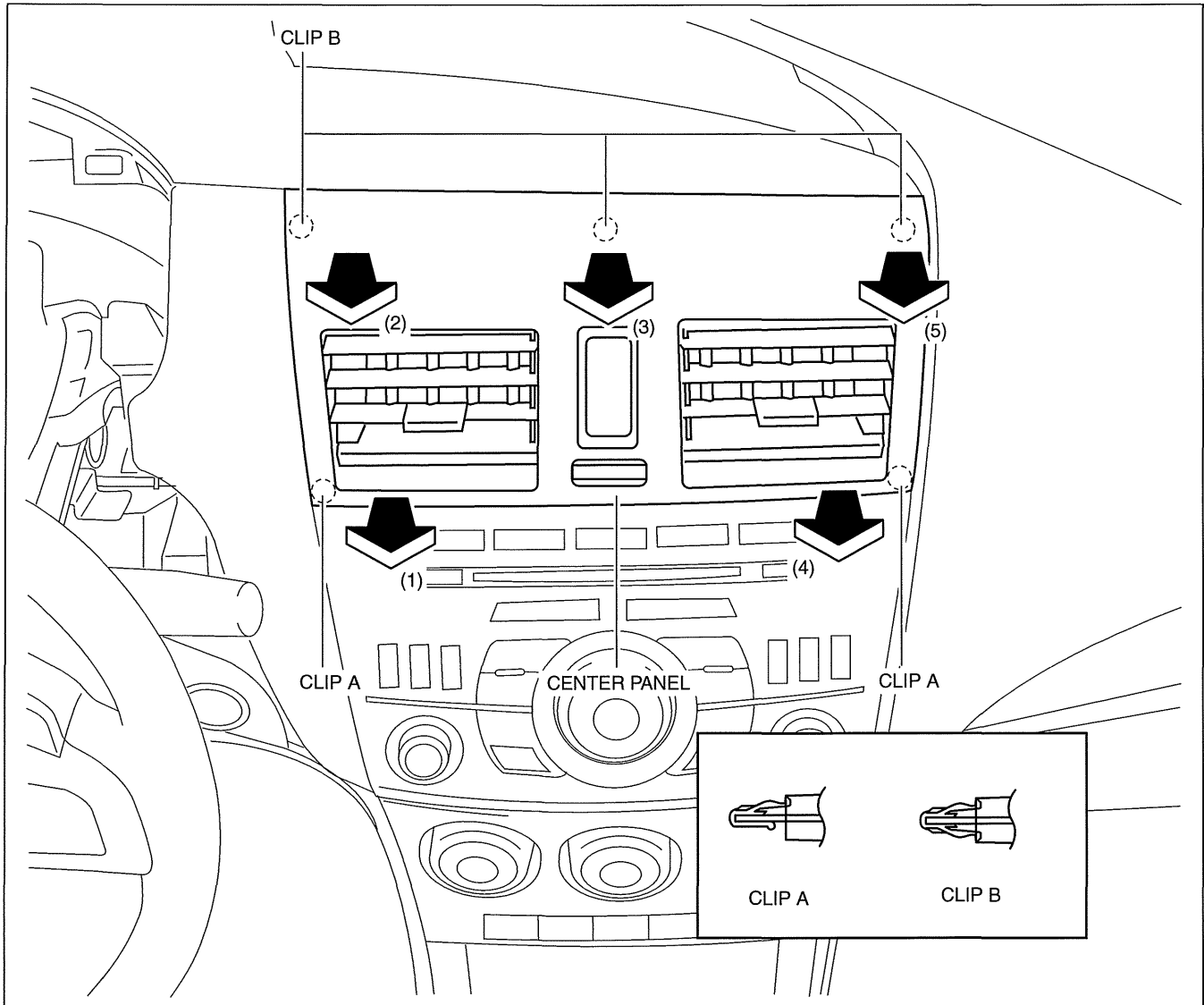
7. Install in the reverse order of removal.

INTERIOR TRIM

CENTER PANEL REMOVAL/INSTALLATION

id091700804500

1. Disconnect the negative battery cable.
2. Pull the center panel in the direction of arrow (1), (2), (3), (4), (5) and then remove the clips A and B.



am3uuw0000517

3. Disconnect the hazard warning switch connector.
4. Remove the center panel.
5. Install in the reverse order of removal.

INTERIOR TRIM

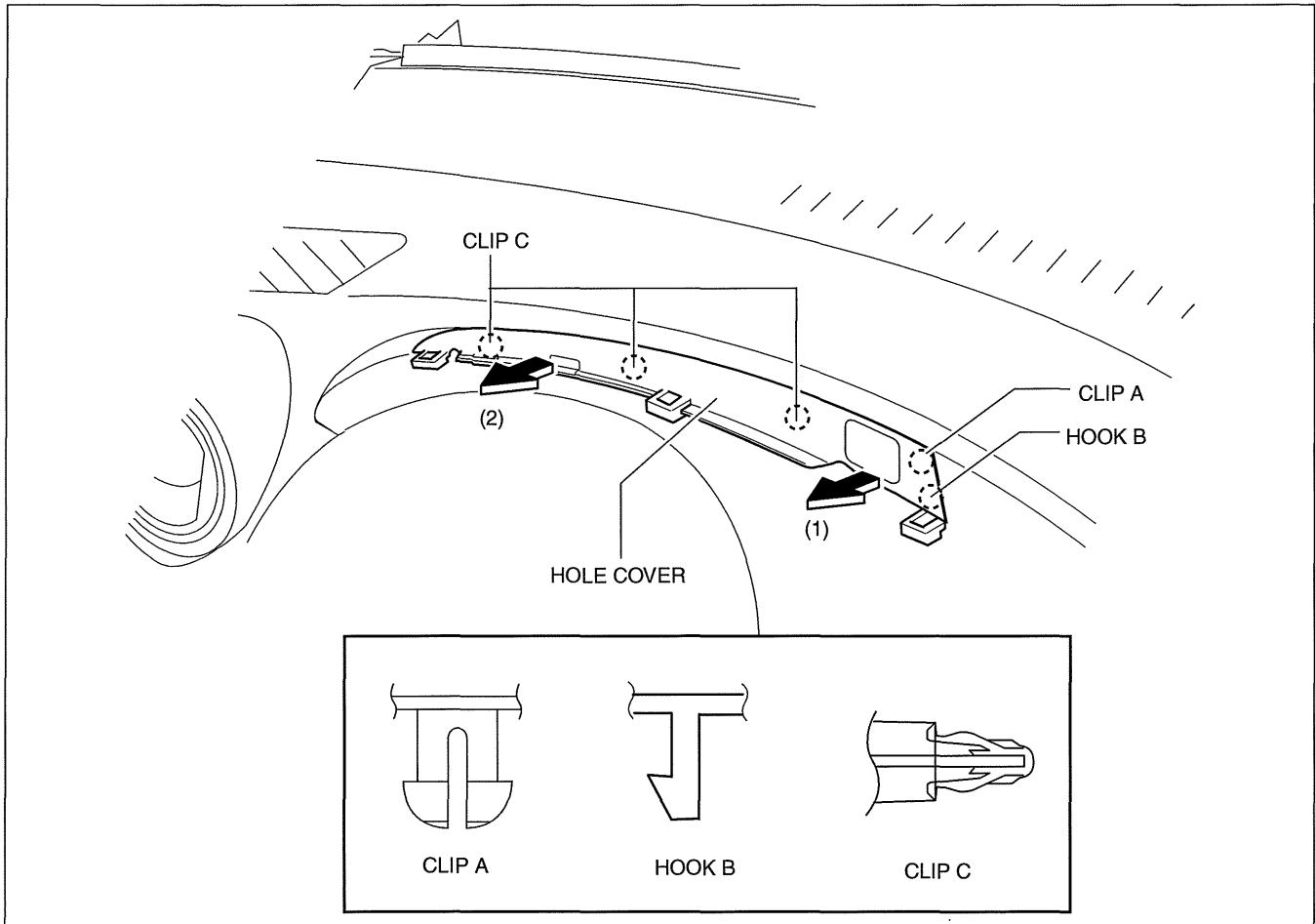
HOLE COVER REMOVAL/INSTALLATION

id091700989800

1. Disconnect the negative battery cable.

With Car-navigation system

1. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (5) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (6) Multi information display (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.)
2. Pull the hole cover in the direction of arrow (1), (2) shown in the figure, while remove the clip A, hook B and clips C.



09-17

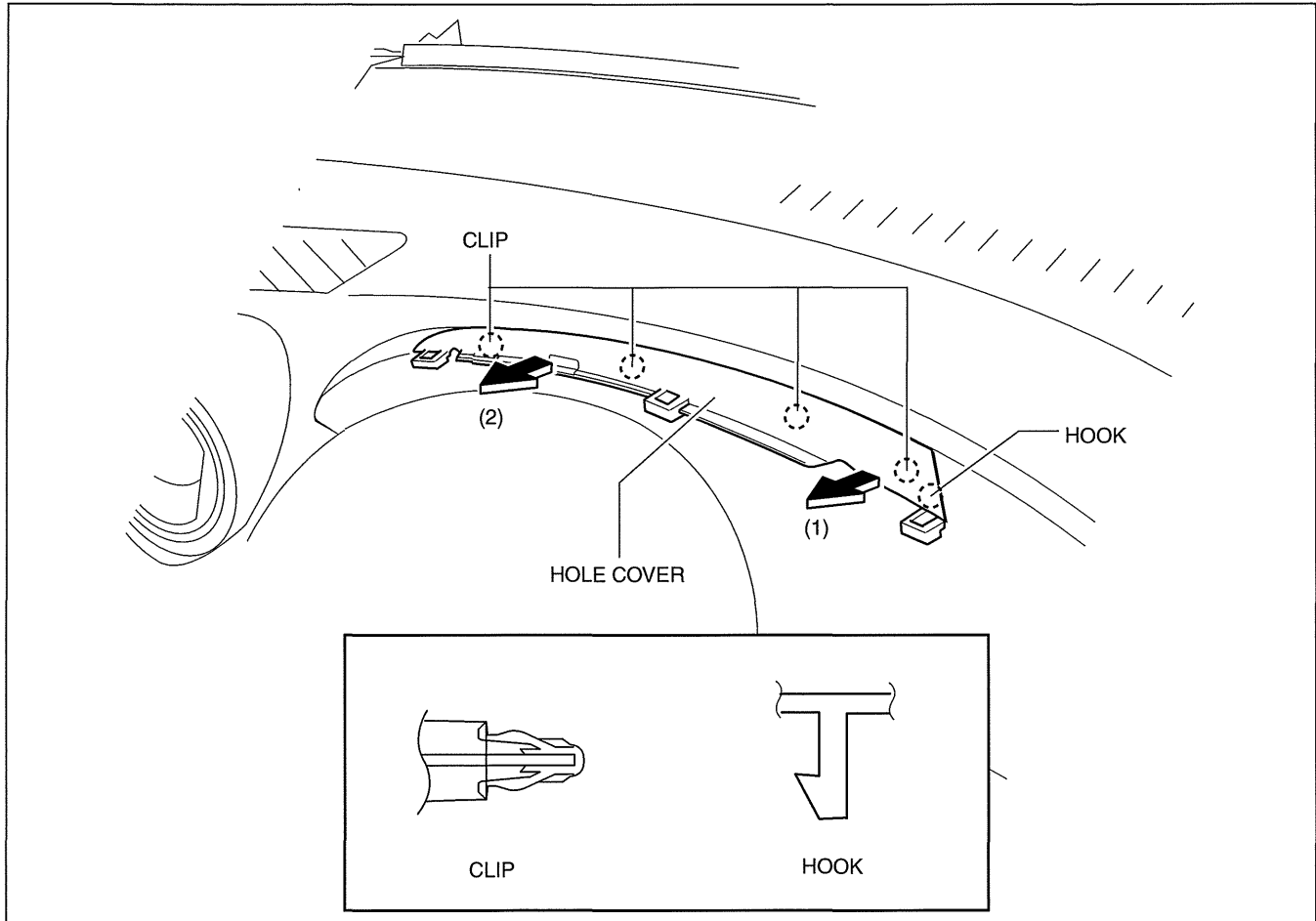
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3. Remove the hole cover.
4. Install in the order of removal.

INTERIOR TRIM

Without Car-navigation system

1. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (5) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
2. Pull the hole cover in the direction of arrow (1), (2) shown in the figure, while remove the hook and clips.



am3uuw000548

3. Remove the hole cover.
4. Install in the order of removal.

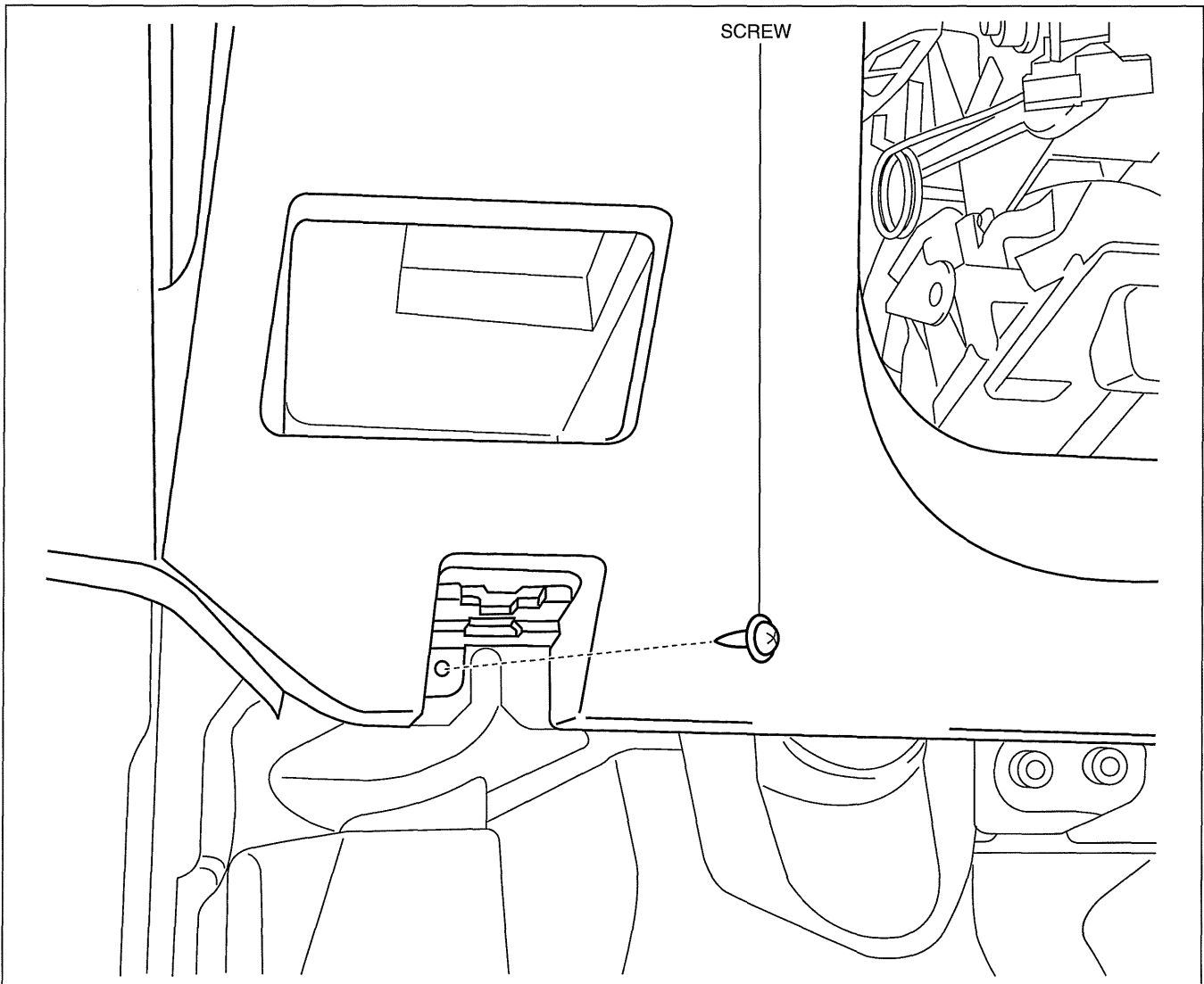
INTERIOR TRIM

LOWER PANEL REMOVAL/INSTALLATION

id091700801100

Driver-side

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Driver-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Driver-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (4) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (5) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (9) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Partially peel back the seaming welt.
4. Remove the screw.

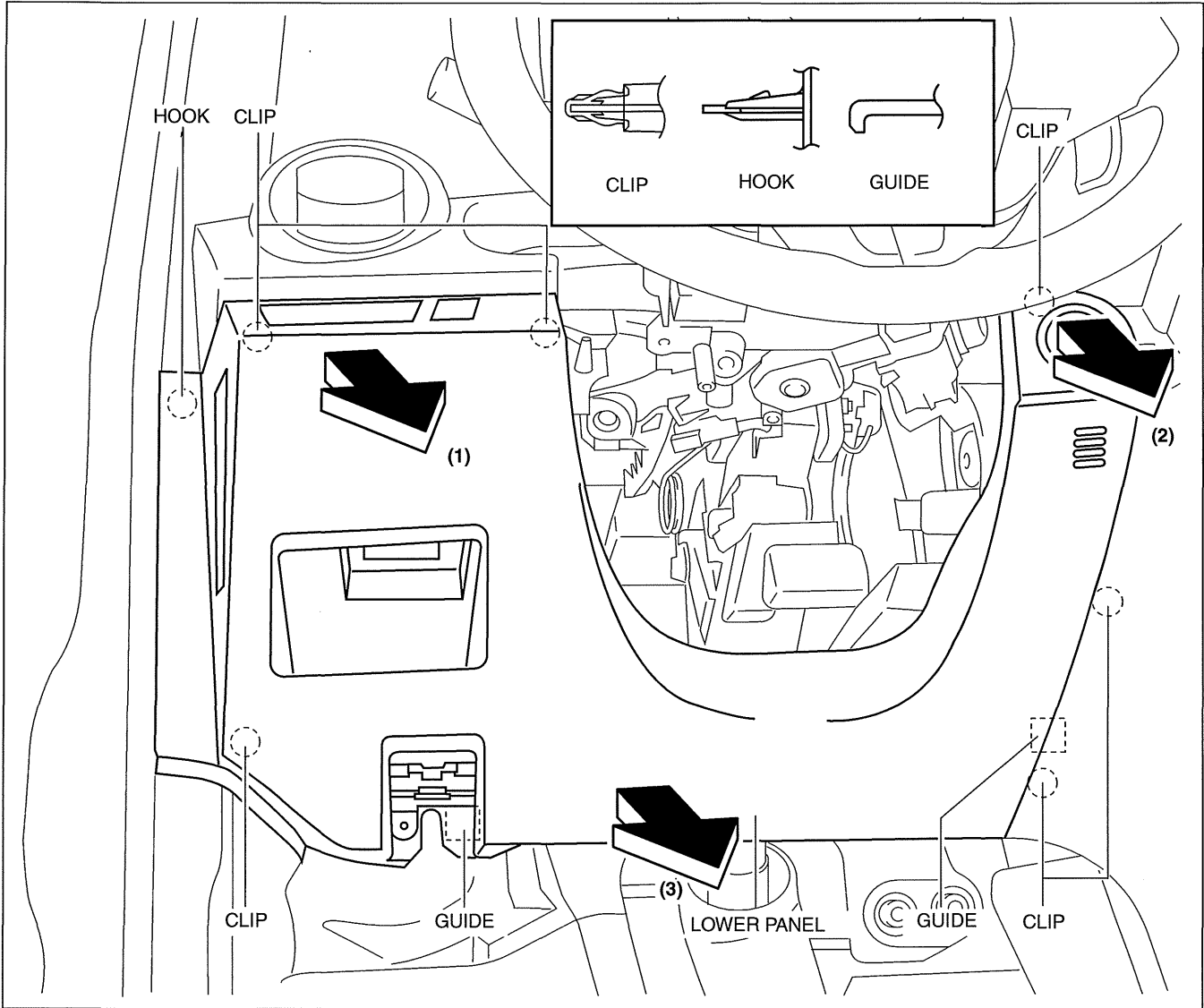


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09-17

INTERIOR TRIM

5. Pull the lower panel in the direction of the arrow in the order of (1) (2), (3) and remove the lower panel while detaching the hooks, clips and guides.



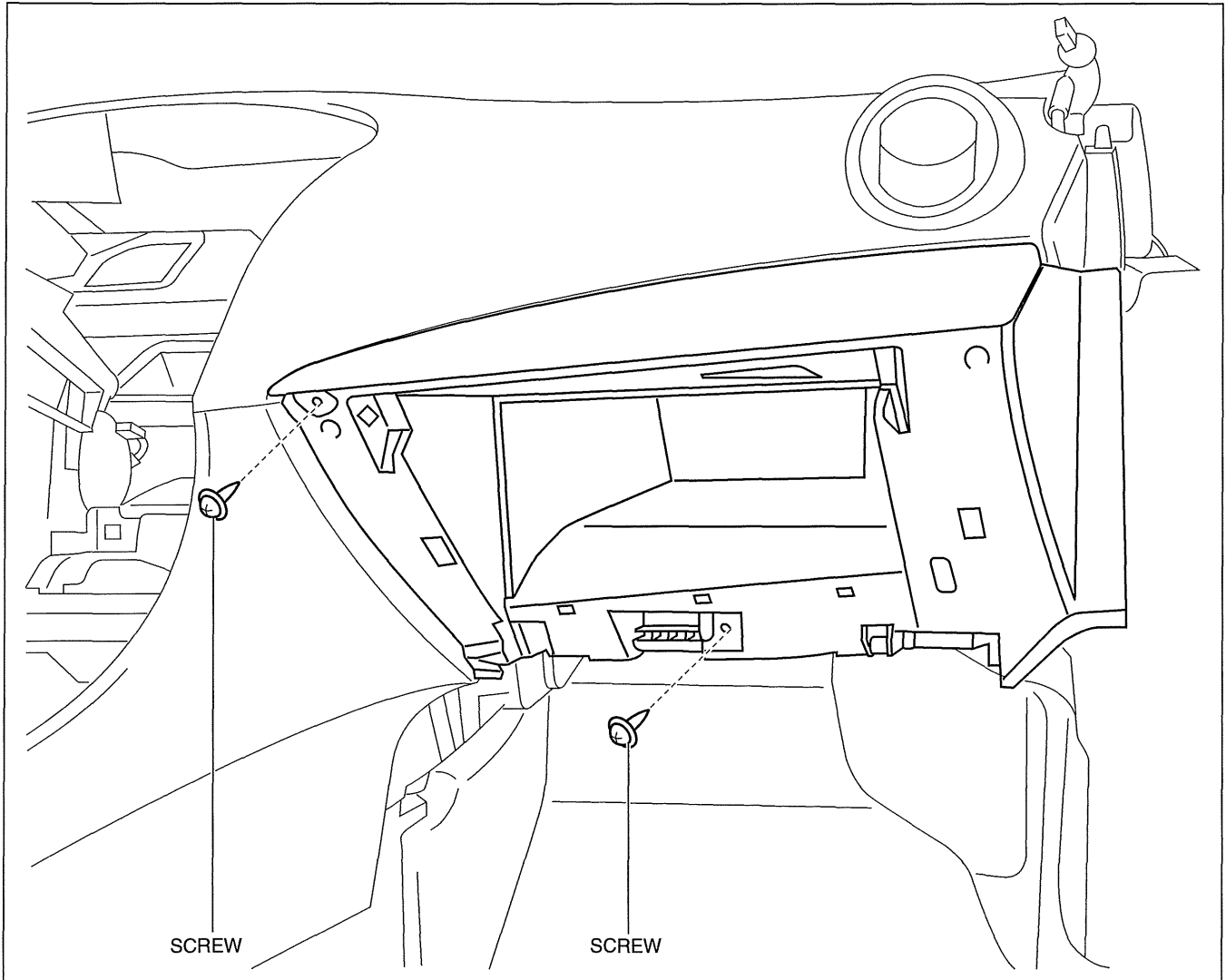
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6. Disconnect the switch connector.
7. Disconnect the push button start connector.
8. Install in the reverse order of removal.

INTERIOR TRIM

Passenger-side

1. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
2. Partially peel back the seaming welt.
3. Remove the screws.

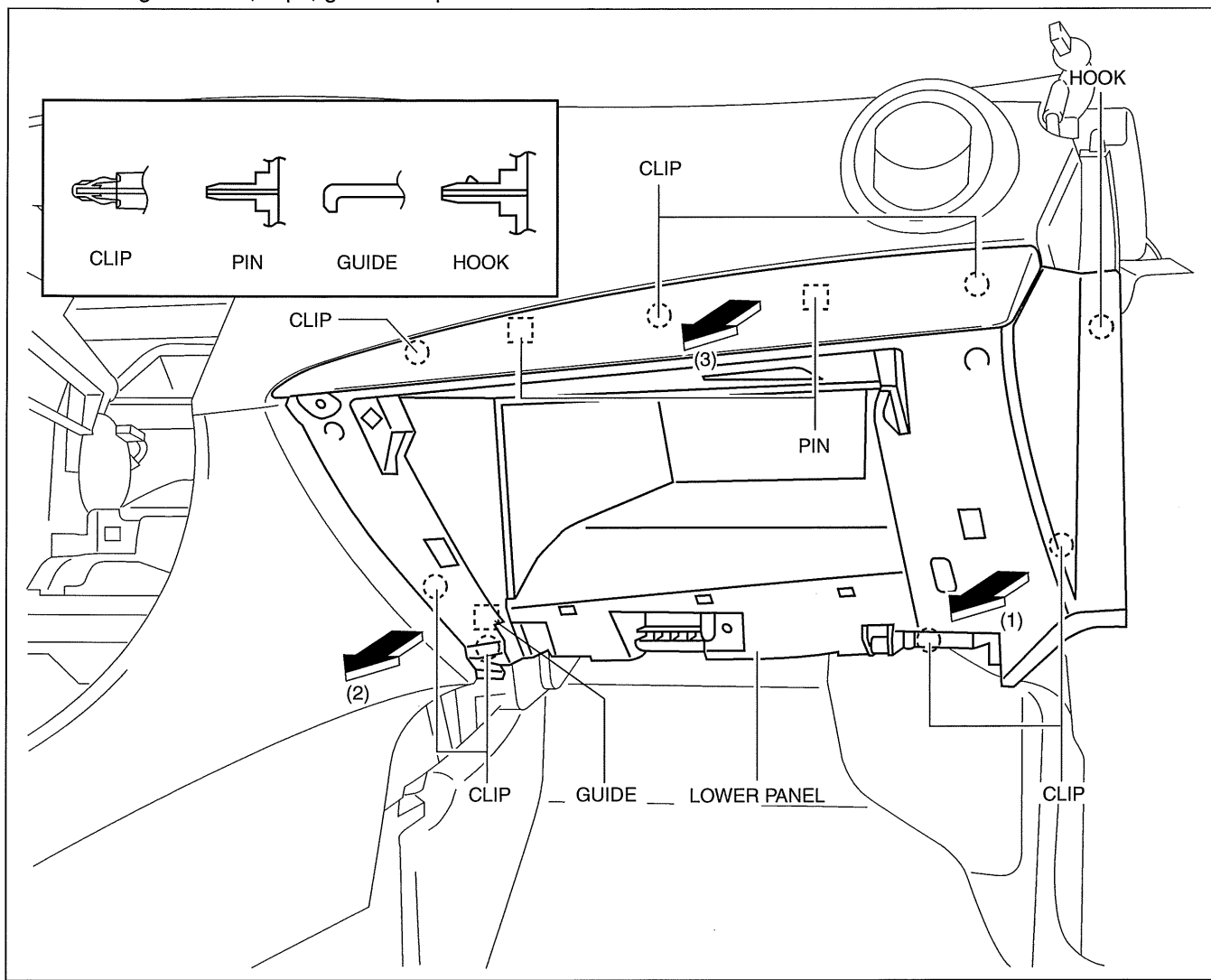


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09-17

INTERIOR TRIM

4. Pull the lower panel in the direction of the arrow in the order of (1) (2), (3) and remove the lower panel while detaching the hook, clips, guide and pins.



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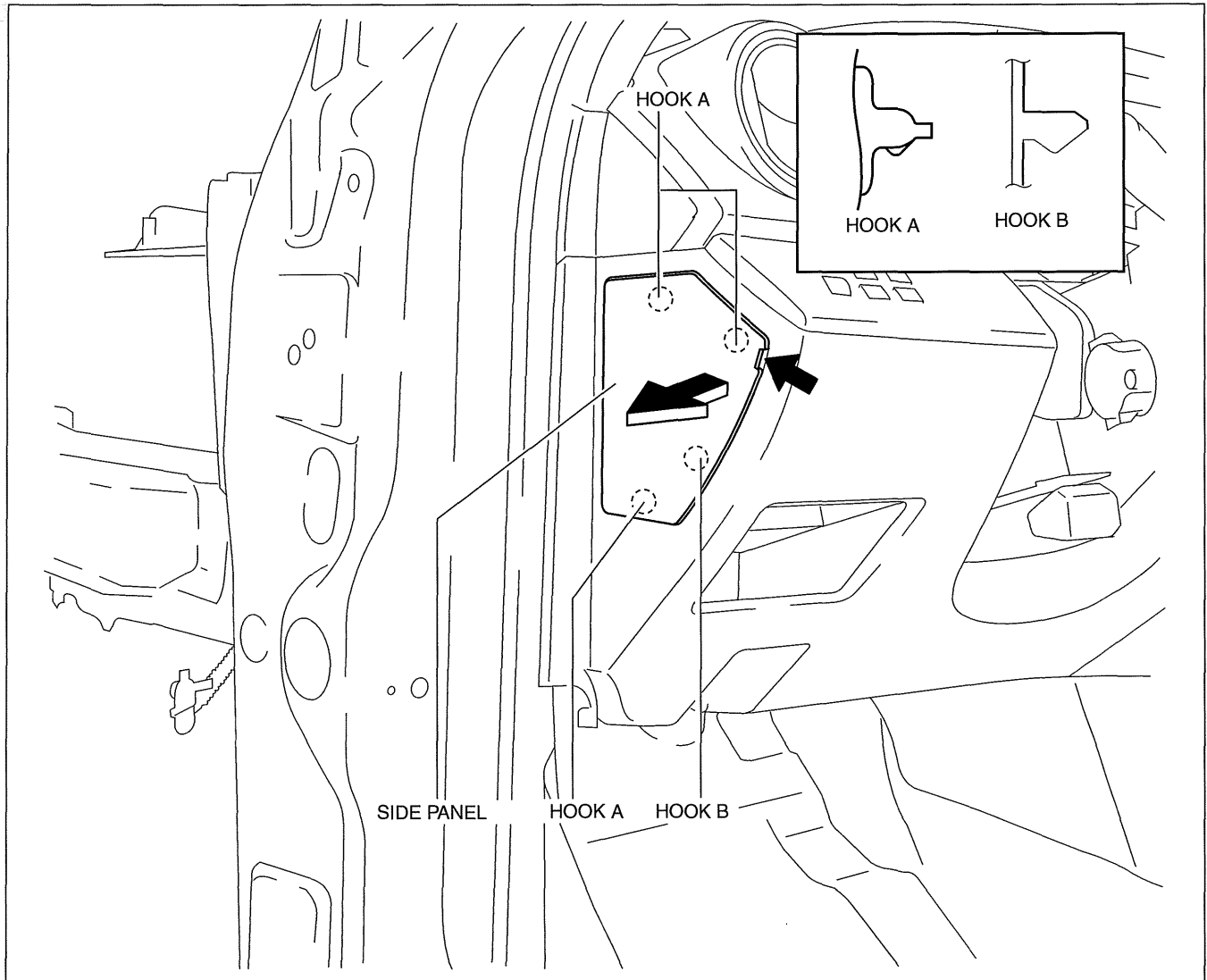
5. Install in the reverse order of removal.

INTERIOR TRIM

SIDE PANEL REMOVAL/INSTALLATION

id091700800500

1. Insert a tape-wrapped fastener remover into the position indicated by the arrow in the figure.
2. Pull the side panel in the direction of the arrow shown in the figure, then remove the clips and hook.

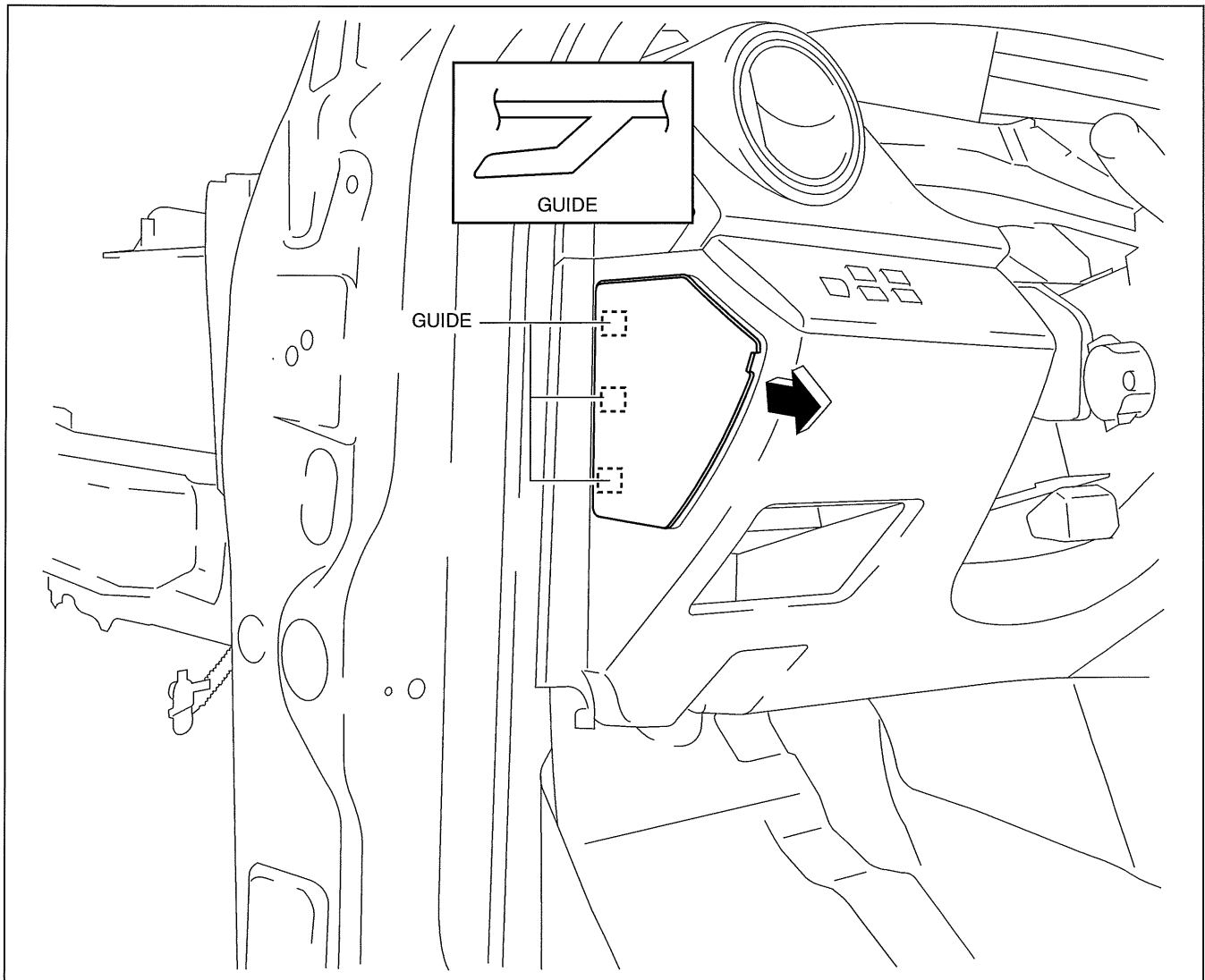


09-17

am3uuw0000548

INTERIOR TRIM

3. Pull the side panel in the direction of the arrow shown in the figure, while detaching the guides.



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Caution

- When pulling out the side panel, be careful not to damage the guide.

4. Install in the reverse order of removal.

INTERIOR TRIM

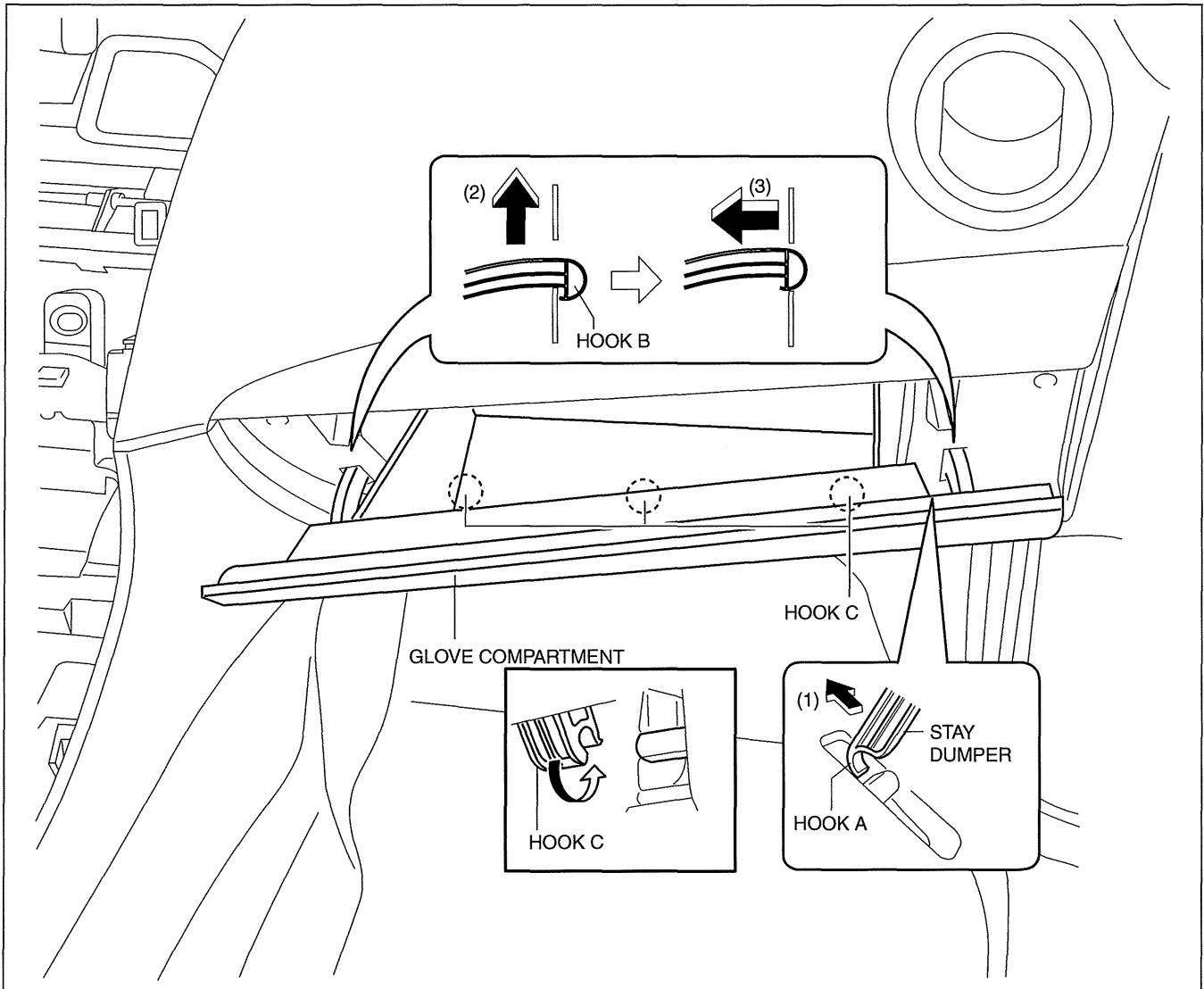
GLOVE COMPARTMENT REMOVAL/INSTALLATION

id091700800700

Caution

- If the glove compartment is closed without being joined to the stay damper, the stay damper may be damaged. Verify that the stay damper is joined to the glove compartment before closing the glove compartment.

1. Pull the stay damper in the direction (1) shown in the figure, and detach the hook A between the glove compartment and the stay damper.
2. Pull up the hook B in the direction of arrow (2) and remove it in the direction of arrow (3) shown in the figure.
3. Lower the glove compartment.
4. Detach the hook C from the dashboard and remove the glove compartment.



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5. Install in the reverse order of removal.

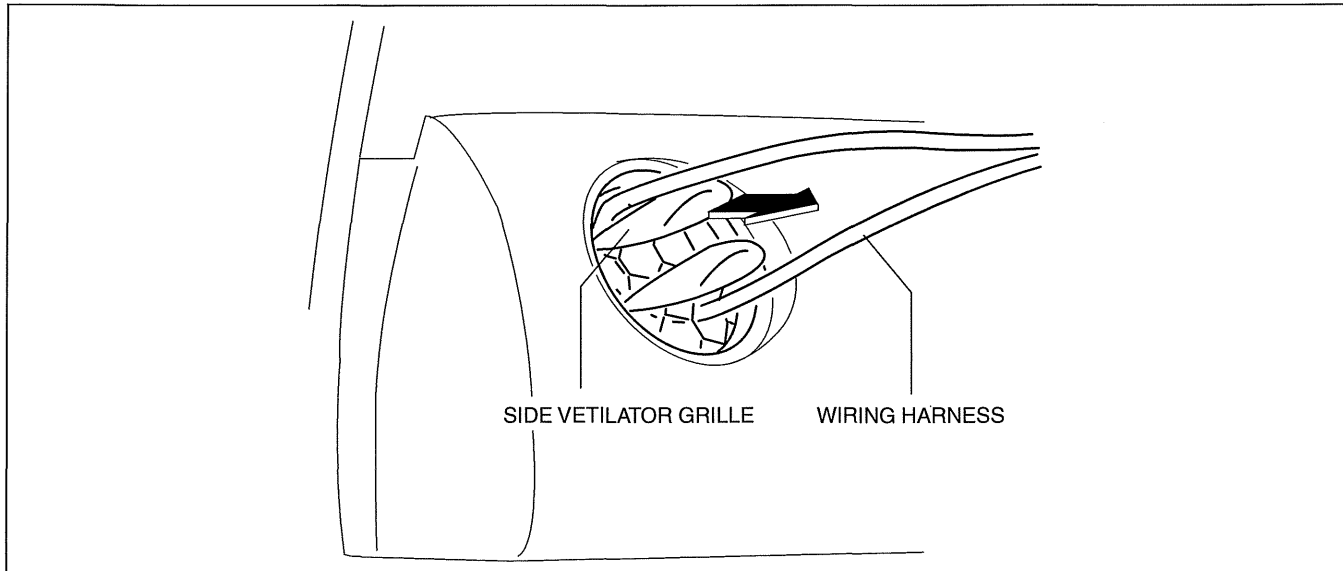
INTERIOR TRIM

VENTILATOR GRILLE REMOVAL/INSTALLATION

id091700804600

Side Ventilator grille

1. Through the wiring harness into the position shown in the figure, remove the side ventilator grille in the direction of arrow.



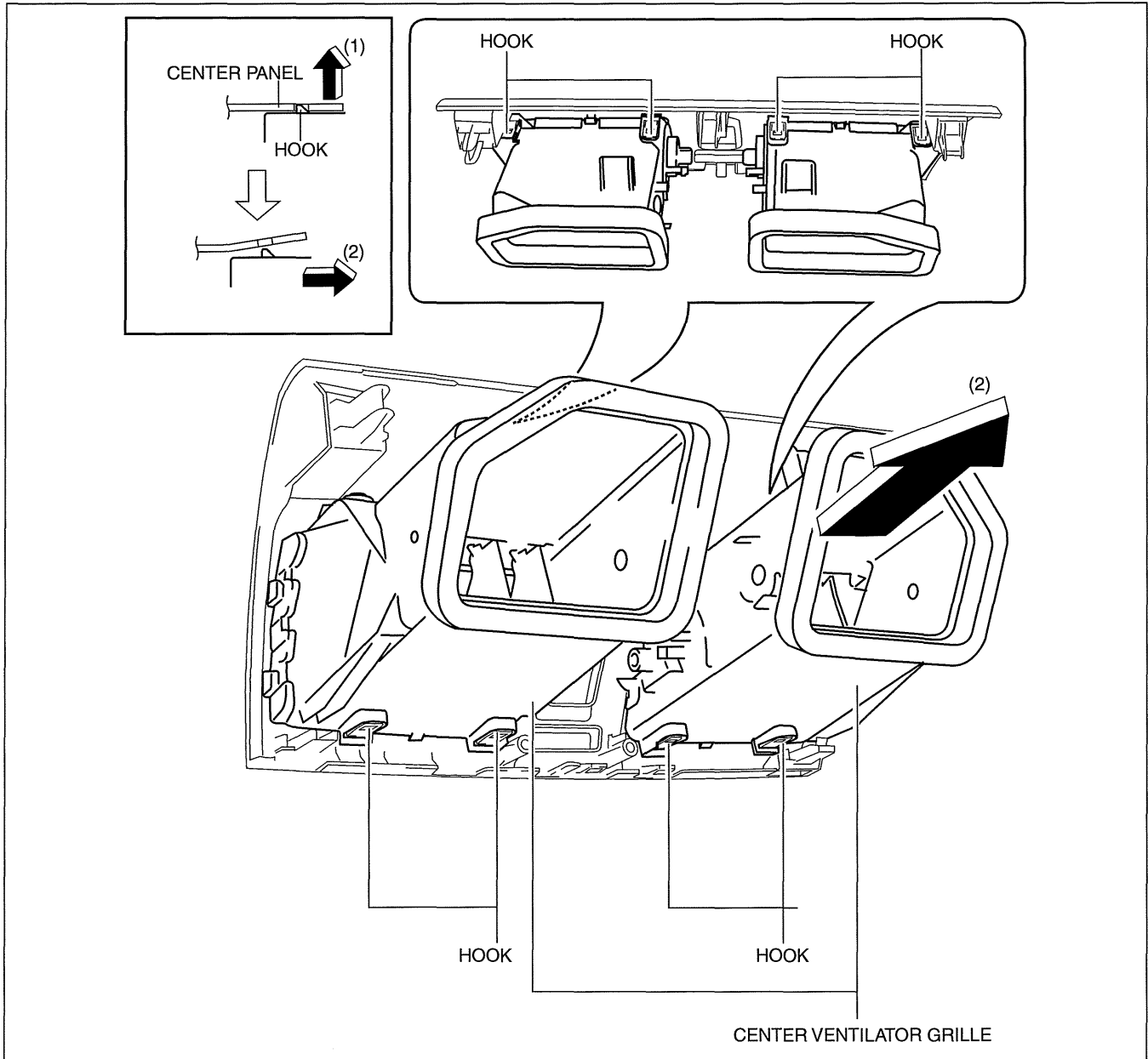
am3uuw0000471

2. When installing the side ventilator grille, push it for the dashboard.

INTERIOR TRIM

Center Ventilator grille

1. Disconnect the negative battery cable.
2. Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION)
3. Push the edge of center panel in the direction of arrow (1) and detach the hooks.
4. Remove the center ventilator grille in the direction of arrow (2) shown in the figure.



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5. Install in the reverse order of removal.

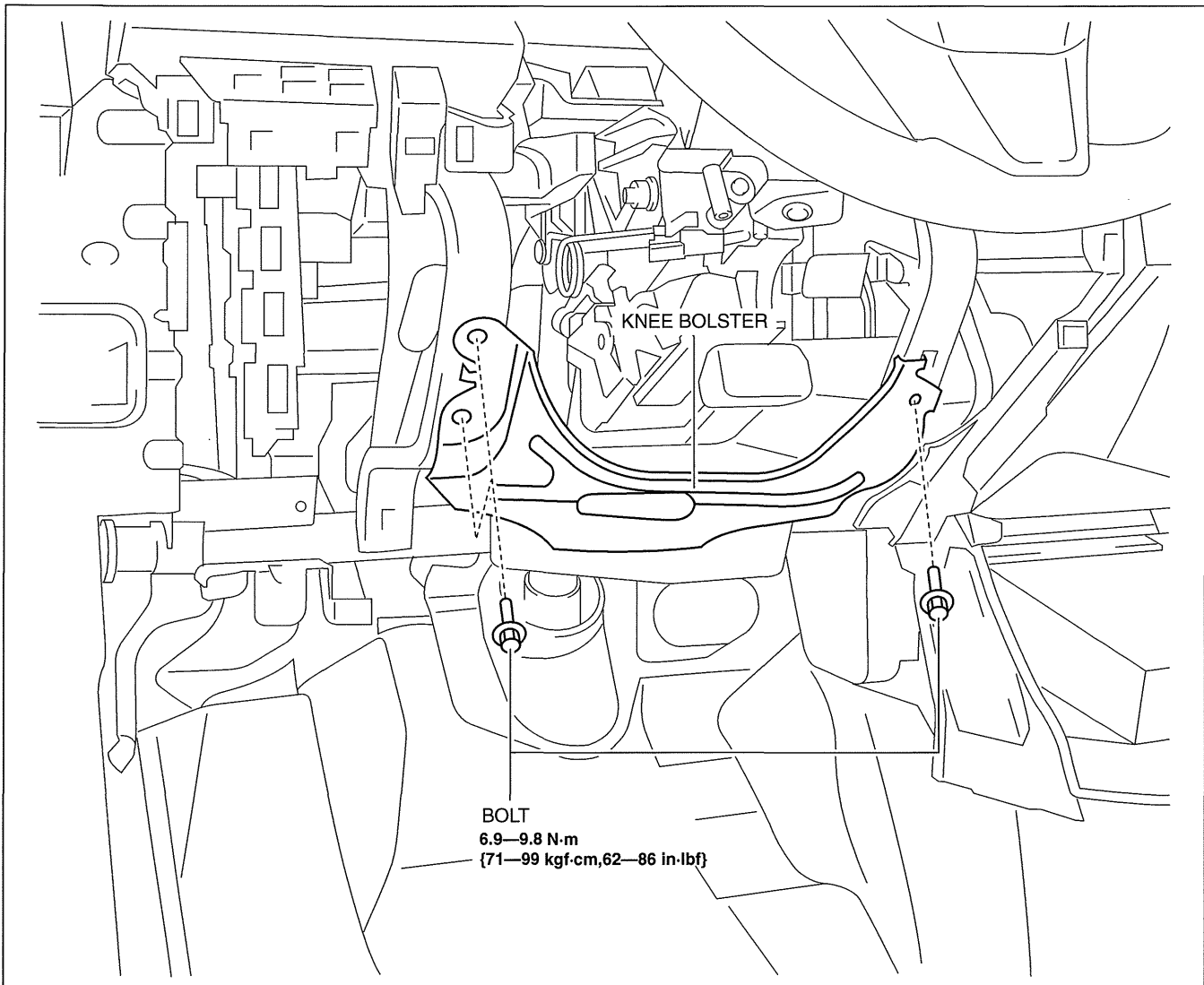
09-17

INTERIOR TRIM

id091700804000

KNEE BOLSTER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Driver-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Driver-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (4) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (5) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION)
 - (6) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (9) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (10) Driver-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
3. Remove the bolts.



am6xuw0000184

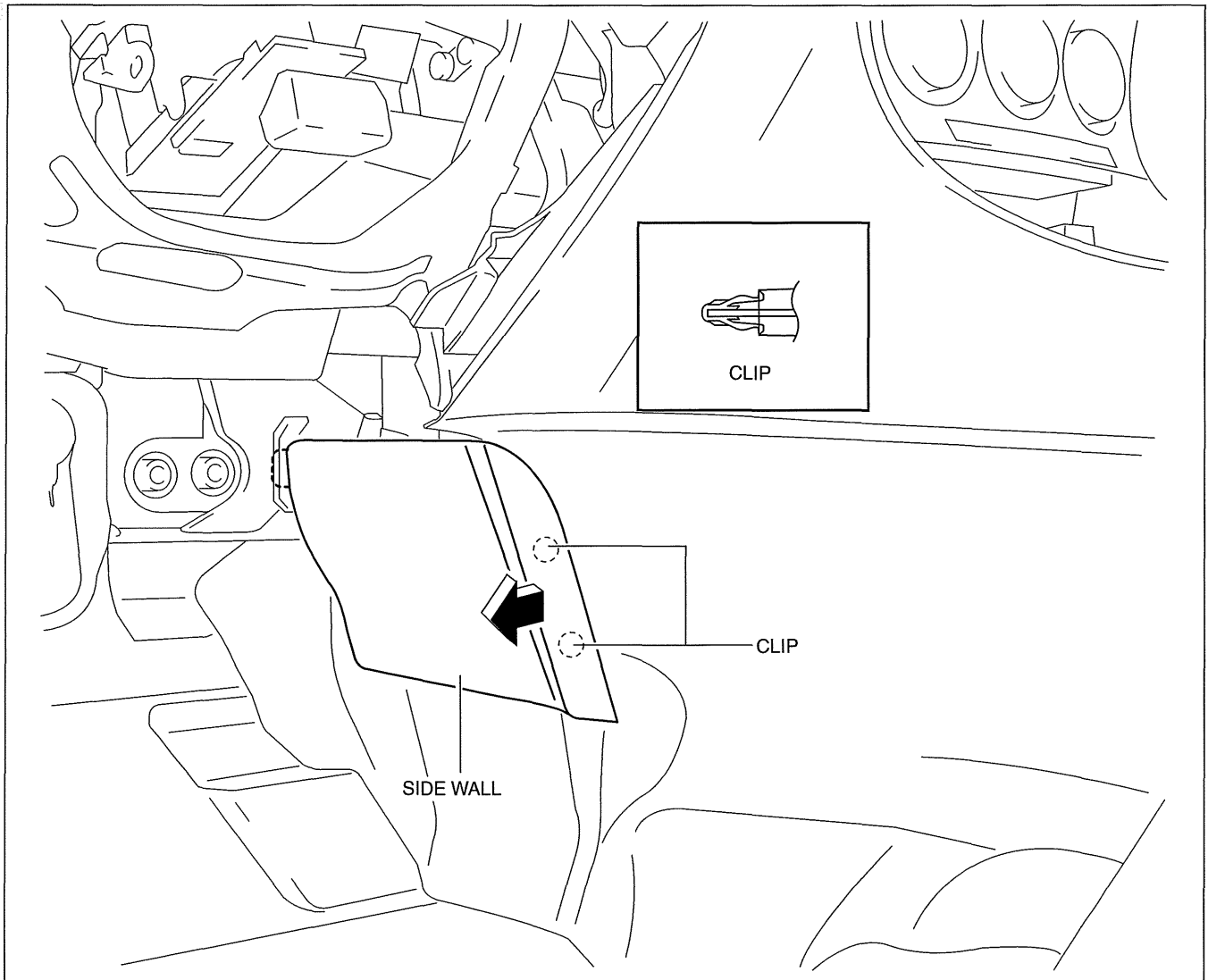
4. Remove the knee bolster.
5. Install in the reverse order of removal.

INTERIOR TRIM

SIDE WALL REMOVAL/INSTALLATION

id091700805400

1. Pull out the side wall in the direction shown in the direction of the arrow shown in the figure, then remove the clips.

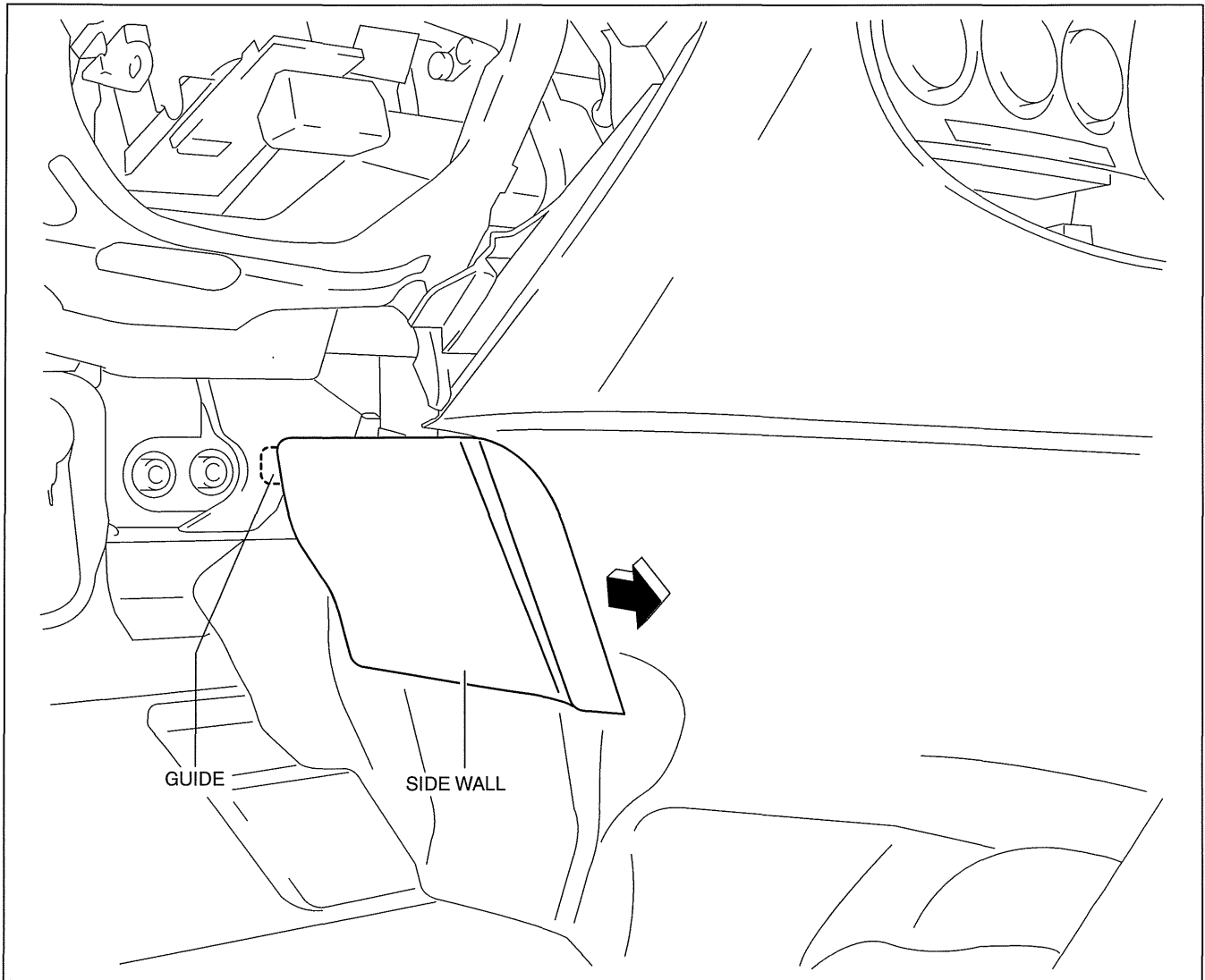


am3uuw0000548

09-17

INTERIOR TRIM

2. Remove the side wall in the direction of the arrow shown in the figure.



am3uuw000122

Caution

- When remove the side wall, be careful not to damage the guide.

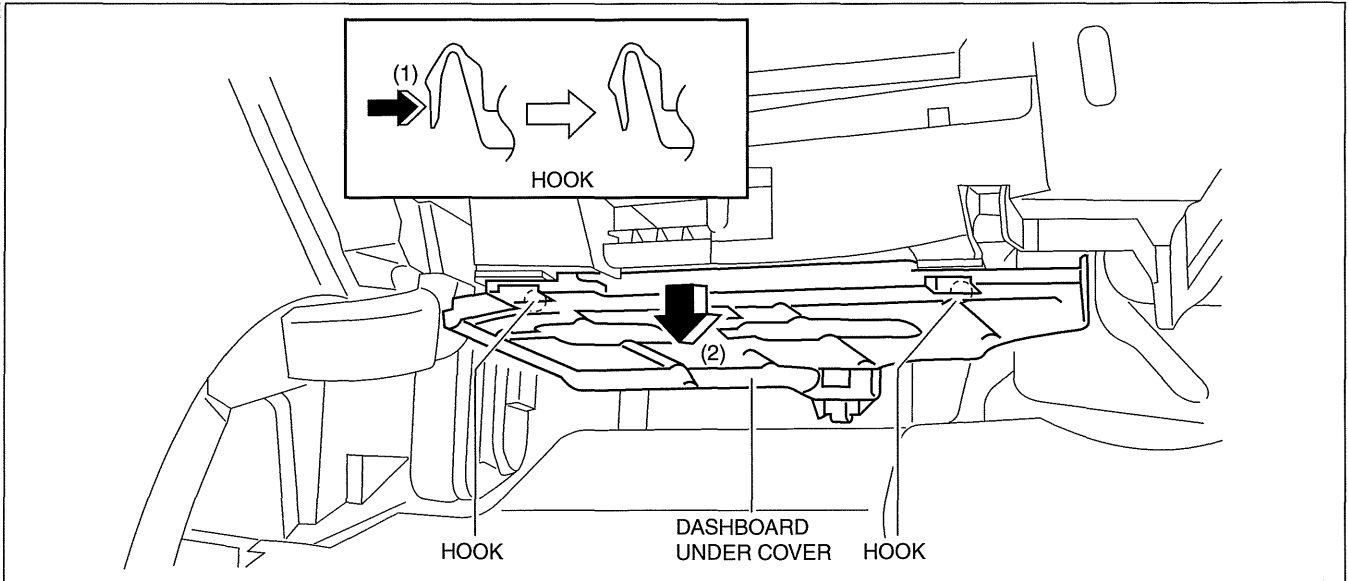
3. Install in the reverse order of removal.

INTERIOR TRIM

DASHBOARD UNDER COVER REMOVAL/INSTALLATION

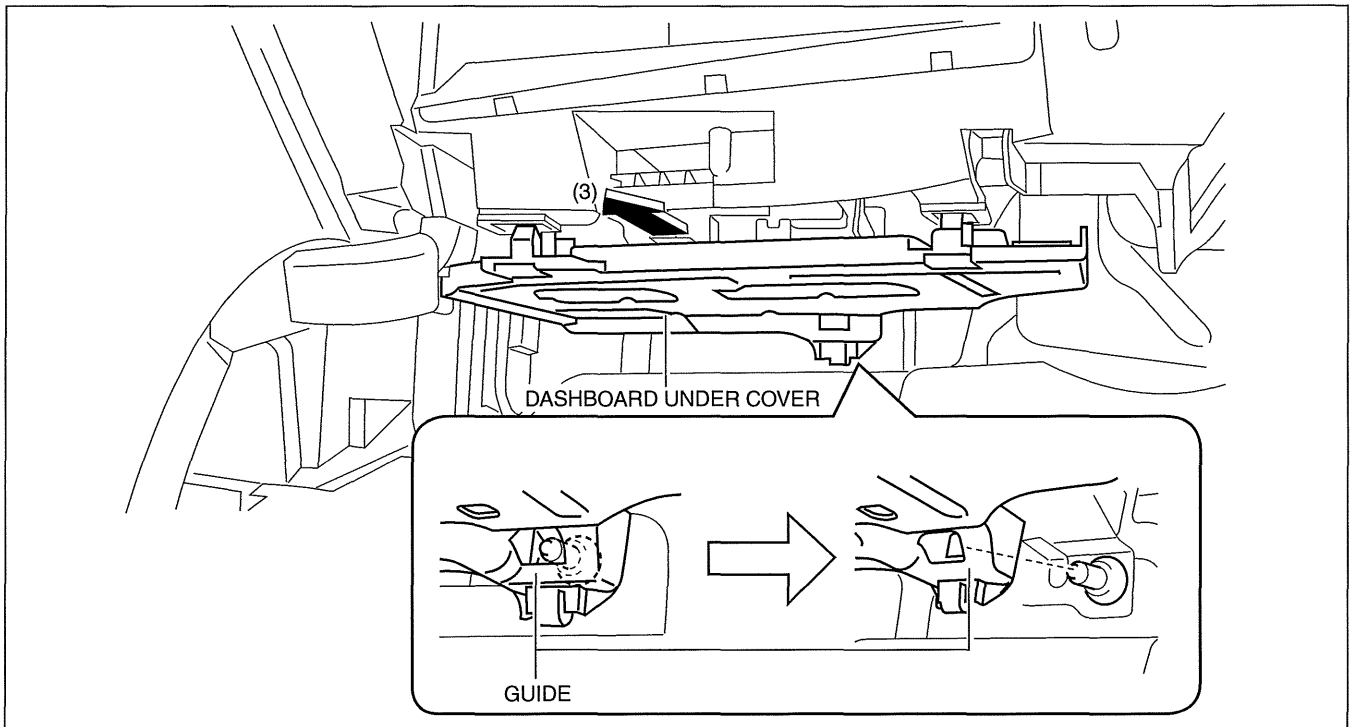
id091700807200

1. Detach the hooks in the direction of arrow (1) shown in the figure.
2. Pull the dashboard under cover in the direction of arrow (2).



am3uuw0000548

3. Remove the dashboard under cover, then remove the guide.



09-17

am3uuw0000549

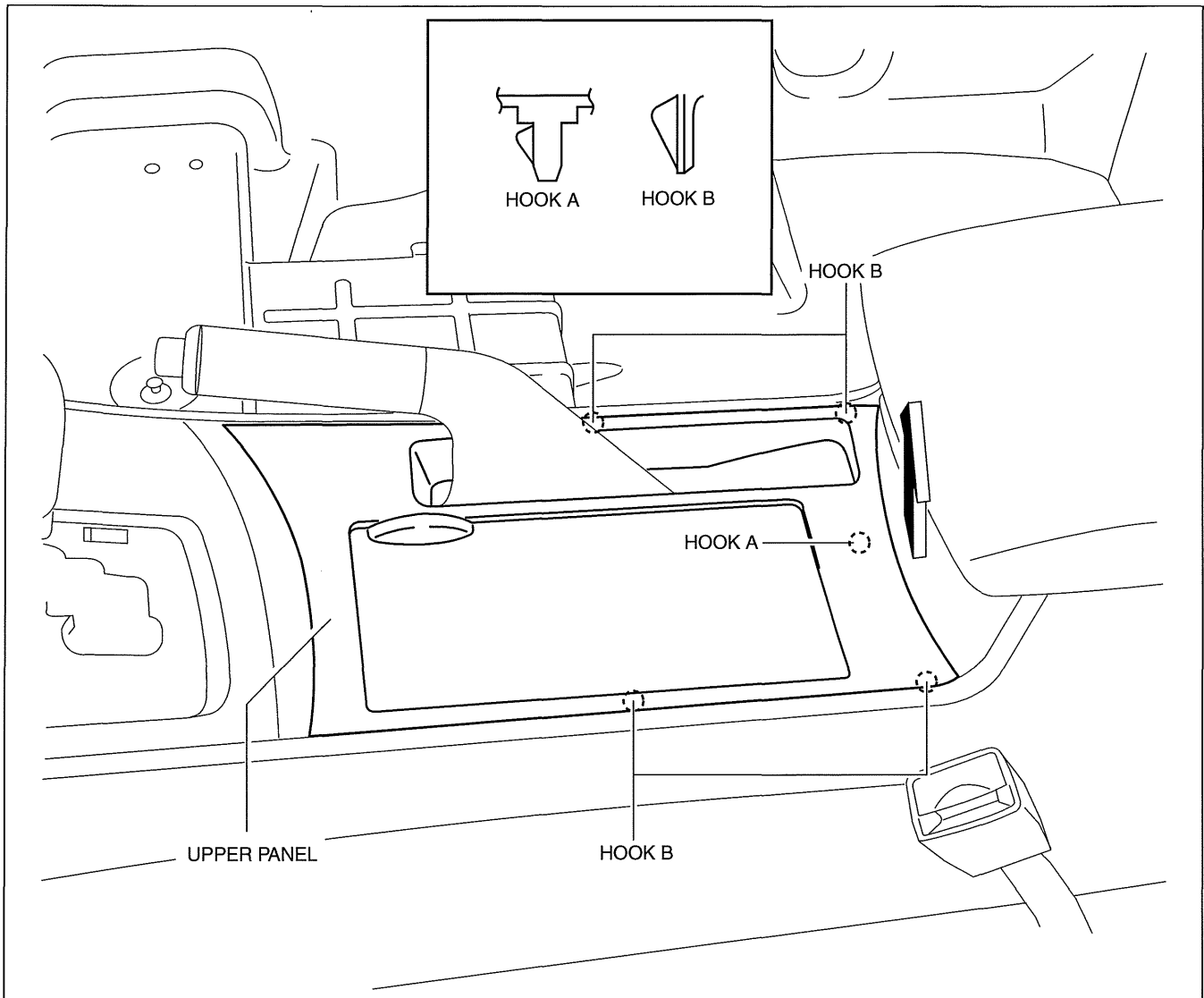
4. Install in the reverse order of removal.

INTERIOR TRIM

UPPER PANEL REMOVAL/INSTALLATION

id091700898300

1. Pull the upper panel in the direction of the arrow shown in the figure, then remove it while detaching the hook A and hooks B.



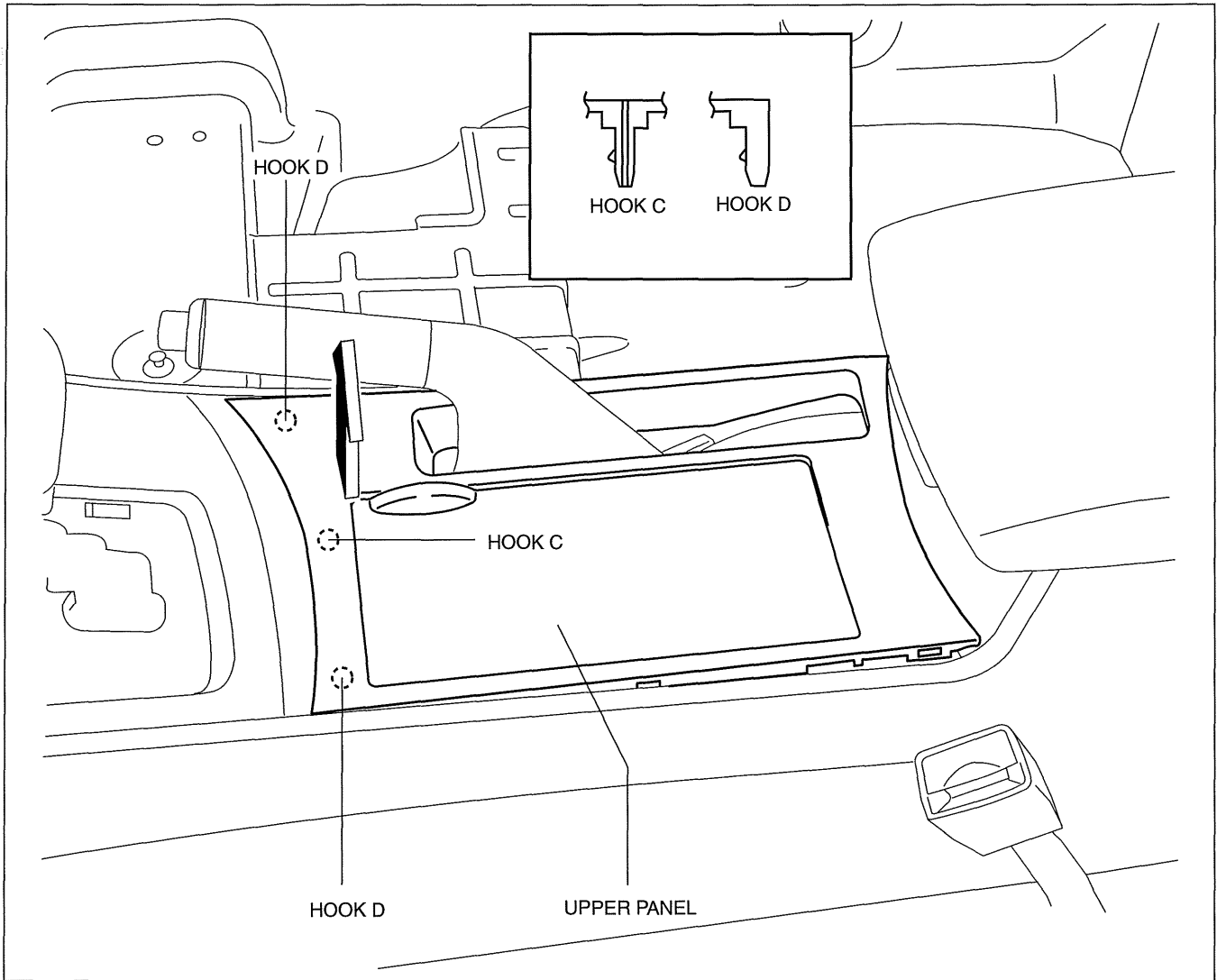
am3uuw0000467

Caution

- When removing hook A, press the connecting part of the console with a hand to prevent damage to hook A.

INTERIOR TRIM

2. Pull the upper panel in the direction of the arrow shown in the figure, then remove it while detaching the hook C and hooks D.



09-17

am3uuw0000467

3. Remove the upper panel.
4. Install in the reverse order of removal.

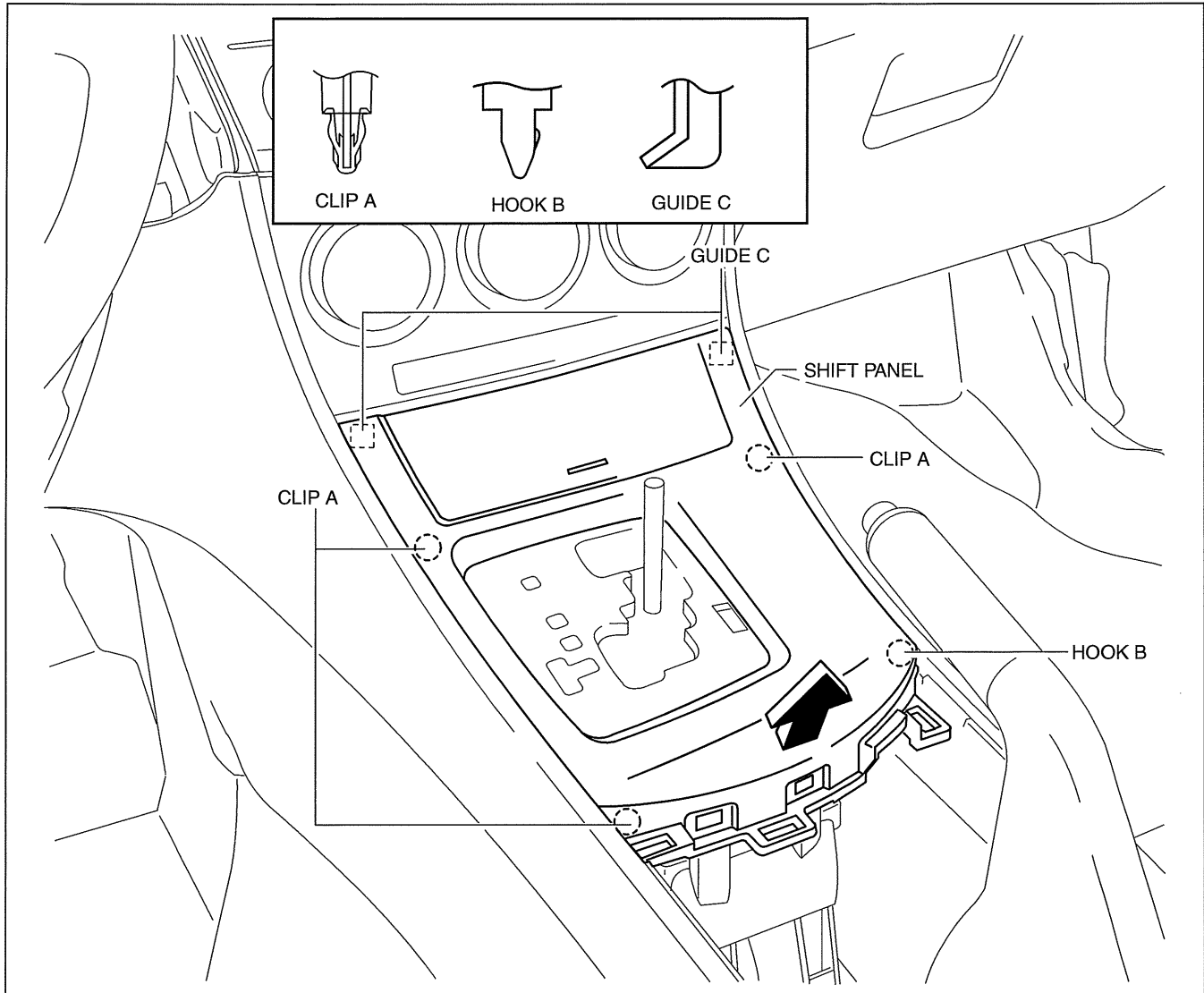
INTERIOR TRIM

SHIFT PANEL REMOVAL/INSTALLATION

id091700898400

ATX

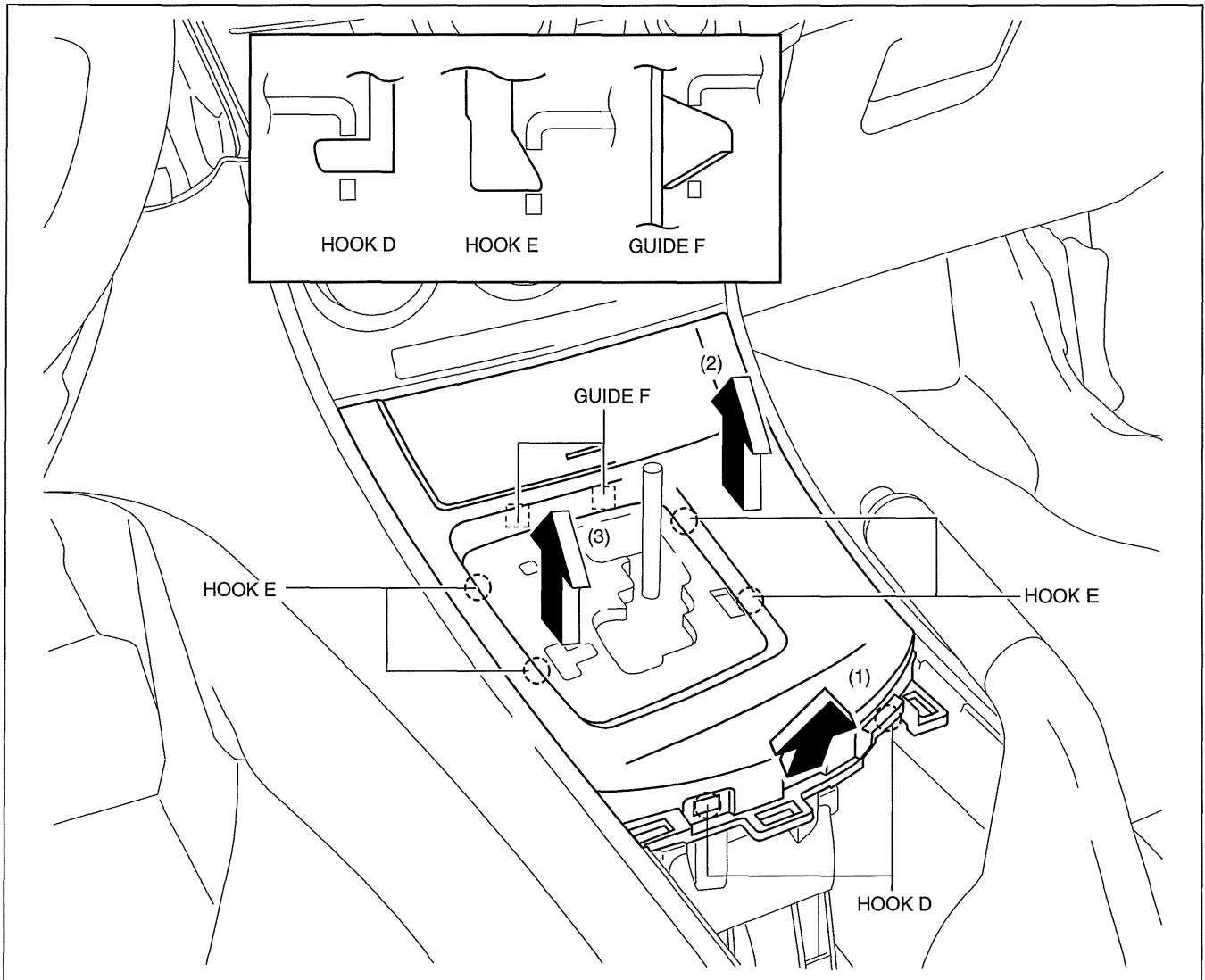
1. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
2. Remove the selector lever knob. (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION)
3. Pull the shift panel in the direction of the arrow shown in the figure and remove it while detaching the clips A, hook B and guides C.



am3uuw0000528

INTERIOR TRIM

4. Pull the shift panel in the direction of the arrow (1), (2), (3) while remove the hooks D, E and guide F.



am3uuw0000550

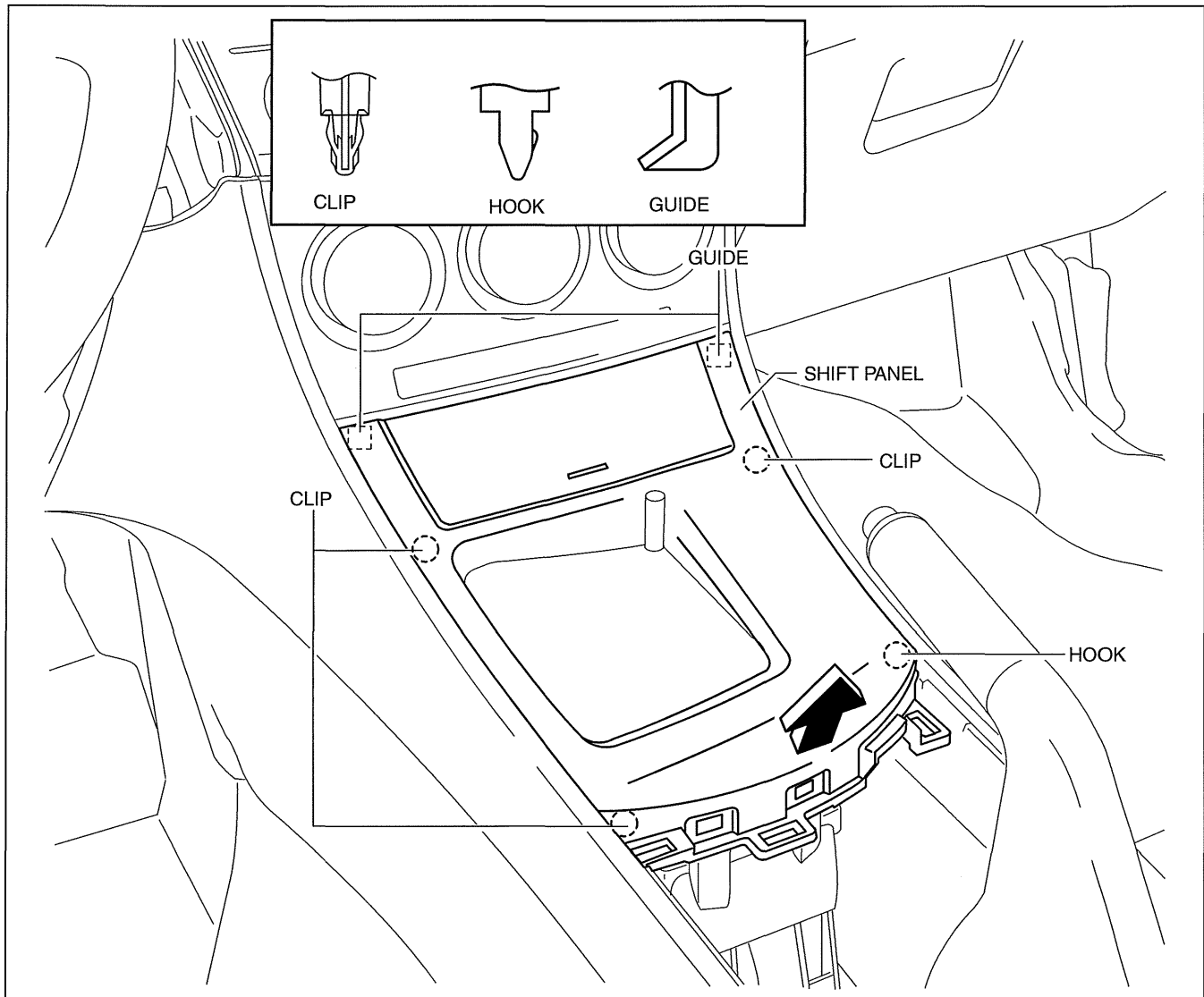
5. Remove the shift panel.
6. Install in the reverse order of removal.

09-17

INTERIOR TRIM

MTX

1. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
2. Remove the shift knob. (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION)
3. Pull the shift panel in the direction of the arrow shown in the figure and remove it while detaching the clips, hook and guides.



am3uuw0000528

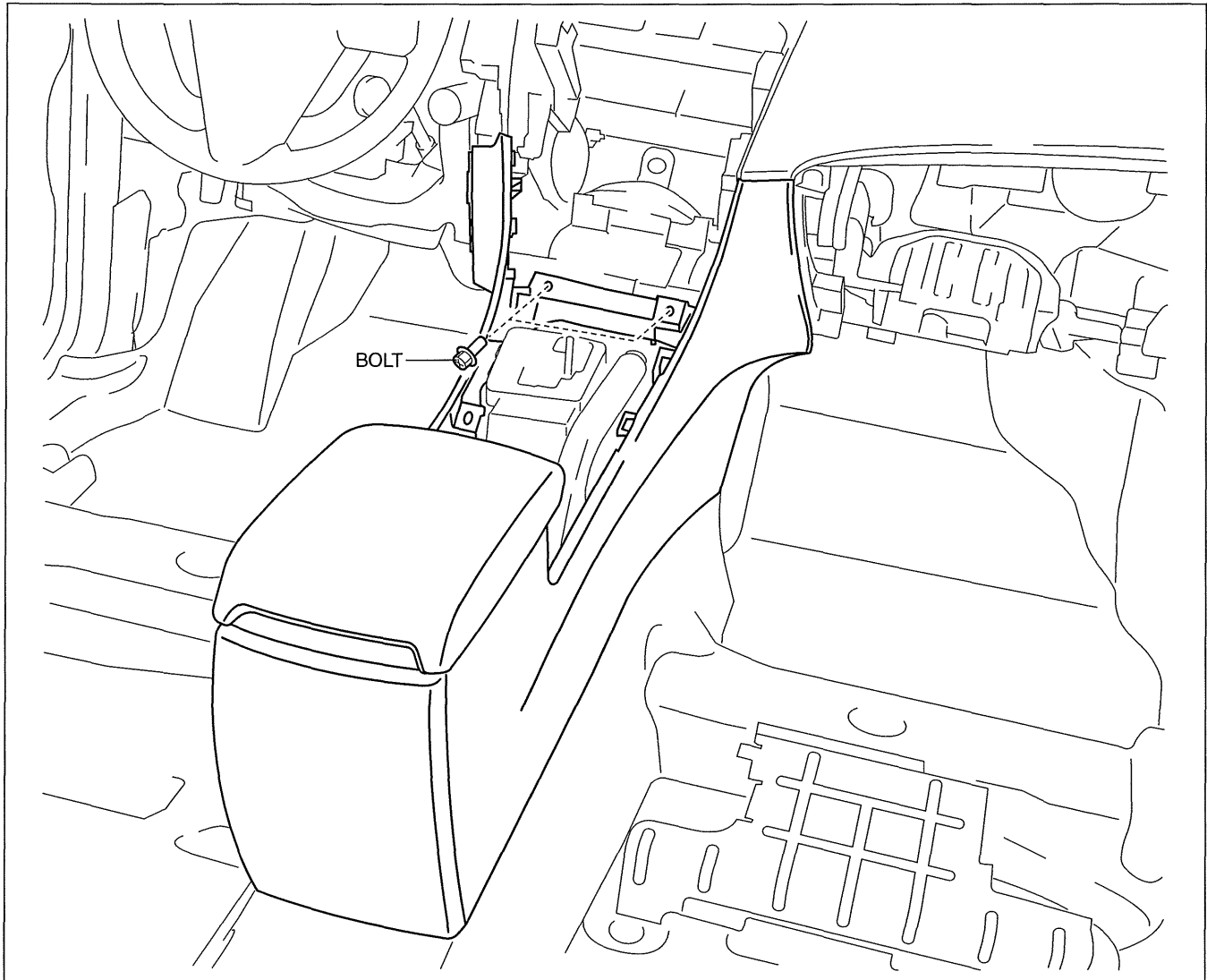
4. Remove the shift panel.
5. Install in the reverse order of removal.

INTERIOR TRIM

CONSOLE REMOVAL/INSTALLATION

id091700801200

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
3. Remove the bolts.

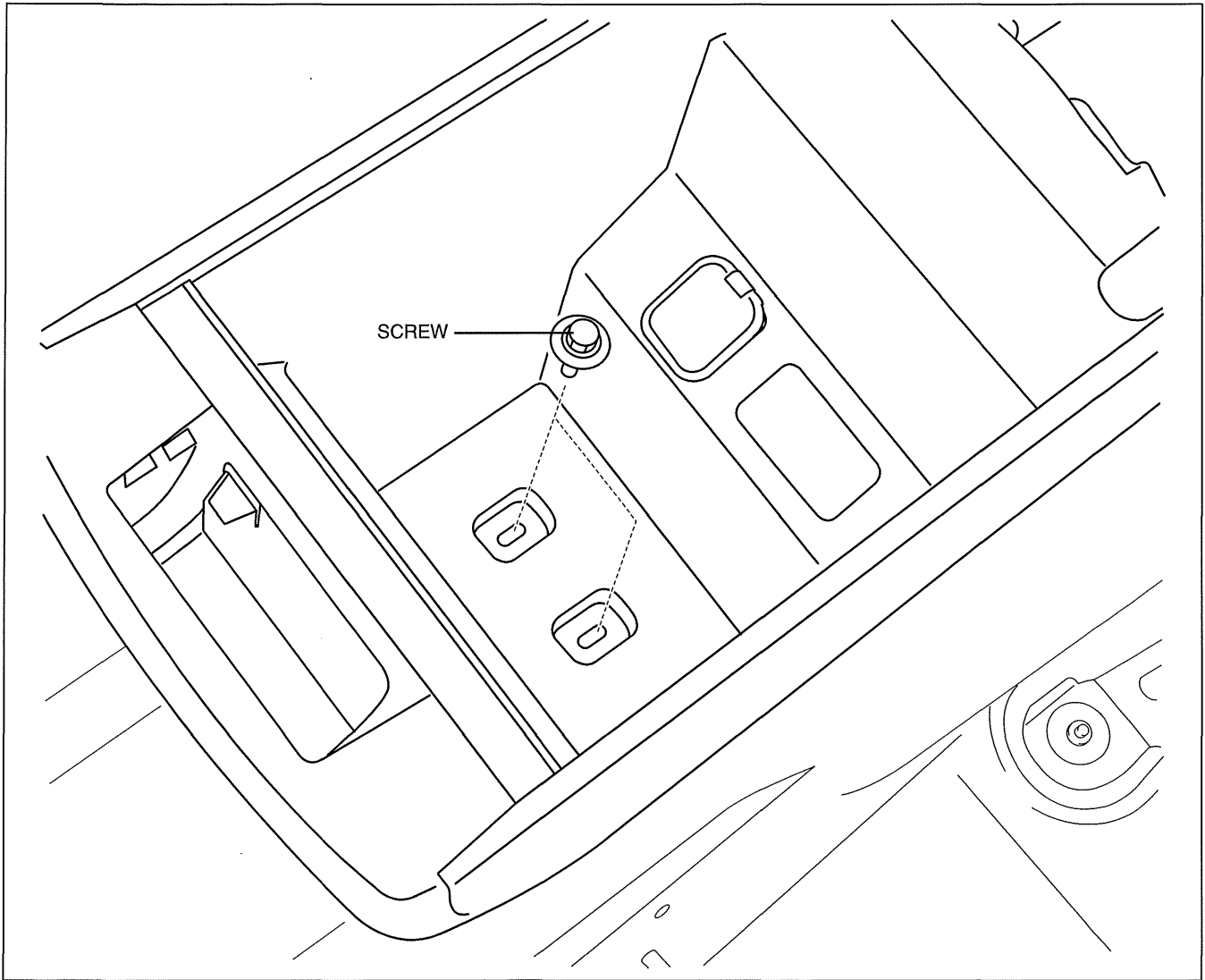


am3uuw000476

09-17

INTERIOR TRIM

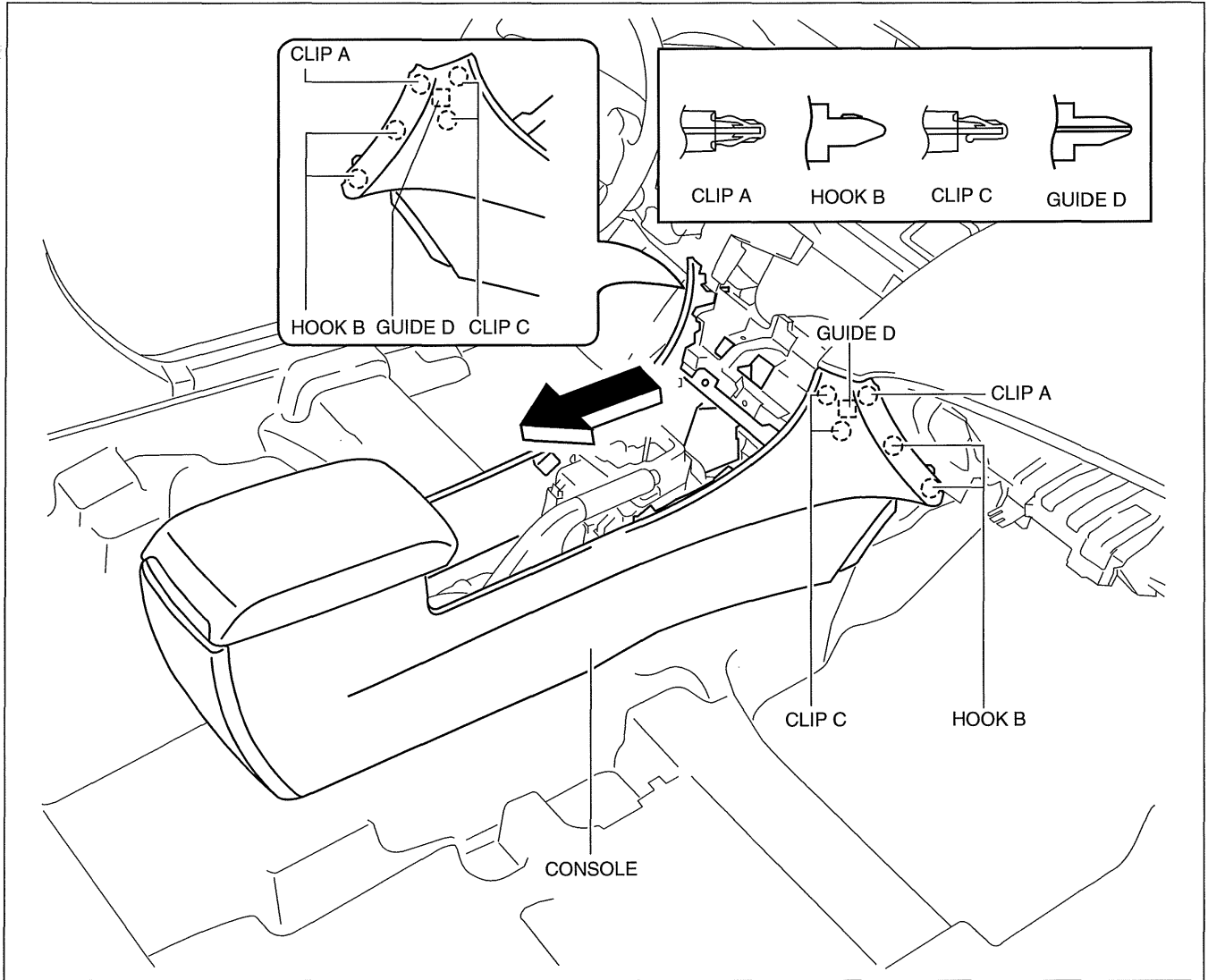
4. Remove the screws.



am3uuw0000476

INTERIOR TRIM

5. Pull the console in the direction of the arrow shown in the figure, then detaching clips A, C hooks B and guides D.

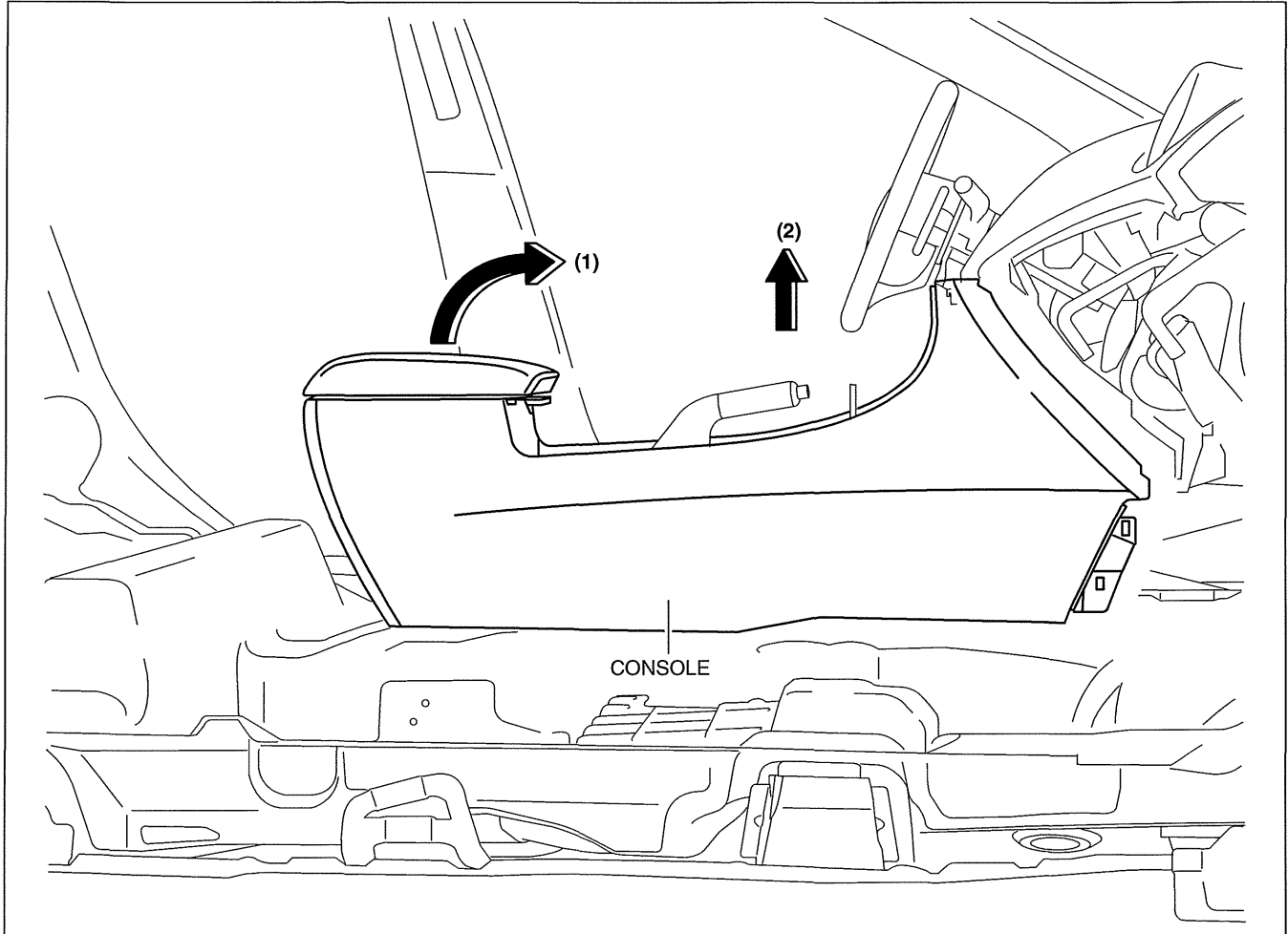


09-17

am3uuw0000550

INTERIOR TRIM

6. Pull up the console in the direction of the arrow (1) shown in the figure, move the rear console in the direction of the arrow (2), and remove it avoiding the parking brake lever.



am3uuw0000528

7. Install in the reverse order of removal.

INTERIOR TRIM

DECORATION PANEL REMOVAL/INSTALLATION

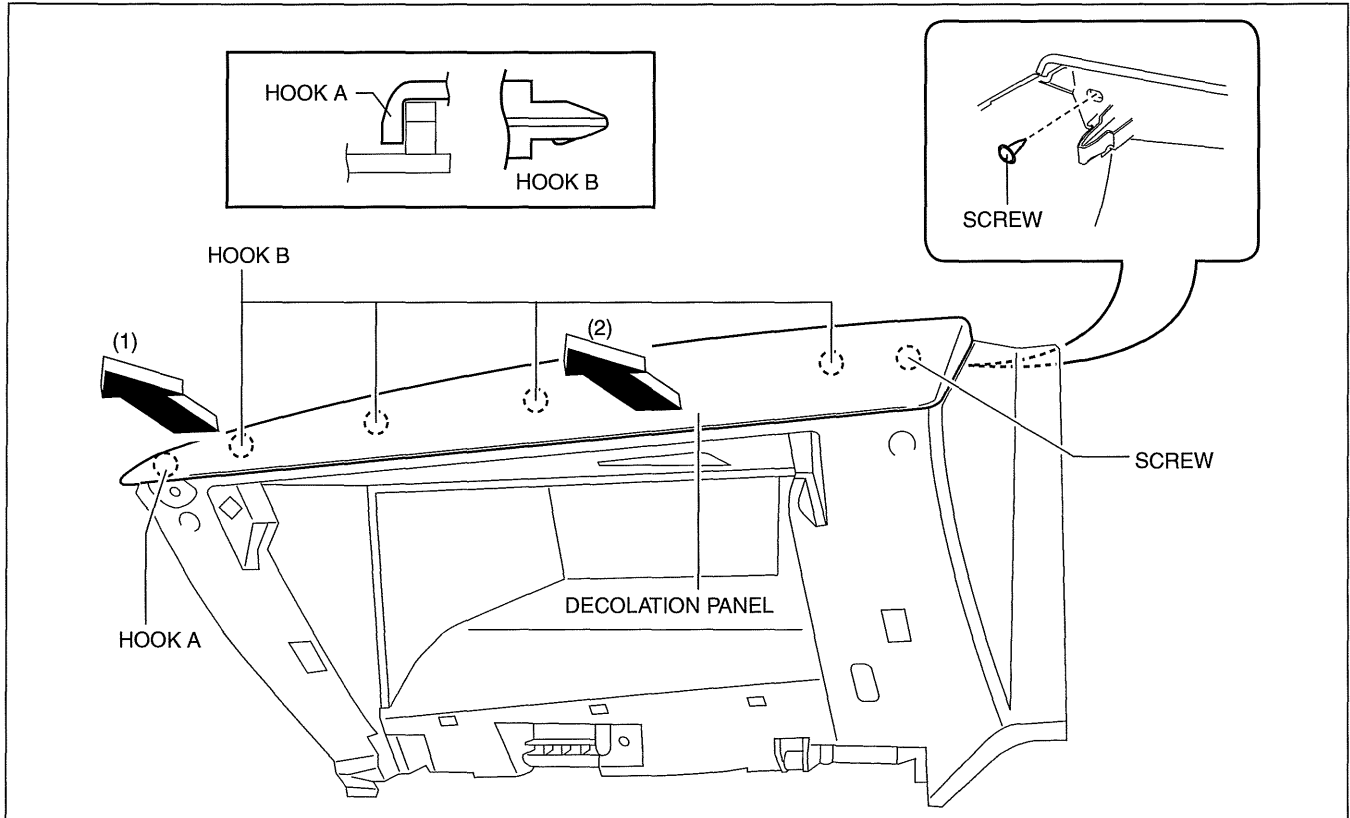
id091700806600

1. Remove the following parts:

- (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
- (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
- (3) Grove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
- (4) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)

2. Remove the screw.

3. Pull the decoration panel in the direction of the arrow (1), (2) shown in the figure, while remove the hook A and hooks B.



09-17

am3uuw0000549

4. Remove the decoration panel.

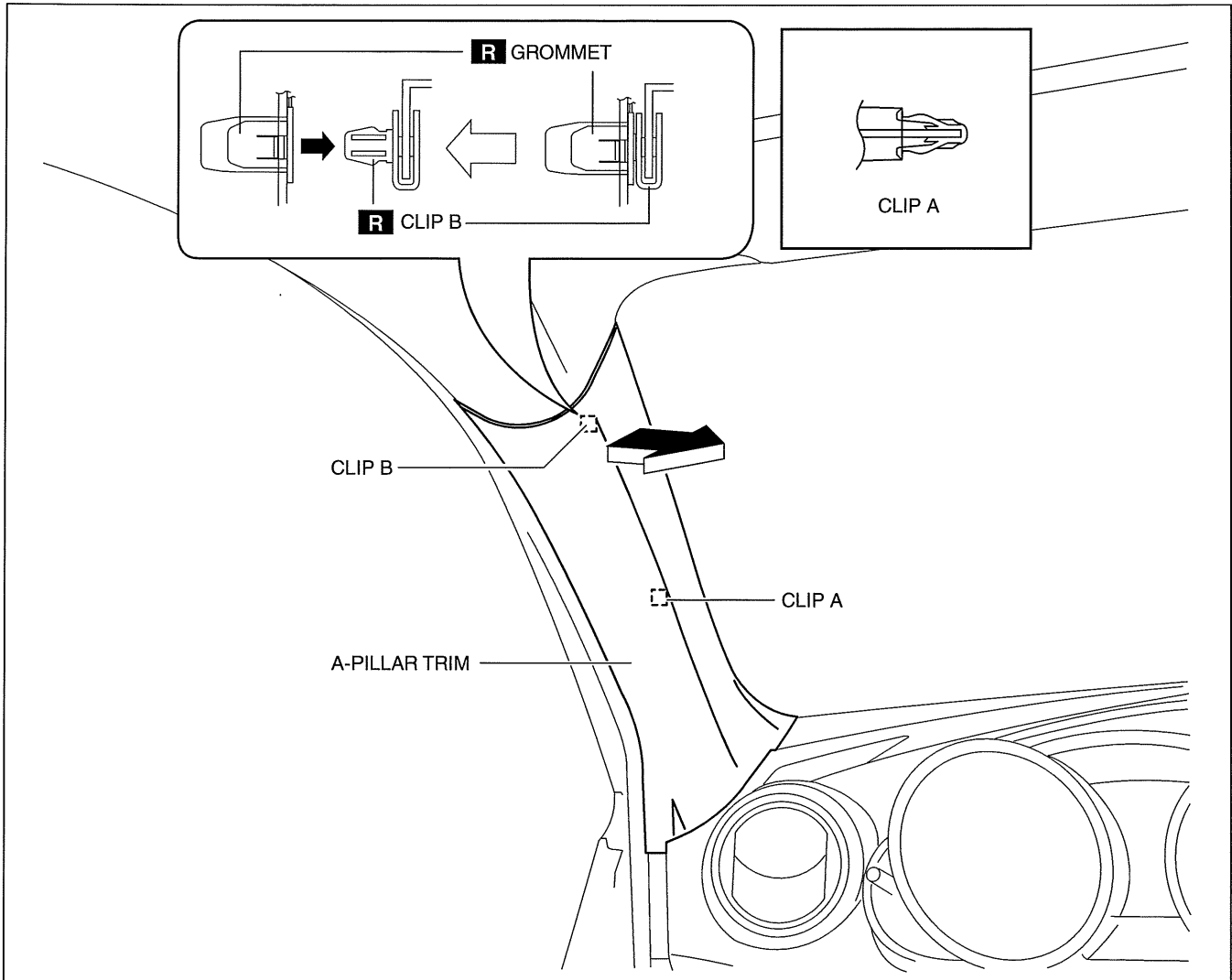
5. Install in the reverse order of removal.

INTERIOR TRIM

A-PILLAR TRIM REMOVAL/INSTALLATION

id091700801900

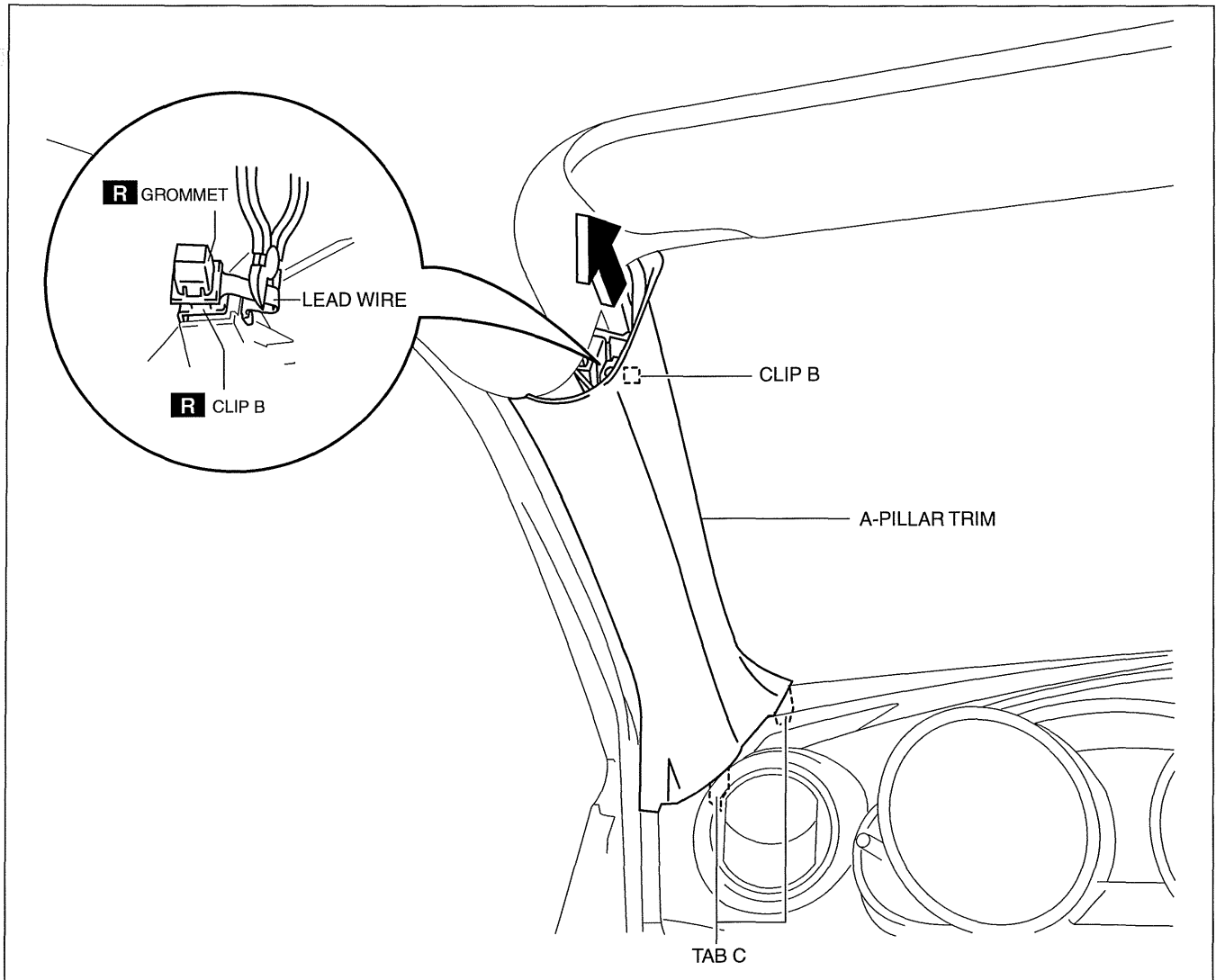
1. Partially peel back the seaming welt.
2. Pull the upper end of the A-pillar trim in the direction of the arrow shown in the figure and remove clip A and B.



am3uuw0000526

INTERIOR TRIM

3. Cut the lead wire connecting clip B and grommet using a nipper and pull out the A-pillar trim in the direction of the arrow shown in the figure.



am3uuw000526

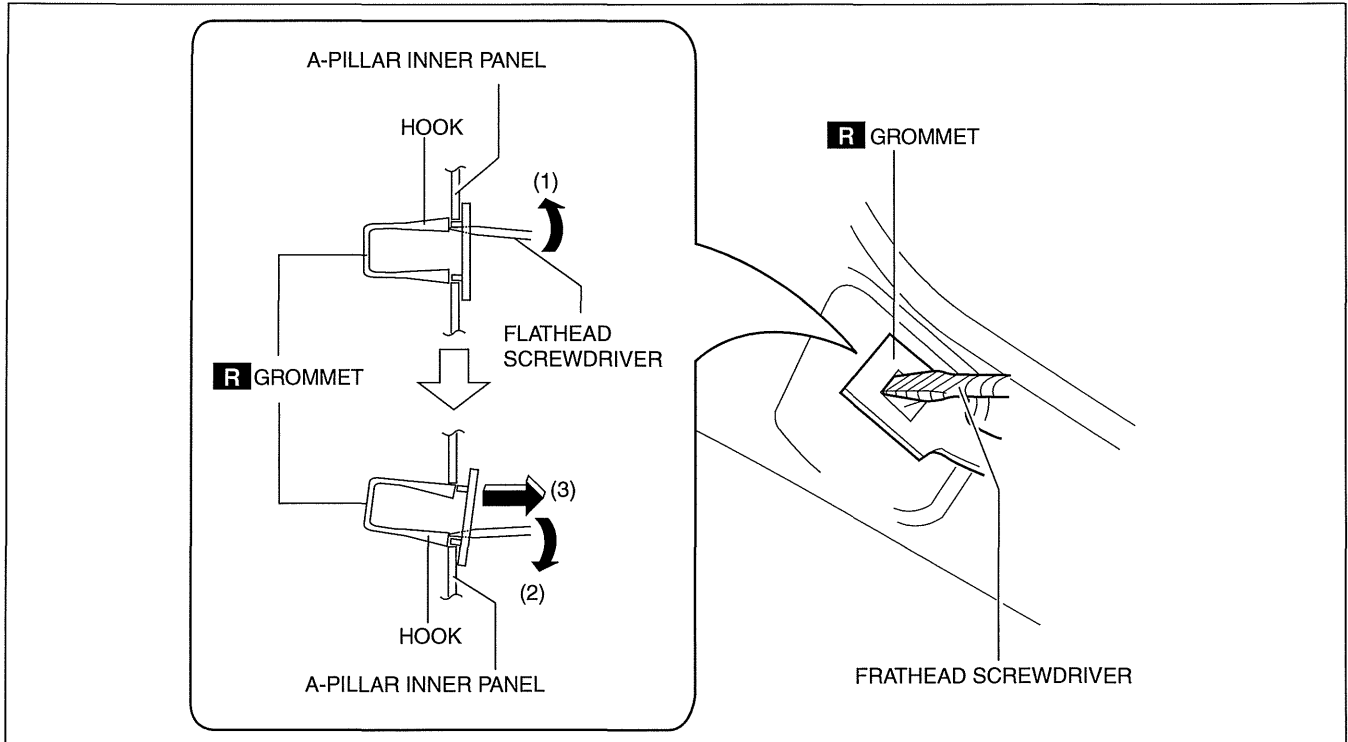
Caution

- When pulling out the A-pillar trim, be careful not to damage the tabs C.

09-17

INTERIOR TRIM

4. Move the hook in the direction of arrows (1) and (2) shown in the figure using a flathead screwdriver and detach it from the A-pillar inner panel.



am6zzw0000166

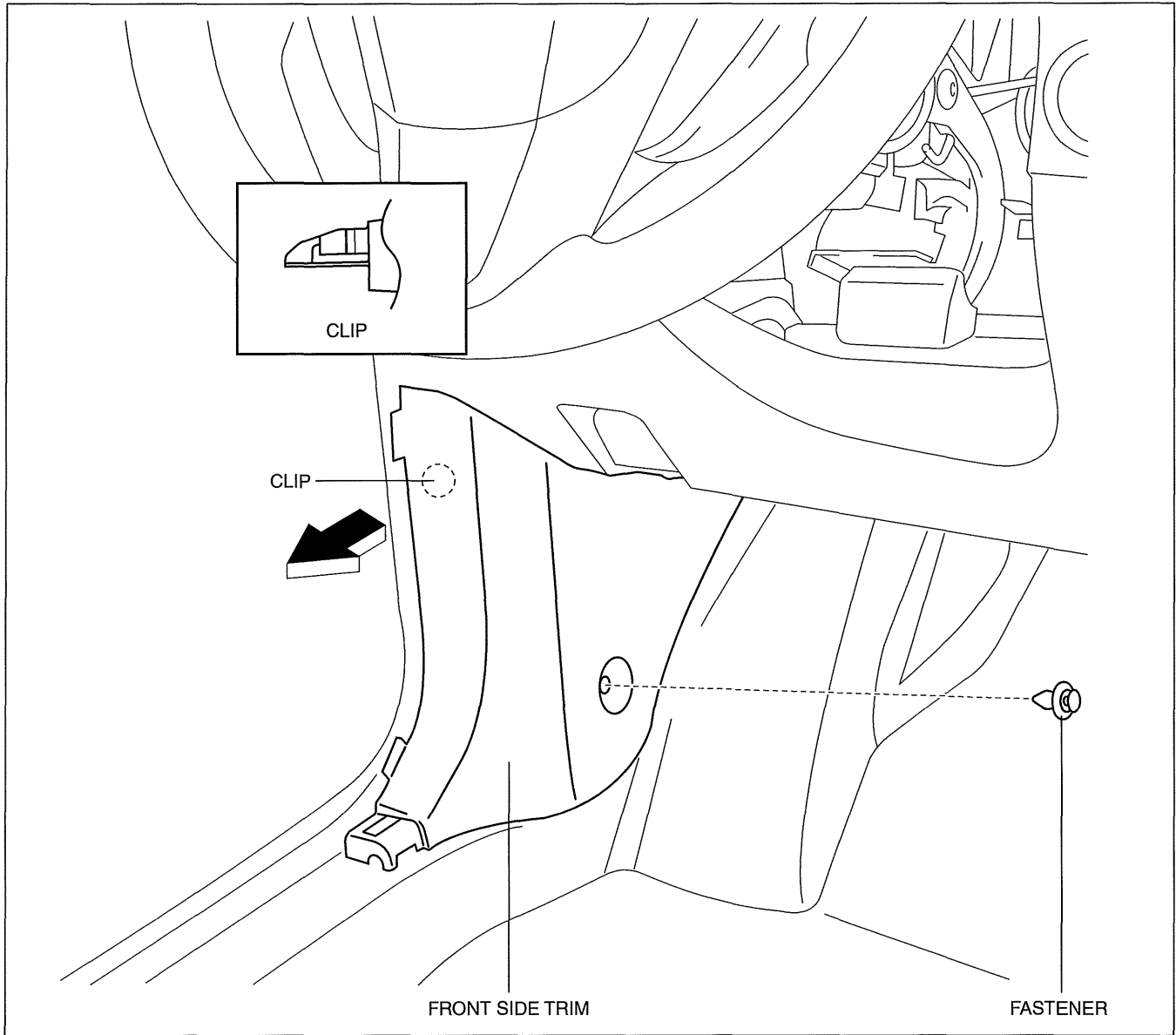
5. Remove the grommet in the direction of the arrow (3) shown in the figure.
6. When installing the A-pillar, install the new clip B and grommet to the A-pillar trim in advance.
7. Install in the reverse order of removal.

INTERIOR TRIM

FRONT SIDE TRIM REMOVAL/INSTALLATION

id091700802400

1. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
2. Partially peel back the seaming welt.
3. Remove the fastener.
4. Pull the front side trim in the direction of the arrow and detach the clip.



09-17

am3uuw0000477

5. Install in the reverse order of removal.

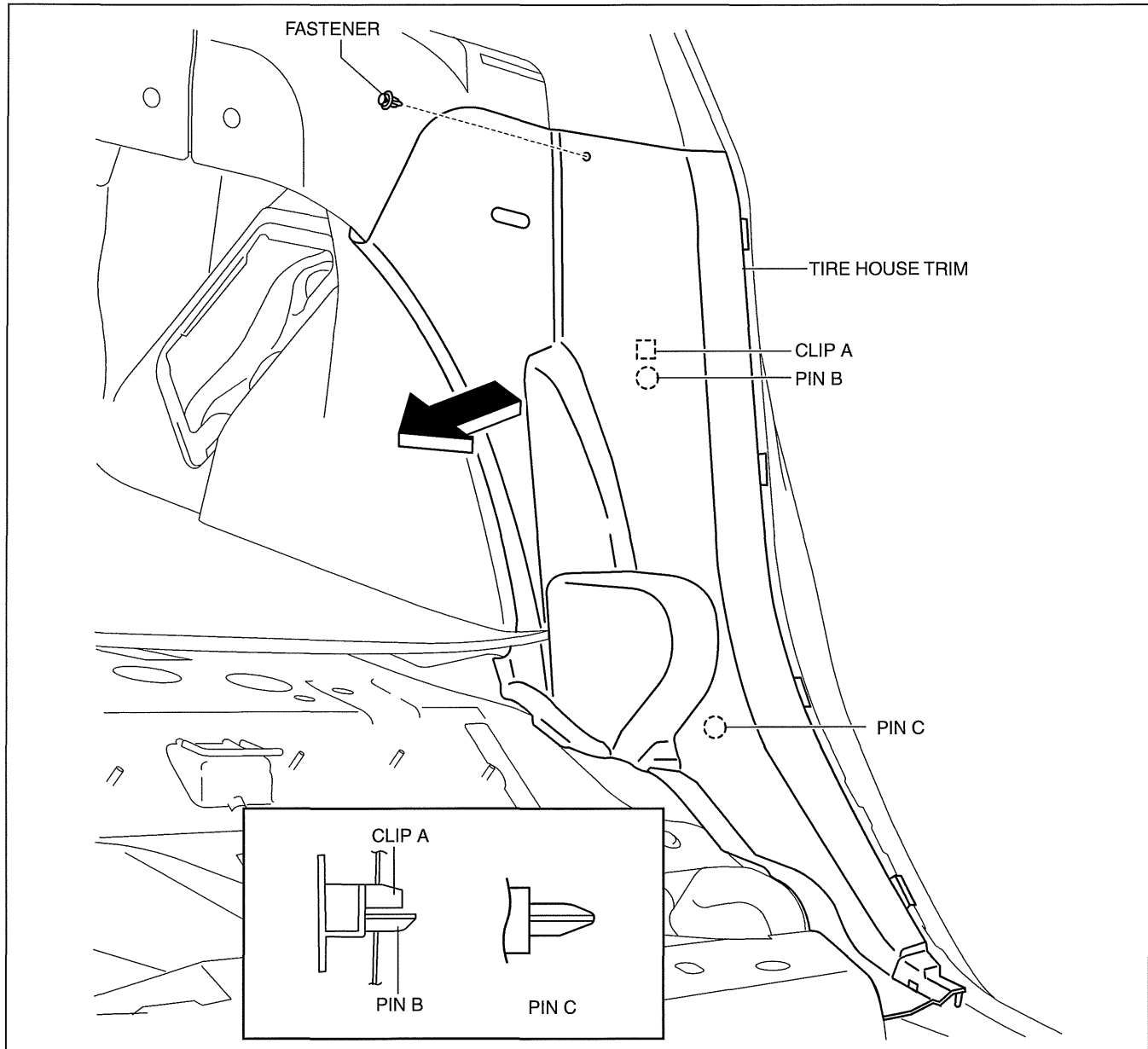
INTERIOR TRIM

TIRE HOUSE TRIM REMOVAL/INSTALLATION

id091700802700

4SD

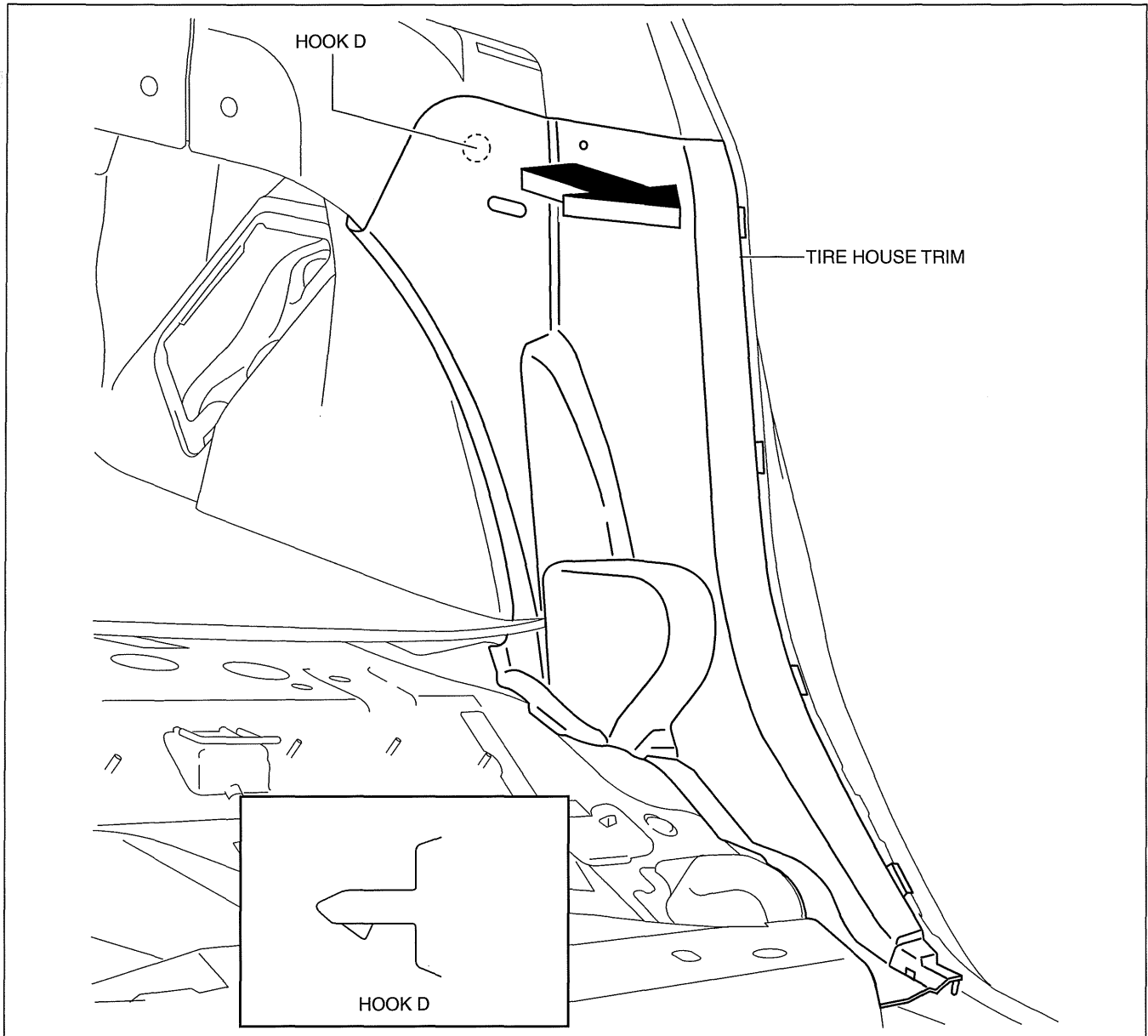
1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
3. Partially peel back the seaming welt.
4. Remove the fastener.
5. Pull the tire house trim in the direction of arrow shown in the figure while remove the clip A, pin B and C.



am3uuw0000477

INTERIOR TRIM

6. Pull the tire house trim in the direction of arrow shown in the figure while remove the hook D.



09-17

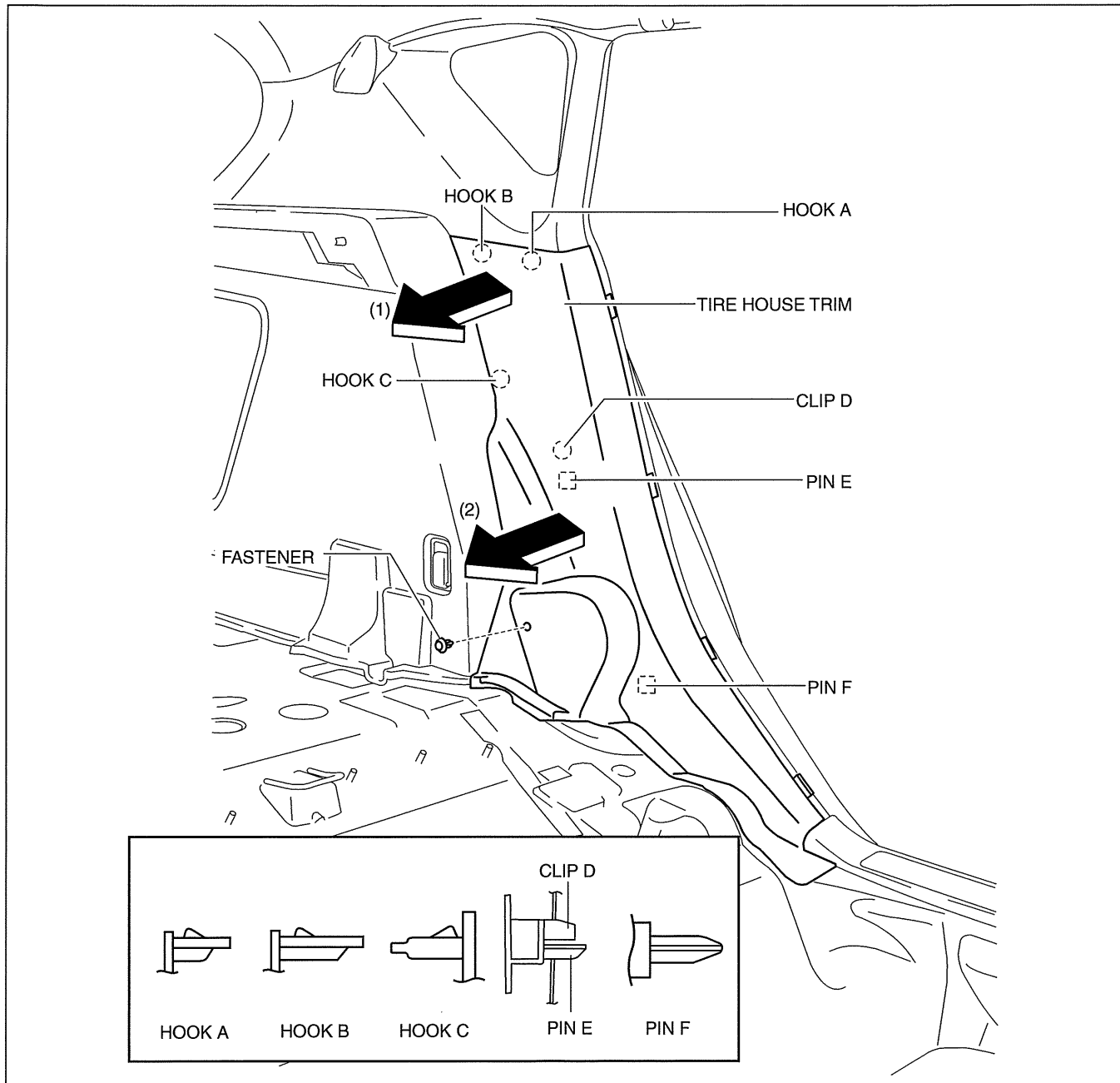
am3uuw0000518

7. Remove the tire house trim.
8. Install in the reverse order of removal.

INTERIOR TRIM

5HB

1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
3. Partially peel back the seaming welt.
4. Remove the fasteners.
5. Pull the tire house trim in the direction of arrow (1), while remove the hook A and B.



am3uuw0000518

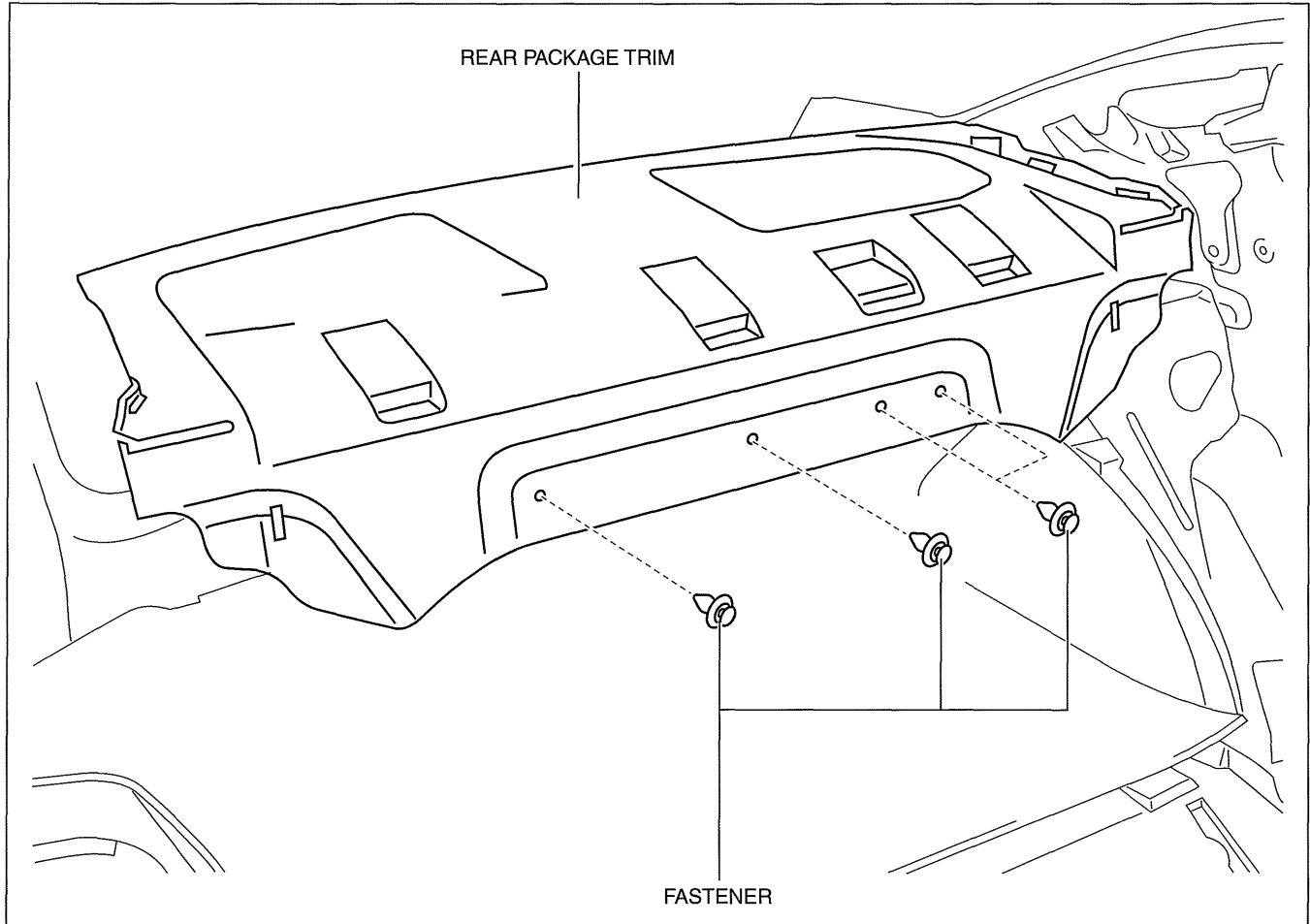
6. Pull the tire house trim in the direction of arrow (2), while remove the hook C, clip D, pin E and F.
7. Remove the tire house trim.
8. Install in the reverse order of removal.

INTERIOR TRIM

REAR PACKAGE TRIM REMOVAL/INSTALLATION

id091700802800

1. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
2. Fold the rear seat back.
3. Remove the fasteners.

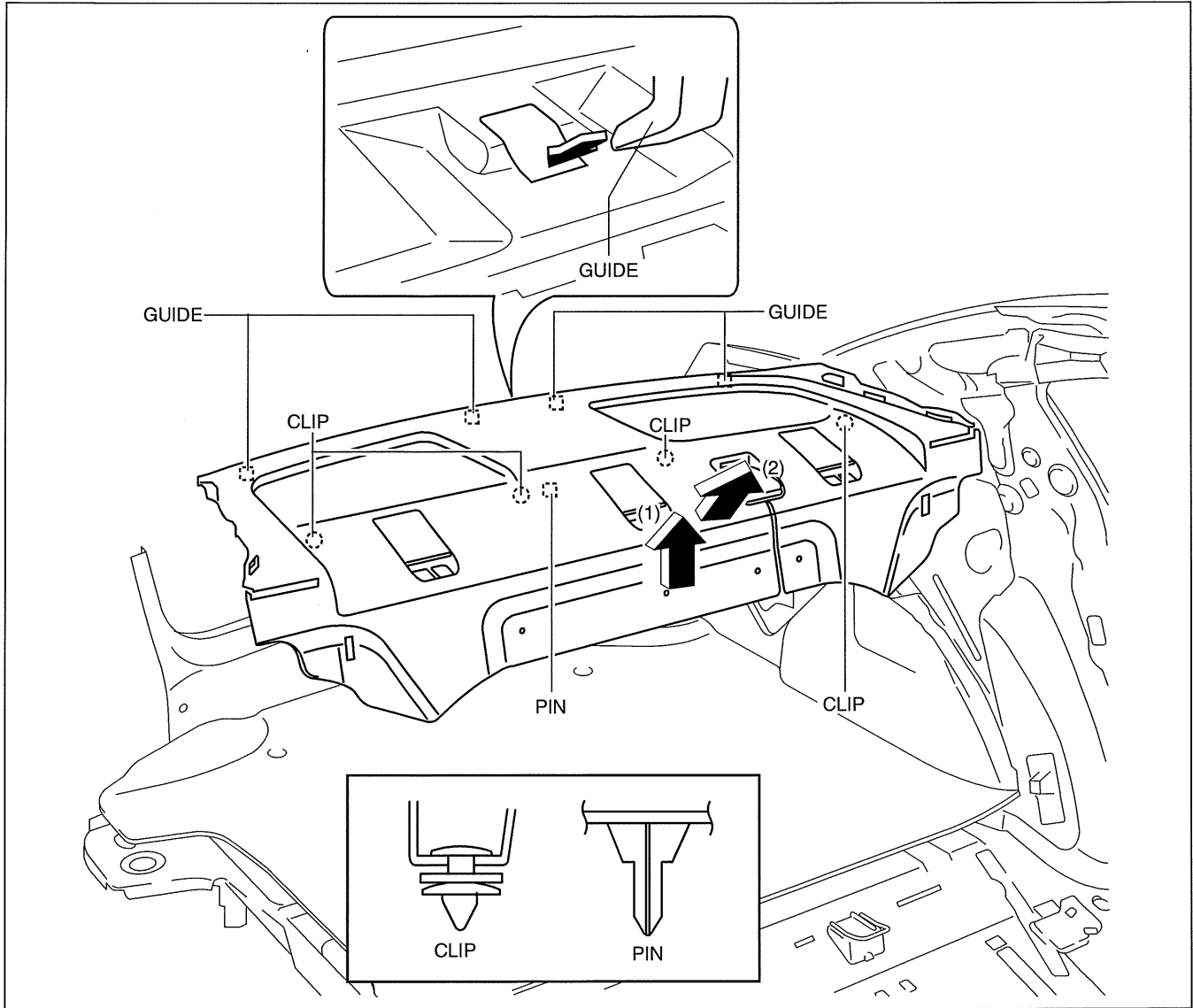


am6zzw0000171

09-17

INTERIOR TRIM

4. Pull up the rear package trim in the direction of the arrow (1) shown in the figure while remove the clips and pin, pull the rear package trim in the direction of the arrow (2), and remove it while pulling out the guides.



am3uuw0000516

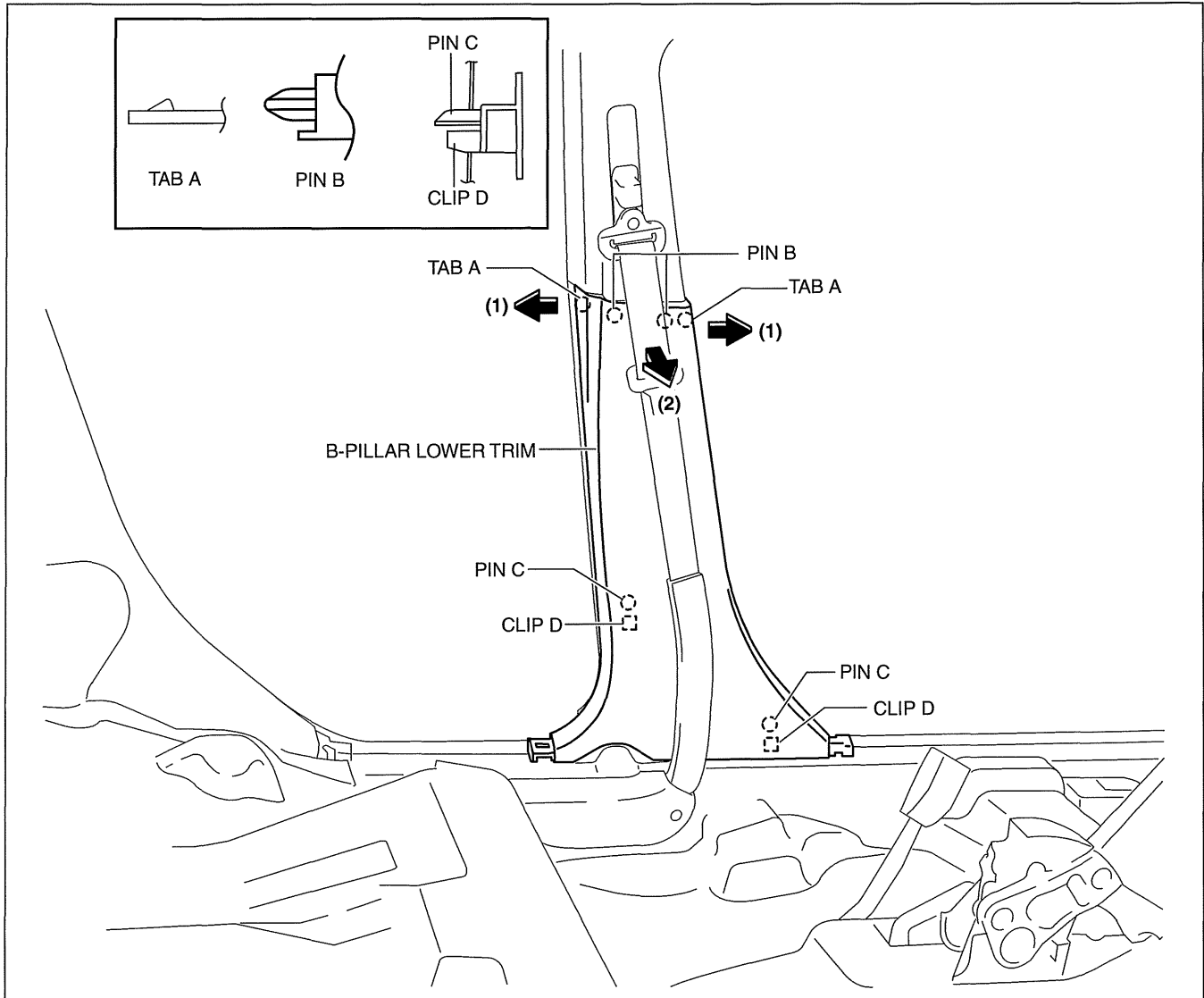
5. Install in the reverse order of removal.

INTERIOR TRIM

B-PILLAR LOWER TRIM REMOVAL/INSTALLATION

id091700802000

1. Remove the front scuff plate. (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION)
3. Partially peel back the seaming welt.
4. Pull the B-pillar lower trim in the direction of the arrow (1), (2) shown in the figure, detach tab A, pin B, pin C, clip D.

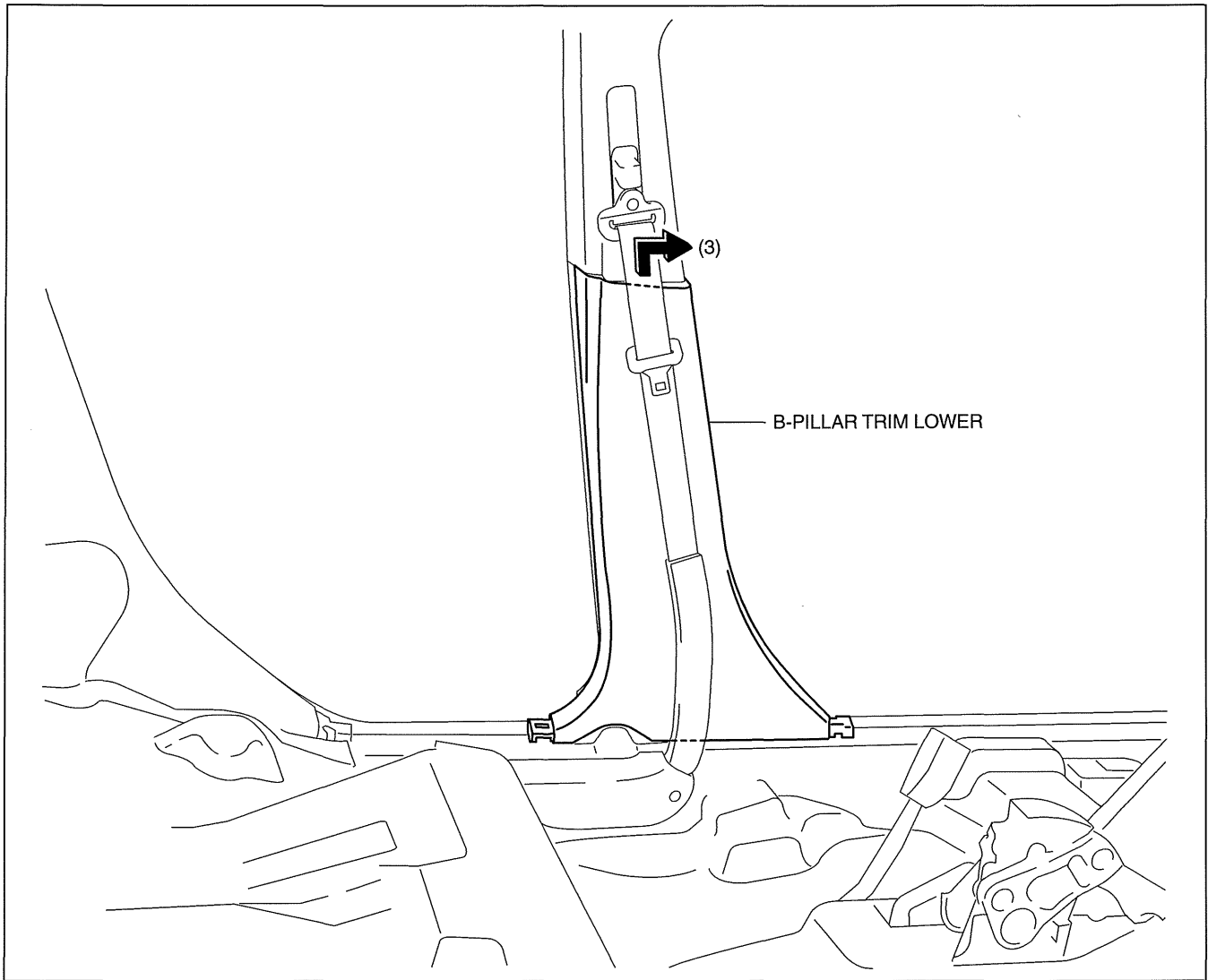


am3uuw0000527

09-17

INTERIOR TRIM

5. Remove the B-pillar lower trim in the direction of the arrow (3) shown in the figure.



am3uuw0000477

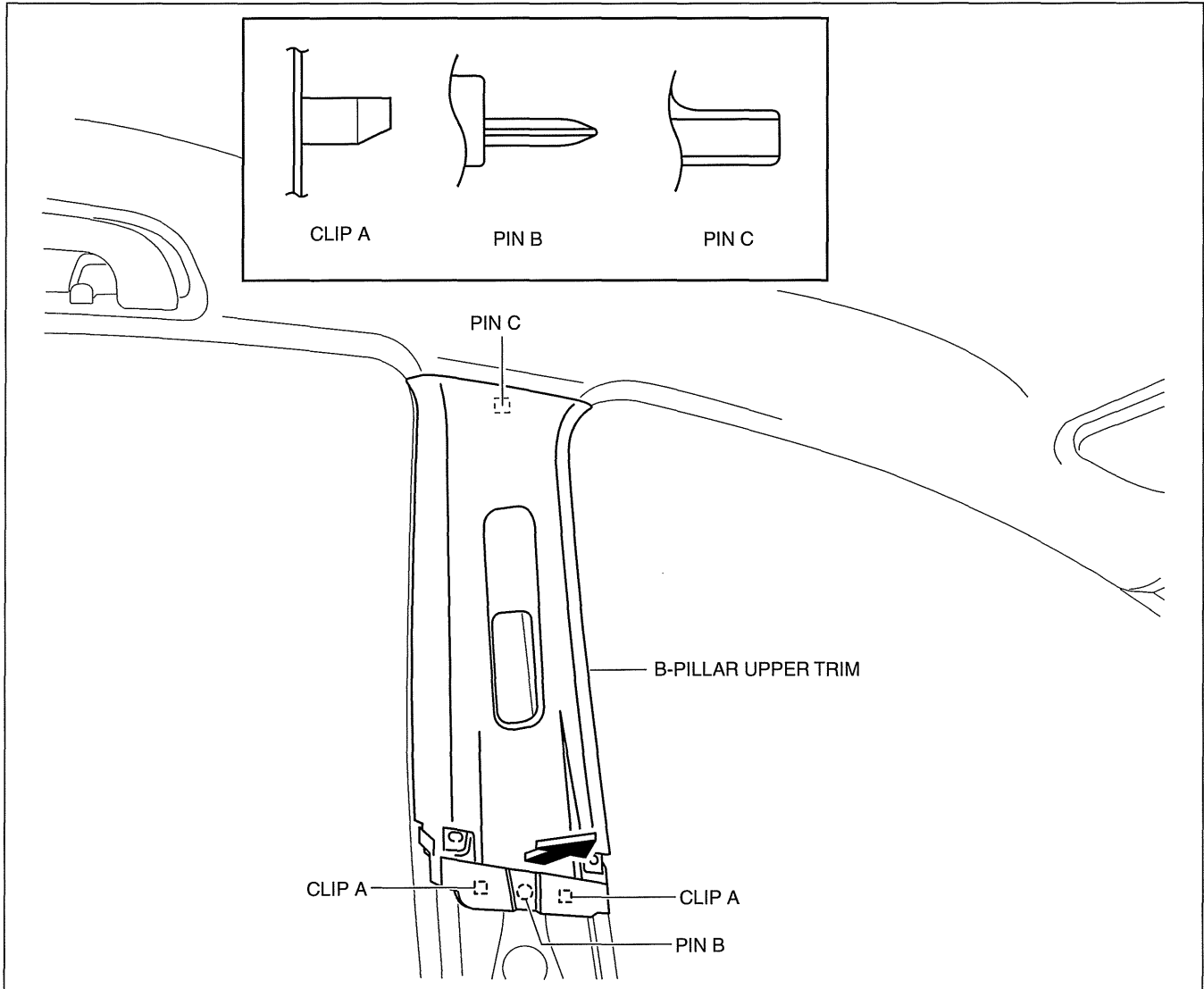
6. Install in the reverse order of removal.

INTERIOR TRIM

B-PILLAR UPPER TRIM REMOVAL/INSTALLATION

id091700802100

1. Remove the following parts:
 - (1) Adjuster anchor cover (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (2) Upper anchor installation bolts on the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
2. Partially peel back the seaming welt.
3. Remove the B-pillar lower trim. (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION)
4. Grasp the lower end of the B-pillar upper trim, pull it in the direction of the arrow shown in the figure, and remove clips A, pin B, and pin C.

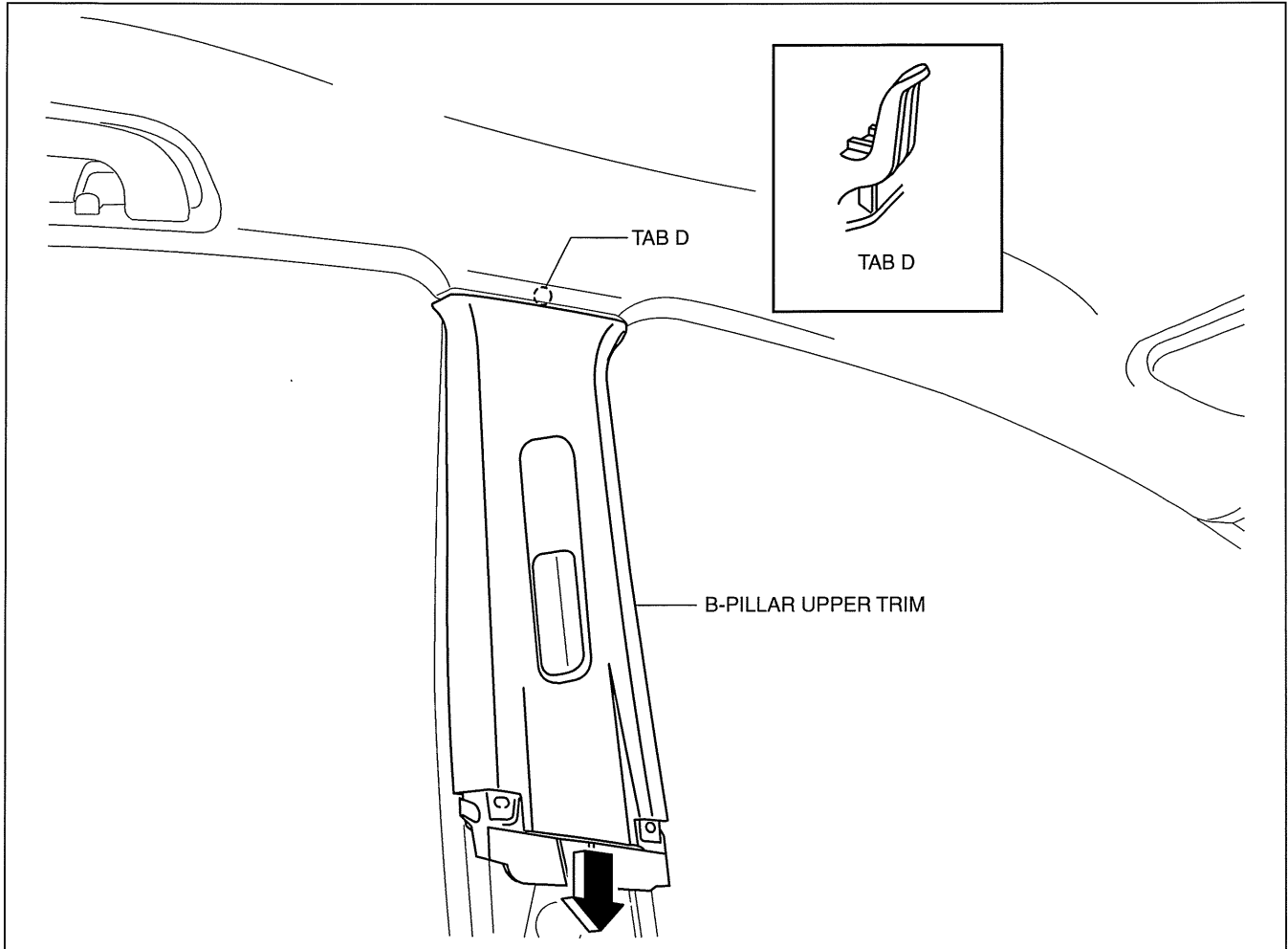


09-17

am6zzw0000454

INTERIOR TRIM

5. Remove the B-pillar upper trim in the direction of the arrow shown in the figure.



am3uuw0000527

Caution

- When removing the B-pillar upper trim, be careful not to damage the tab D.

6. Install in the reverse order of removal.

INTERIOR TRIM

C-PILLAR TRIM REMOVAL/INSTALLATION

id091700802200

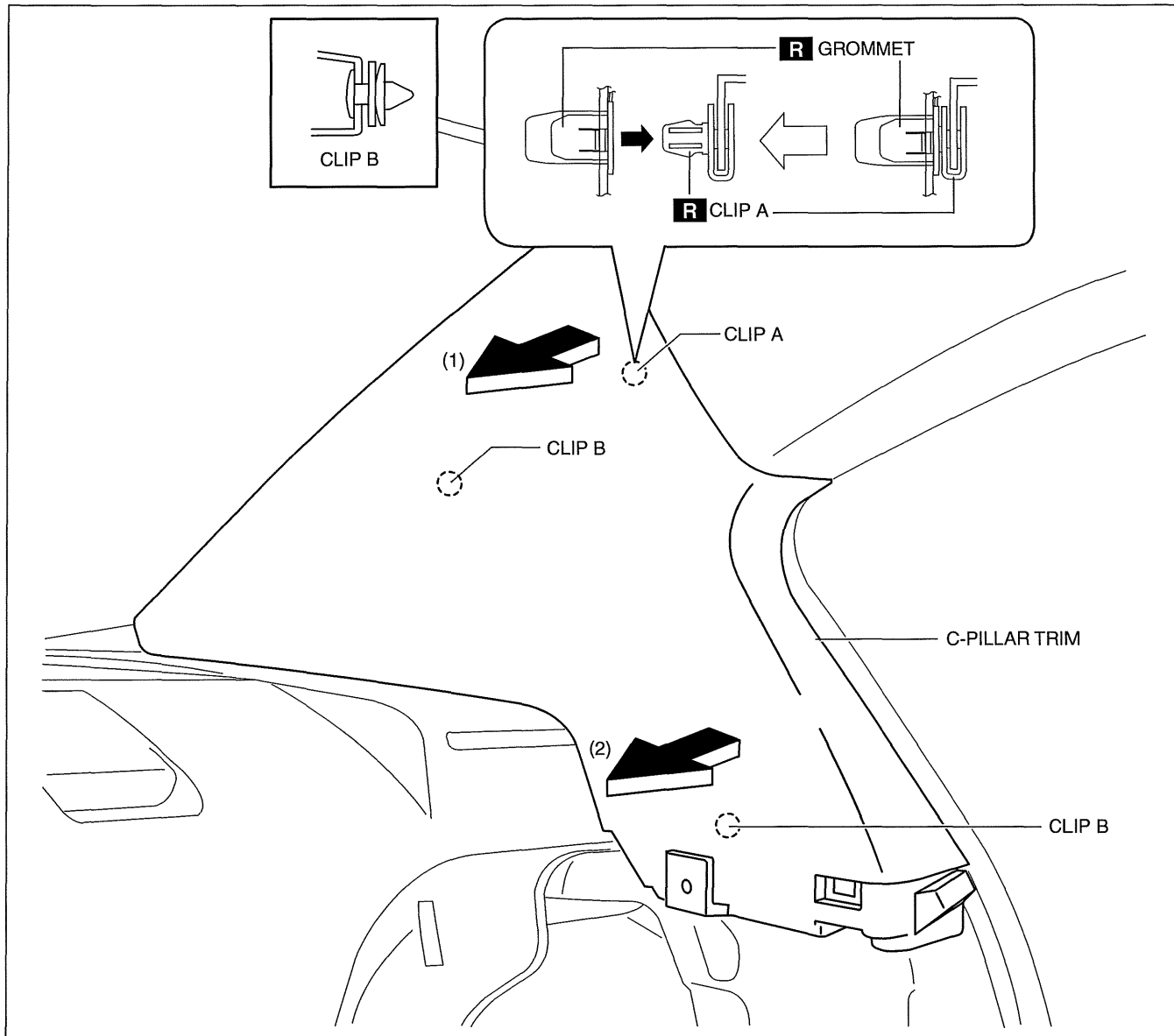
4SD

1. Remove the following parts:

- (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
- (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)

2. Partially peel back the seaming welt.

3. Pull the C-pillar trim in the direction of the arrow (1), (2) shown in the figure, then detaching clip A and B.

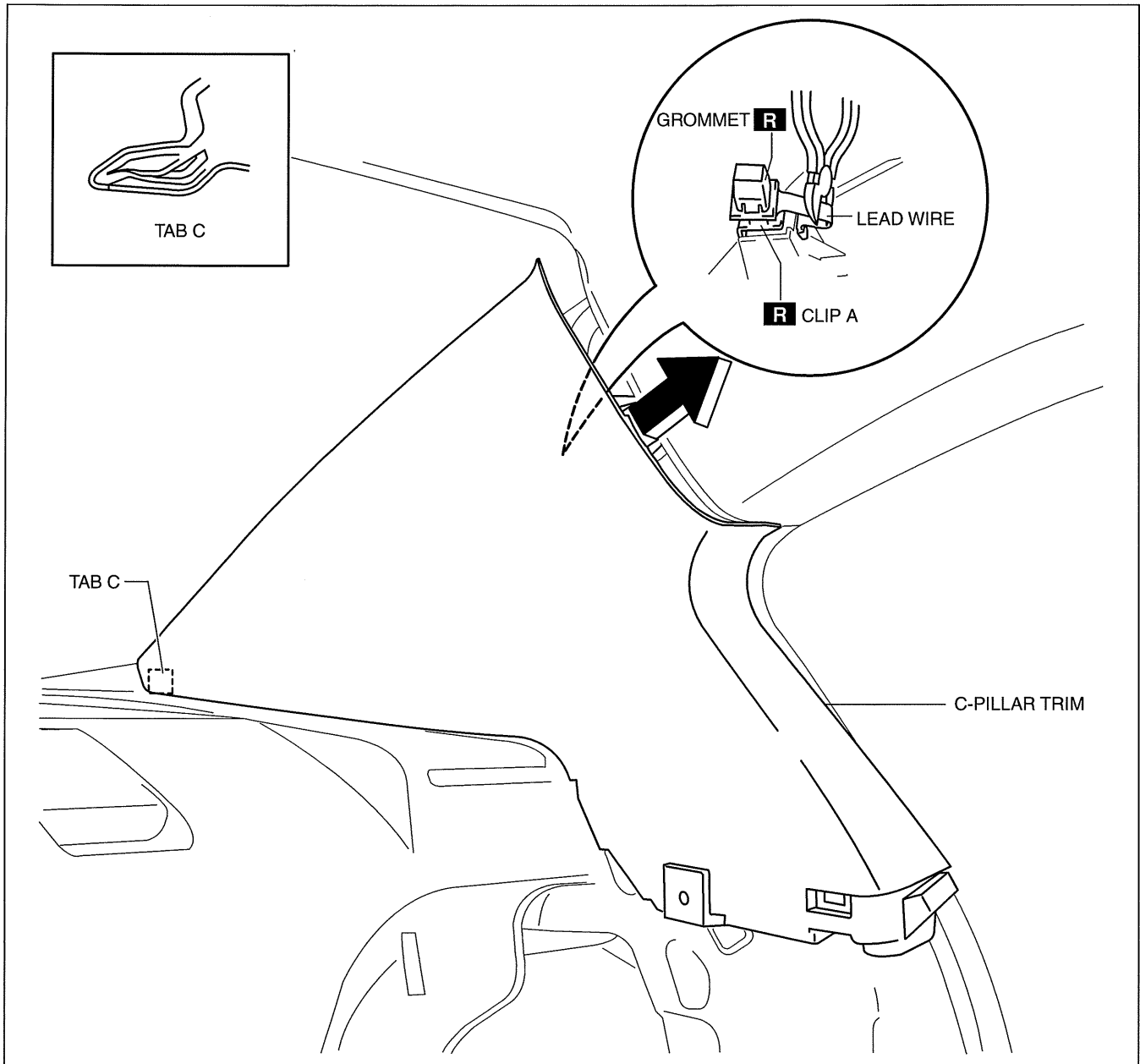


am3uuw0000477

09-17

INTERIOR TRIM

4. Cut the lead wire connecting clip A and grommet using a nipper and pull out the C-pillar trim in the direction of the arrow shown in the figure, while remove the tab C.



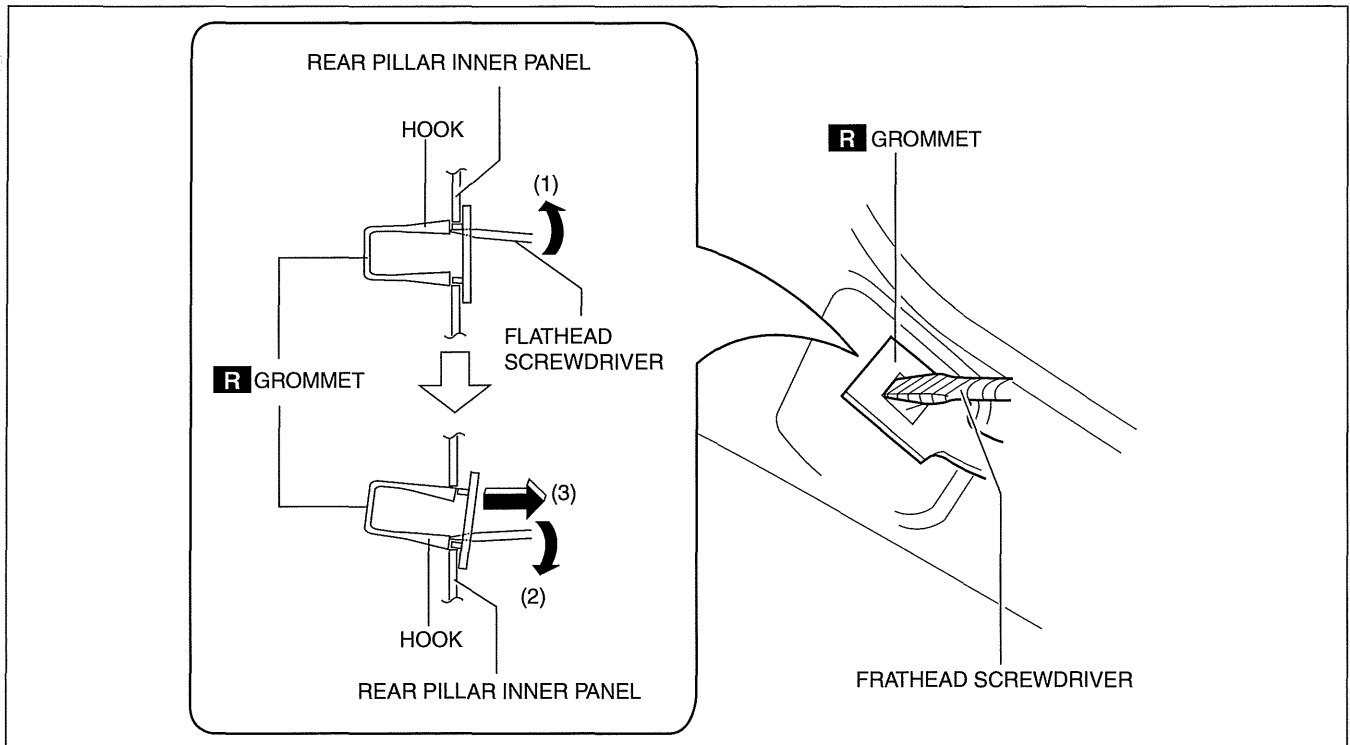
am3uuw0000477

Caution

- When removing the C-pillar trim, be careful not to damage the tab C.

INTERIOR TRIM

5. Move the hook in the direction of arrows (1) and (2) shown in the figure using a flathead screwdriver and detach it from the rear pillar inner panel.



am6zzw0000428

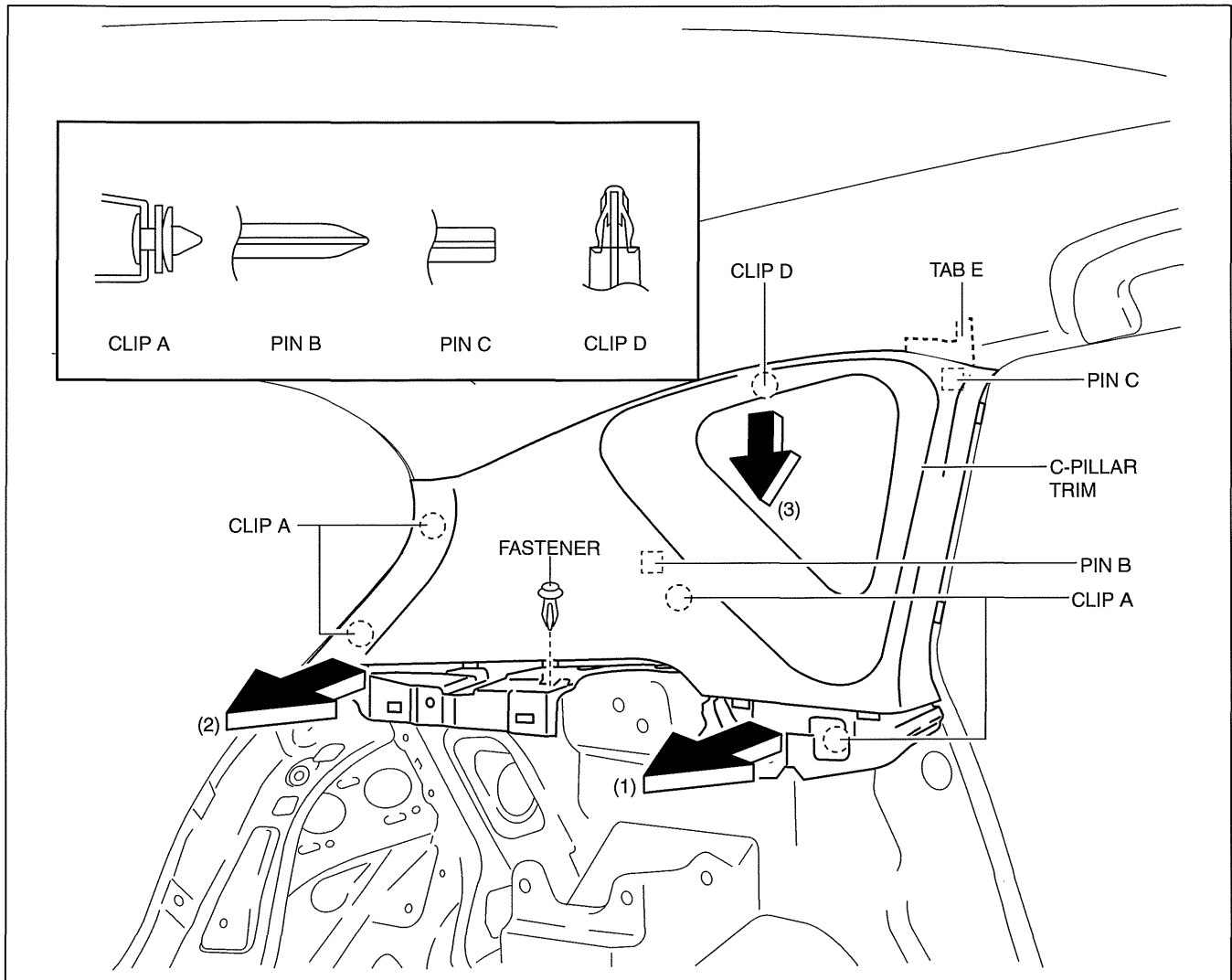
6. Remove the grommet in the direction of the arrow (3) shown in the figure.
7. When installing the C-pillar, install the new clip A and grommet to the C-pillar trim in advance.
8. Install in the reverse order of removal.

09-17

INTERIOR TRIM

5HB

1. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (3) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (4) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
2. Partially peel back the seaming welt.
3. Remove the fastener.
4. Pull the C-pillar trim in the direction of the arrow (1), (2) shown in the figure, then remove the clips A, pin B and C.
5. Pull the C-pillar trim in the direction of the arrow (3) shown in the figure, then remove the clips D and tab E.



am3uuw0000517

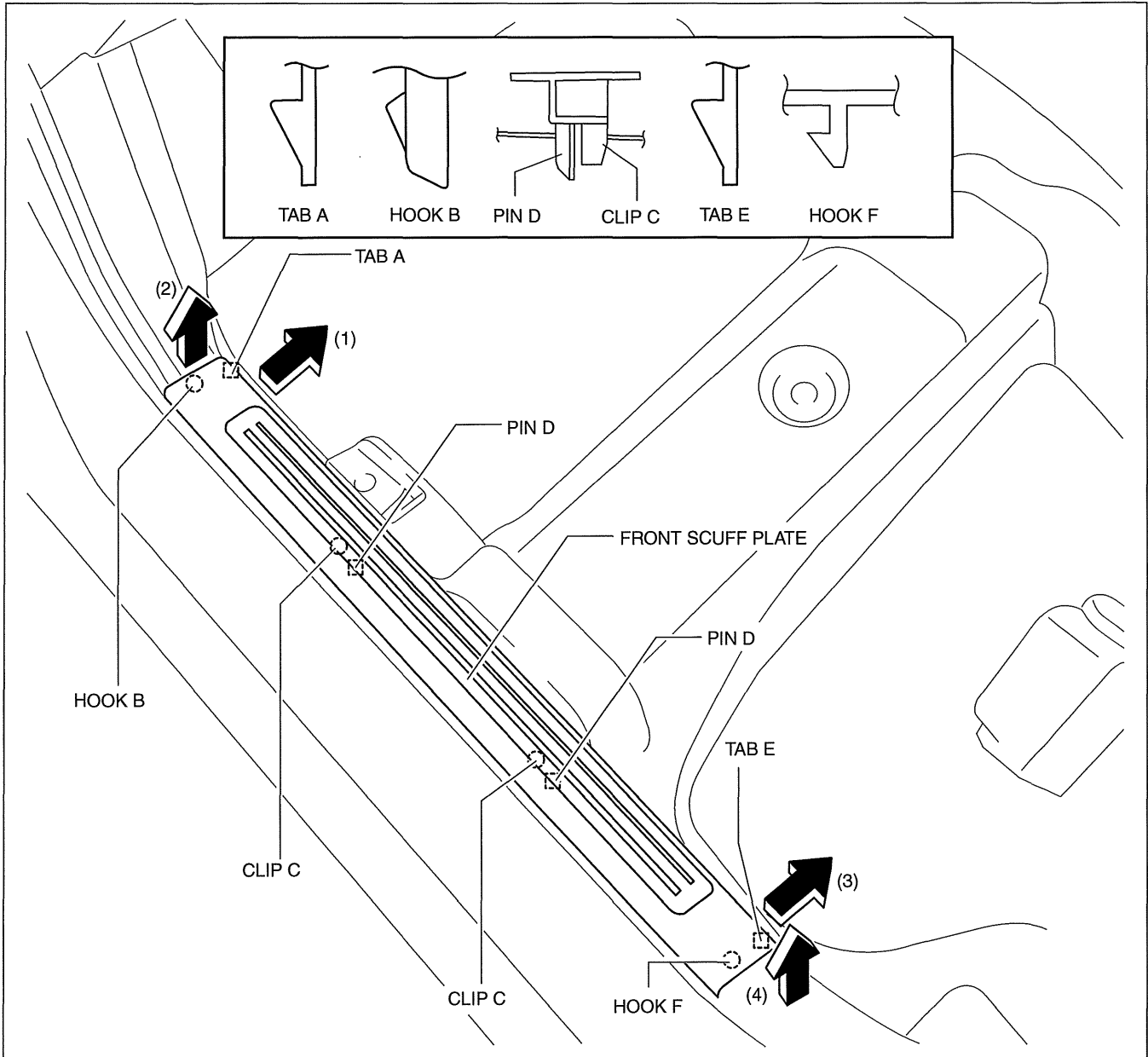
6. Remove the C-pillar trim.
7. Install in the reverse order of removal.

INTERIOR TRIM

FRONT SCUFF PLATE REMOVAL/INSTALLATION

id091700801400

1. Detach tab A while pulling the front scuff plate in the direction of the arrow (1) shown in the figure, then detach hook B, clips C, and pins D while pulling in the direction of the arrow (2).
2. Detach tab E while pulling the front scuff plate in the direction of the arrow (3) shown in the figure, pull the front scuff plate in the direction of the arrow (4), and remove it while detaching hook F.



09-17

am3uuw000478

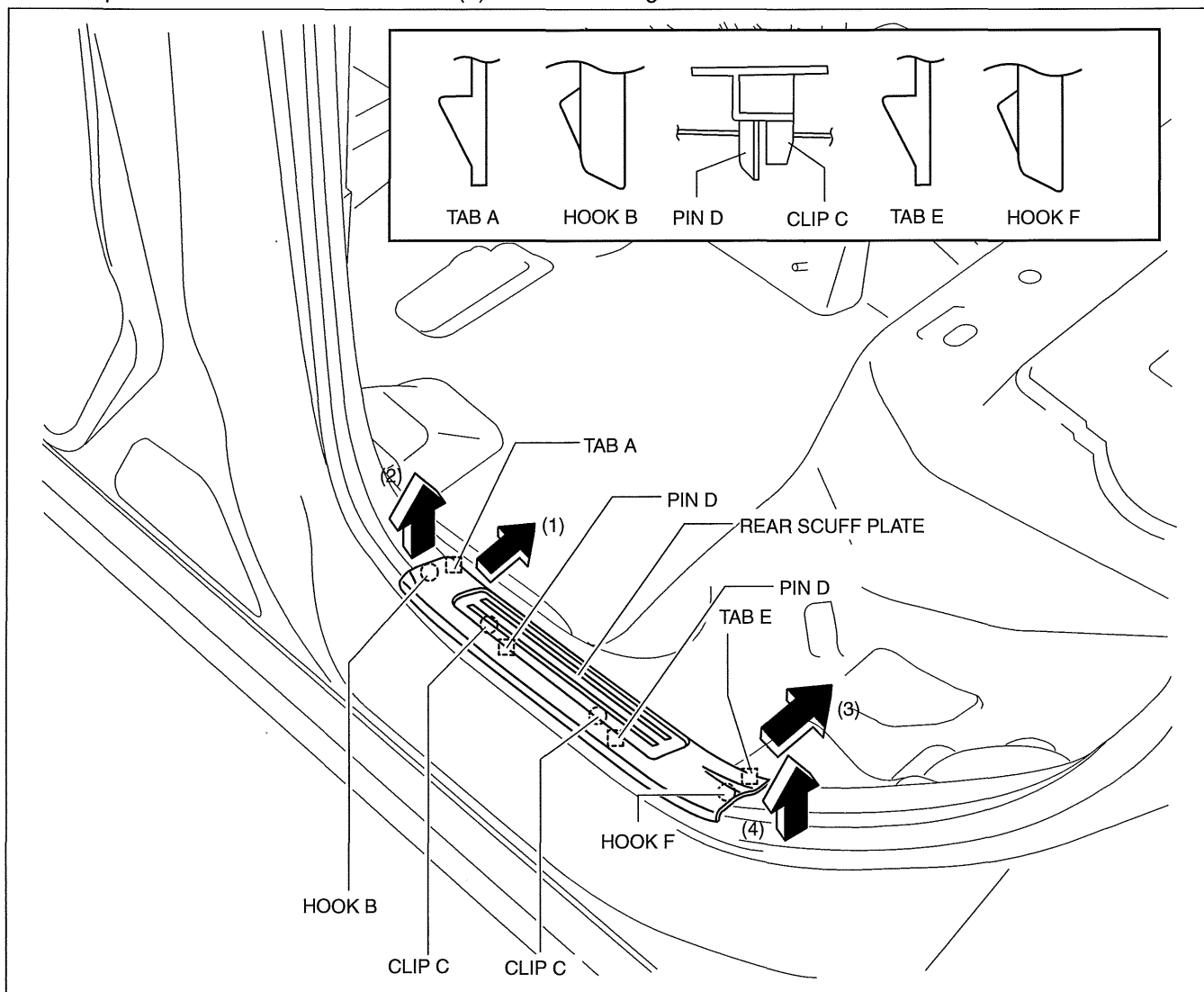
3. Remove the front scuff plate.
4. Install in the reverse order of removal.

INTERIOR TRIM

REAR SCUFF PLATE REMOVAL/INSTALLATION

id091700801500

1. Detach tab A while pulling the rear scuff plate in the direction of the arrow (1) shown in the figure, then detach hook B, clips C, pins D while pulling in the direction of the arrow (2).
2. Detach tab E while pulling the rear scuff plate in the direction of the arrow (3) shown in the figure, pull the rear scuff plate in the direction of the arrow (4) shown in the figure.



am3uuw0000478

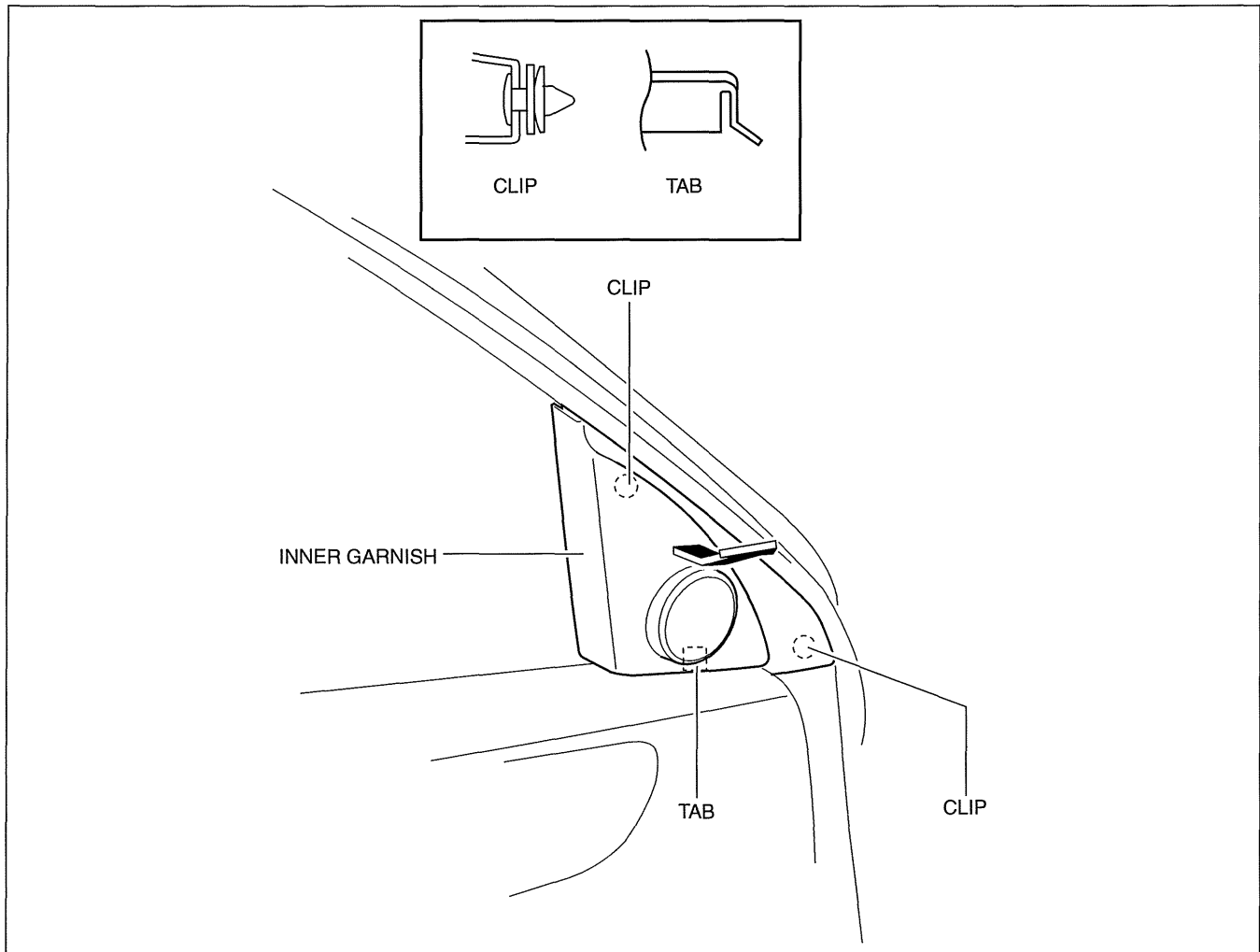
3. Remove the rear scuff plate.
4. Install in the reverse order of removal.

INTERIOR TRIM

INNER GARNISH REMOVAL/INSTALLATION

id091700801000

1. Disconnect the negative battery cable.
2. Pull the inner garnish in the direction of the arrow shown in the figure and remove it while detaching clips and tab.



am6zzw0000173

Caution

- When pulling out the inner garnish, be careful not to damage the tab.

3. Disconnect the front tweeter connector. (Vehicles with tweeter)
4. Install in the reverse order of removal.

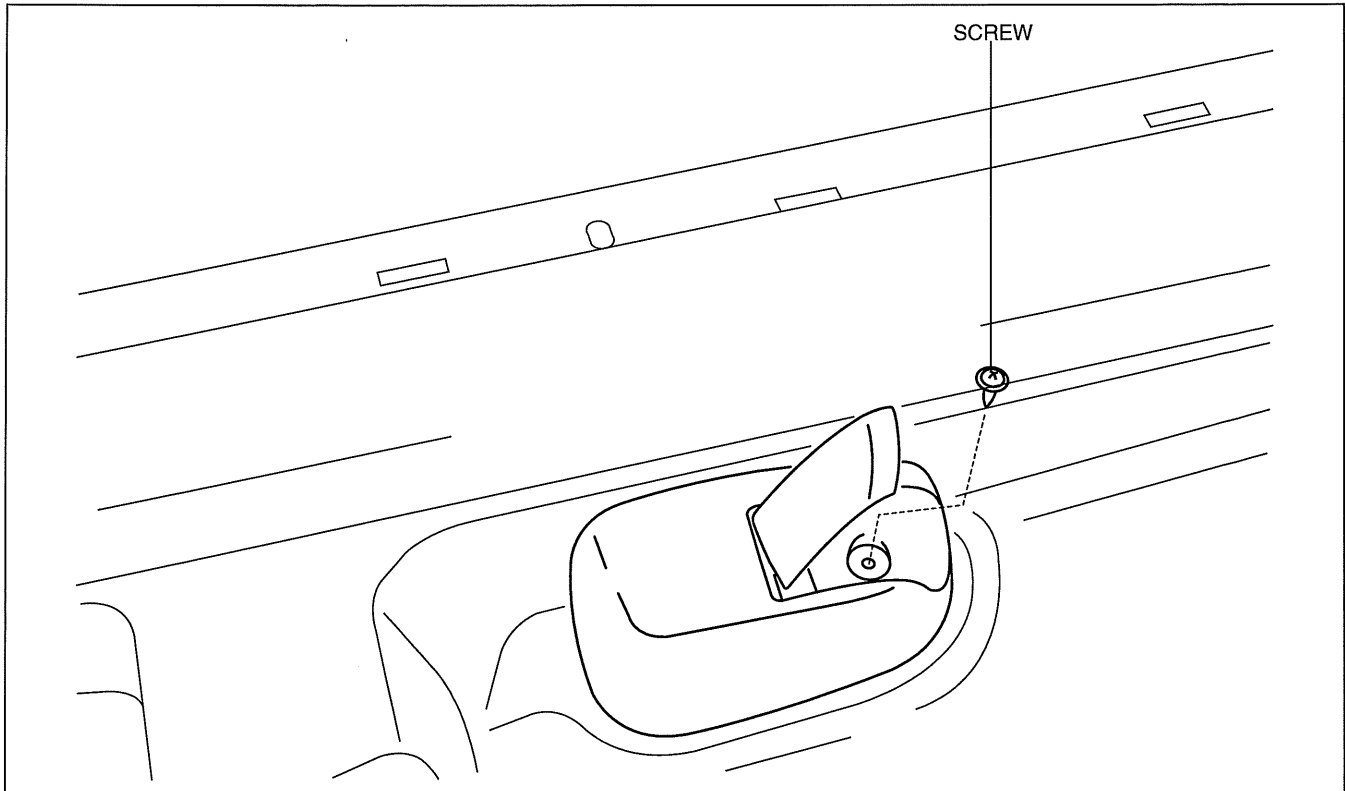
09-17

INTERIOR TRIM

FUEL-FILLER LID OPENER BEZEL REMOVAL/INSTALLATION

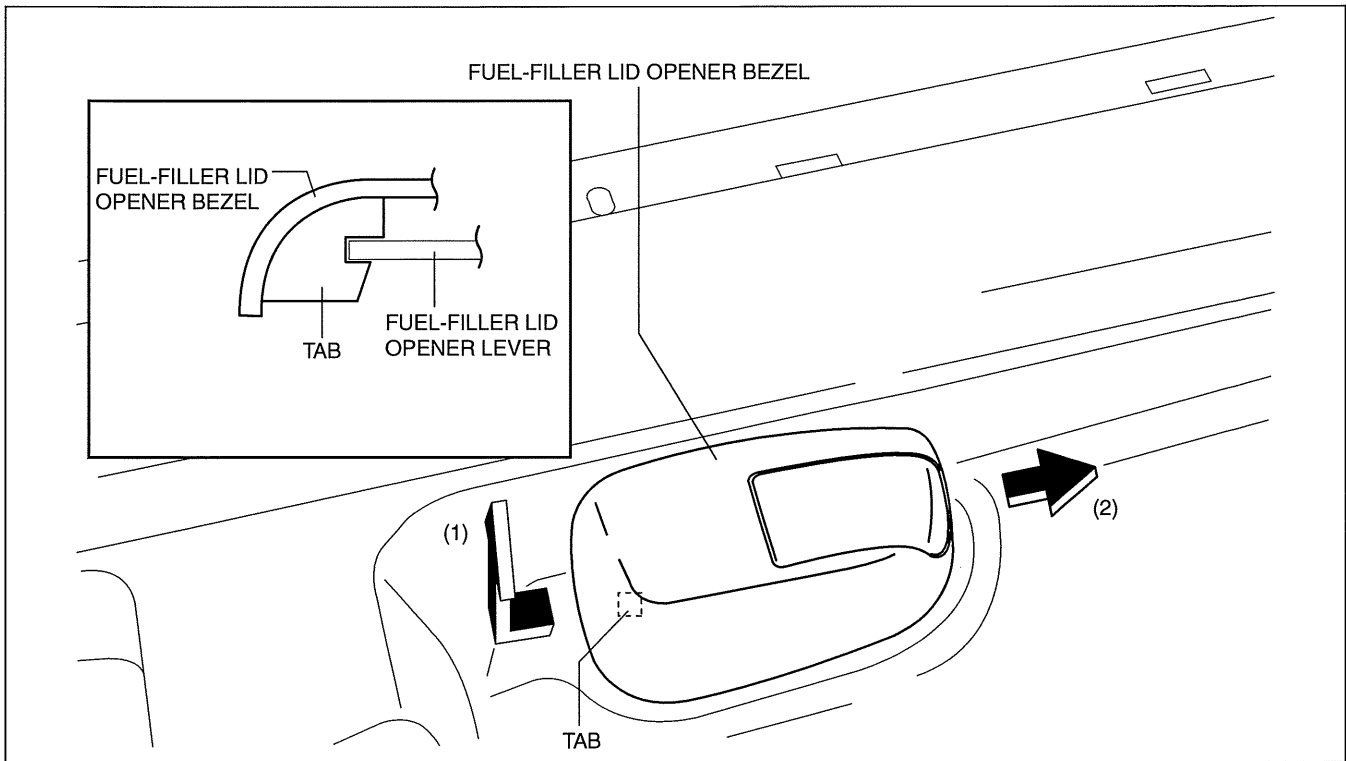
id091700899000

1. Remove the screw.



am6zzw0000173

2. Pull the fuel-filler lid opener bezel in the direction of the arrow (1) then remove the tab.
3. Move the fuel-filler lid opener bezel in the direction of the arrow (2) shown in the figure.



am3uuw0000527

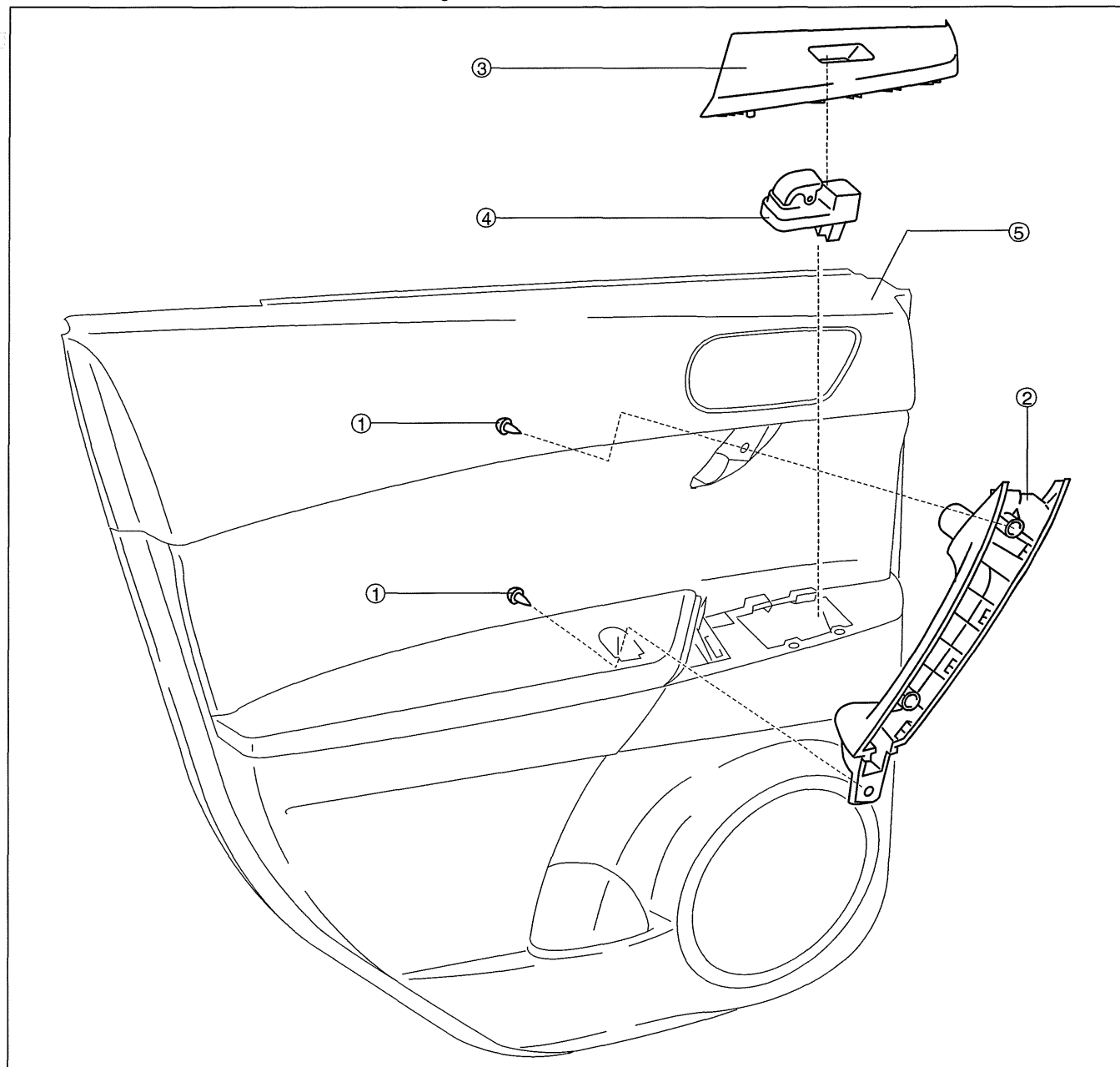
4. Remove the fuel-filler lid opener bezel.
5. Install in the reverse order of removal.

INTERIOR TRIM

REAR DOOR TRIM DISASSEMBLY/ASSEMBLY

id091700804300

1. Disassemble in the order shown in the figure.



09-17

am3uuw0000512

1	Screw
2	Assist handle
3	Switch panel cover
4	Power window subswitch
5	Rear door trim

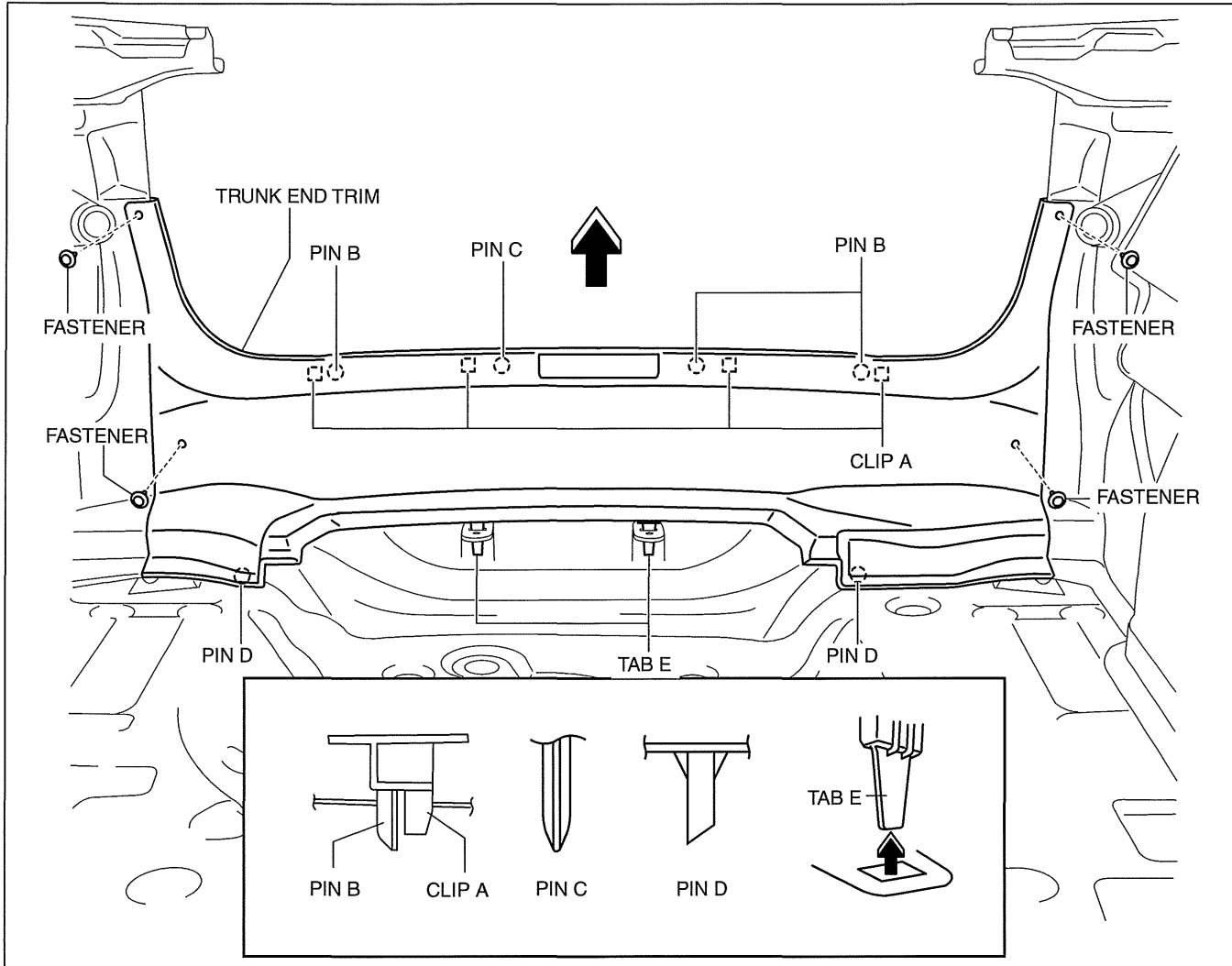
INTERIOR TRIM

TRUNK END TRIM REMOVAL/INSTALLATION

id091700803400

4SD

1. Remove the trunk mat. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION)
2. Remove the trunk board. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION)
3. Remove the fasteners.
4. Pull the trunk end trim indicated in the arrow shown in the figure, then detach clips A, pins B, pin C, D and tabs E.



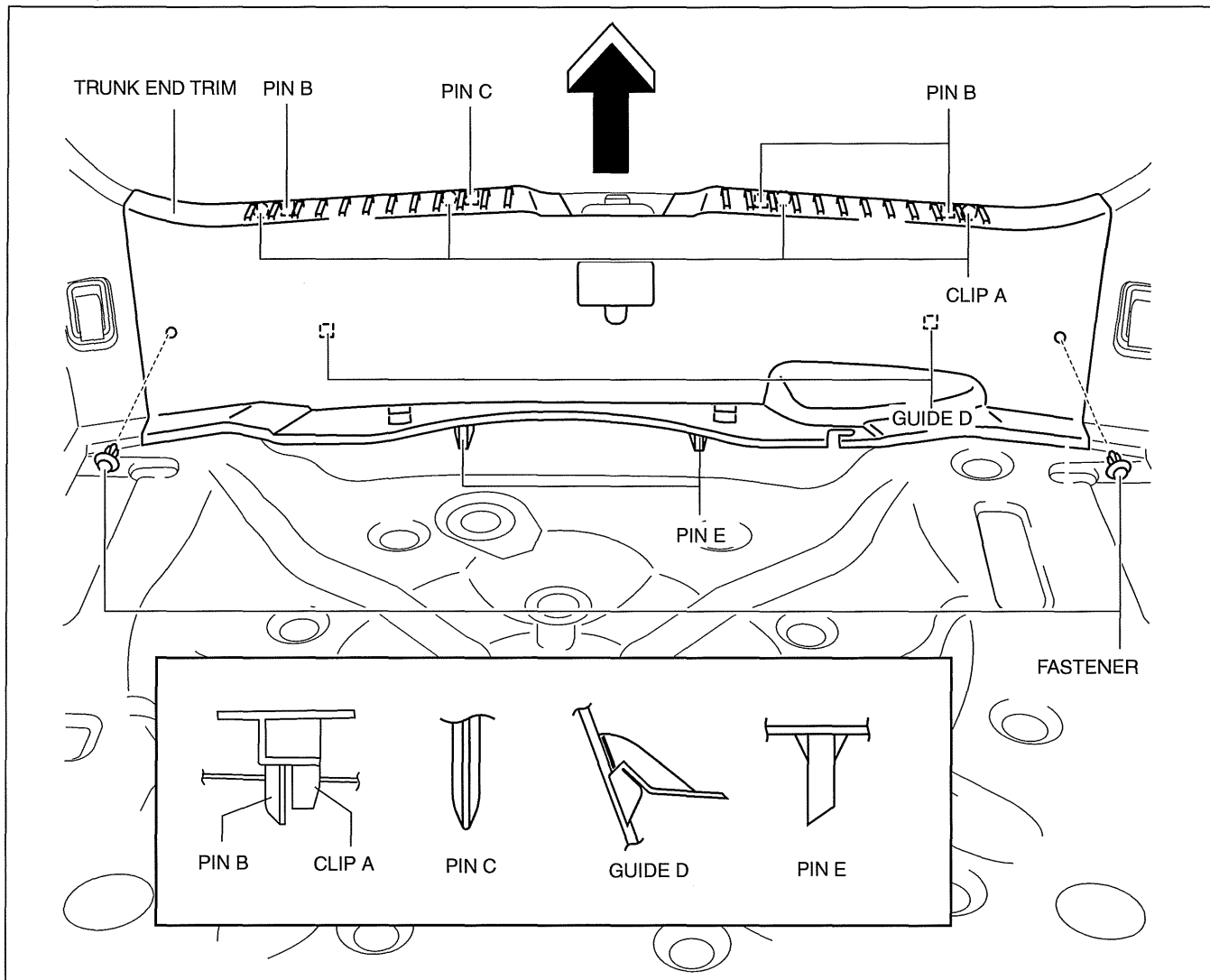
am3uuw0000478

5. Remove the trunk end trim.
6. Install in the reverse order of removal.

INTERIOR TRIM

5HB

1. Remove the trunk mat. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION)
2. Remove the trunk board. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION)
3. Remove the fasteners.
4. Pull the trunk end trim indicated in the arrow shown in the figure, then detach clips A, pins B, pin C, guides D and pins E.



09-17

am3uuw000479

5. Remove the trunk end trim.
6. Install in the reverse order of removal.

INTERIOR TRIM

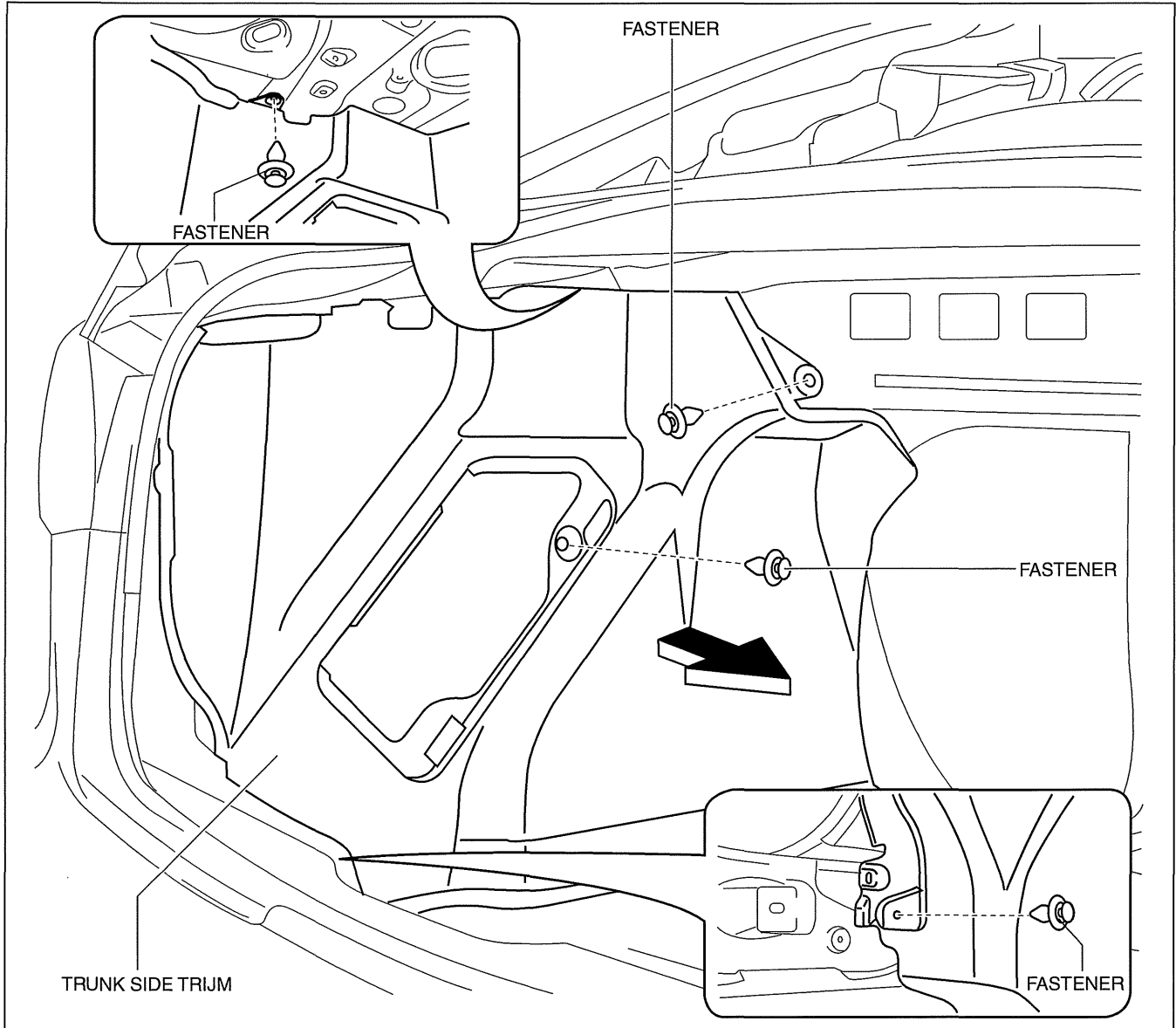
TRUNK SIDE TRIM REMOVAL/INSTALLATION

id091700803100

4SD

Left-side

1. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (3) Trunk mat (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
 - (4) Trunk board (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
 - (5) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (6) Service hole cover
2. Remove the fasteners.



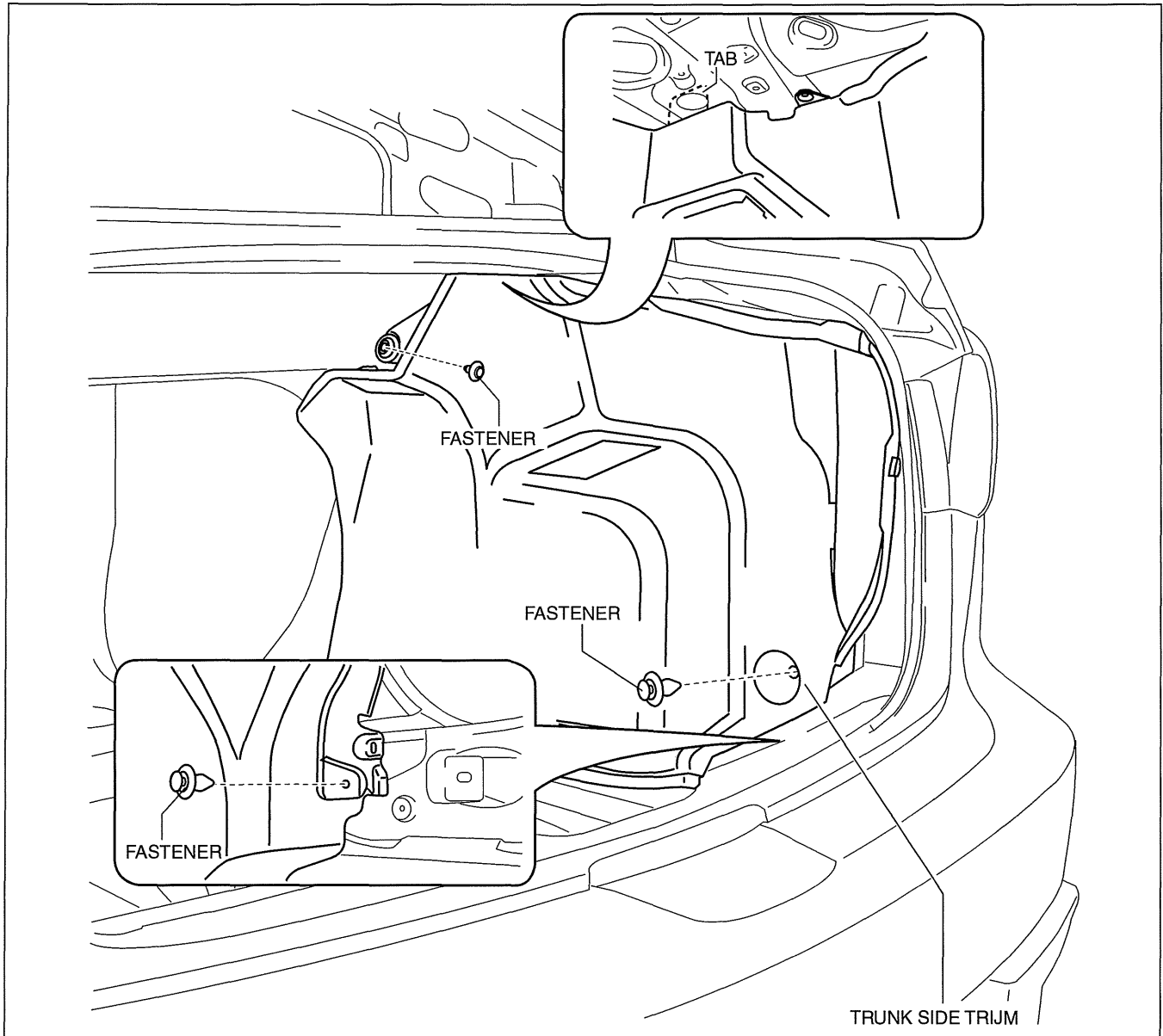
am3uuw0000527

3. Install in the reverse order of removal.

INTERIOR TRIM

Right-side

1. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (3) Trunk mat (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
 - (4) Trunk board (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
 - (5) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
2. Remove the fasteners and tab.



09-17

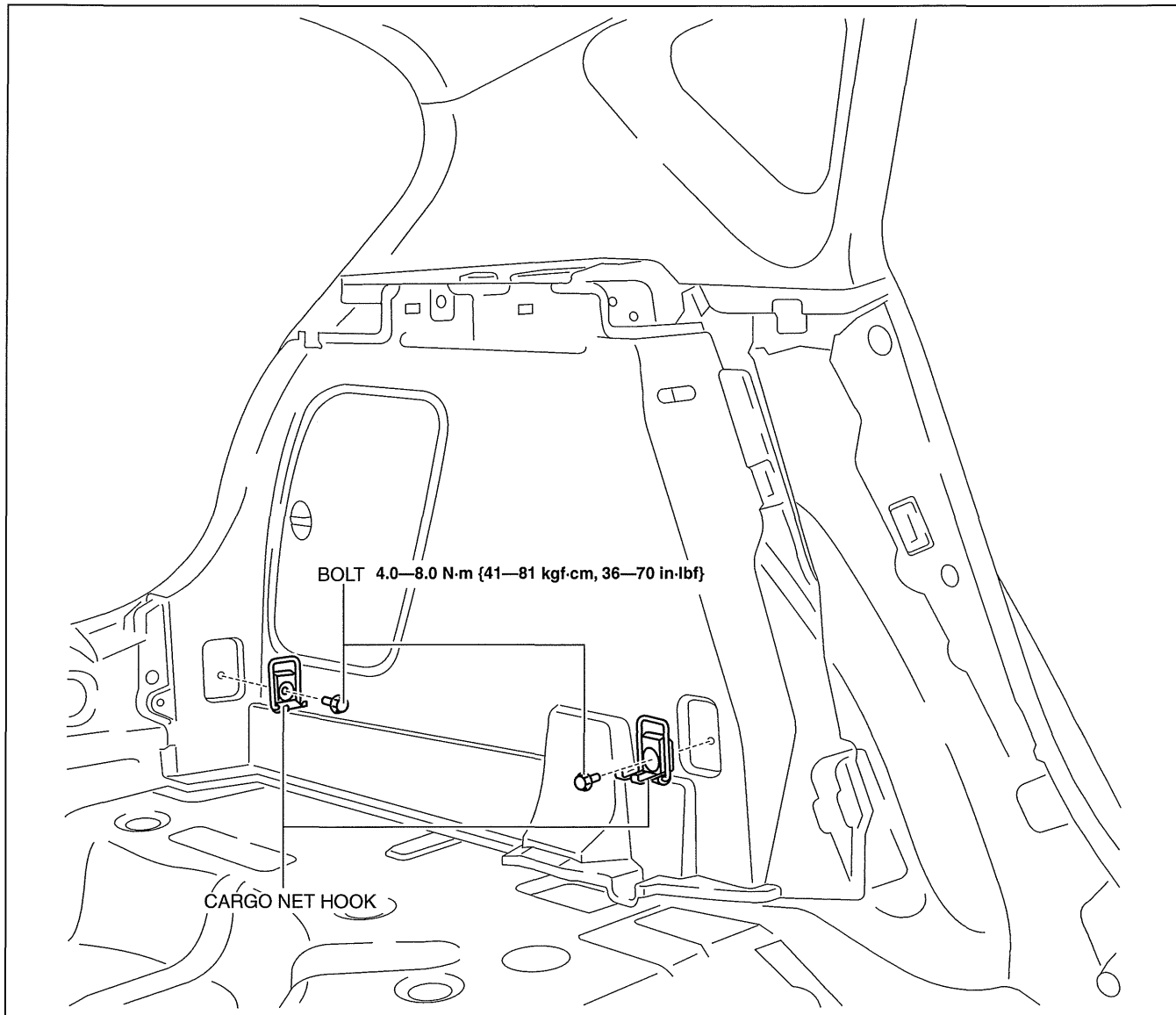
am3uuw0000527

3. Install in the reverse order of removal.

INTERIOR TRIM

5HB

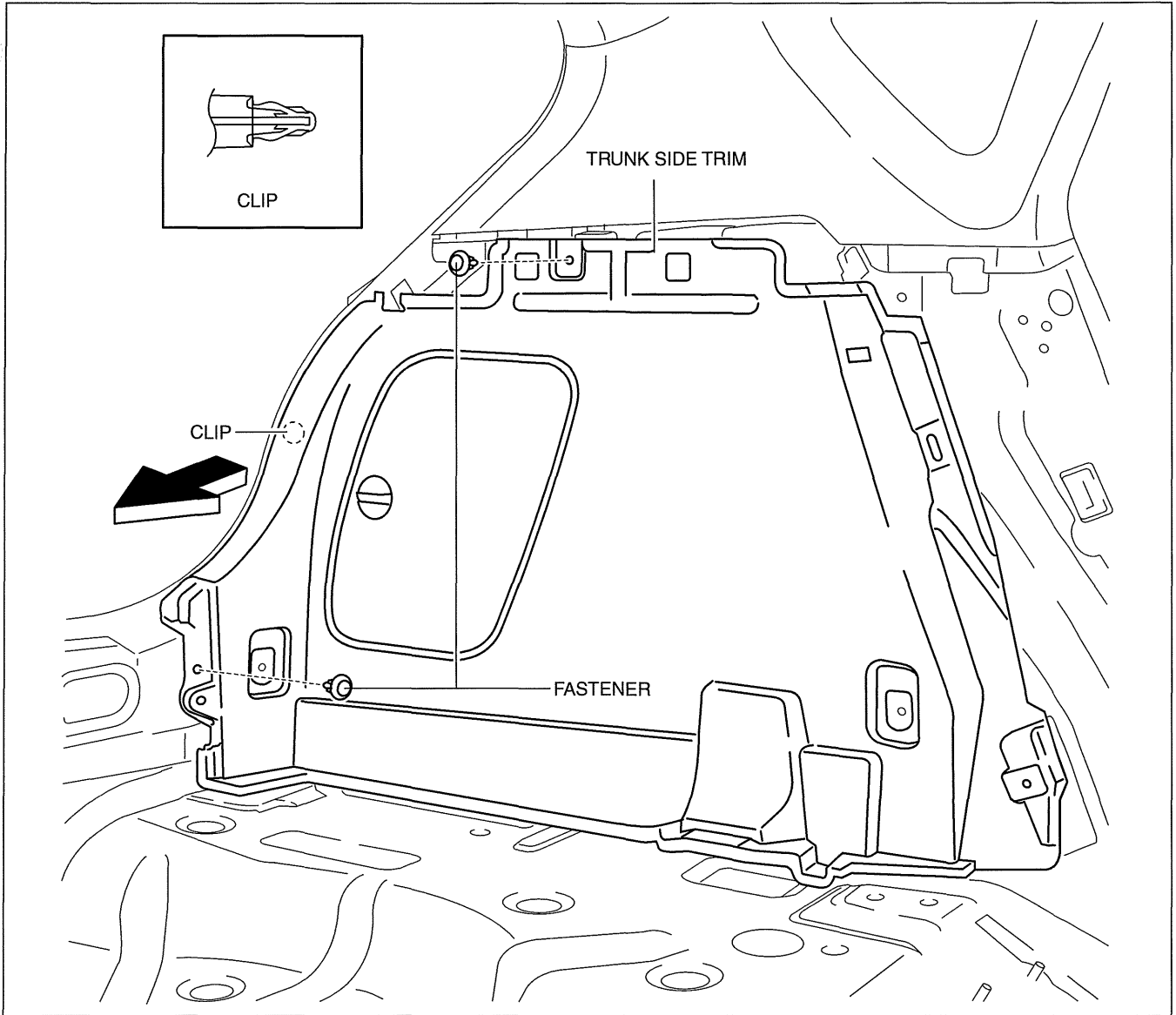
1. Disconnect the negative battery cable. (Right-side only)
2. Remove the following parts:
 - (1) Rear seat (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) Trunk end trim (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
 - (5) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
3. Remove the bolts, then remove the cargo net hooks.



am3uuw0000529

INTERIOR TRIM

4. Remove the fasteners.
5. Pull the trunk side trim in the direction of arrow, while remove the clip.



am3uuw000480

6. Remove the trunk side trim.
7. Disconnect the cargo compartment light connector. (Right-side only)
8. Install in the reverse order of removal.

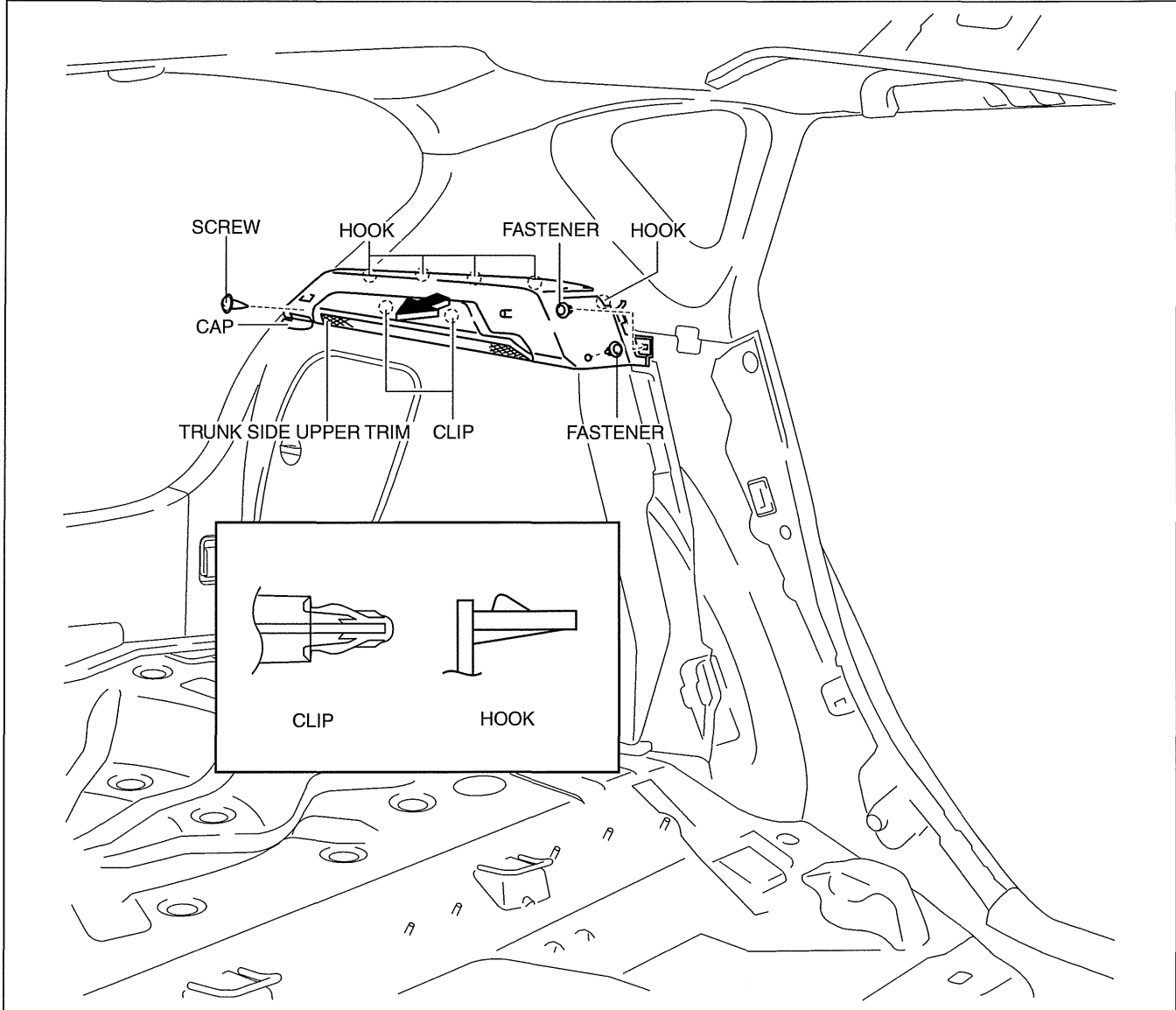
09-17

INTERIOR TRIM

TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION

id091700803200

1. Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION)
2. Remove the rear scuff plate. (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION)
3. Remove the tire house trim. (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION)
4. Open the cap.
5. Remove the screw.
6. Remove the fasteners.
7. Pull the trunk side upper trim in the direction of arrow, then detach the hooks and clips.



am3uuw0000480

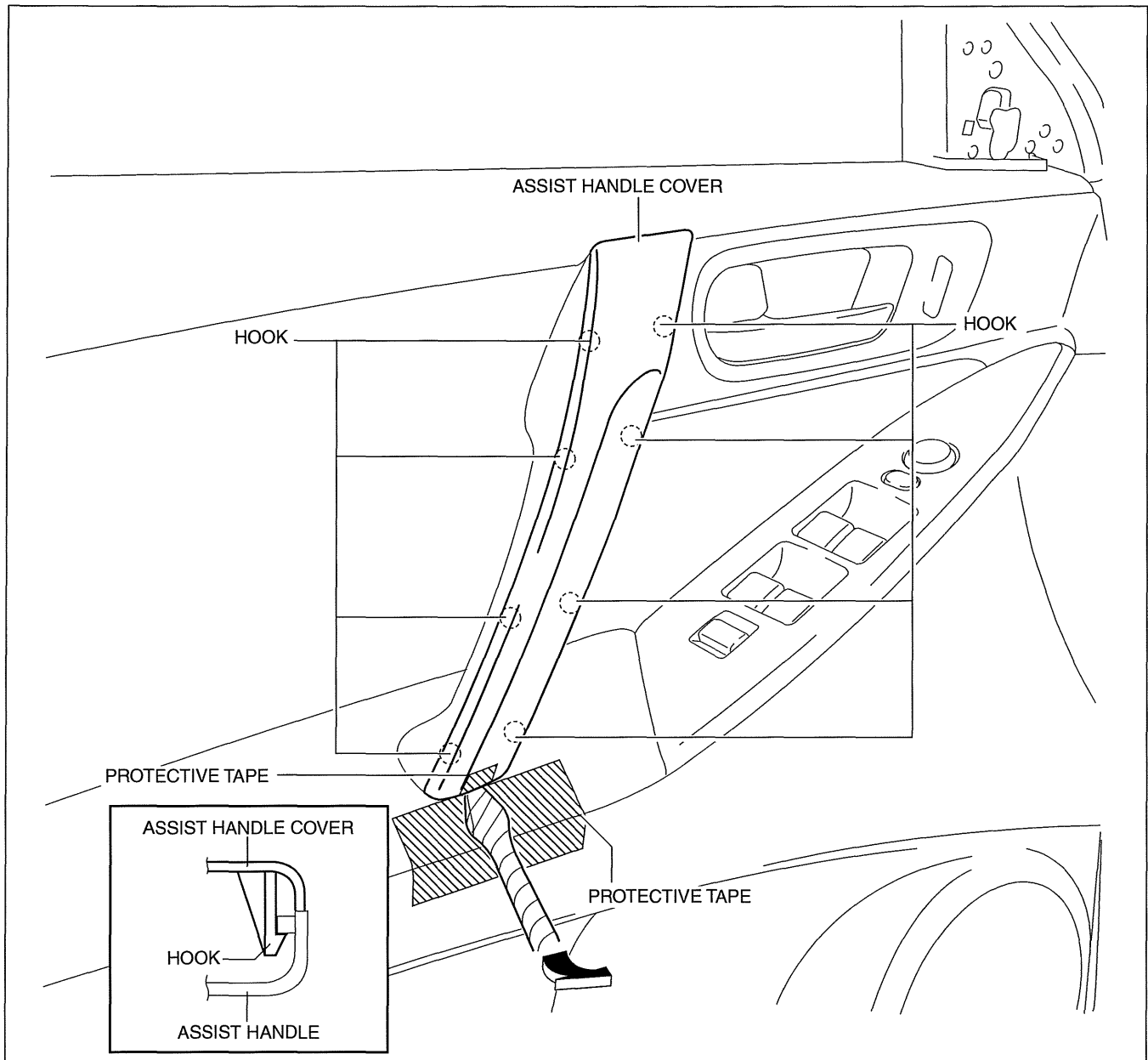
8. Install in the reverse order of removal.

INTERIOR TRIM

FRONT DOOR TRIM REMOVAL/INSTALLATION

id091700802500

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION)
3. Move the hook in the direction of arrow shown in the figure using a tape-lapped flathead screwdriver and detach it from the front door trim.



09-17

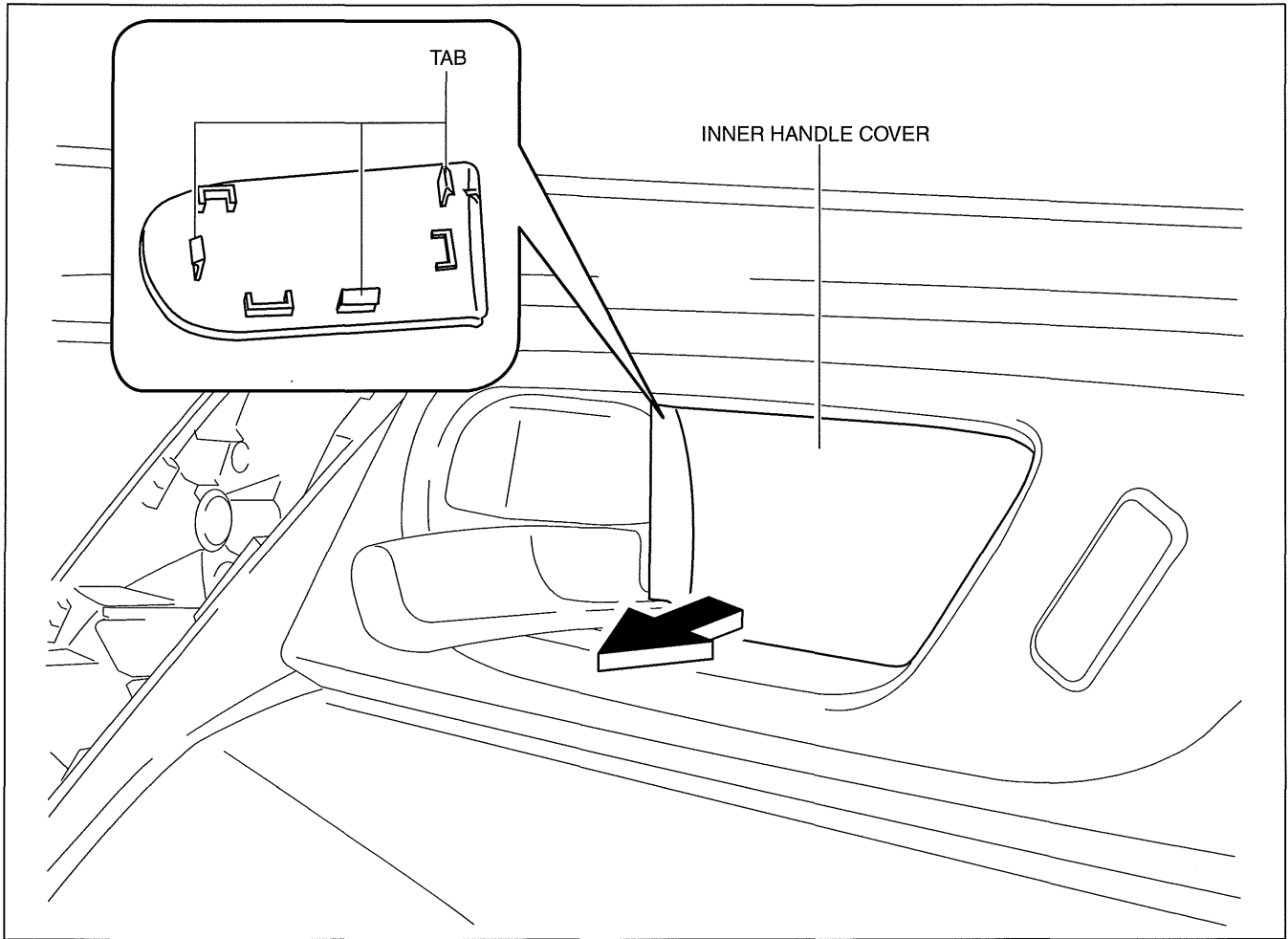
am3uuw000481

Caution

- Affix protective tape to the front door trim and assist handle cover to prevent damage.

INTERIOR TRIM

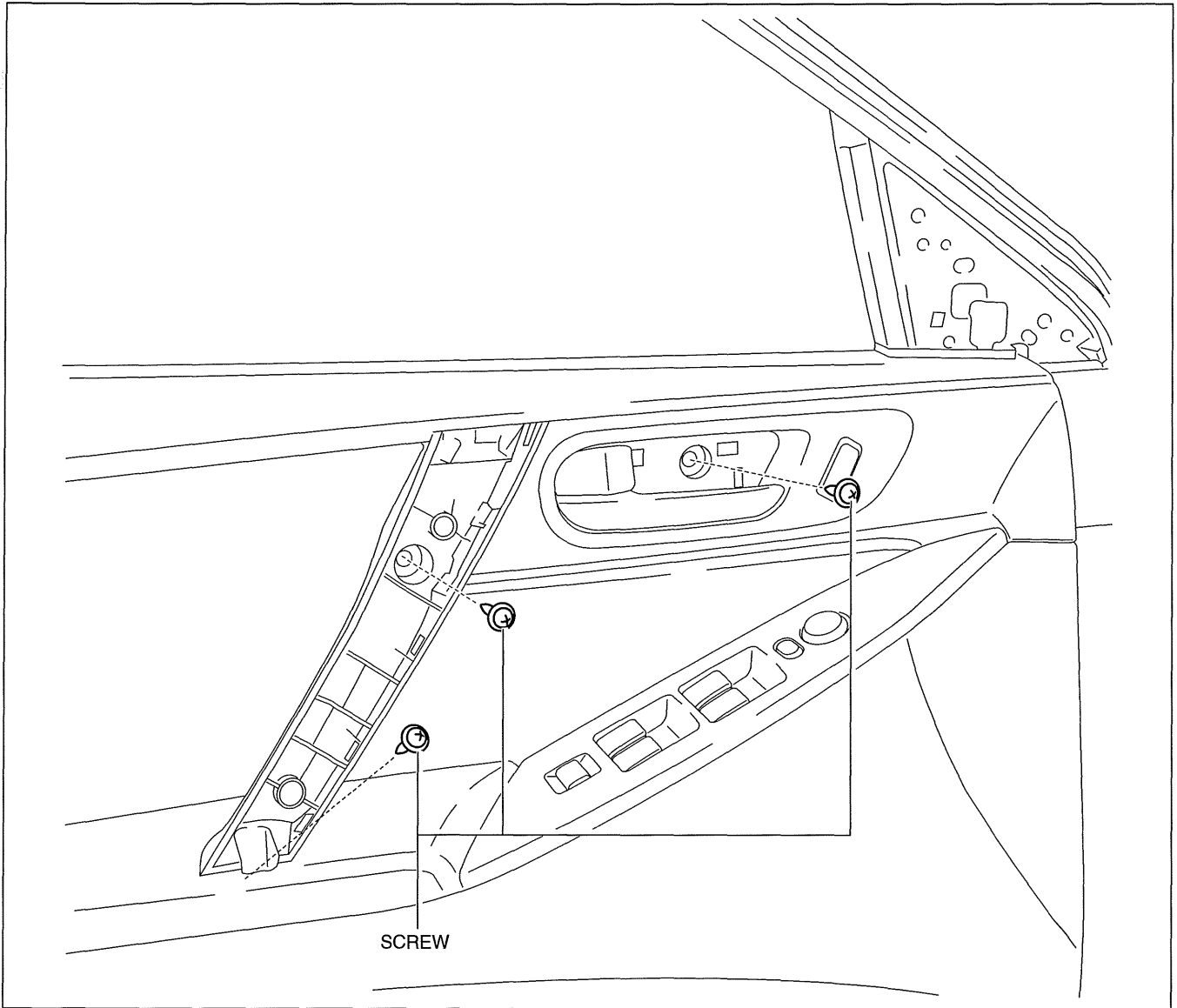
4. Pull the inner handle cover in the direction of arrow and remove it while detaching tabs.



am3uuw0000481

INTERIOR TRIM

5. Remove the screws.

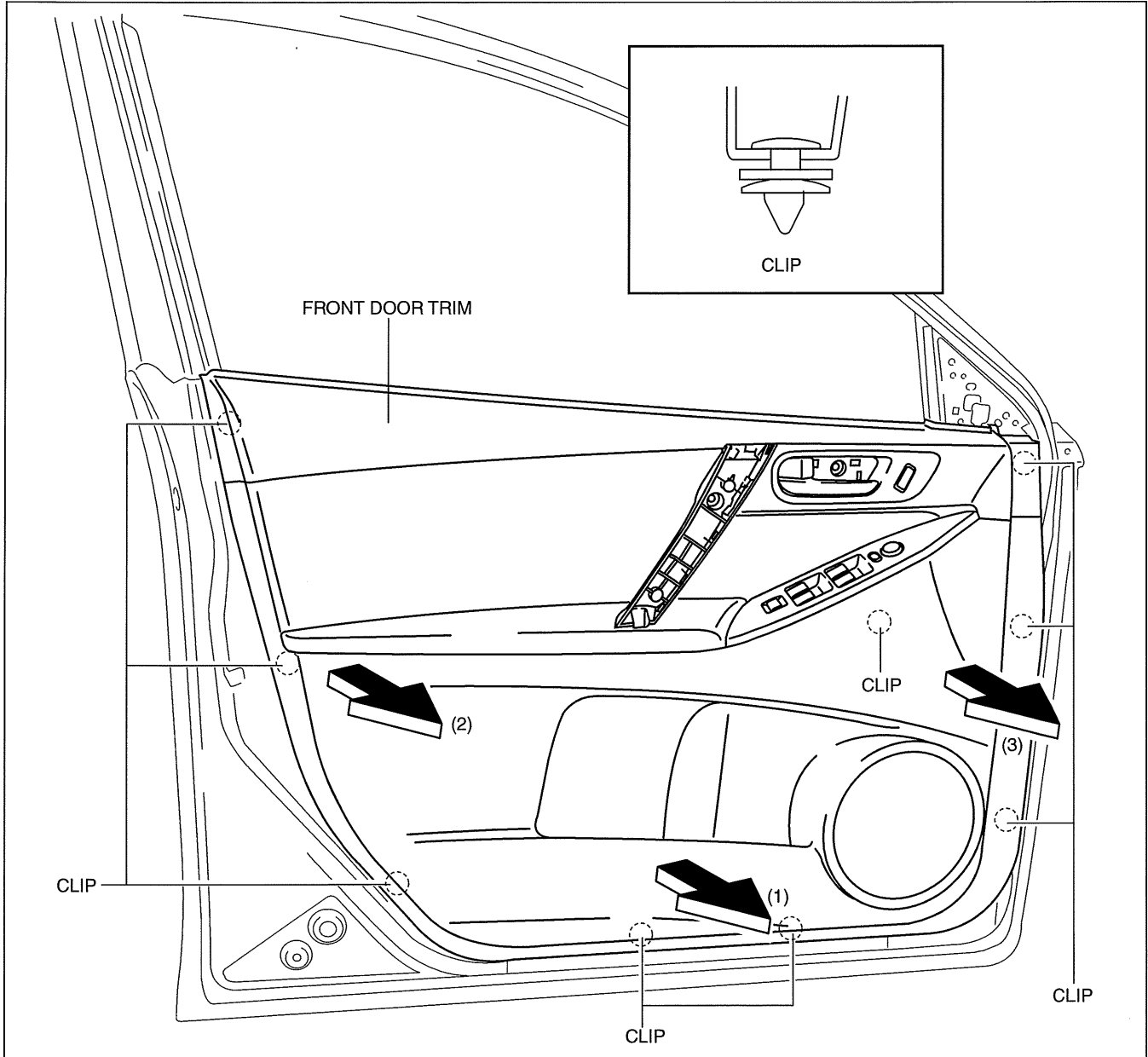


09-17

am3uuw0000512

INTERIOR TRIM

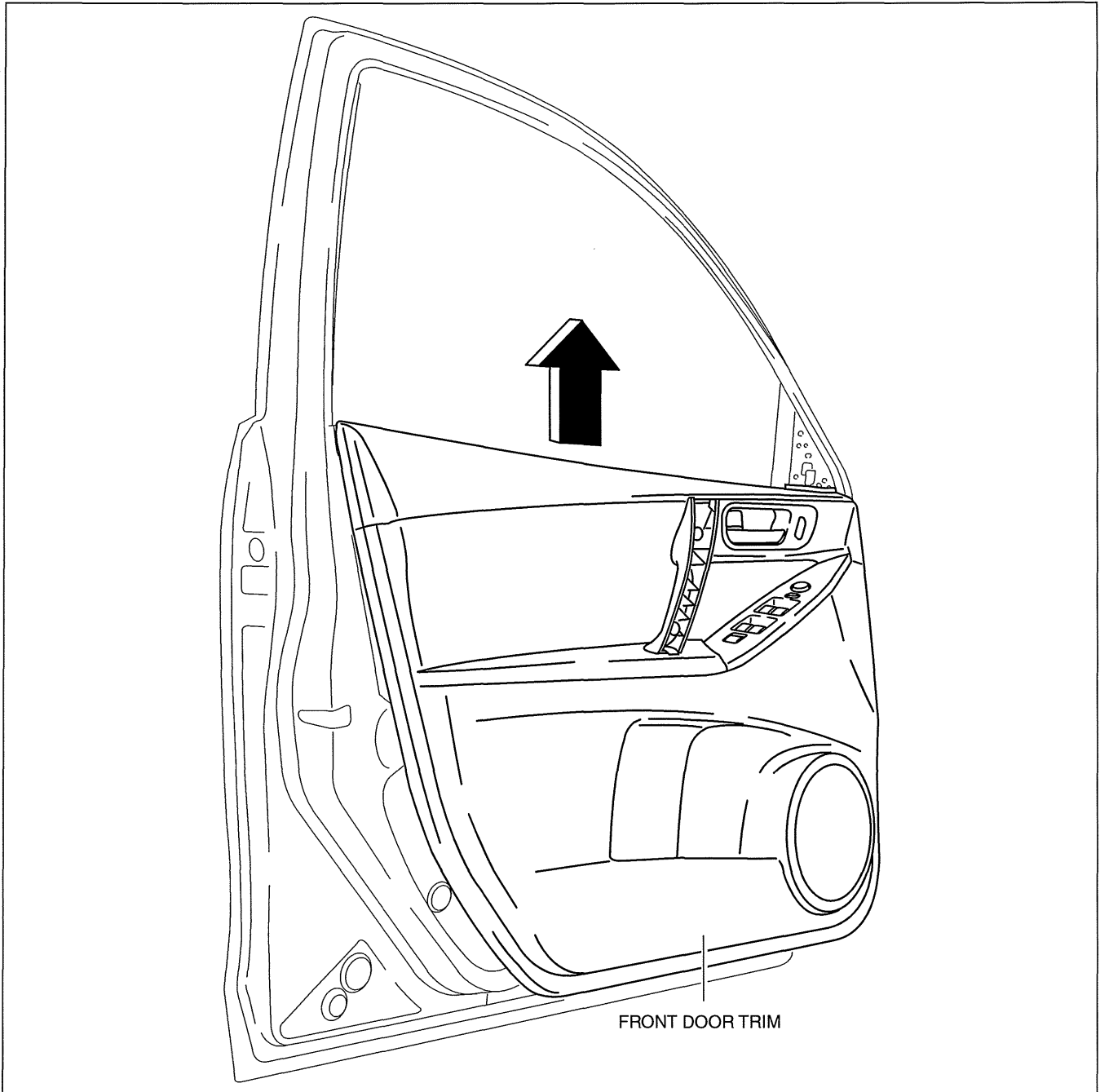
6. Pull in the direction of the arrow (1), (2), (3) shown in the figure and remove clips from the door inner panel using a fastener remover.



am3uuw0000517

INTERIOR TRIM

7. Remove the front door trim in the direction of the arrow shown in the figure.

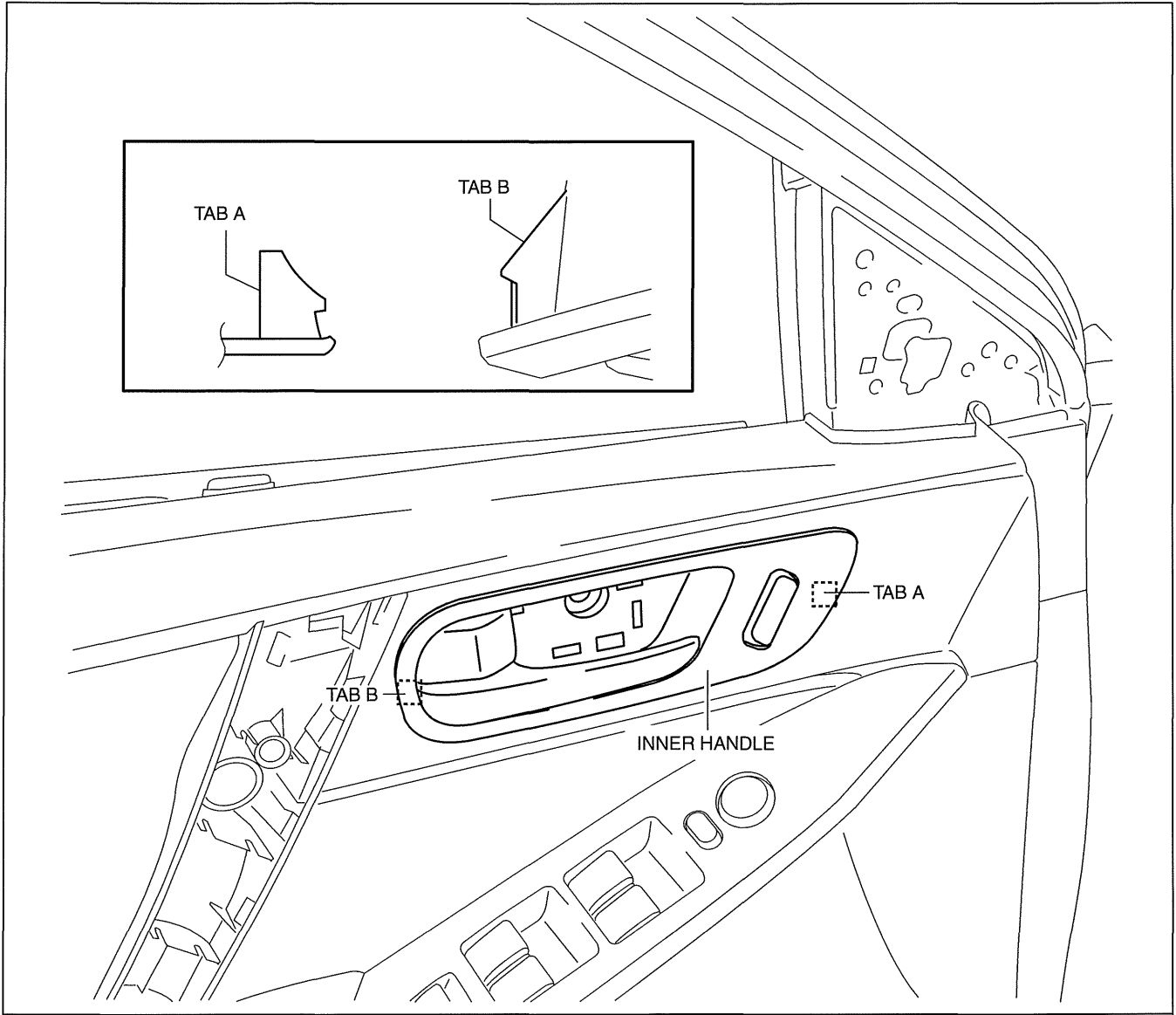


09-17

am3uuw0000527

INTERIOR TRIM

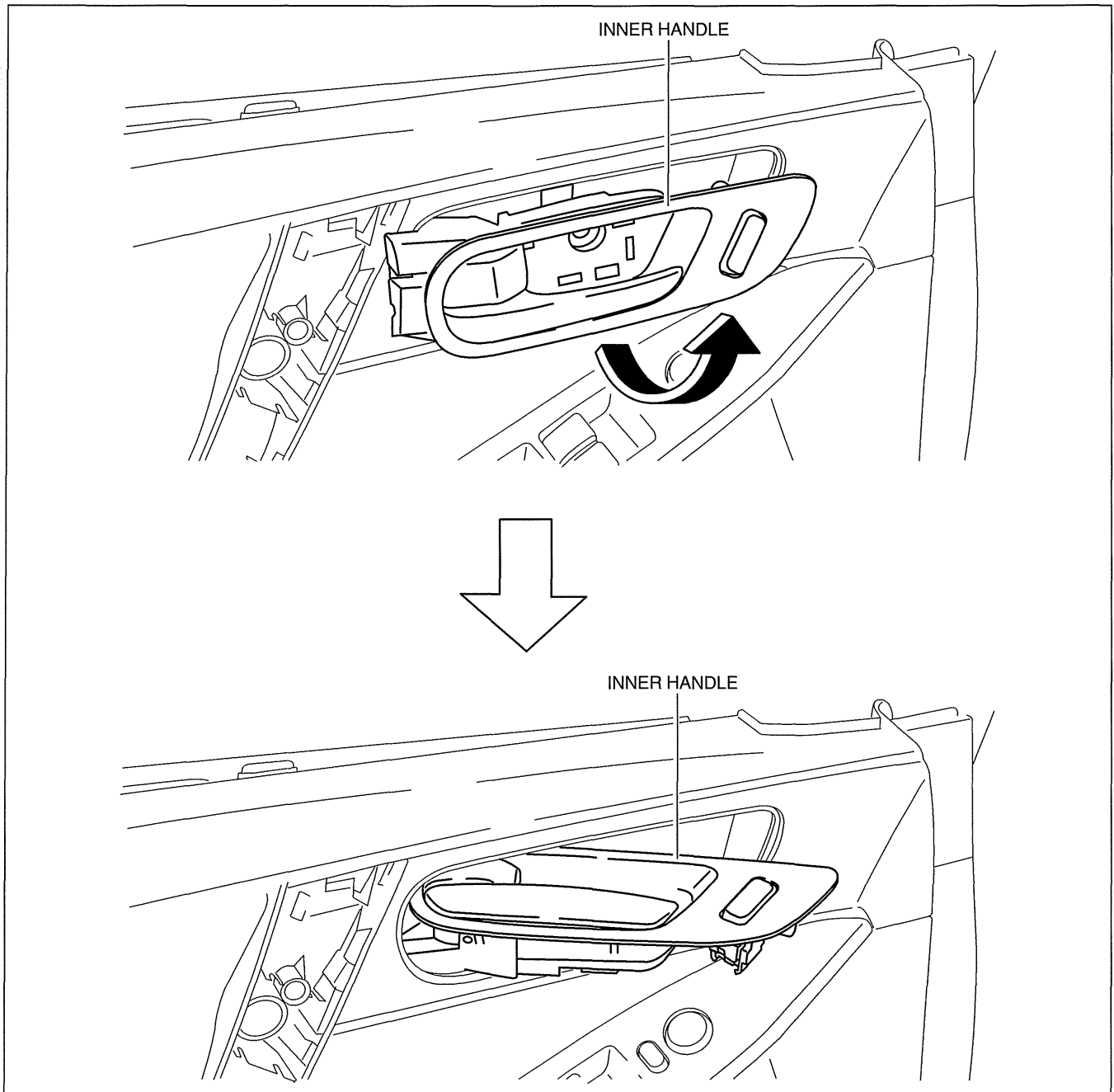
8. Remove the inner handle and move the front door trim shown in the figure.



am3uuw0000527

INTERIOR TRIM

9. Turn the inner handle 90° in the direction of the arrow and remove it from the front door trim.



am3uuw0000481

10. Disconnect the driver-side power outer mirror switch connector and driver-side power window main switch connector.
11. Install in the reverse order of removal.

09-17

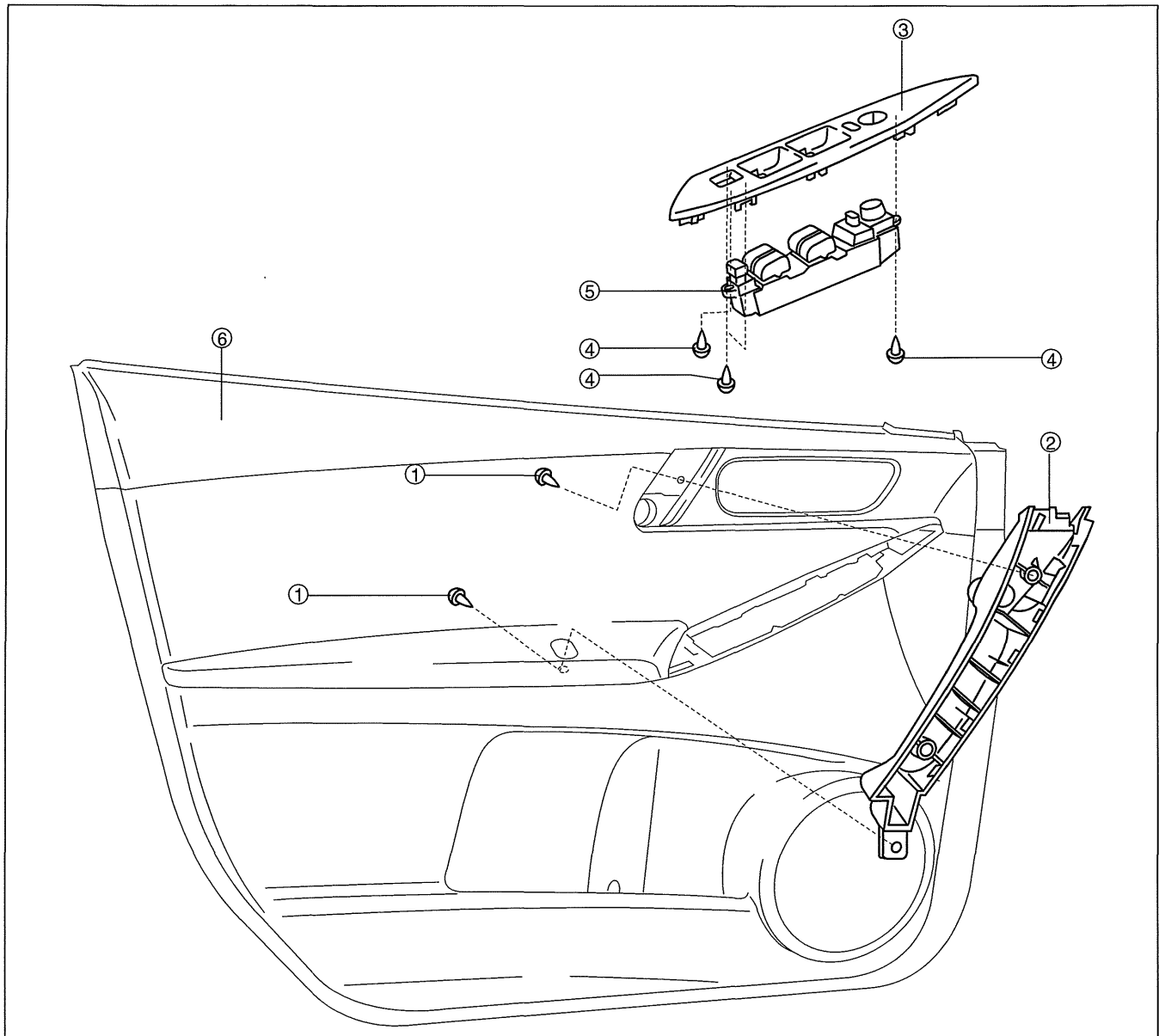
INTERIOR TRIM

FRONT DOOR TRIM DISASSEMBLY/ASSEMBLY

id091700804200

Driver-side

1. Disassemble in the order shown in the figure.



am3uuw0000512

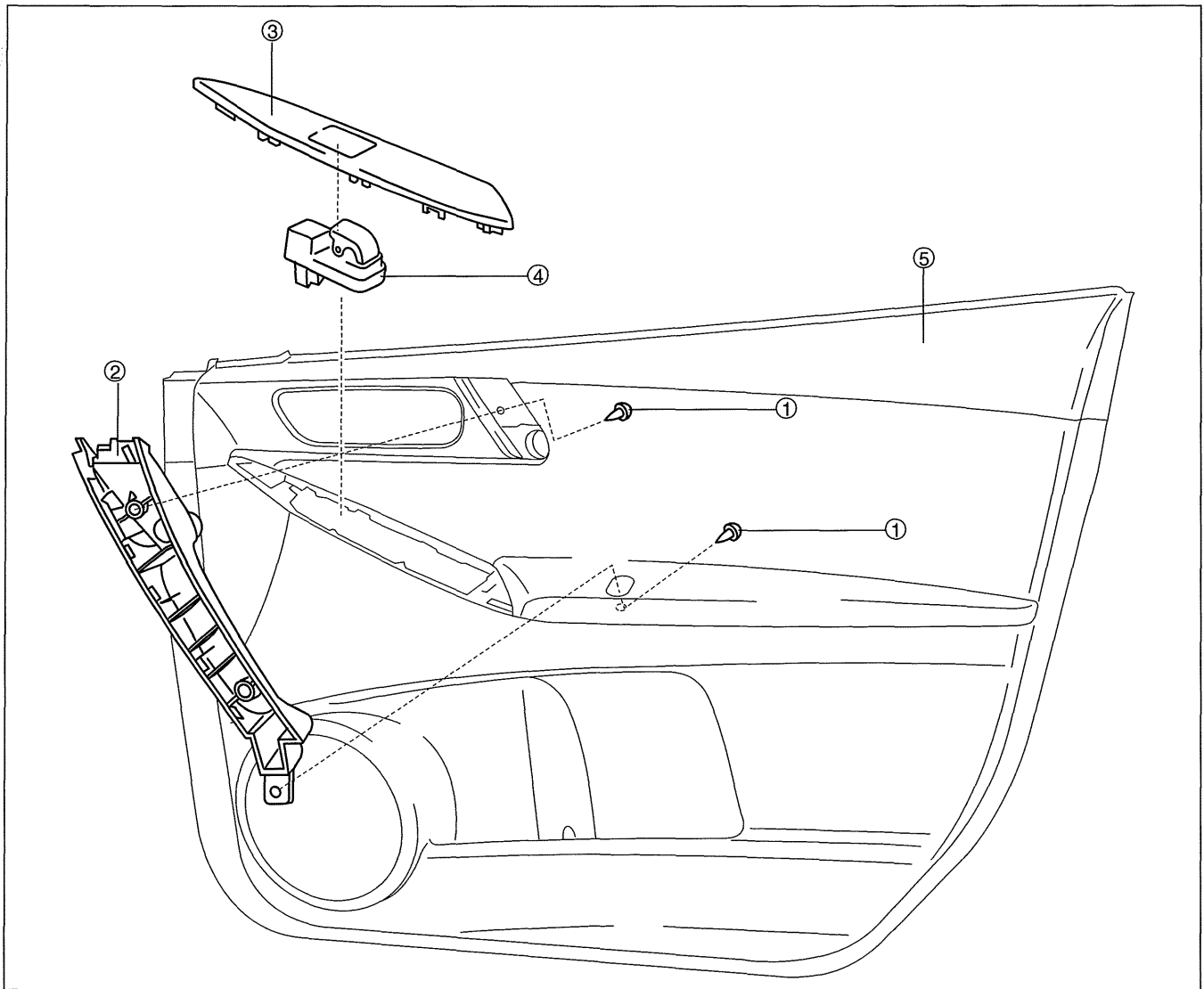
1	Screw A
2	Assist handle
3	Switch panel cover

4	Screw B
5	Power window main switch
6	Front door trim

INTERIOR TRIM

Passenger-side

1. Disassemble in the order shown in the figure.



am3uuw0000512

1	Screw
2	Assist handle
3	Switch panel cover

4	Power window subswitch
5	Front door trim

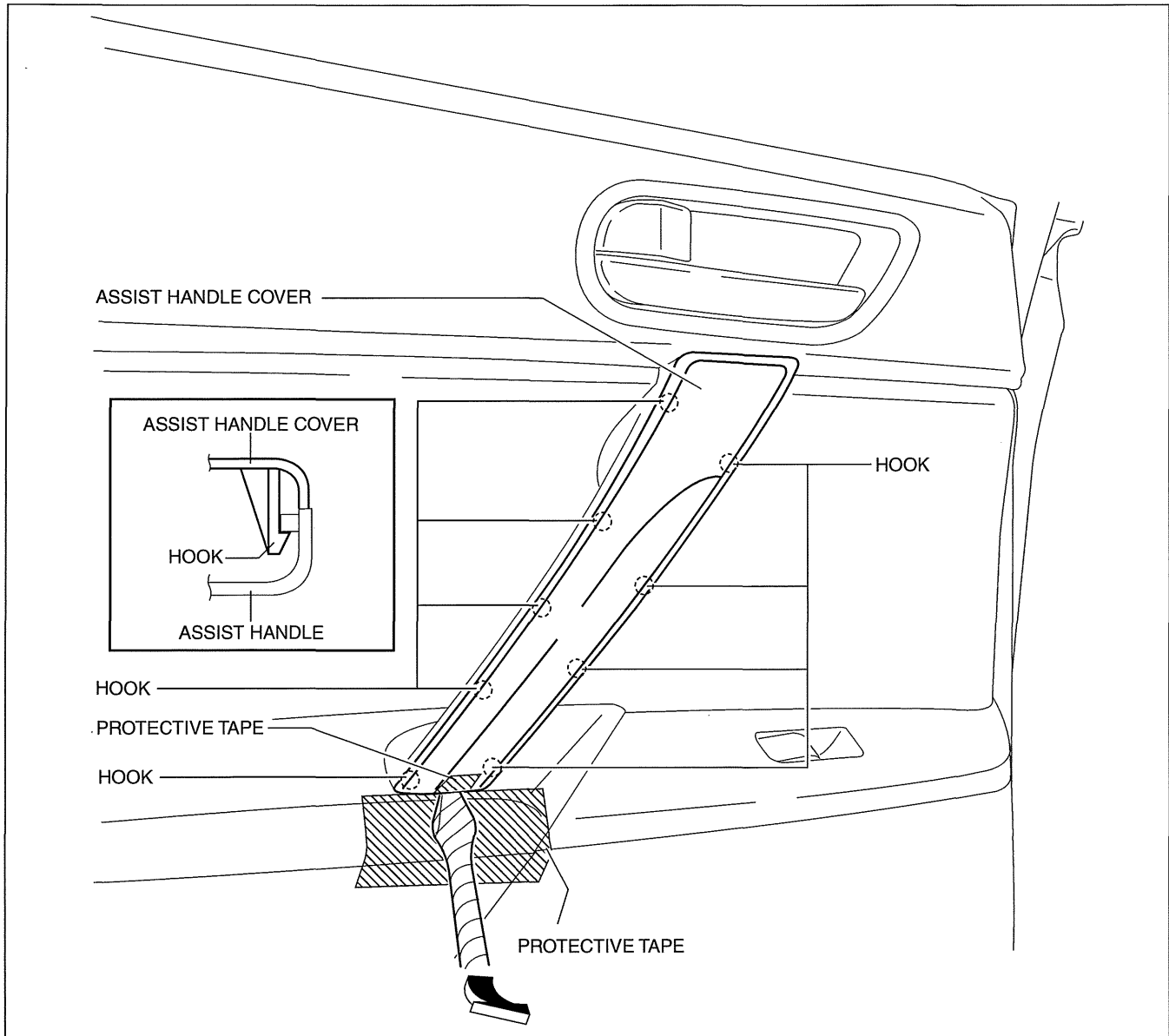
09-17

INTERIOR TRIM

REAR DOOR TRIM REMOVAL/INSTALLATION

id091700802600

1. Disconnect the negative battery cable.
2. Move the hook in the direction of arrow shown in the figure using a tape-lapped flathead screwdriver and detach it from the rear door trim.



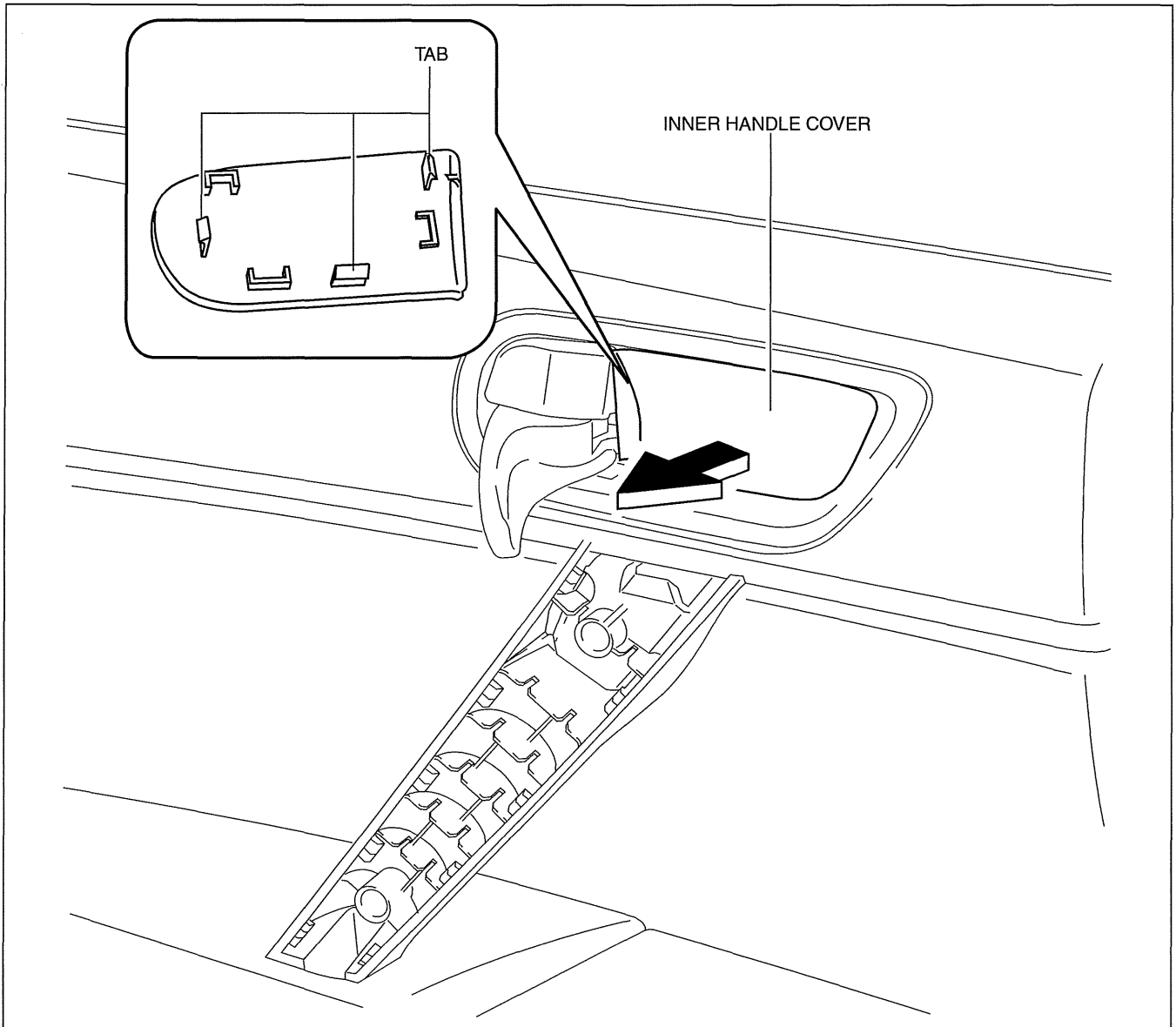
am3uuw0000481

Caution

- Affix protective tape to the rear door trim and assist handle cover to prevent damage.

INTERIOR TRIM

3. Pull the cover of inner handle and remove it while detaching tabs.

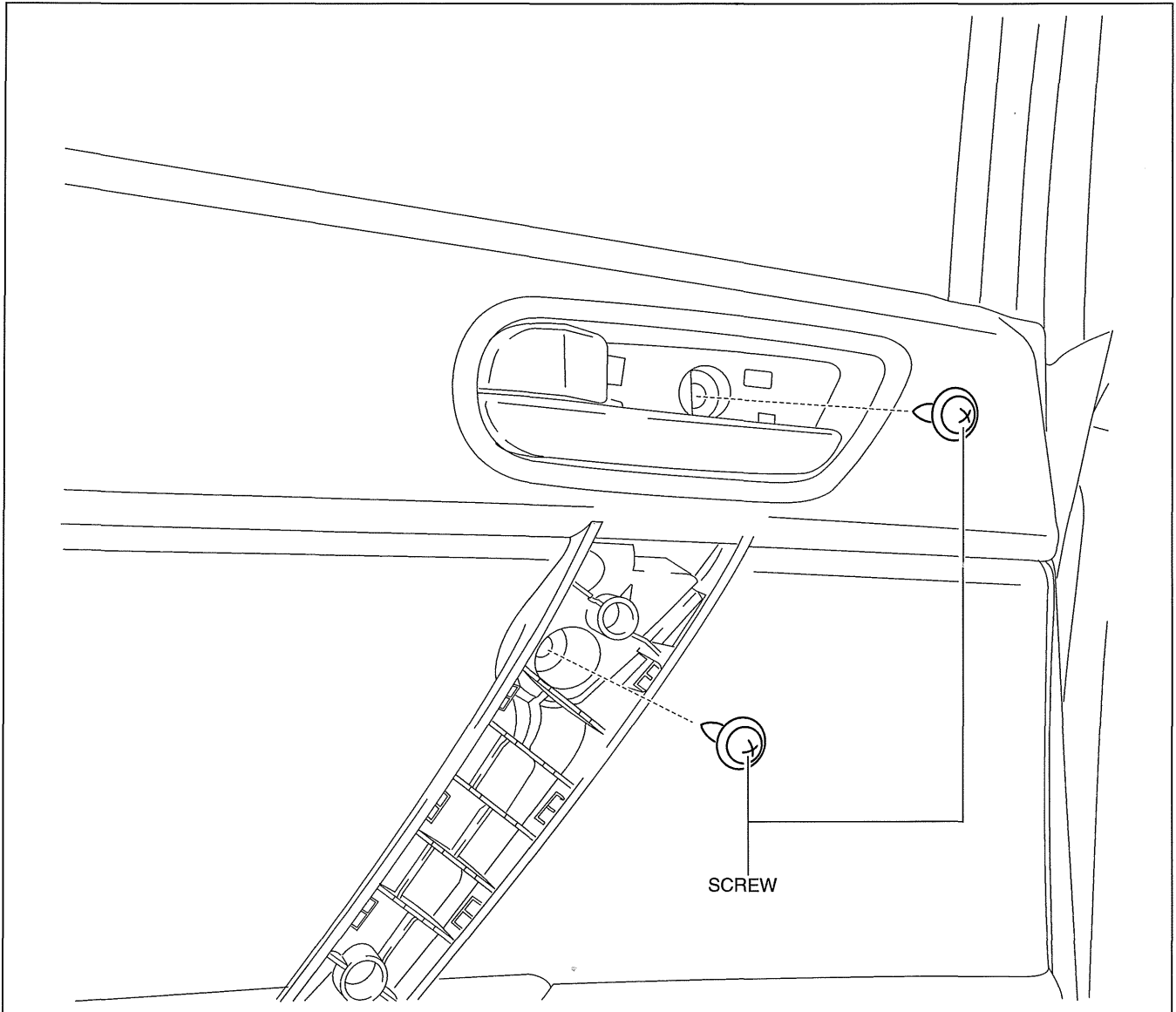


09-17

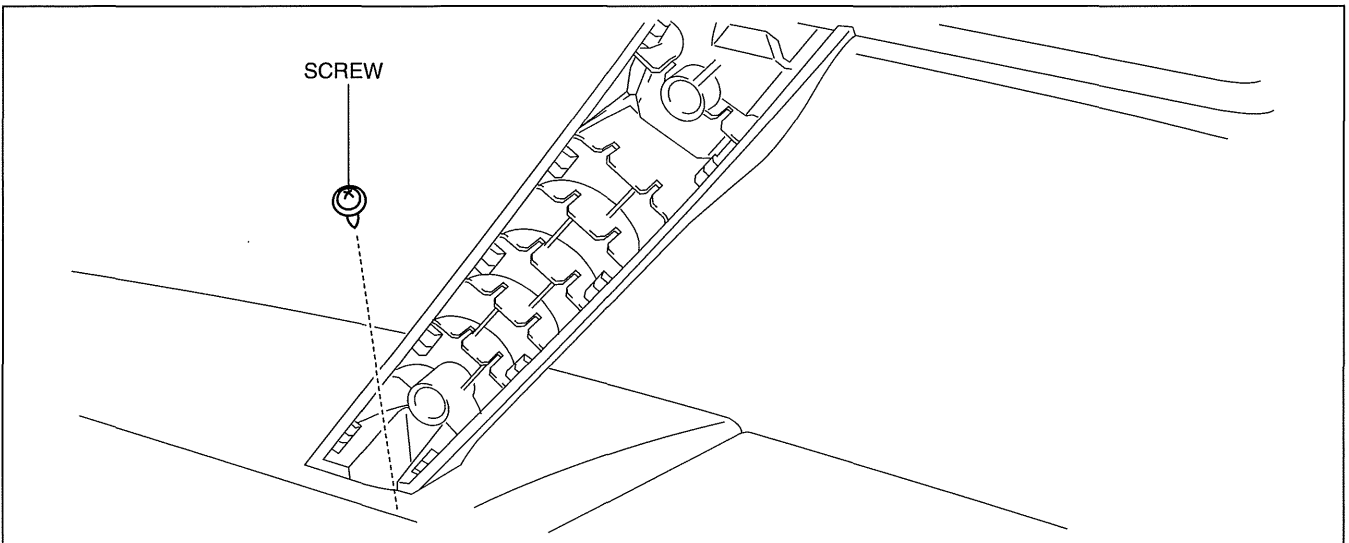
am3uuw0000481

INTERIOR TRIM

4. Remove the screws.



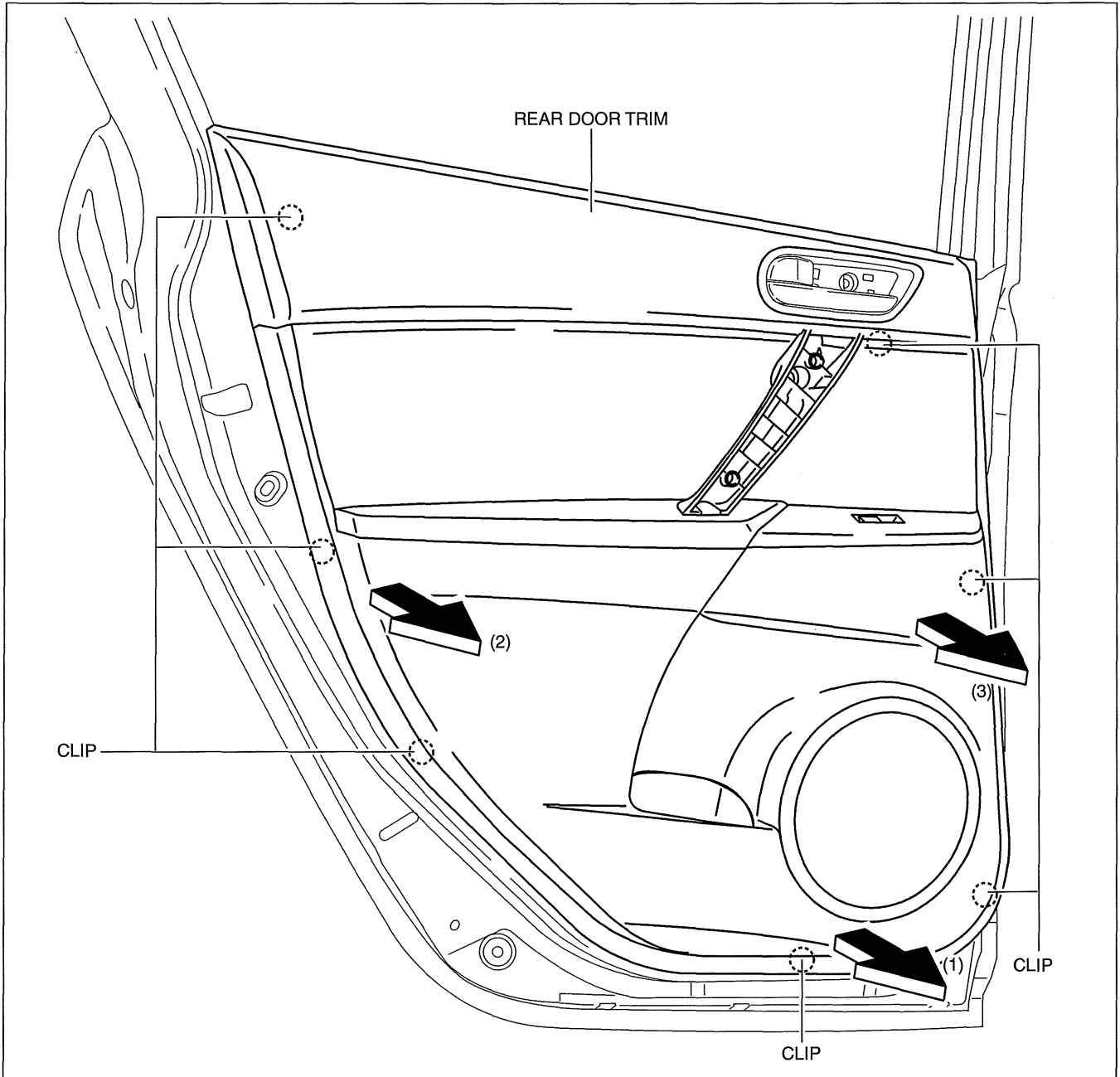
am3uuw0000481



am3uuw0000512

INTERIOR TRIM

5. Pull in the direction of the arrow (1), (2), (3) shown in the figure and remove clips from the door inner panel using a fastener remover.

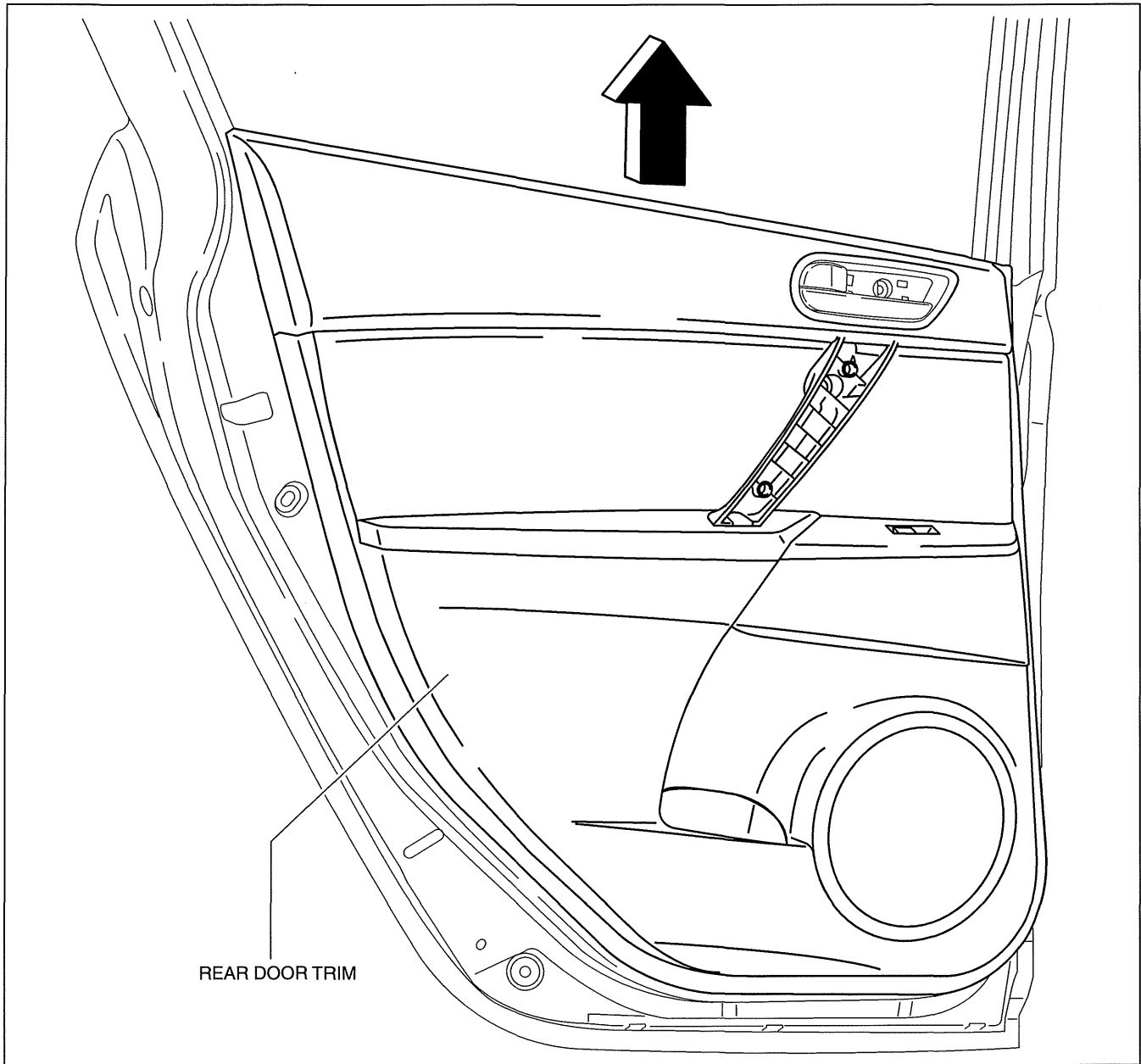


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09-17

INTERIOR TRIM

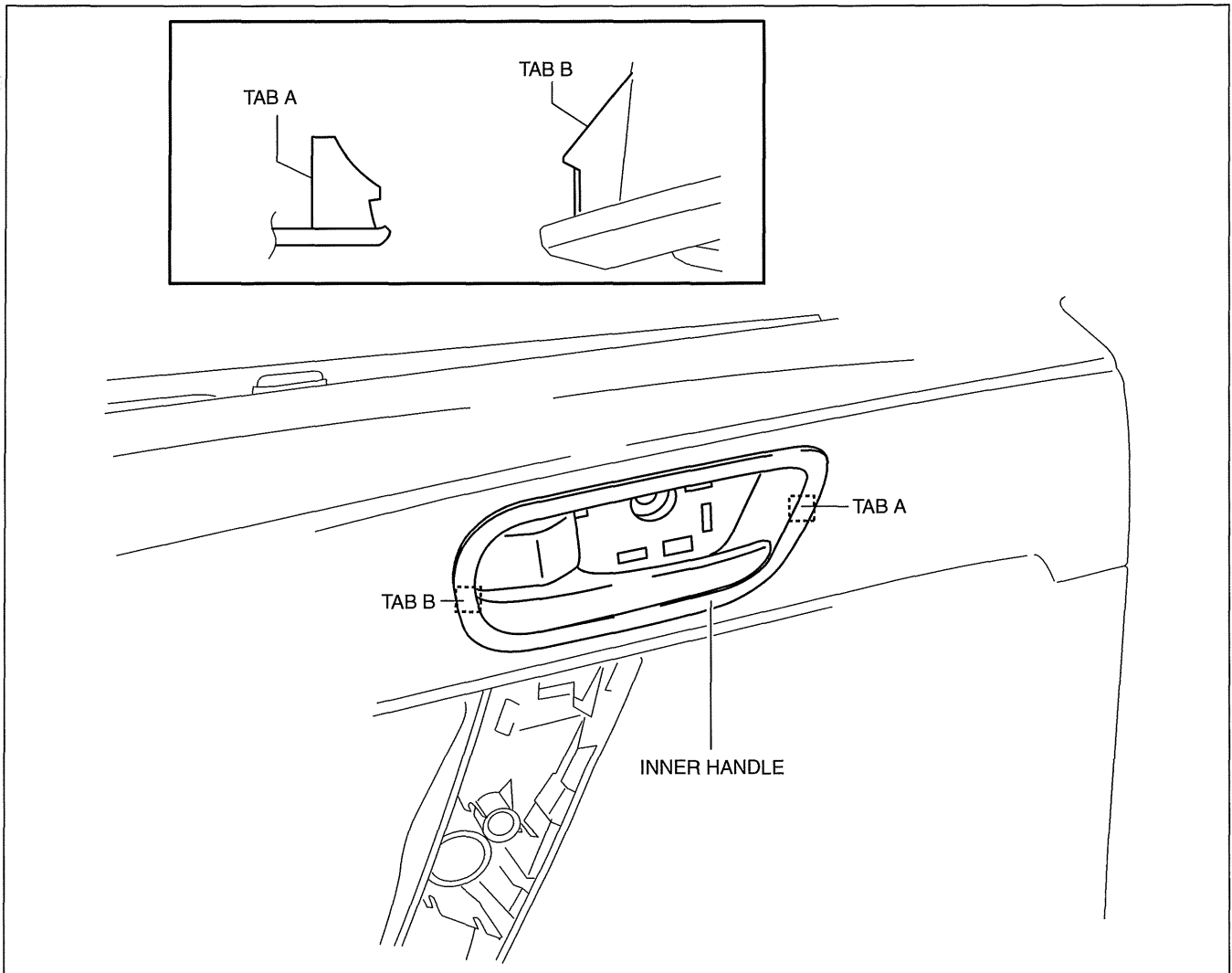
6. Remove the rear door trim in the direction of the arrow shown in the figure.



am3uuw0000527

INTERIOR TRIM

7. Remove the inner handle and move the rear door trim in the direction of the arrow shown in the figure.

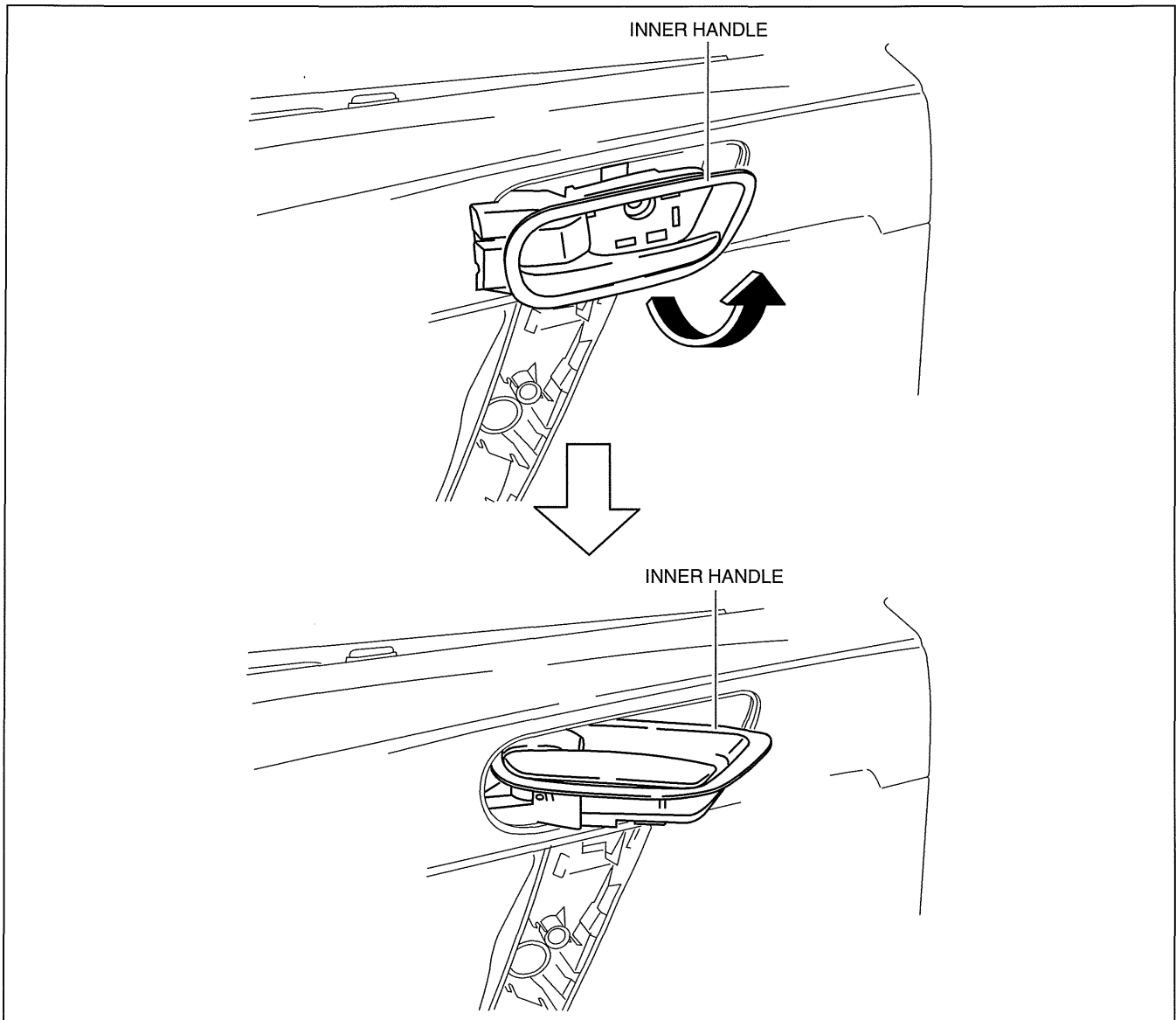


am3uuw0000527

09-17

INTERIOR TRIM

8. Turn the inner handle 90° in the direction of the arrow and remove it from the rear door trim.



am3uuw000482

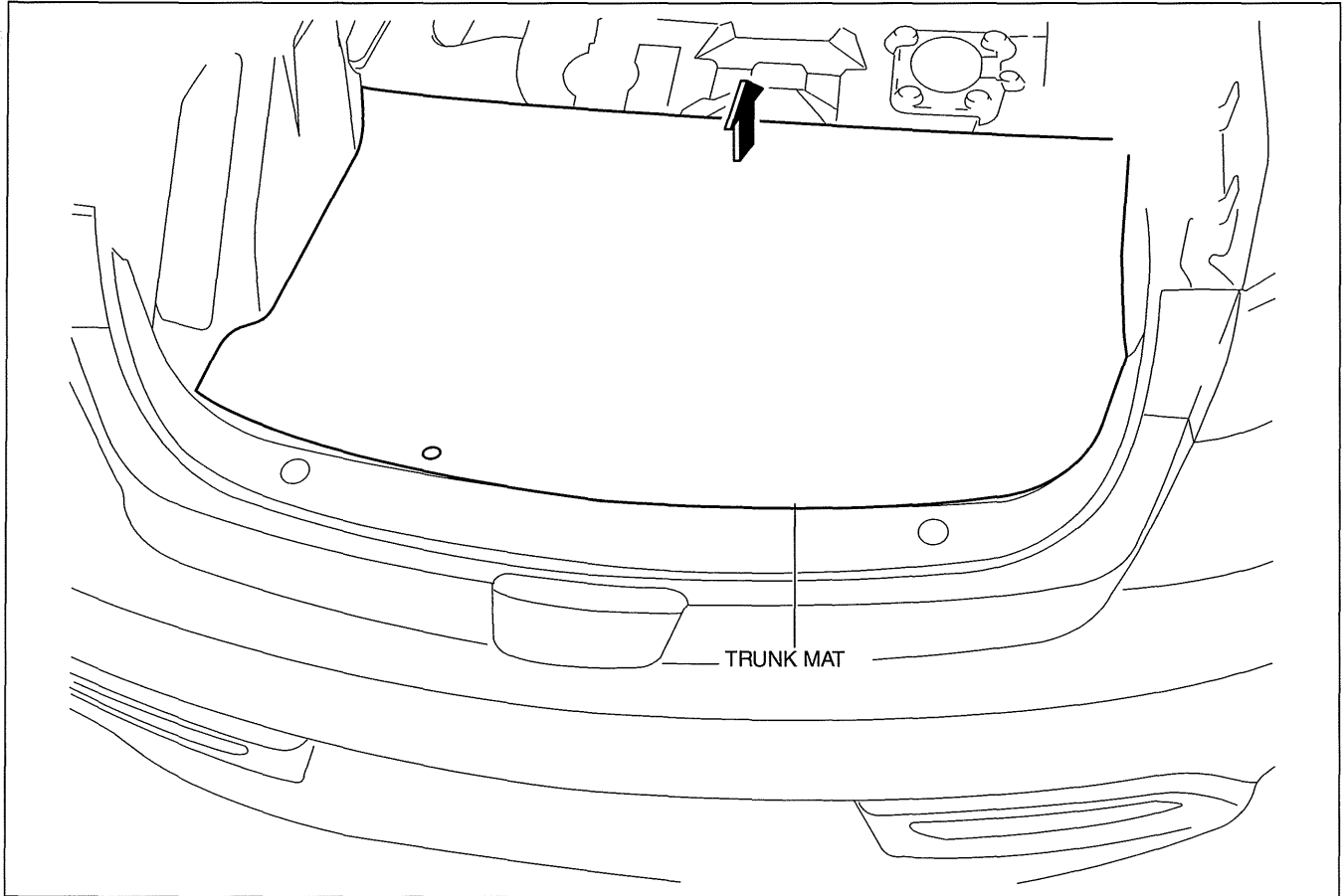
9. Disconnect the power window subswitch connector.
10. Install in the reverse order of removal.

INTERIOR TRIM

TRUNK BOARD REMOVAL/INSTALLATION

id091700810000

1. Remove the trunk mat in the direction of arrow shown in the figure.

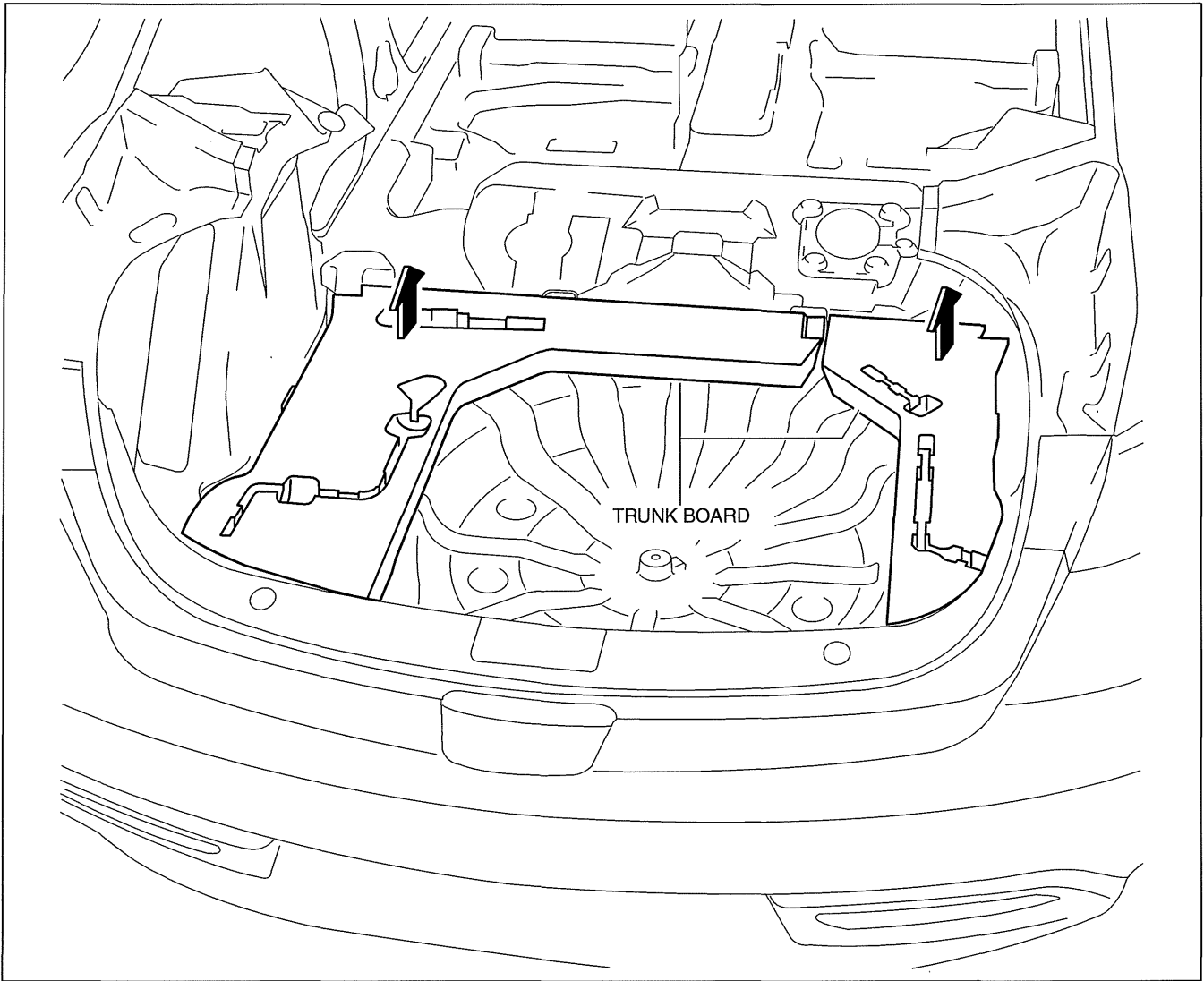


am3uuw0000487

09-17

INTERIOR TRIM

2. Remove the trunk board in the direction of arrow shown in the figure.



am3uuw0000487

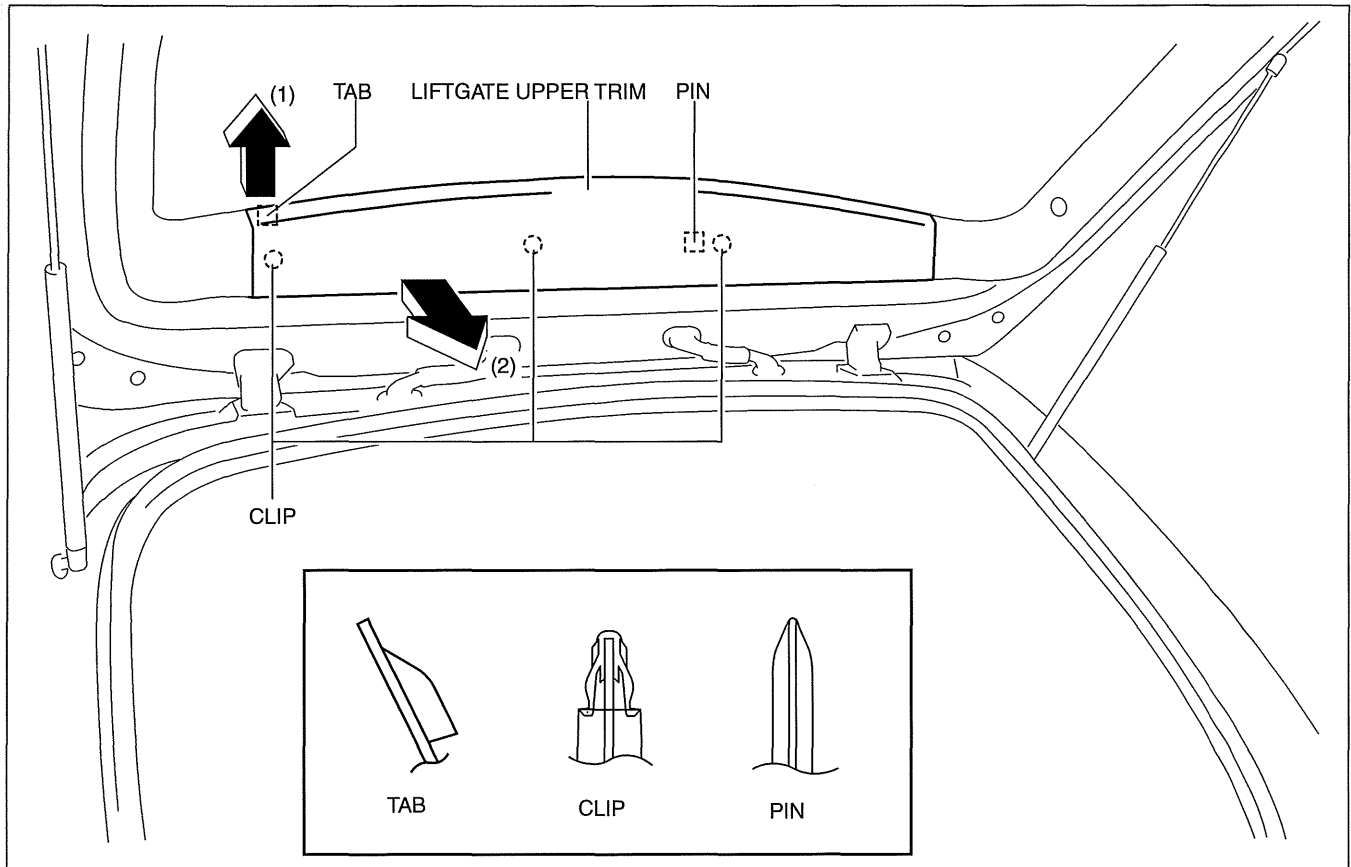
3. Install in the reverse order of removal.

INTERIOR TRIM

LIFTGATE UPPER TRIM REMOVAL/INSTALLATION

id091700803600

1. Detach tab while pulling the liftgate upper trim in the direction of the arrow (1) shown in the figure, then detach clips and pin while pulling in the direction of the arrow (2).

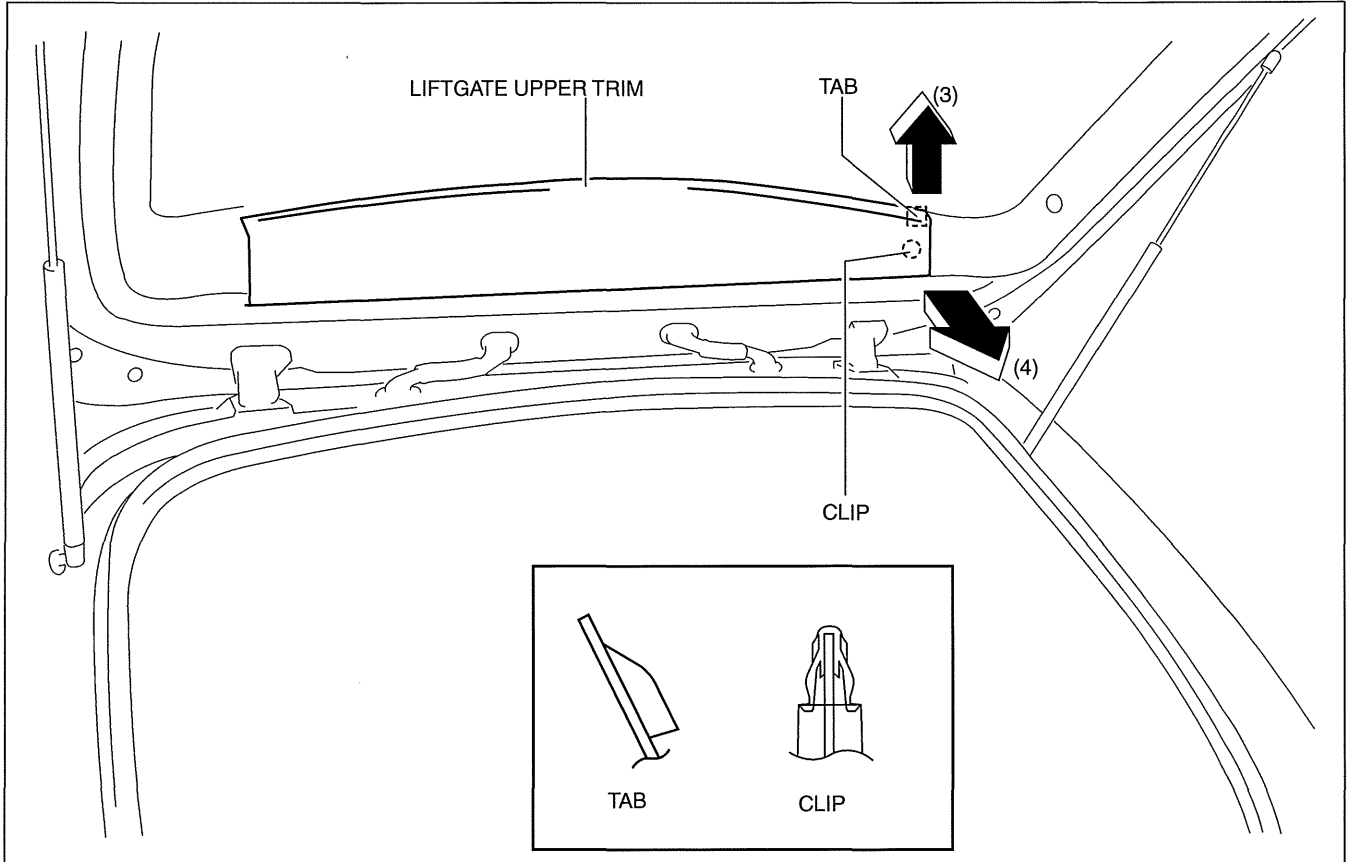


09-17

am3uuw0000487

INTERIOR TRIM

2. Detach tab while pulling the liftgate upper trim in the direction of the arrow (3) shown in the figure, then detach clip while pulling in the direction of the arrow (4).



am3uuw0000487

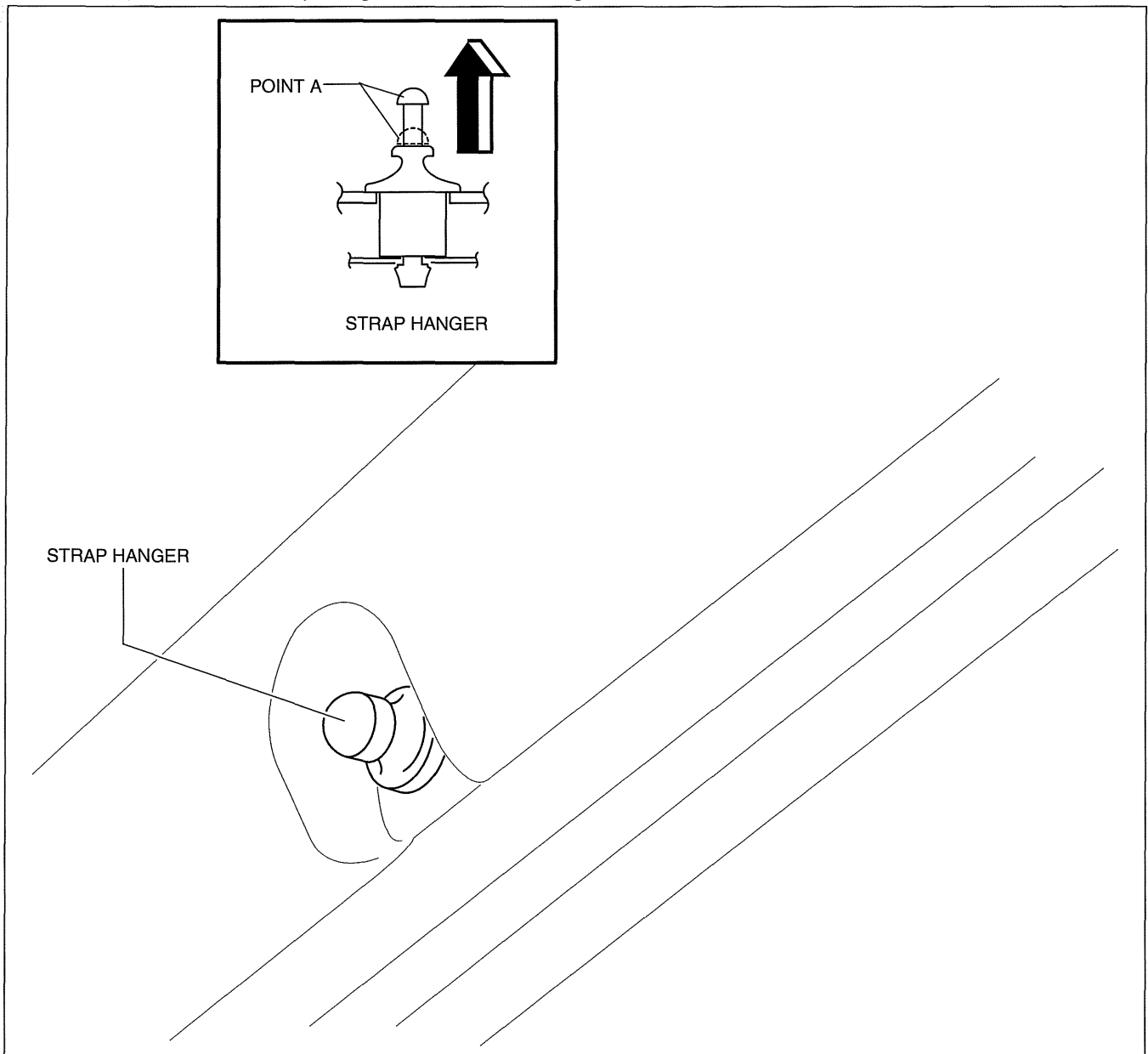
3. Remove the liftgate upper trim.
4. Install in the reverse order of removal.

INTERIOR TRIM

LIFTGATE SIDE TRIM REMOVAL/INSTALLATION

id091700803700

1. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
2. Pull the point A of the strap hanger as shown in the figure.

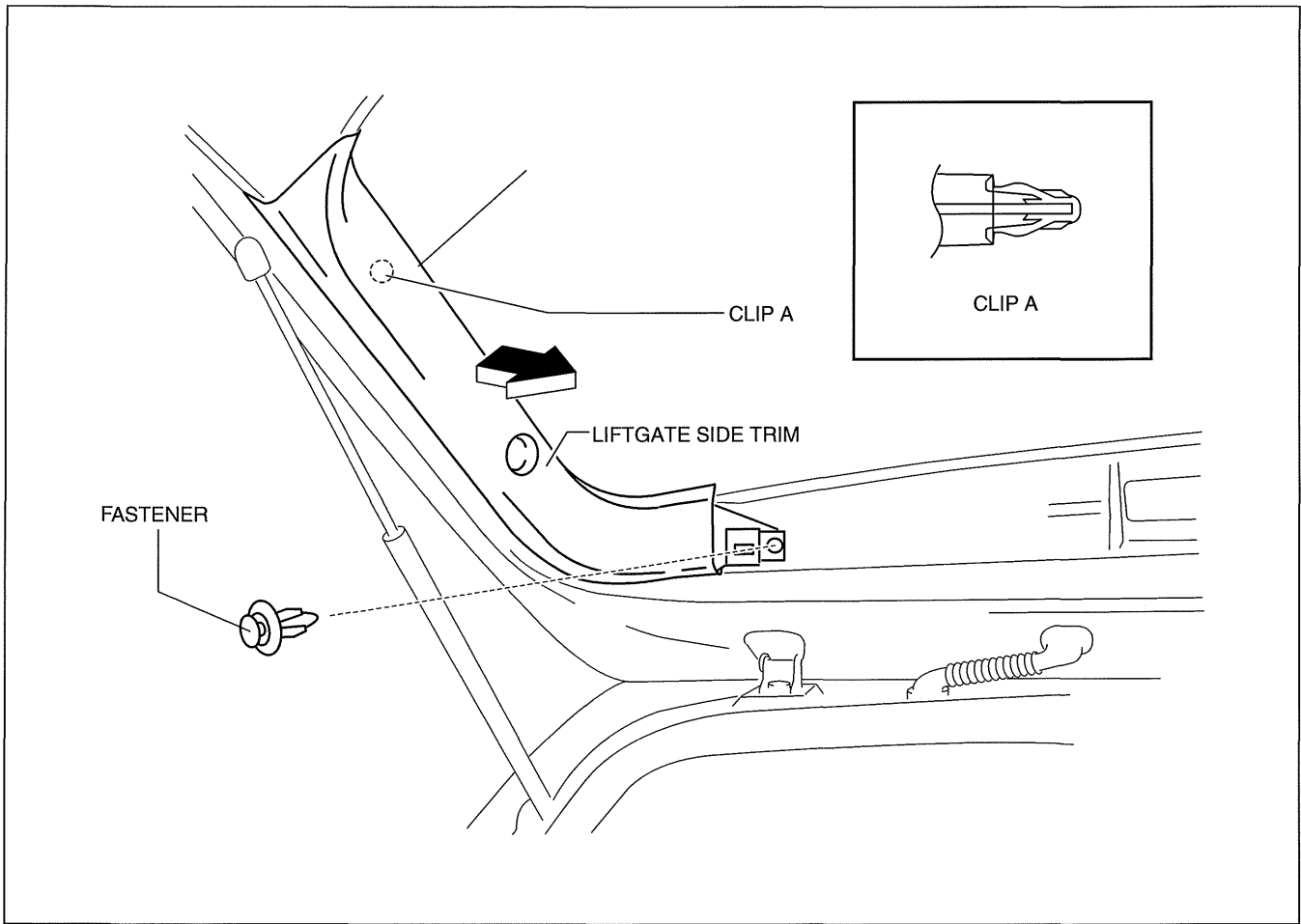


09-17

am3uuw0000488

INTERIOR TRIM

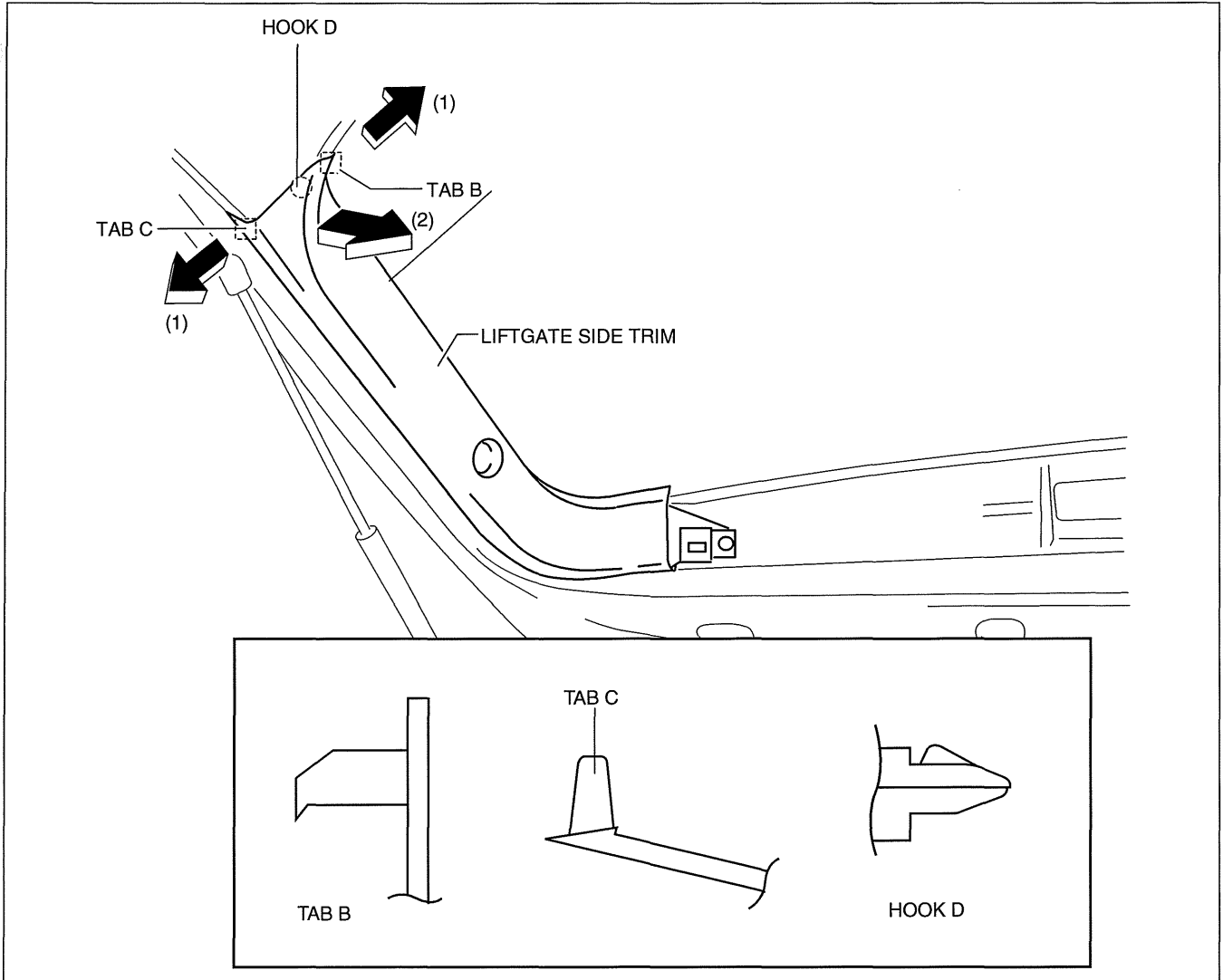
3. Remove the strap hanger.
4. Remove the fastener.
5. Pull the liftgate side trim in the direction of arrow then remove clip A.



am3uuw0000488

INTERIOR TRIM

6. Detach tab B and C while pulling the liftgate side trim in the direction of the arrow (1) shown in the figure, then detach hook D while pulling in the direction of the arrow (2).



7. Install in the reverse order of removal.

am3uuw0000488

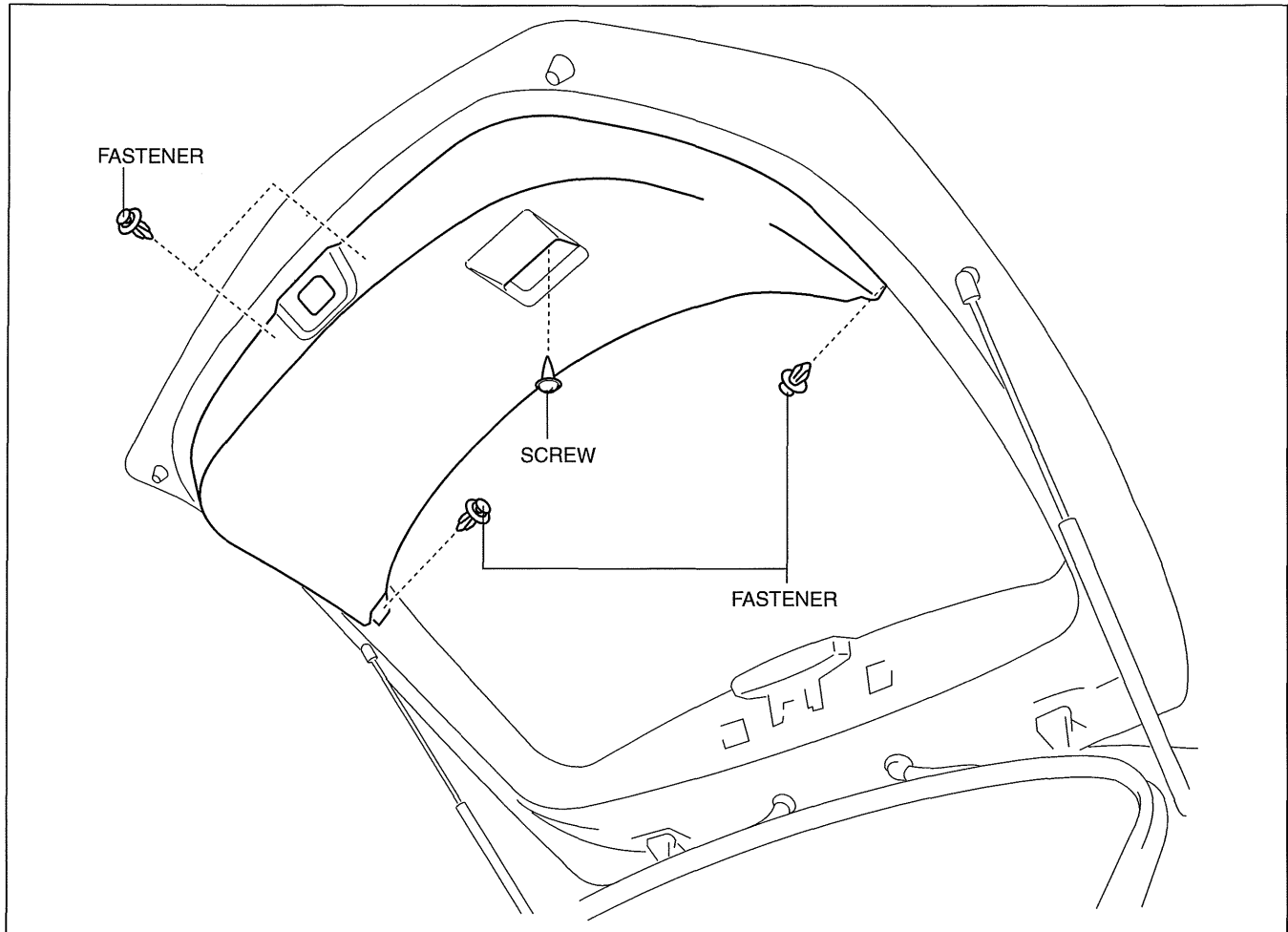
09-17

INTERIOR TRIM

LIFTGATE LOWER TRIM REMOVAL/INSTALLATION

id091700803800

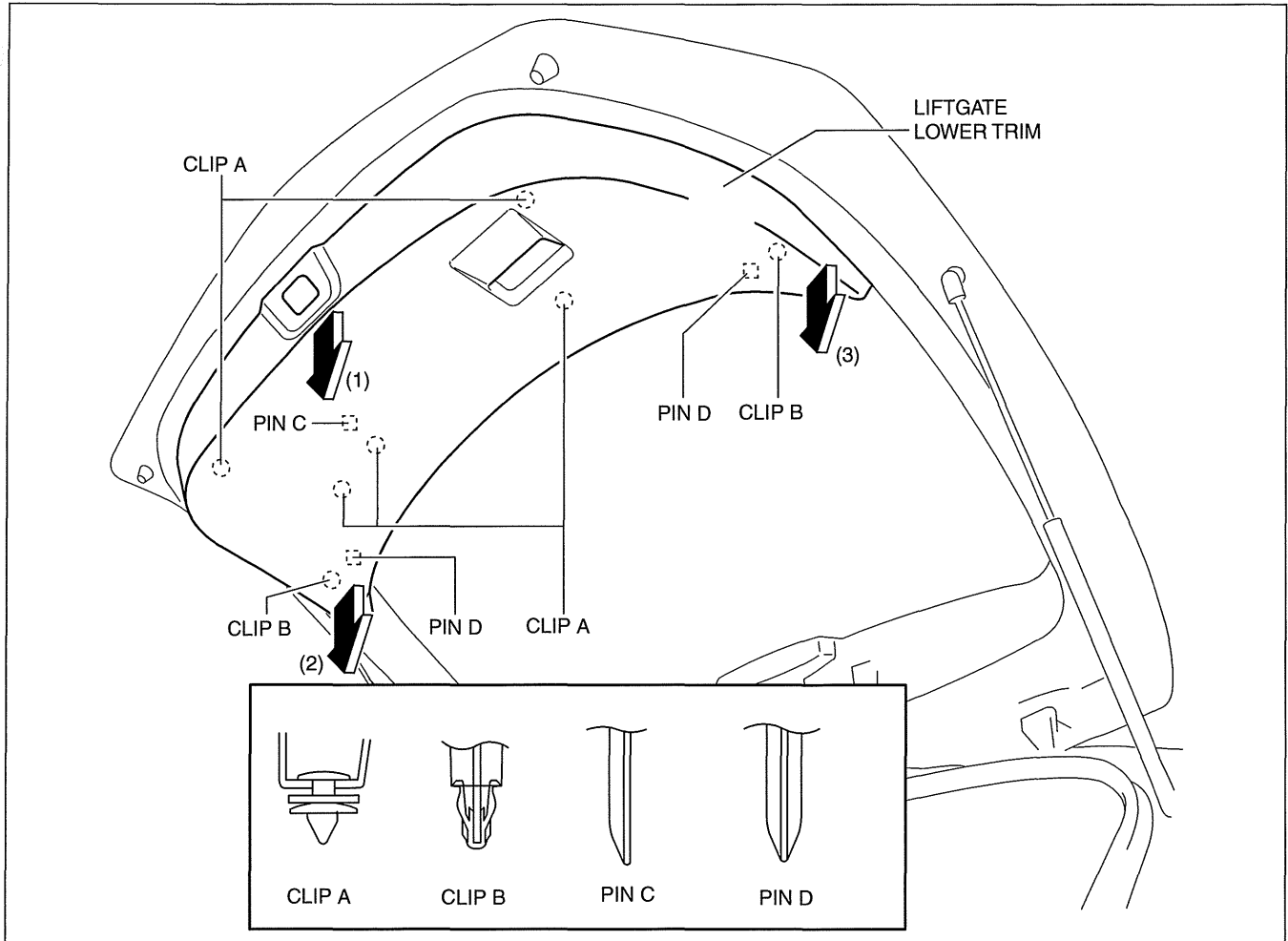
1. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
2. Remove the liftgate side trim. (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
3. Remove the screw and fasteners.



am3uuw0000488

INTERIOR TRIM

4. Pull the liftgate lower trim in the direction of arrow (1), (2), (3), then detach clips A, B, pin C and D from the liftgate.



am3uuw0000527

5. Remove the liftgate lower trim.
6. Install in the reverse order of removal.

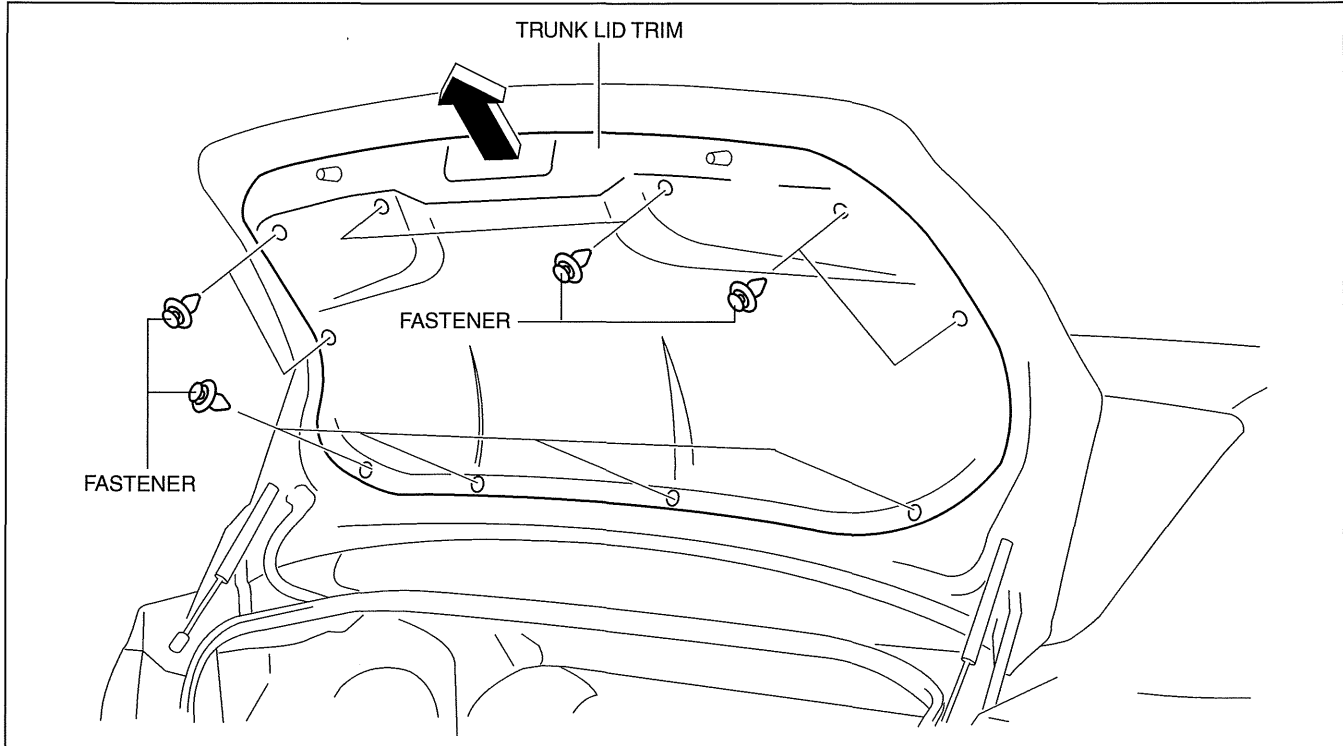
09-17

INTERIOR TRIM

TRUNK LID TRIM REMOVAL/INSTALLATION

id091700803500

1. Remove the fasteners, then remove the trunk lid trim.



am3uuw0000489

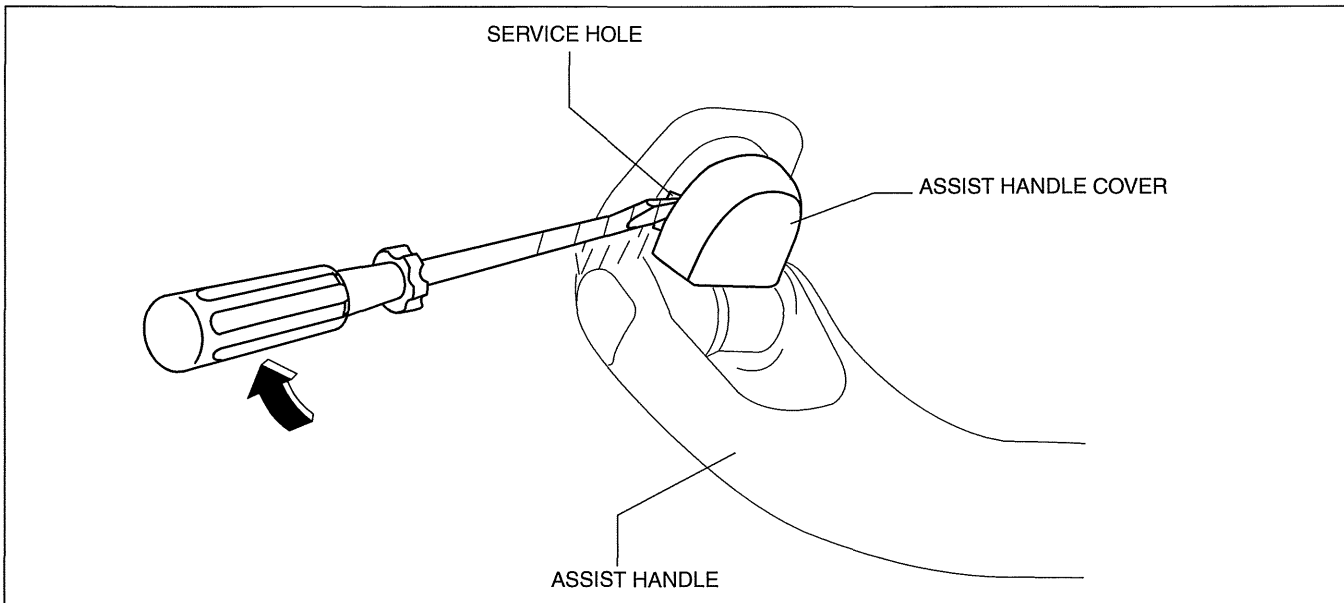
2. Install in the reverse order of removal.

ASSIST HANDLE REMOVAL/INSTALLATION

id091700801800

Assist Handle Removal

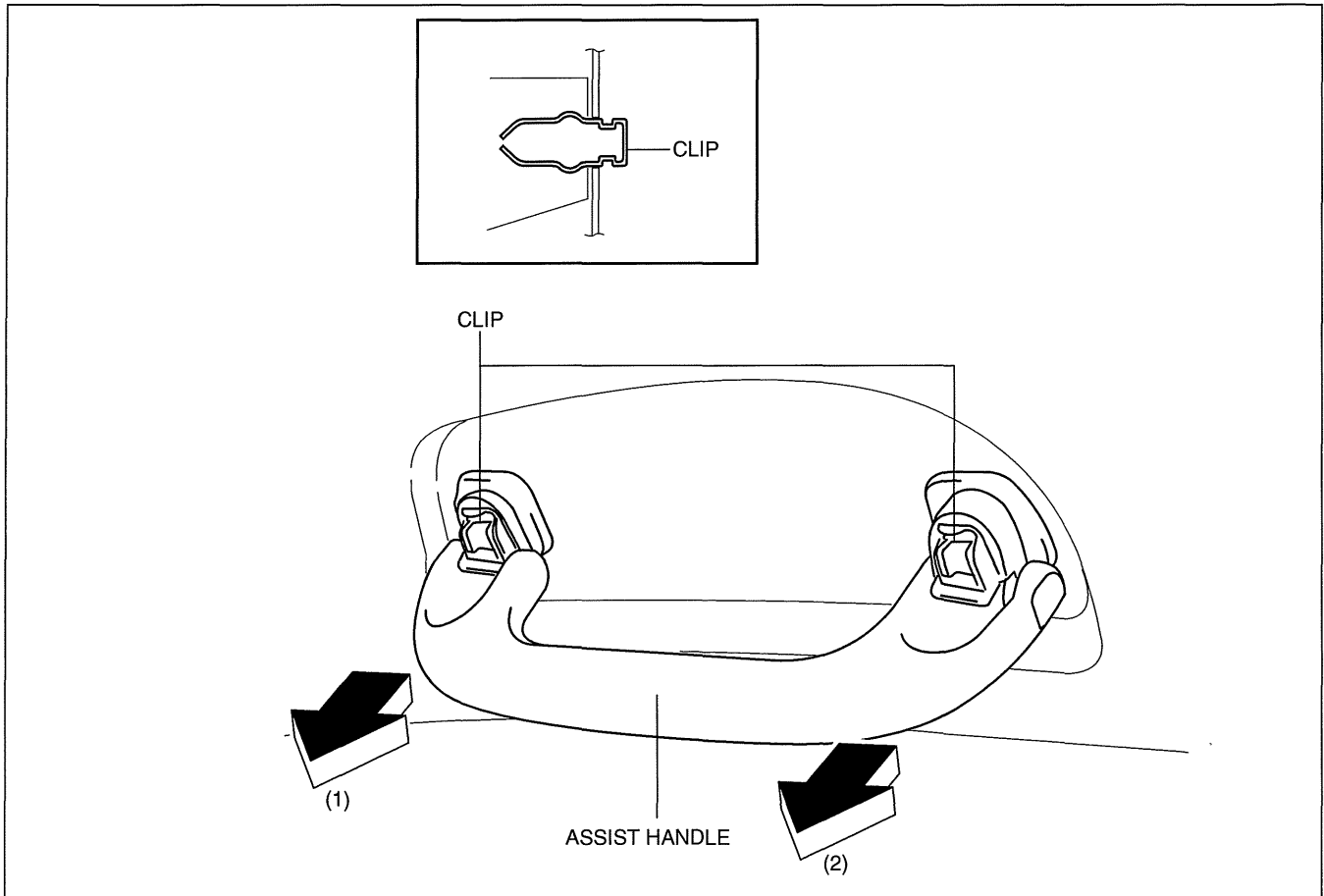
1. Insert a flathead screwdriver into the service hole and remove the assist handle covers.



am3uuw0000524

INTERIOR TRIM

2. Remove the assist handle in the direction of the arrow (1) and (2), while detach the clip.



09-17

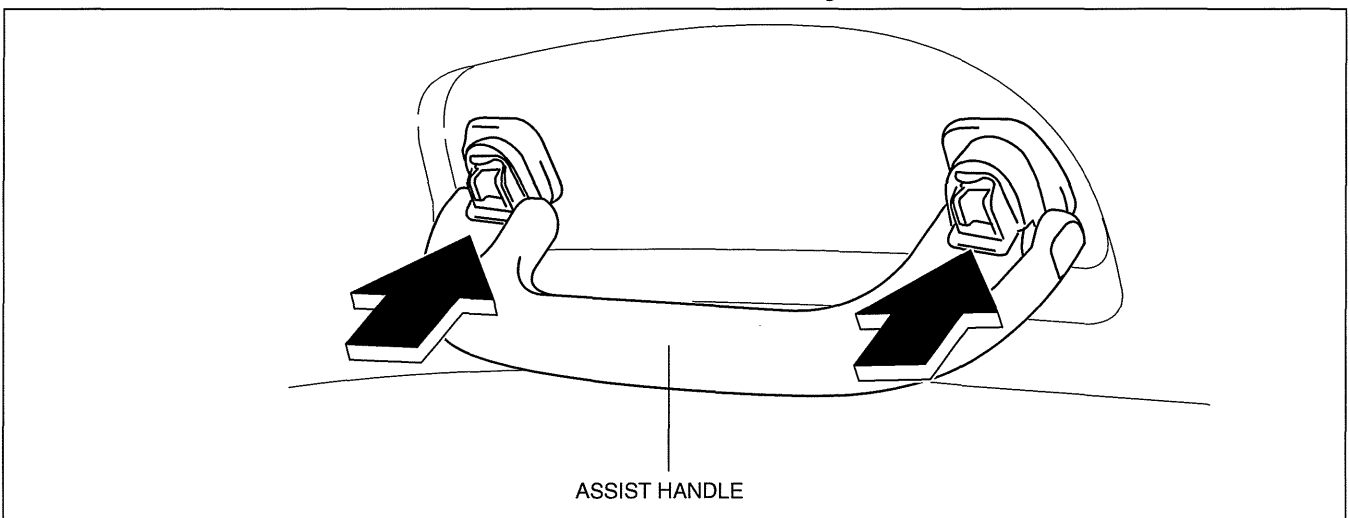
am3uuw0000524

Note

- Remove the assist handle by shaking it up and down.

Assist Handle Installation

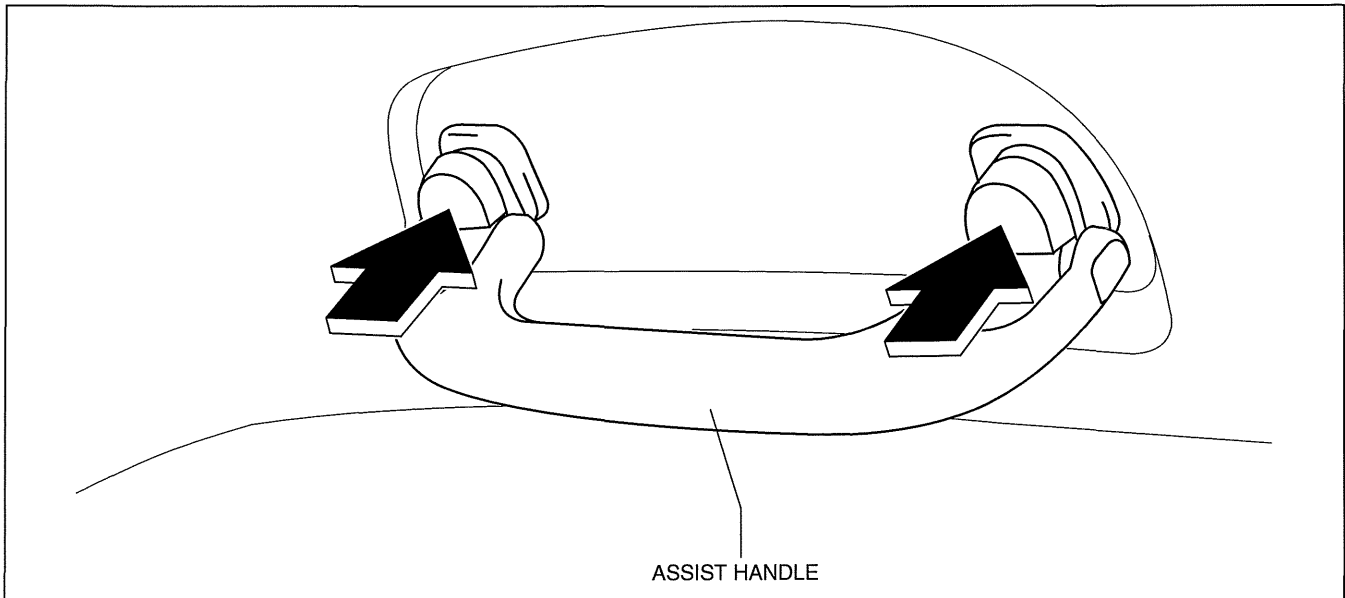
1. Push the assist handle in the direction of the arrow shown in the figure.



am3uuw0000528

INTERIOR TRIM

2. Push the assist handle cover assembled to install the assist handle.

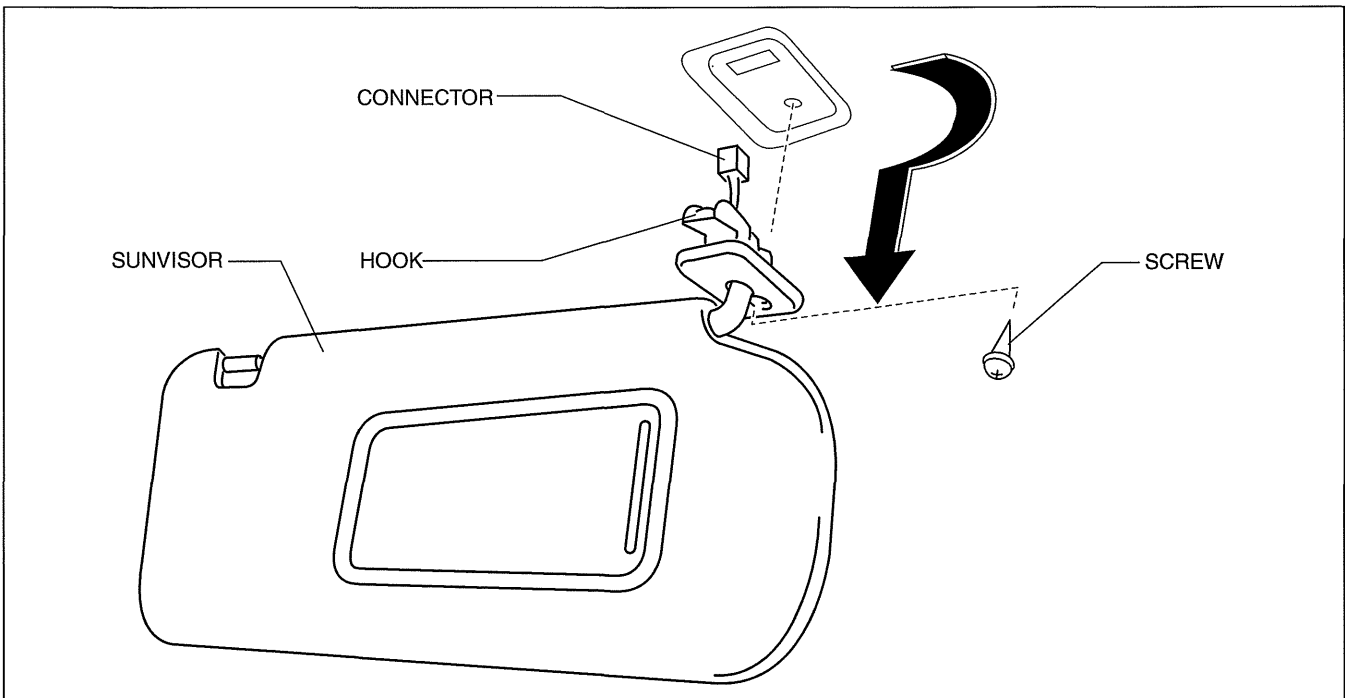


am3uuw0000524

SUNVISOR REMOVAL/INSTALLATION

id091700801700

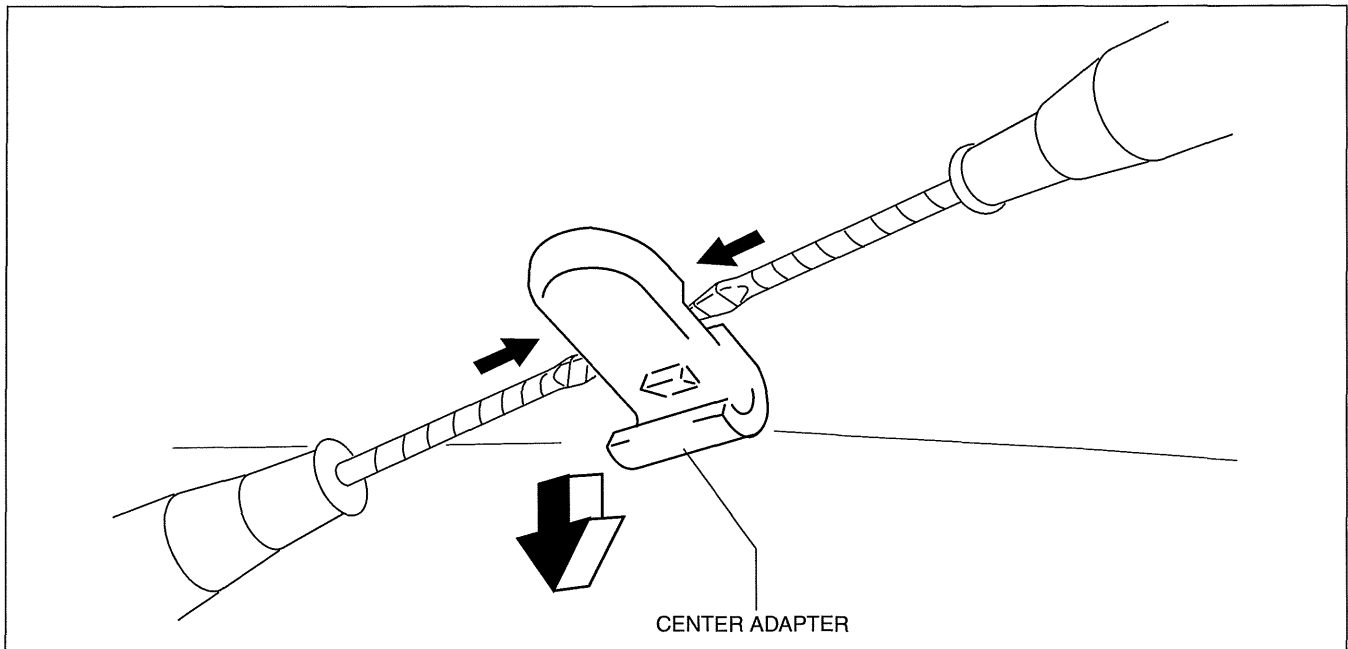
1. Disconnect the negative battery cable.
2. Remove the screw.
3. Rotate the sunvisor in the direction of the arrow.
4. Unhook and remove the sunvisor.



am3uuw0000524

INTERIOR TRIM

5. Disconnect the vanity mirror illumination connector. (Vehicles with vanity mirror illumination)
6. Press the center adaptor tabs as shown in the figure using two tape-wrapped flathead screwdrivers, and remove the center adaptor.



am3uuw0000524

7. Install in the reverse order of removal.

HEADLINER REMOVAL/INSTALLATION

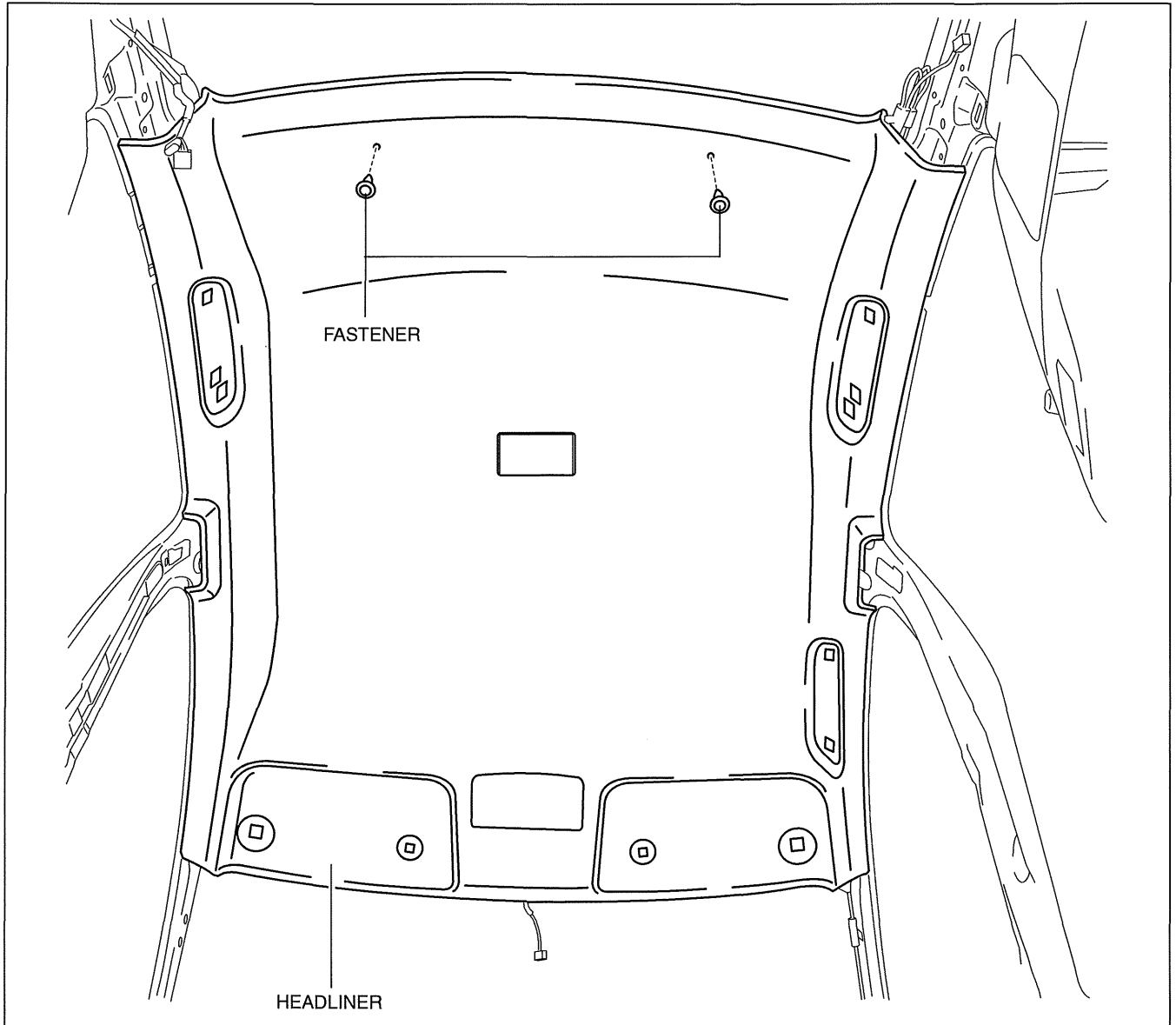
id091700801600

09-17

1. Shift to the D (ATX) or 4th gear (MTX) position. (4SD)
2. Disconnect the negative battery cable.
3. Remove the rain sensor cover. (Vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION)
4. Disconnect the rain sensor connector. (Vehicles with auto light/wiper system)
5. Partially peel back the seaming welts.
6. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
7. Disconnect the roof wiring harness connector and remove the roof wiring harness connector clip from the body.
8. Disconnect the rear washer hose. (5HB)
9. Remove the fasteners.

INTERIOR TRIM

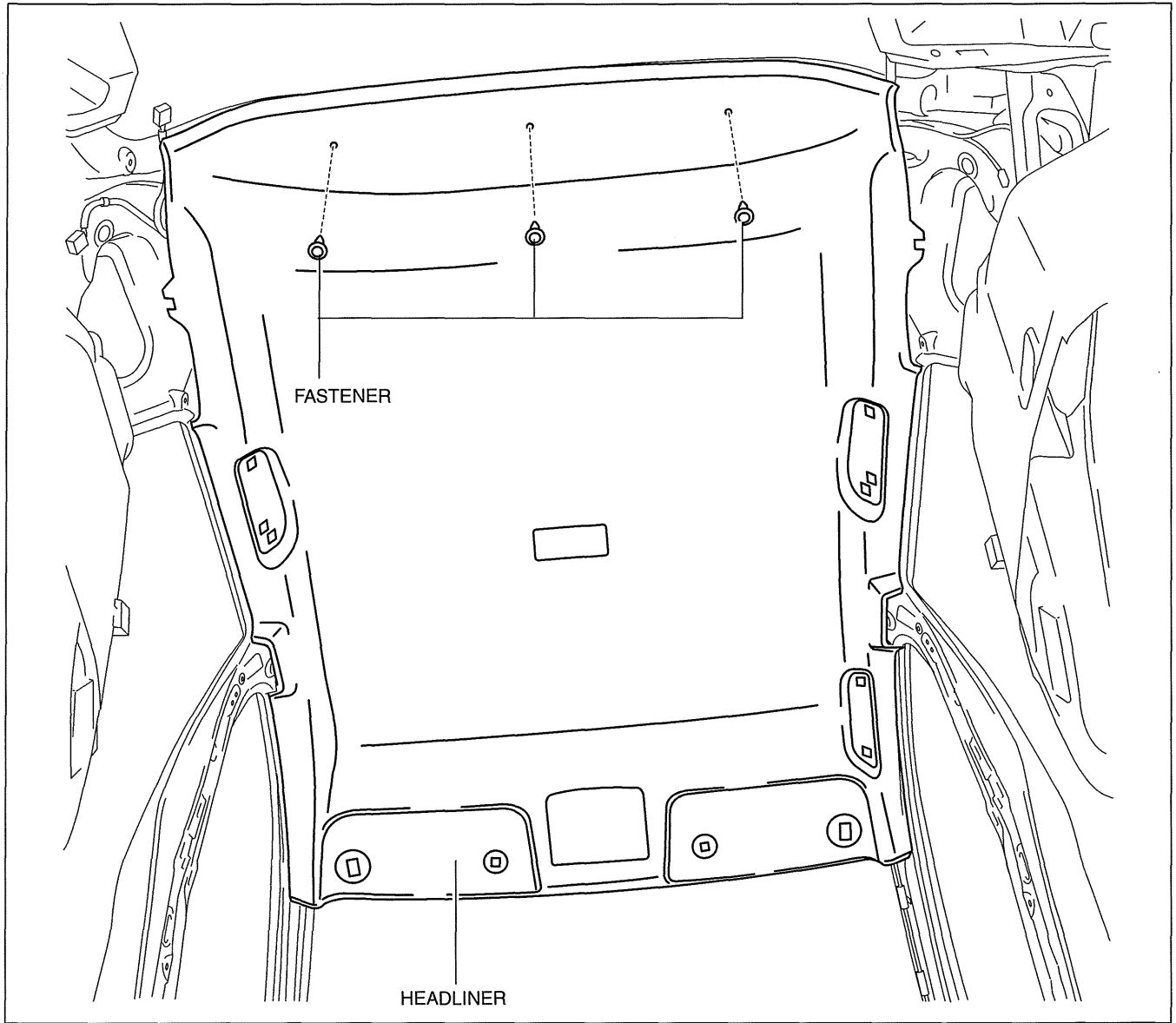
4SD



am3uuw0000528

INTERIOR TRIM

5HB

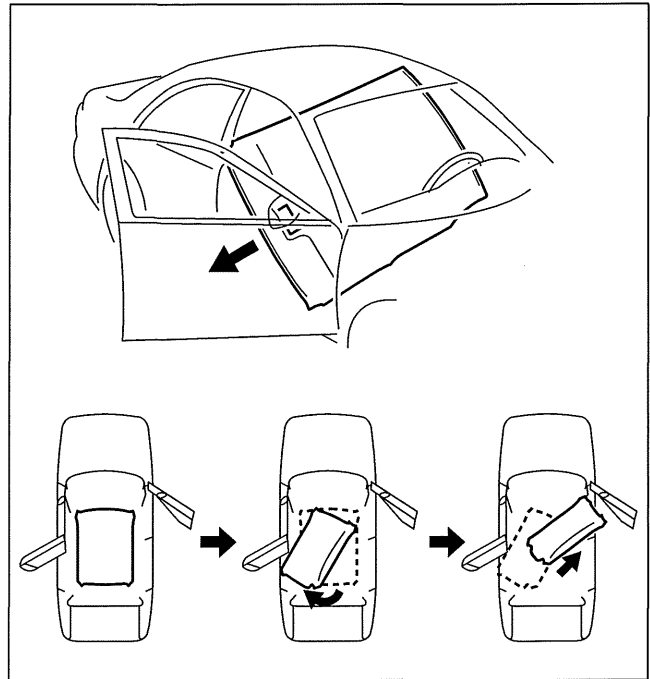


09-17

am3uuw0000528

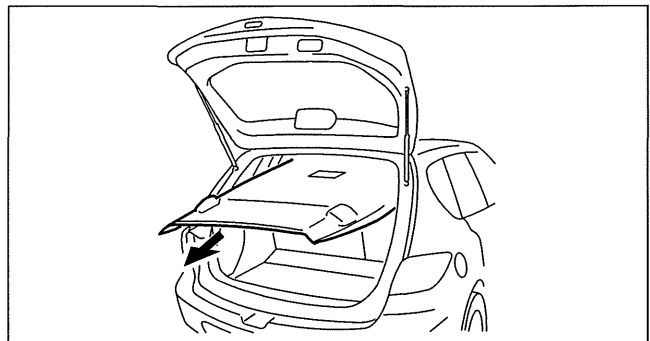
INTERIOR TRIM

10. Take the headliner out from the opened front passenger-side door. (4SD)



e3u917zw7101

11. Take the headliner out from the opened liftgate. (5HB)
12. Install in the reverse order of removal.



e3u917zw7102

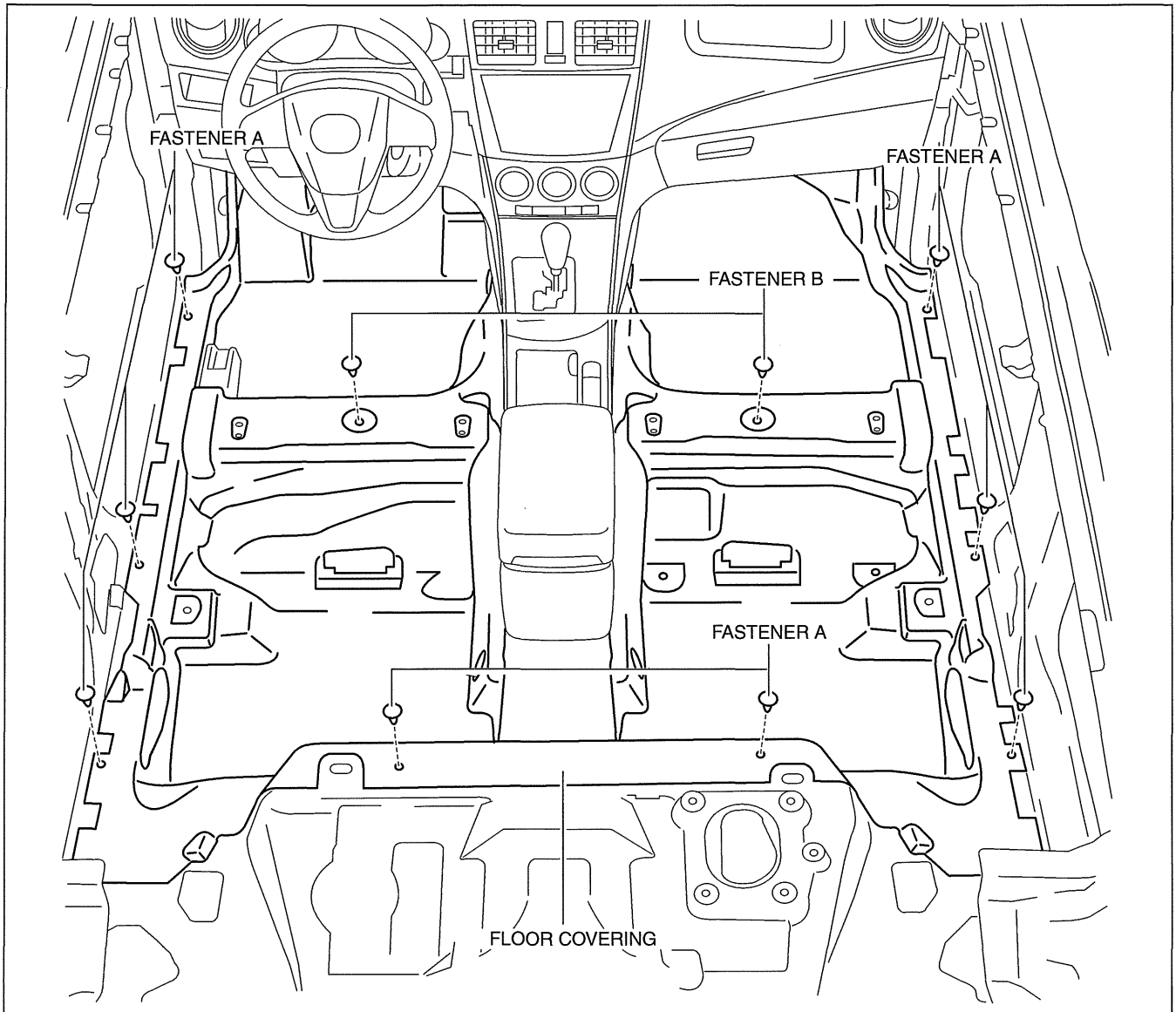
FLOOR COVERING REMOVAL/INSTALLATION

id091700803000

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front seat (See 09-13-3 FRONT SEAT REMOVAL/INSTALLATION.)
 - (2) Audio amplifier (Vehicles with Bose®) (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Joint cover (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (5) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (6) Fuel-filler lid opener lever bezel (See 09-17-70 FUEL-FILLER LID OPENER BEZEL REMOVAL/INSTALLATION.)
 - (7) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (8) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (9) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (10) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (11) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (12) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (13) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (14) Lower anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (15) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (16) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (17) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)

INTERIOR TRIM

3. Remove fasteners A and B.



09-17

am3uuw0000556

4. Take the floor covering out from the opened door.
5. Install in the reverse order of removal.

09-18 LIGHTING SYSTEMS

LIGHTING SYSTEMS LOCATION

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REMOVAL/INSTALLATION 09-18-37

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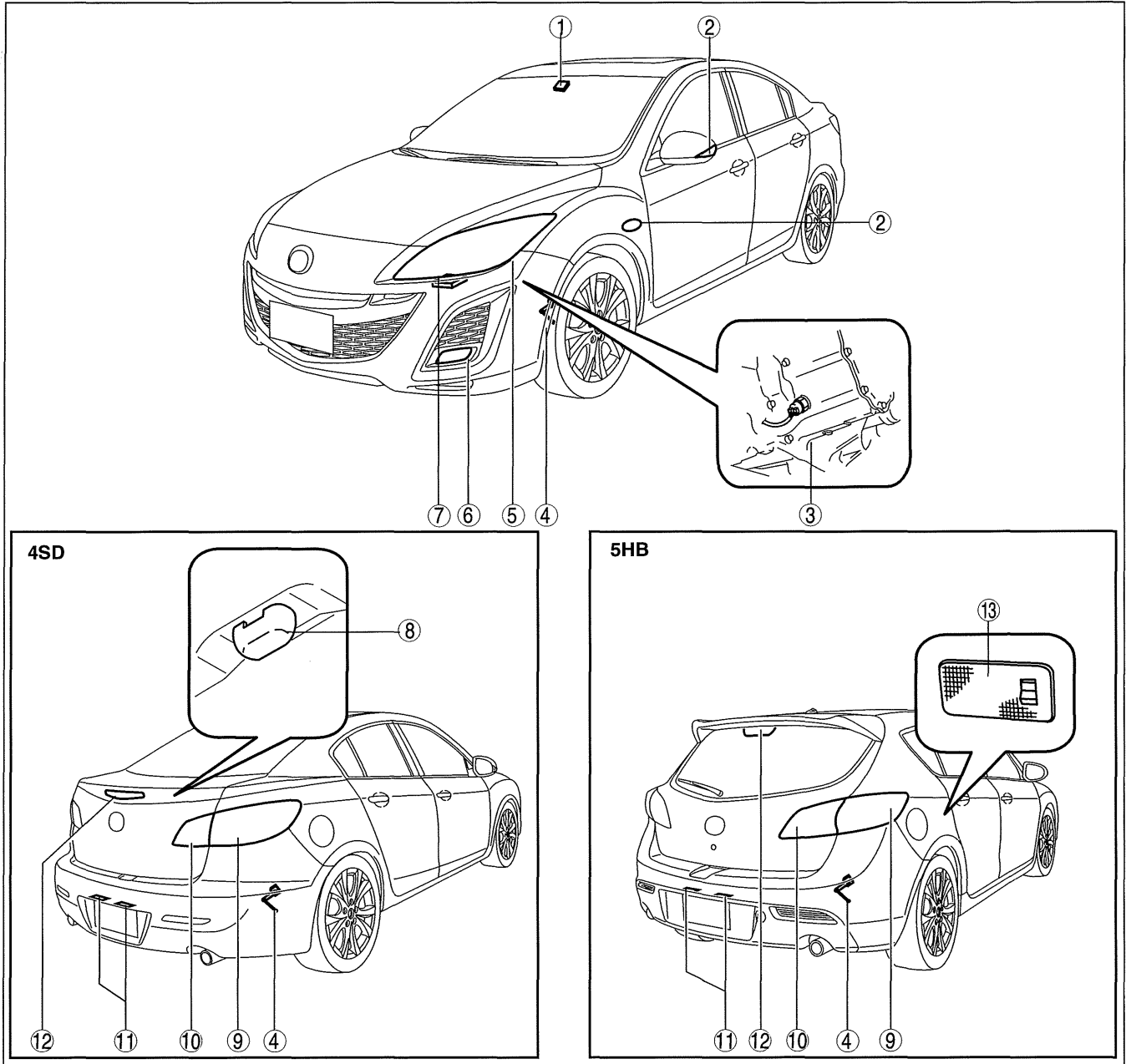
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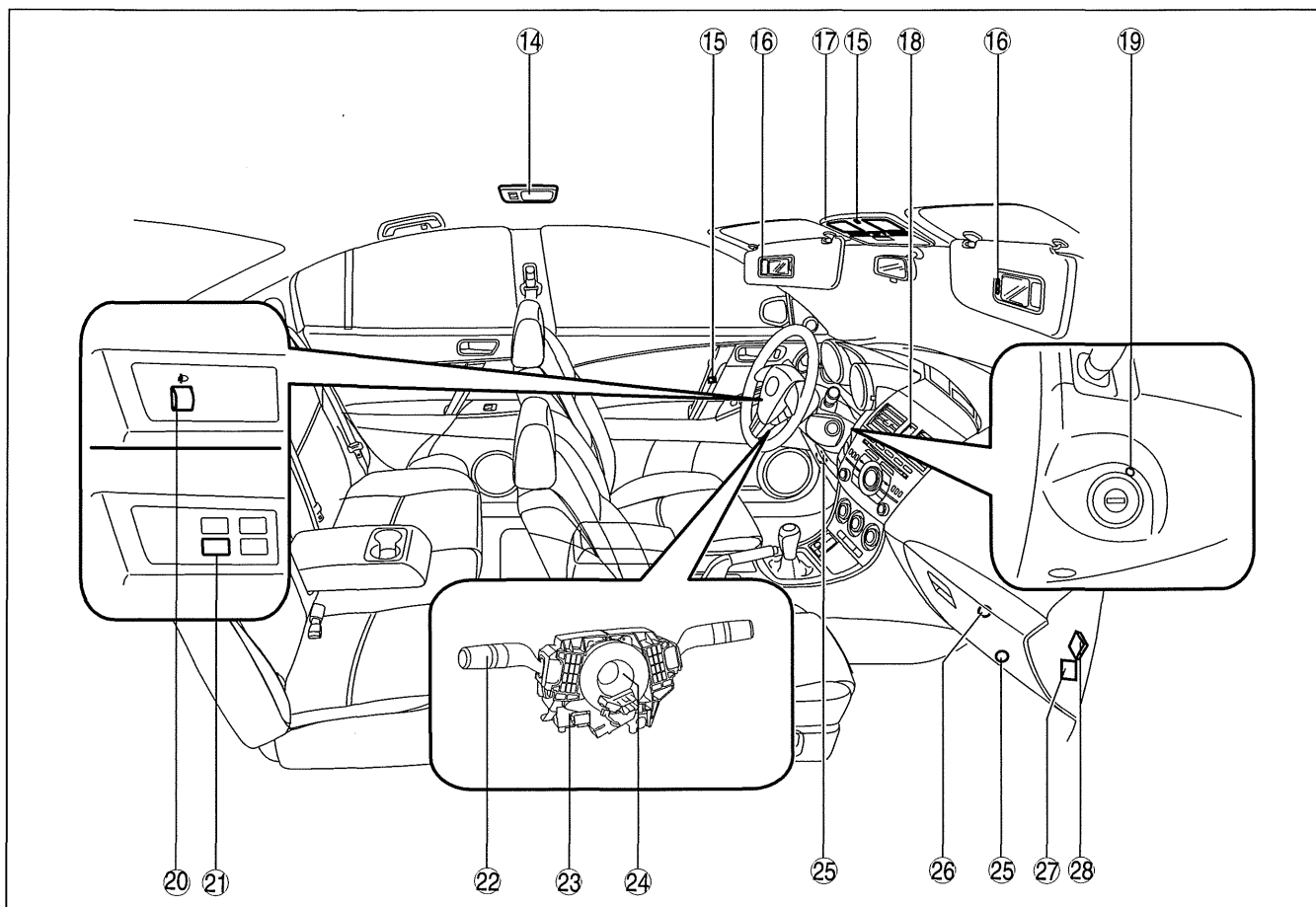
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LIGHTING SYSTEMS



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1	Auto light sensor (See 09-19-25 RAIN SENSOR REMOVAL/ INSTALLATION.)
2	Side turn light (See 09-18-30 SIDE TURN LIGHT REMOVAL/ INSTALLATION.)
3	Back-up light switch (See 09-18-55 BACK-UP LIGHT SWITCH INSPECTION.)
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7	Discharge headlight control module (See 09-18-6 DISCHARGE HEADLIGHT SERVICE WARNINGS.) (See 09-18-14 DISCHARGE HEADLIGHT CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-18-15 DISCHARGE HEADLIGHT SYSTEM INSPECTION.)
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10	Inboard light (See 09-18-40 INBOARD LIGHT REMOVAL/INSTALLATION.) (See 09-18-37 BACK-UP LIGHT BULB REMOVAL/INSTALLATION.)
11	License plate light (See 09-18-49 LICENSE PLATE LIGHT REMOVAL/INSTALLATION.) (See 09-18-48 LICENSE PLATE LIGHT BULB REMOVAL/INSTALLATION.)
12	High-mount brake light (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.) (See 09-18-45 HIGH-MOUNT BRAKE LIGHT DISASSEMBLY/ASSEMBLY.)
13	Cargo Compartment Light (See 09-18-70 CARGO COMPARTMENT LIGHT REMOVAL/INSTALLATION.) (See 09-18-71 CARGO COMPARTMENT LIGHT INSPECTION.)
14	Interior Light (See 09-18-69 INTERIOR LIGHT REMOVAL/INSTALLATION.) (See 09-18-69 INTERIOR LIGHT BULB REMOVAL/INSTALLATION.)
15	Indirect illumination (See 09-18-75 INDIRECT ILLUMINATION REMOVAL/INSTALLATION.)
16	Vanity mirror illumination (See 09-18-73 VANITY MIRROR ILLUMINATION BULB REMOVAL/INSTALLATION.) (See 09-18-73 VANITY MIRROR ILLUMINATION INSPECTION.)
17	Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.) (See 09-18-68 MAP LIGHT INSPECTION.)
18	Hazard warning switch (See 09-18-60 HAZARD WARNING SWITCH REMOVAL/INSTALLATION.) (See 09-18-61 HAZARD WARNING SWITCH INSPECTION.)
19	Ignition key illumination (See 09-18-72 IGNITION KEY ILLUMINATION REMOVAL/INSTALLATION.)
20	Headlight leveling switch (See 09-18-61 HEADLIGHT LEVELING SWITCH REMOVAL/INSTALLATION.) (See 09-18-62 HEADLIGHT LEVELING SWITCH INSPECTION.)
21	AFS OFF switch (with AFS (Adaptive front lighting system)) (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH REMOVAL/INSTALLATION.) (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH INSPECTION.)

22	Light switch (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.) (See 09-18-58 LIGHT SWITCH INSPECTION.)
23	Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.) (See 09-18-57 COMBINATION SWITCH DISASSEMBLY/ASSEMBLY.)
24	Steering angle sensor (See 09-18-19 STEERING ANGLE SENSOR INSPECTION.) (See 09-18-20 STEERING ANGLE SENSOR INITIALIZATION PROCEDURE.) (See 09-18-19 STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
25	Foot light (See 09-18-74 FOOT LIGHT REMOVAL/INSTALLATION.)
26	Glove compartment light (See 09-18-72 GLOVE COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION.)
27	Auto light/wiper control module (with auto light/wiper system) (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-18-65 AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.)
28	AFS control module (with AFS (Adaptive front lighting system)) (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)

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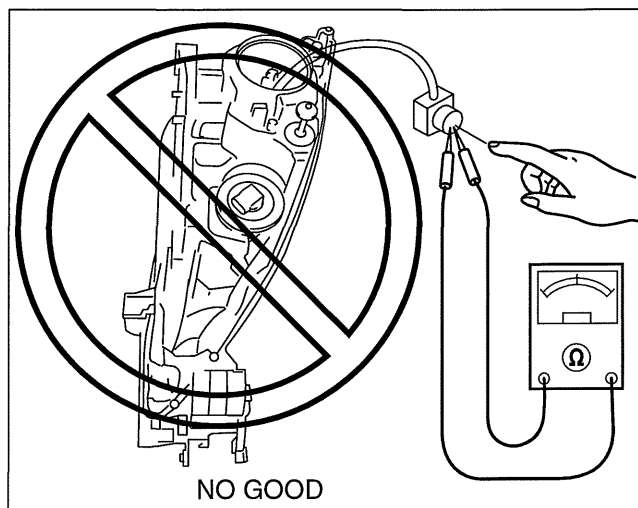
LIGHTING SYSTEMS

DISCHARGE HEADLIGHT SERVICE WARNINGS

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Discharge Headlight Service Warnings

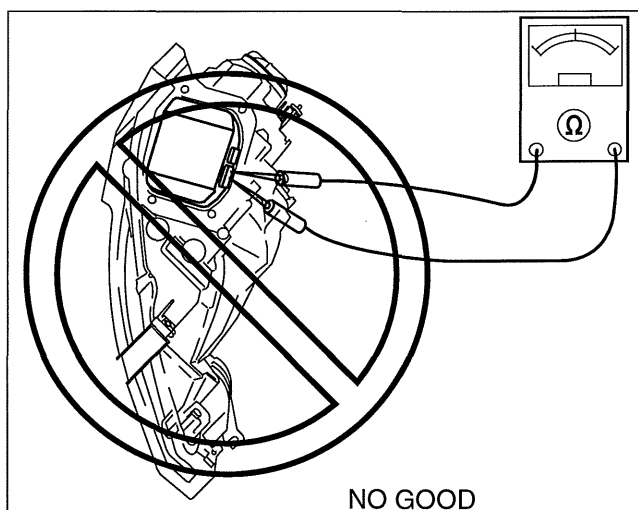
- To prevent electrical shock when replacing the discharge headlight bulb, dry hands thoroughly, and carry out work in an area out of rain.
- When the light switch is on, approx. 25,000 V of high voltage passes through the discharge headlight bulb socket. Because of the danger of electrical shock, do not insert fingers or a tester.
- When the headlights are on, high voltage flows around the socket and bulb. When turning on the discharge headlights while working, always leave the headlights in the vehicle-installed condition to prevent electrical shock.



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Discharge Headlight Control Module Service Warnings

- Because of the danger of electrical shock, when inspecting with a tester, do not inspect the discharge headlight control module as a single unit or disassemble it.



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Discharge Headlight Control Module Reuse

- If the discharge headlight control module is dented or damaged in any way, replace the module with a new one to prevent electrical shock and improper operation.
- Although the control module may temporarily operate normally even though it has received an impact, it is possible that the interior may have been damaged. When reusing the control module, inspect the following items regarding discharge headlight illumination to verify that there are no malfunctions.
 - Verify that the discharge headlights illuminate normally by testing them several times under cold illumination (headlights off for approx. 10 min or more and then turned on) and hot illumination (headlights on for approx. 15 min or more, turned off for approx. 1 min, and then turned on again) conditions.
 - Inspect the headlight illumination in the period from directly after cold illumination until they are uniformly illuminated (approx. 5 min) and verify that there is no flickering or inconsistent brightness.
 - Turn on the headlights for approx. 30 min with normal condition bulbs and verify that there is no brightness difference between the right and left, and that illumination is consistent.

LIGHTING SYSTEMS

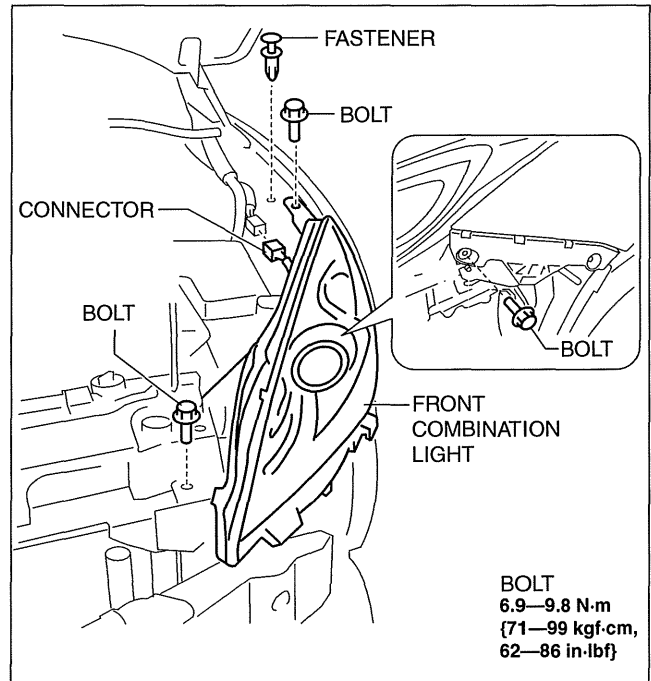
FRONT COMBINATION LIGHT REMOVAL/INSTALLATION

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Warning

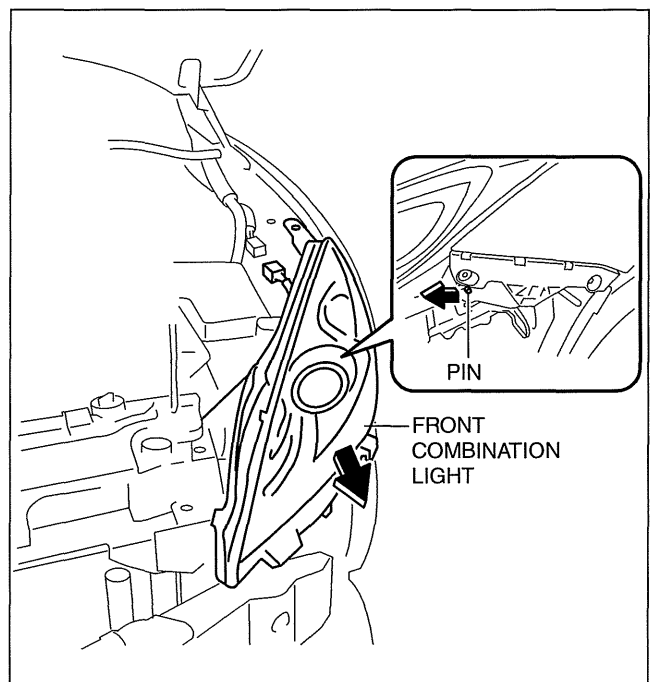
- **Incorrect servicing of the discharge headlights could result in electrical shock. Before servicing the discharge headlights, always refer to the discharge headlight service warnings. (See 09-18-6 DISCHARGE HEADLIGHT SERVICE WARNINGS.)**

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Remove the bolt and fastener shown in the figure.
4. Disconnect the connector.



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5. Pull the front combination light in the direction of the arrow shown in the figure and remove the pin from the body.
6. Remove the front combination light.

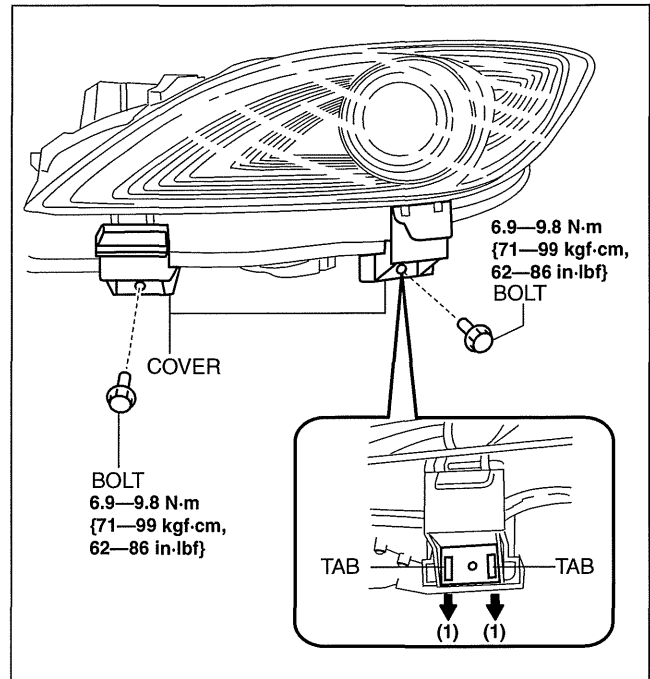


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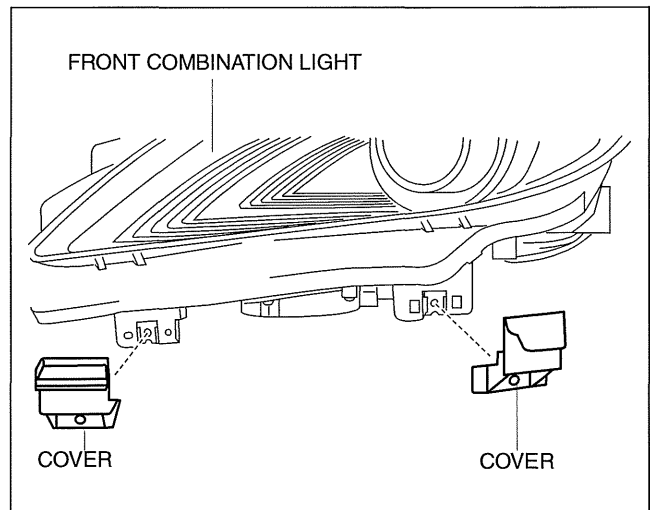
LIGHTING SYSTEMS

7. Remove the bolts.
8. Pull the cover in the direction of the arrow (1) while detaching tab.



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9. Remove the cover from the front combination light.
10. Install in the reverse order of removal.
11. Adjust the headlight aiming. (See 09-18-11 HEADLIGHT AIMING.)



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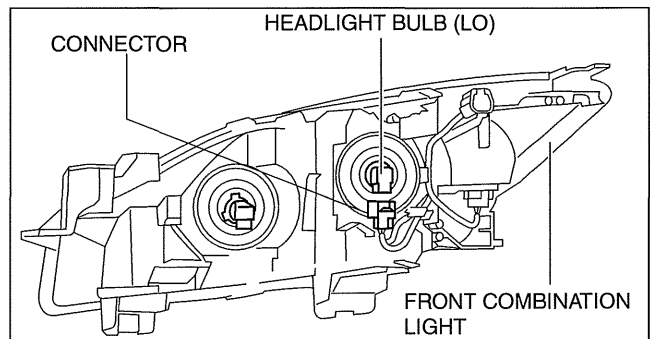
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HEADLIGHT BULB REMOVAL/INSTALLATION

Halogen Type

Low-beam

1. Disconnect the negative battery cable.
2. Disconnect the connector.



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LIGHTING SYSTEMS

3. Remove the cover.
4. Remove the adaptor.
5. Remove the headlight bulb (LO).

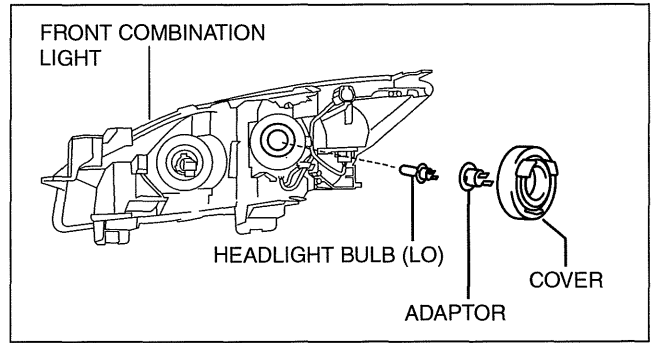
Caution

- A halogen bulb generates extremely high heat when it is illuminated. If the surface of the bulb is soiled, excessive heat will build up and the life of the bulb will be shortened. When replacing the bulb, hold the metal flange, not the glass.

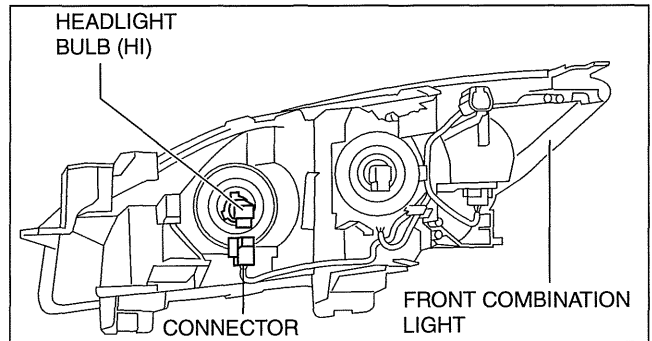
6. Install in the reverse order of removal.

High-beam

1. Disconnect the negative battery cable.
2. Disconnect the connector.



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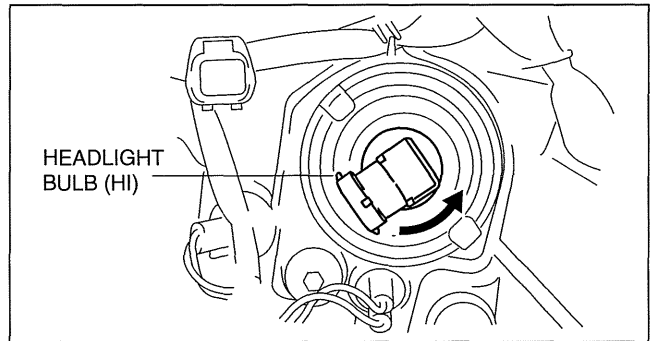
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3. Rotate the headlight bulb (HI) in the direction of the arrow shown in the figure to remove it.
4. Remove the headlight bulb (HI).

Caution

- A halogen bulb generates extremely high heat when it is illuminated. If the surface of the bulb is soiled, excessive heat will build up and the life of the bulb will be shortened. When replacing the bulb, hold the metal flange, not the glass.

5. Install in the reverse order of removal.



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09-18

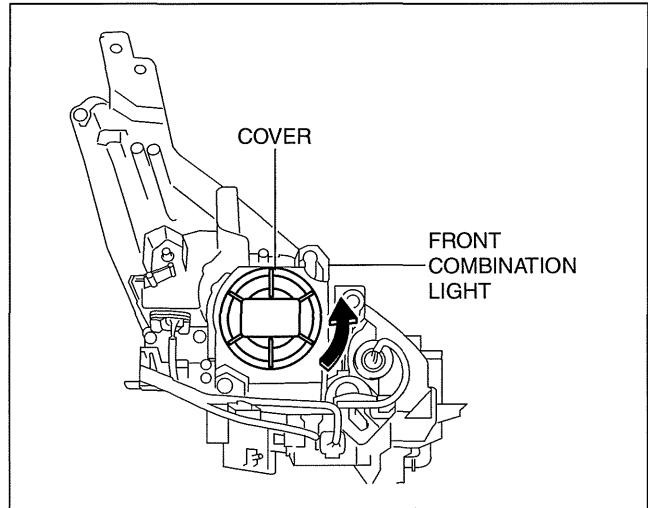
LIGHTING SYSTEMS

Discharge Type

Warning

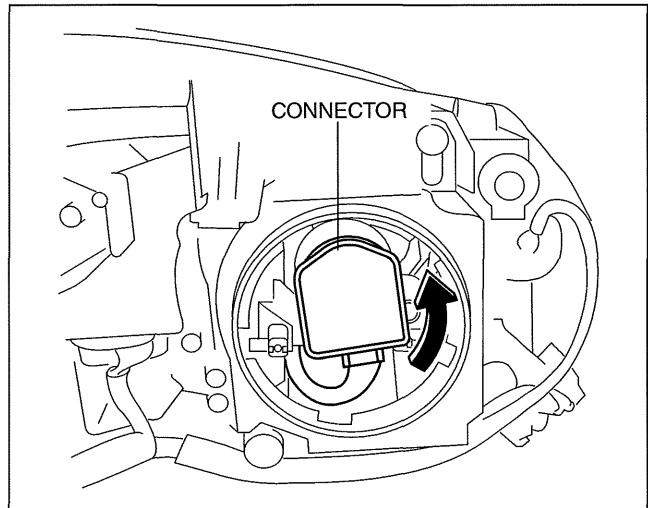
- Incorrect servicing of the discharge headlights could result in electrical shock. Before servicing the discharge headlights, always refer to the discharge headlight service warnings. (See 09-18-6 DISCHARGE HEADLIGHT SERVICE WARNINGS.)

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Remove the front combination light. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
4. Rotate the cover in the direction of the arrow shown in the figure to remove it.



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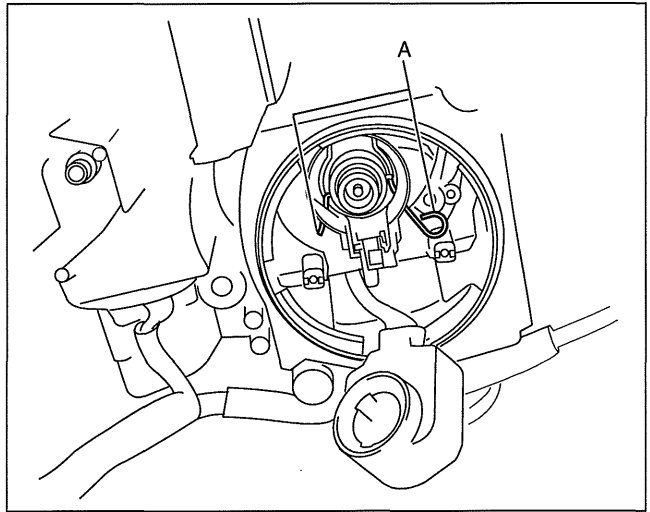
5. Rotate the connector in the direction of the arrow shown in the figure to remove it.



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LIGHTING SYSTEMS

- Press sections A to release the bulb retaining wire and remove the discharge headlight.



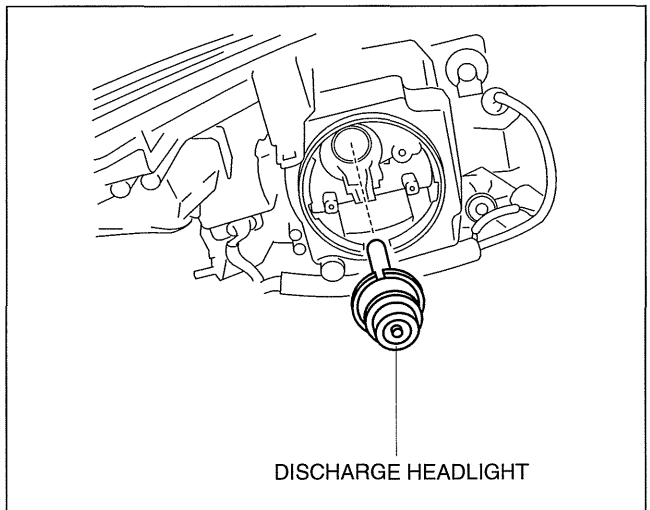
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- Remove the discharge headlight.

Caution

- The bulb generates extremely high heat when it is illuminated. If the surface of the bulb is soiled, excessive heat will build up and the life of the bulb will be shortened. When replacing the bulb, hold the metal flange, not the glass.

- Install in the reverse order of removal.



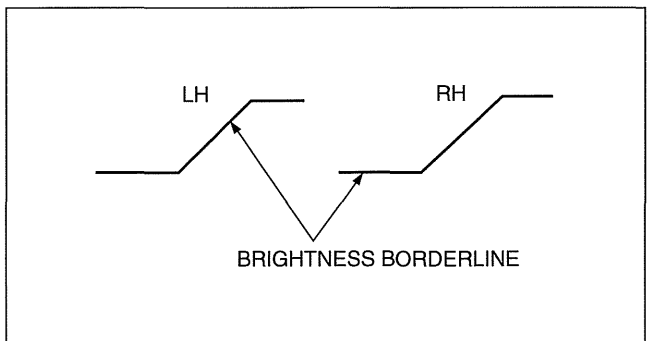
DISCHARGE HEADLIGHT

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HEADLIGHT AIMING

- Point the headlight beams to a wall and verify that the headlight beams are as shown in the figure.

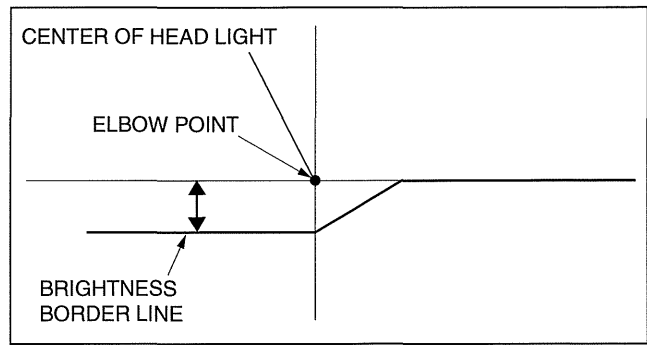


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09-18

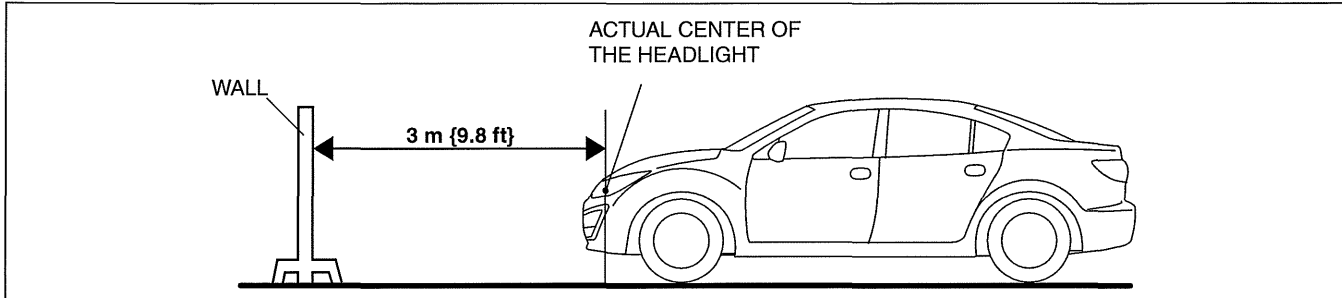
LIGHTING SYSTEMS

2. Make a screen as shown in the figure using double-weight, white paper.
3. Adjust the tire pressure to the specification.
4. Position the unloaded vehicle on a flat, level surface.
5. Seat one person in the driver's seat.



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6. Line up the vehicle with the wall so that the center of the headlight is **3 m {9.8 ft}** away from the wall.

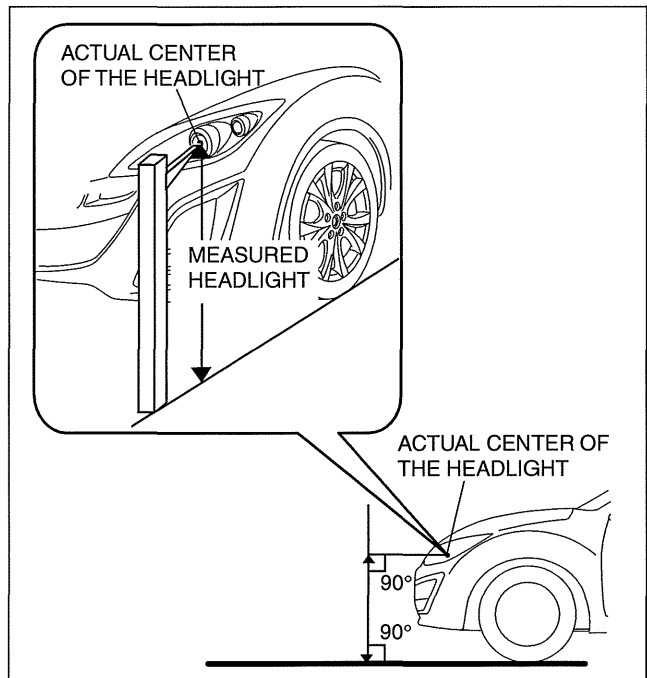


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7. Measure the height at the center of the headlight.

Note

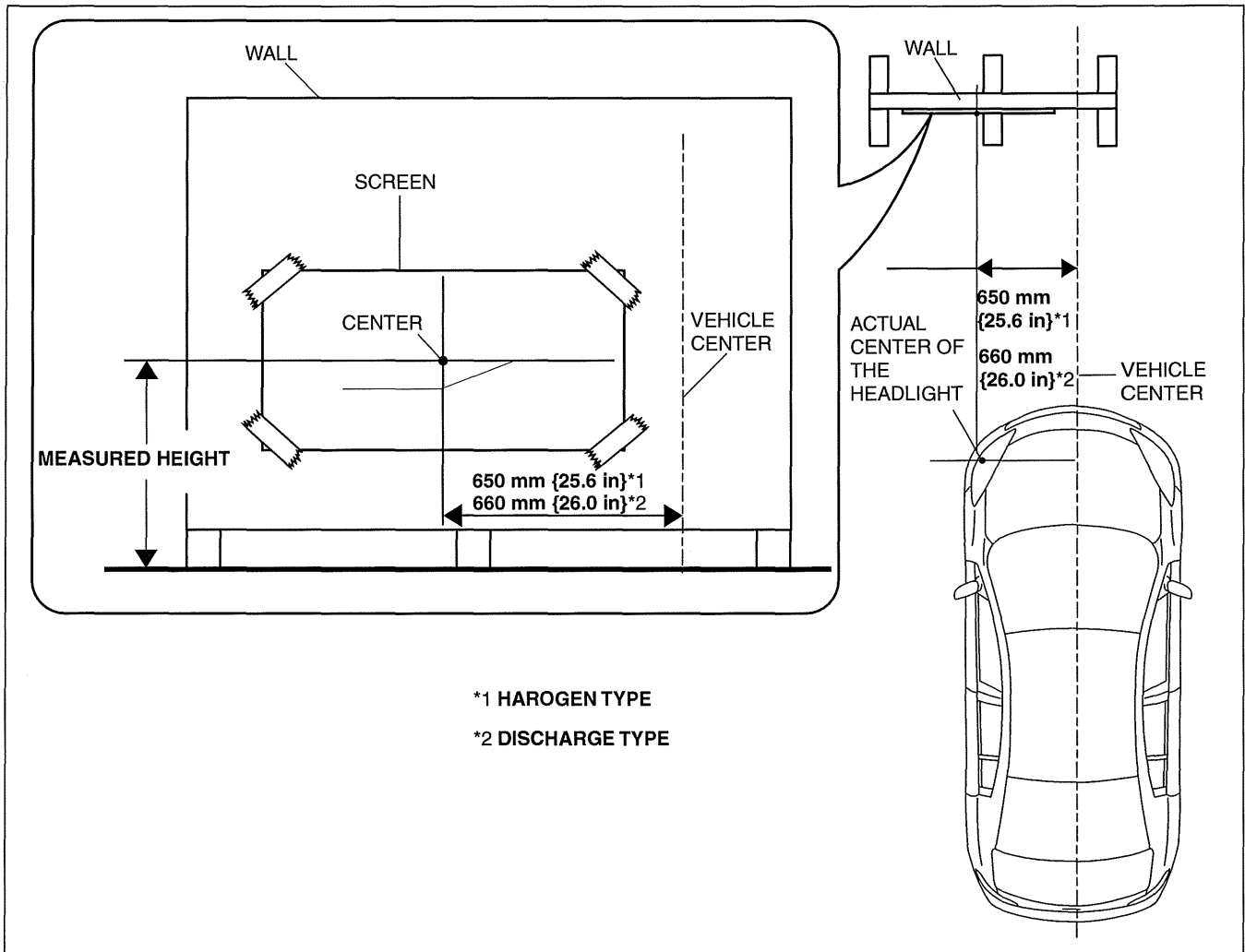
- Since the height of the vehicle varies depending on the vehicle situation, measure the height of the center of the headlight using the actual vehicle.



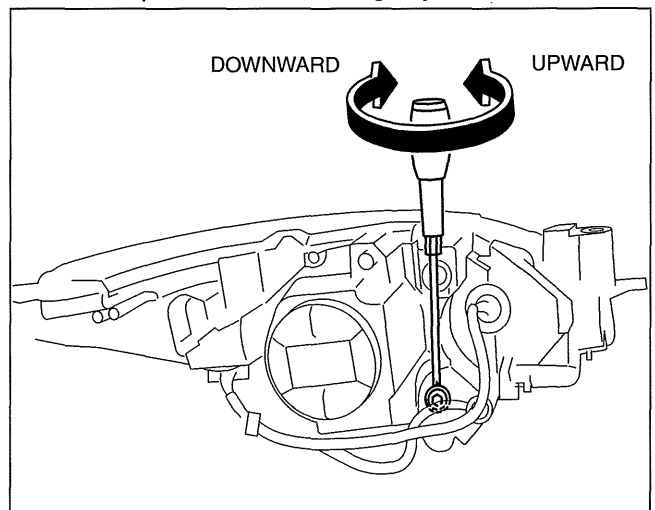
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LIGHTING SYSTEMS

8. Align the center of the headlight with the center of the screen.



9. Block the light of the other headlight using a partition.
10. Start the engine and charge the battery.
11. Turn on the headlight low beams.
12. Set the headlight leveling switch to the 0 position. (vehicles with headlight leveling switch)
13. Verify that the elbow point of the headlight is in the position indicated on the screen.
 - If the elbow point is not in the position indicated on the screen, perform the following adjustment:
 1. Insert a Phillips driver into the position shown in the figure and adjust the headlights.

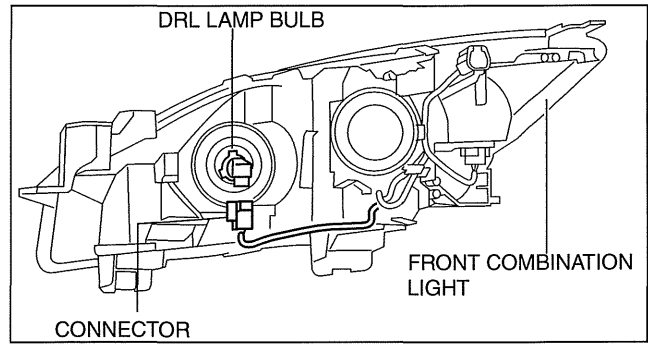


LIGHTING SYSTEMS

DRL LAMP BULB REMOVAL/INSTALLATION

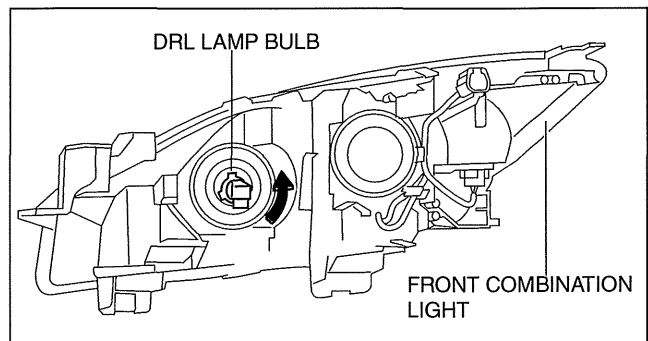
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1. Disconnect the negative battery cable.
2. Disconnect the connector.



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3. Rotate the DRL lamp bulb in the direction of the arrow shown in the figure to remove it.
4. Remove the DRL lamp bulb.
5. Install in the reverse order of removal.



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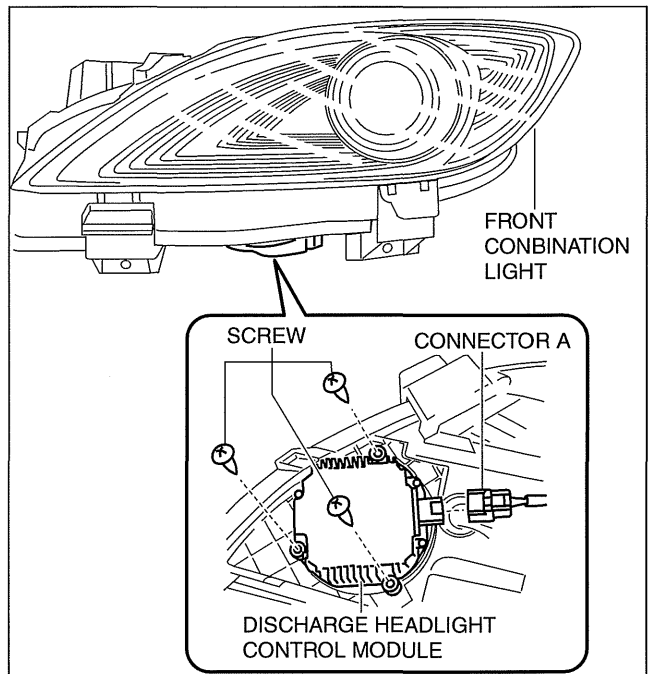
DISCHARGE HEADLIGHT CONTROL MODULE REMOVAL/INSTALLATION

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Caution

- **Incorrect servicing of the discharge headlight control module could result in electrical shock. Before servicing the discharge headlight control module, always refer to the "Discharge headlight service warnings." (See 09-18-6 DISCHARGE HEADLIGHT SERVICE WARNINGS.)**

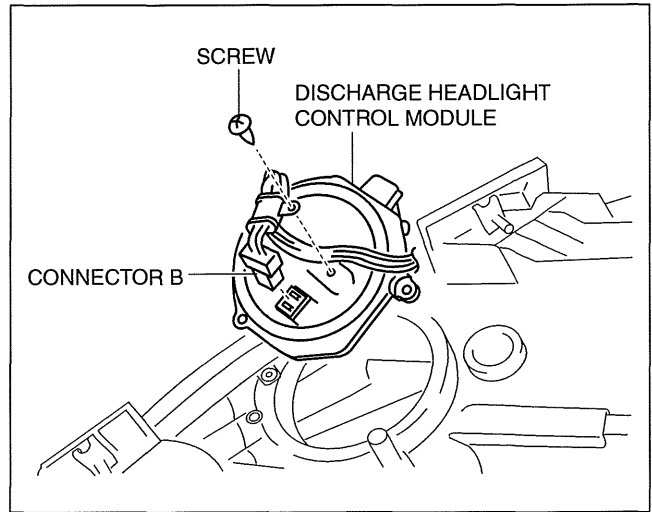
1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Remove the front combination light. (See 09-18-7 FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)
4. Remove the screws.
5. Disconnect the connector A.



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LIGHTING SYSTEMS

6. Remove the screw.
7. Disconnect the connector B.
8. Remove the discharge headlight control module.
9. Install in the reverse order of removal.



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DISCHARGE HEADLIGHT SYSTEM INSPECTION

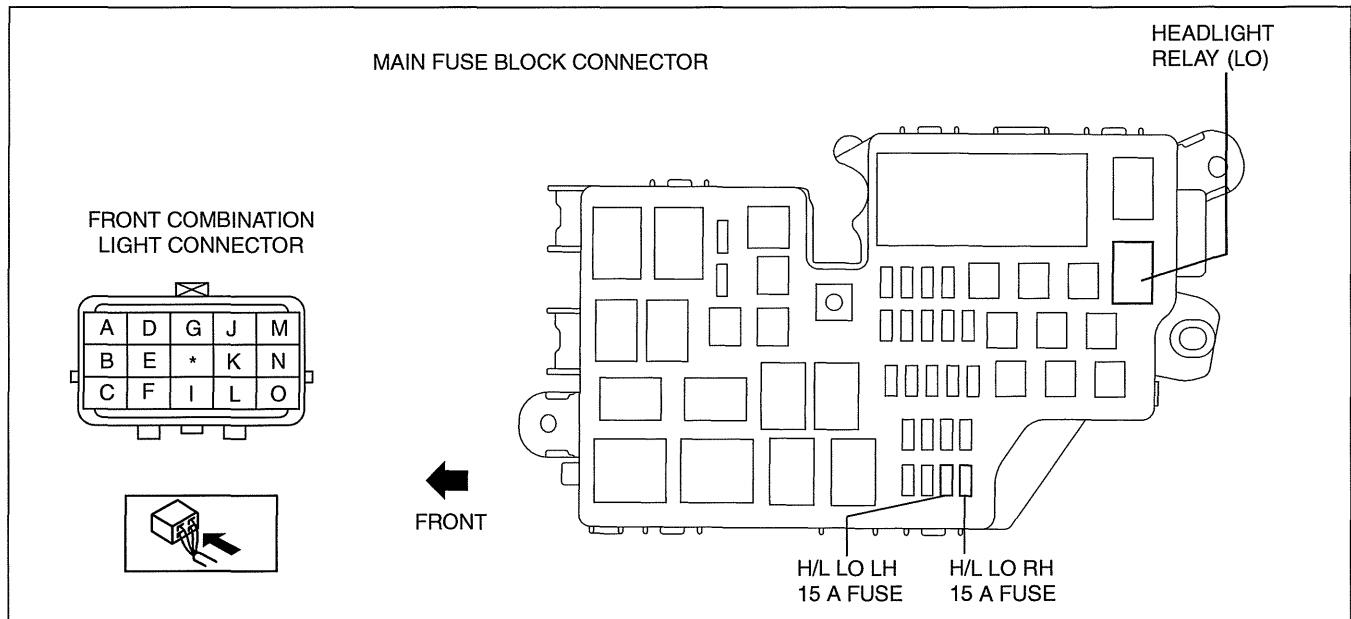
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Discharge headlight inoperative

Warning

- Incorrect servicing of the discharge headlights could result in electrical shock. Before servicing the discharge headlights, always refer to the discharge headlight service warnings. (See 09-18-6 DISCHARGE HEADLIGHT SERVICE WARNINGS.)

Terminal layout



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09-18

LIGHTING SYSTEMS

Inspection procedure

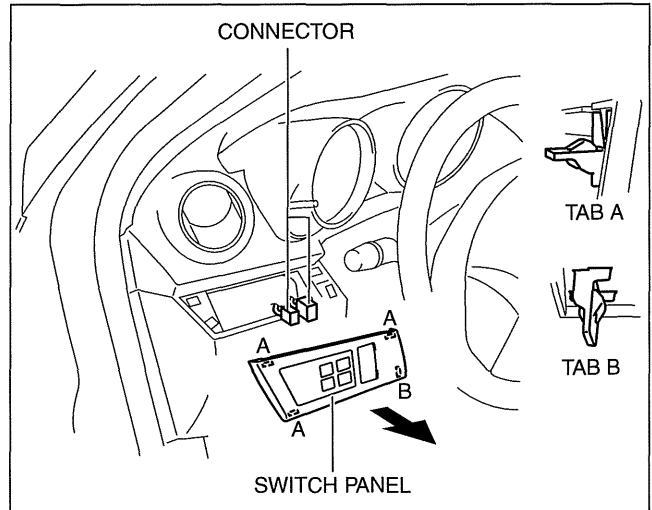
STEP	INSPECTION	ACTION	
1	INSPECT POWER SUPPLY CIRCUIT OF DISCHARGE HEADLIGHT CONTROL MODULE <ul style="list-style-type: none"> • Disconnect the discharge headlight control module connector. • Turn the headlight switch to the HEADLIGHT (LO) position. • Measure the voltage at discharge headlight control module connector (harness-side) terminal B. • Is the voltage approx. 12 V? 	Yes	Go to Step 6.
		No	Go to the next step.
2	INSPECT FUSE <ul style="list-style-type: none"> • Turn the headlight switch to the OFF position. • Remove the H/L LO RH 15 A fuse or H/L LO LH 15 A fuse. • Inspect the fuses. • Are the fuses normal? 	Yes	Go to the next step.
		No	Replace the fuse.
3	INSPECT HEADLIGHT RELAY <ul style="list-style-type: none"> • Remove the headlight relay (LO). (See 09-21-16 RELAY LOCATION.) • Inspect the headlight relay (LO). (See 09-21-17 RELAY INSPECTION.) • Is the headlight low relay normal? 	Yes	Go to the next step.
		No	Replace the headlight low relay. (See 09-21-16 RELAY LOCATION.)
4	INSPECT LIGHT SWITCH <ul style="list-style-type: none"> • Inspect the light switch. (See 09-18-58 LIGHT SWITCH INSPECTION.) • Is the light switch normal? 	Yes	Go to the next step.
		No	Replace the light switch. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
5	INSPECT WIRING HARNESS BETWEEN BATTERY AND DISCHARGE HEADLIGHT CONTROL MODULE <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Inspect for continuity between the following terminals: <ul style="list-style-type: none"> — Positive battery—headlight low relay terminal D — H/L LO RH 15 A fuse—discharge headlight control module terminal B — H/L LO LH 15 A fuse—discharge headlight control module terminal B • Are the wiring harnesses normal? 	Yes	Go to the next step.
		No	Replace the related wiring harness.
6	INSPECT WIRING HARNESS BETWEEN DISCHARGE HEADLIGHT CONTROL MODULE AND GROUND <ul style="list-style-type: none"> • Inspect wiring harness between discharge headlight control module terminal M and ground for following: <ul style="list-style-type: none"> — Short to power supply — Open circuit • Is the wiring harness normal? 	Yes	Go to the next step.
		No	Replace the related wiring harness.
7	VERIFY WHETHER MALFUNCTION IS IN DISCHARGE HEADLIGHT OR DISCHARGE HEADLIGHT CONTROL MODULE <ul style="list-style-type: none"> • Install any other discharge headlight. (See 09-18-8 HEADLIGHT BULB REMOVAL/INSTALLATION.) • Connect the discharge headlight control module connector. • Turn the headlight switch to the HEADLIGHT (LO) position. • Does the headlight (low-beam) illuminate? 	Yes	Replace the discharge headlight. (See 09-18-8 HEADLIGHT BULB REMOVAL/INSTALLATION.)
		No	Replace the discharge headlight control module. (See 09-18-14 DISCHARGE HEADLIGHT CONTROL MODULE REMOVAL/INSTALLATION.)

LIGHTING SYSTEMS

AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH REMOVAL/INSTALLATION

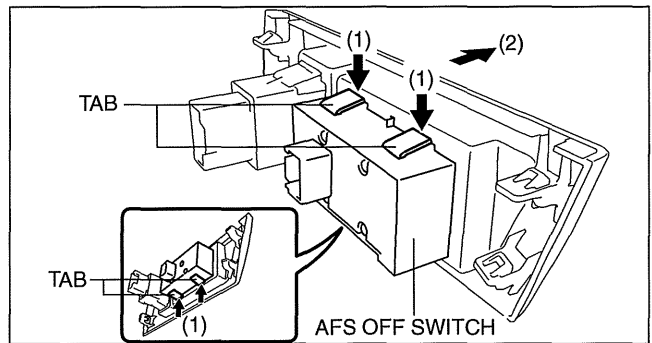
id091800813000

1. Disconnect the negative battery cable.
2. Remove the switch panel in the direction of the arrow shown in the figure.
3. Disconnect the connector.



am3uuw0000529

4. Remove the AFS OFF switch in the direction of the arrow (2) shown in the figure while pressing the tabs in the direction of the arrow (1).
5. Remove the AFS OFF switch.
6. Install in the reverse order of removal.



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09-18

AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH INSPECTION

id091800813100

1. Disconnect the negative battery cable.
2. Remove the AFS OFF switch. (See 09-18-17 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) OFF SWITCH REMOVAL/INSTALLATION.)
3. Verify that the continuity between the AFS OFF switch terminals is as indicated in the table.

○—○ : Continuity

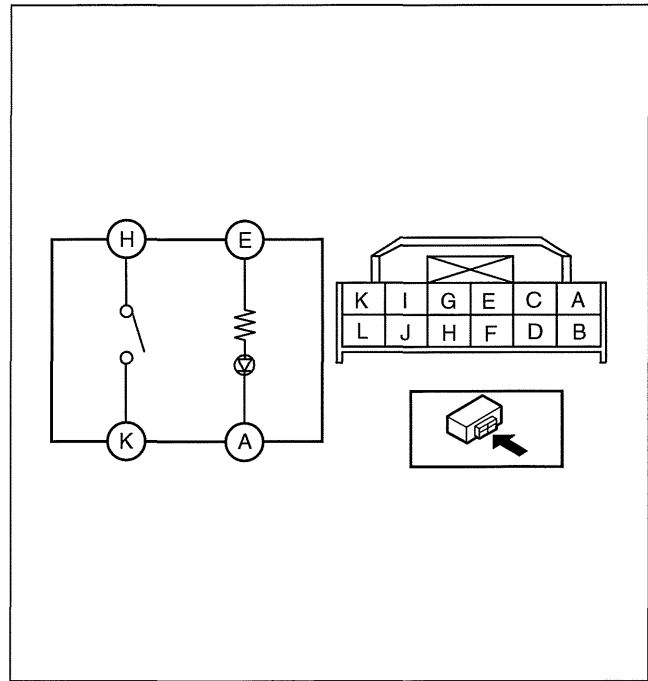
Switch position	Terminal	
	H	K
Off		
On	○—○	○—○

am3uuw00003424

- If the continuity is not as indicated in the table, replace the AFS OFF switch.

LIGHTING SYSTEMS

4. Apply battery positive voltage to AFS OFF switch terminal E, and connect terminal A to ground.
5. Verify that the LED illuminates.
 - If there is any malfunction, replace the AFS OFF switch.



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AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION

id091800813200

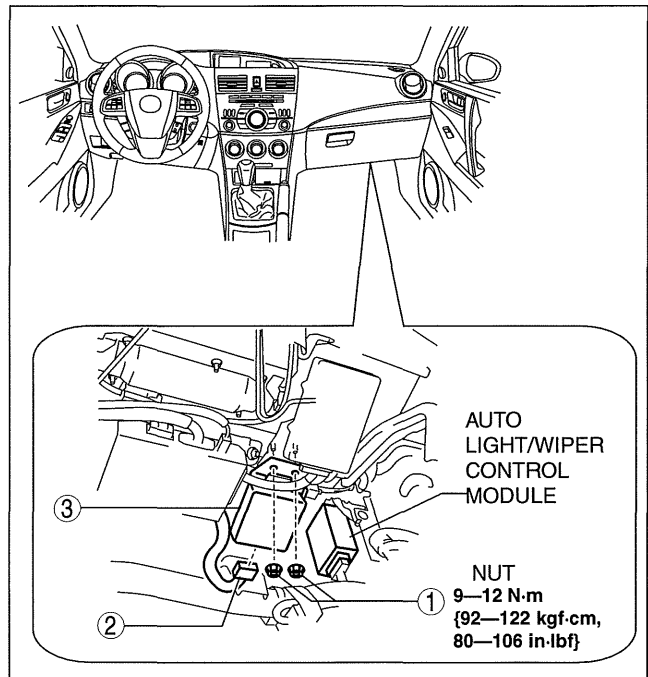
Note

- Perform the auto leveling system initialization after newly replacing the AFS control module to assure that the auto leveling system operates correctly.

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Grove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Nut
2	Connector
3	AFS control module

4. Install in the reverse order of removal.
5. Perform the auto leveling system initialization after newly replacing the AFS control module. (See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)



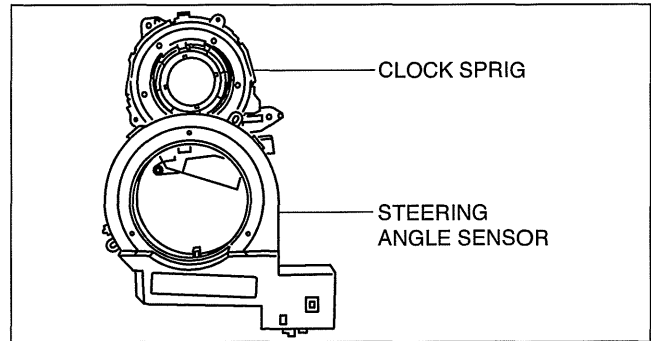
am3uuw0000539

LIGHTING SYSTEMS

STEERING ANGLE SENSOR REMOVAL/INSTALLATION

id091800813600

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
 - (2) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (3) Clock spring (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
3. Remove the steering angle sensor.
4. Install in the reverse order of removal.

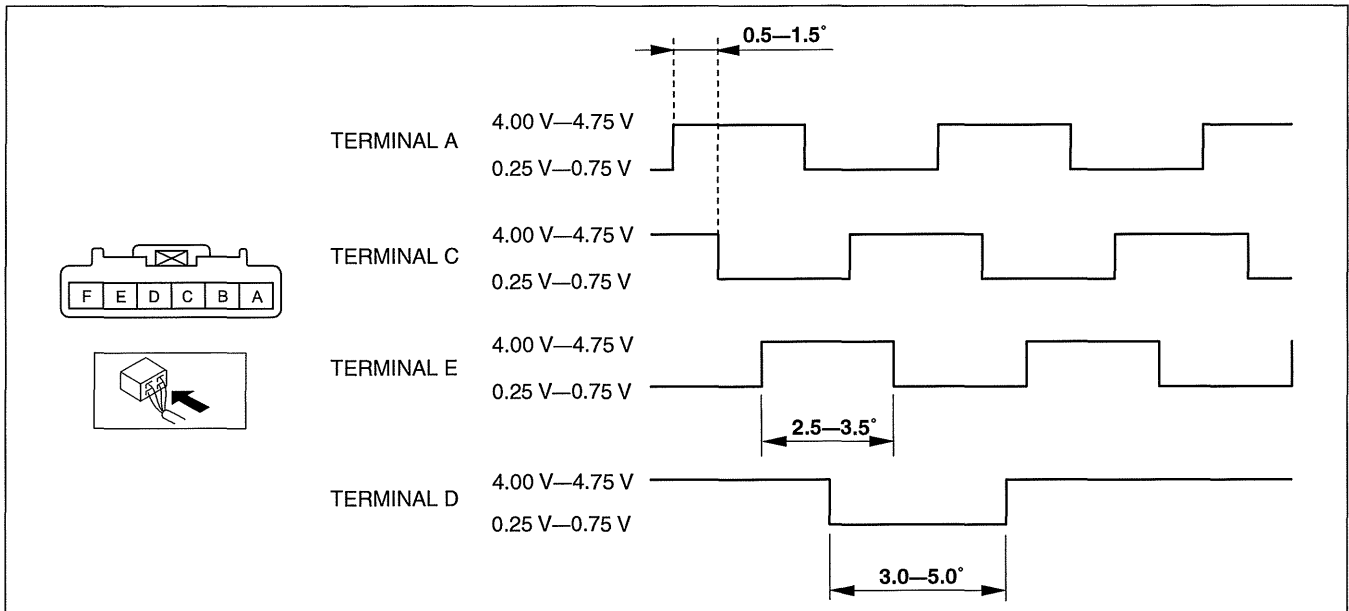


am3uuw0000449

STEERING ANGLE SENSOR INSPECTION

id091800813400

1. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
2. Turn the steering wheel to the right and left, and verify that the voltage and pulses at the terminals are as shown in the figure.
 - If not as specified, replace the steering angle sensor.



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09-18

LIGHTING SYSTEMS

STEERING ANGLE SENSOR INITIALIZATION PROCEDURE

id091800813500

Warning

- If the steering angle sensor reference point setting is not completed, it could result in an unexpected accident due to the related systems being inoperative. Therefore, if the BCM connector or negative battery cable are disconnected, or the BCM power supply is interrupted, always perform the steering angle sensor reference point setting and verify that each system is operational.

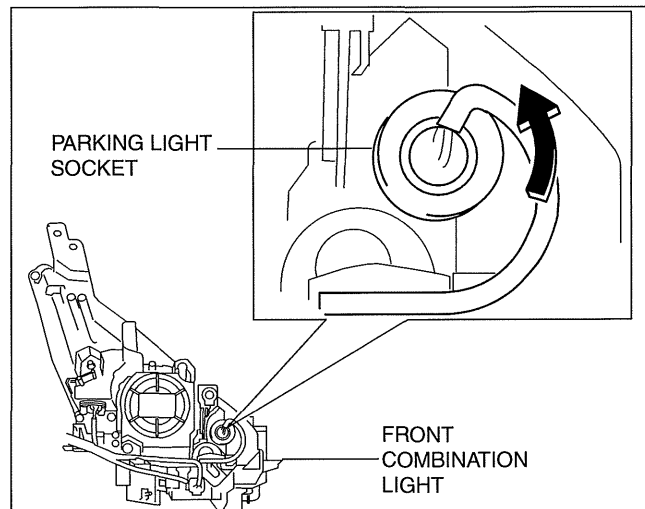
Note

- The BCM stores the steering angle reference point using battery power supply. Therefore, if the following operations are performed and the power supply to the BCM is interrupted, the stored steering angle reference point will be erased.
 - The negative battery cable is disconnected
 - The steering angle sensor connector is disconnected
 - A fuse (ROOM) is removed
 - The wiring harness between the BCM and steering angle sensor connector is disconnected
1. Inspect the wheel alignment, inflation pressure, and the installation condition of the steering wheel.
 - If there is any malfunction, adjust the applicable part.
 2. Connect the negative battery cable.
 3. Switch the ignition to ON.
 4. Confirm that the AFS OFF indicator light illuminates and that the AFS OFF light flashes.
 5. Turn the steering wheel to full right lock, then turn it to full left lock.
 6. Confirm that the AFS OFF light and AFS OFF indicator light goes out.
 - If the AFS OFF indicator light does not go out, disconnect the negative battery cable, and perform the procedure again starting from Step 2 shown above.
 7. Drive the vehicle for **approx. 10 min**, and confirm that the AFS OFF indicator lights do not illuminate.

PARKING LIGHT BULB REMOVAL/INSTALLATION

id091800804200

1. Disconnect the negative battery cable.
2. Rotate the parking light socket in the direction of the arrow shown in the figure to remove it.
3. Remove the parking light bulb.
4. Install in the reverse order of removal.



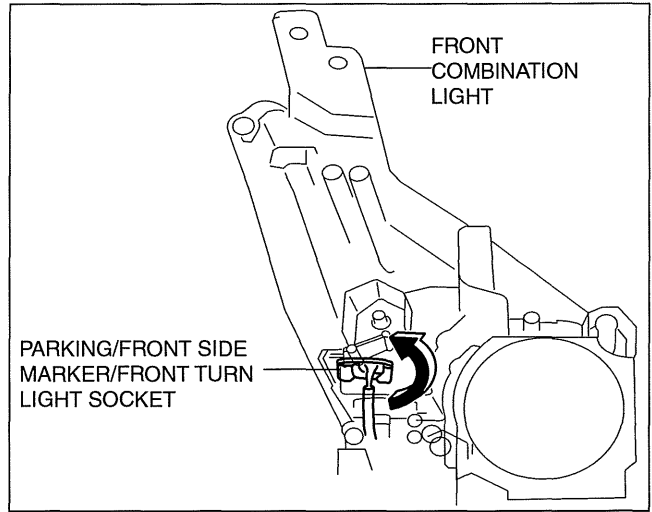
am3uuw000361

LIGHTING SYSTEMS

PARKING/FRONT SIDE MARKER/FRONT TURN LIGHT BULB REMOVAL/INSTALLATION

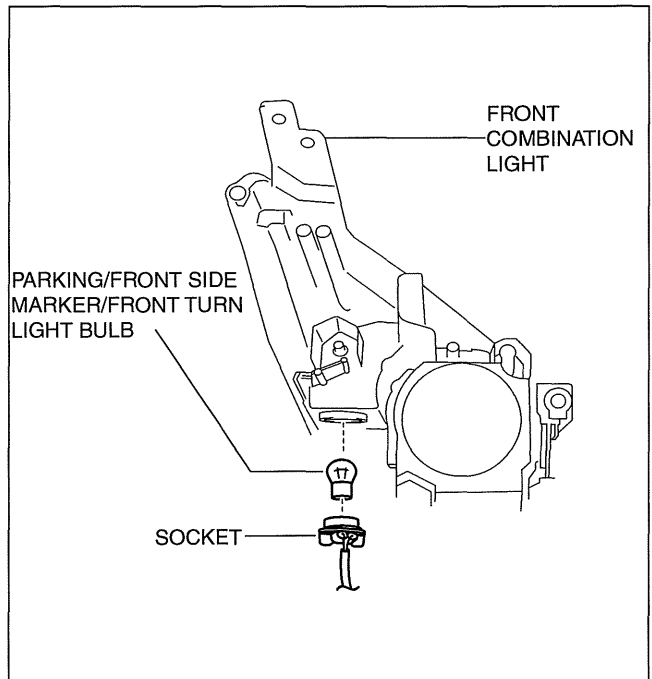
id091800819500

1. Disconnect the negative battery cable.
2. Slightly bend back the front mudguard. (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Rotate the parking/front side marker/front turn light socket in the direction of the arrow shown in the figure.



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4. Remove the parking/front side marker/front turn light bulb.
5. Install in the reverse order of removal.



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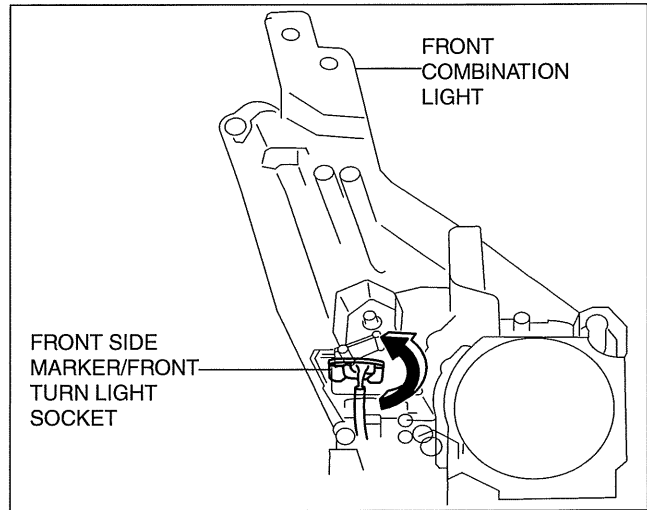
09-18

LIGHTING SYSTEMS

FRONT SIDE MARKER/FRONT TURN LIGHT BULB REMOVAL/INSTALLATION

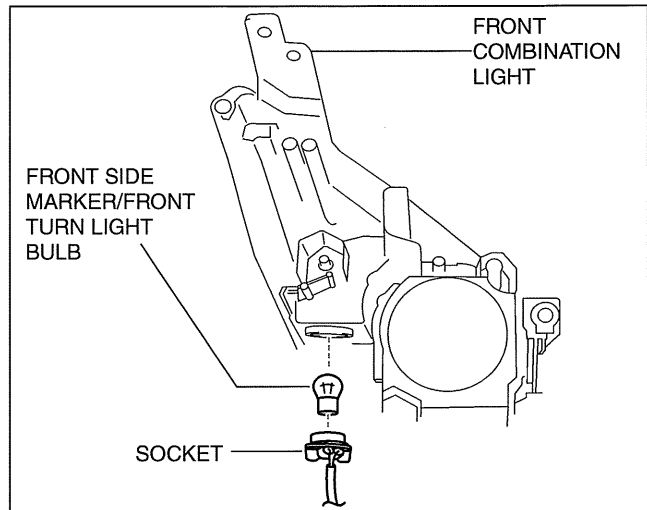
id091800819800

1. Disconnect the negative battery cable.
2. Slightly bend back the front mudguard. (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Rotate the front side marker/front turn light socket in the direction of the arrow shown in the figure.



am3uuw0000271

4. Remove the front side marker/front turn light bulb.
5. Install in the reverse order of removal.



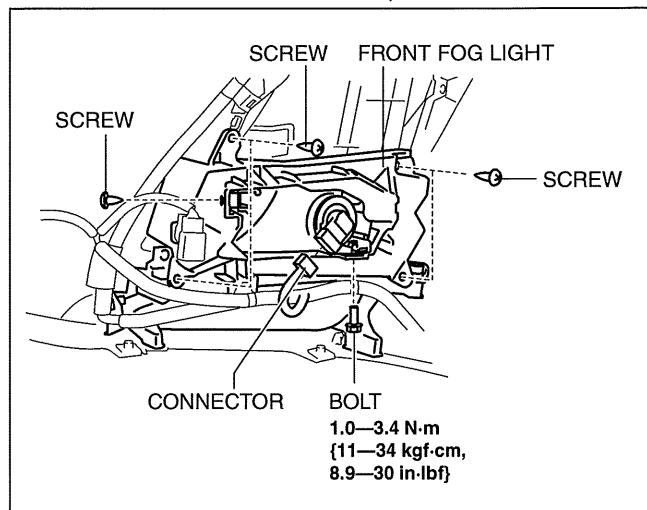
am3uuw0000503

FRONT FOG LIGHT REMOVAL/INSTALLATION

id091800802100

Except Mazdaspeed3

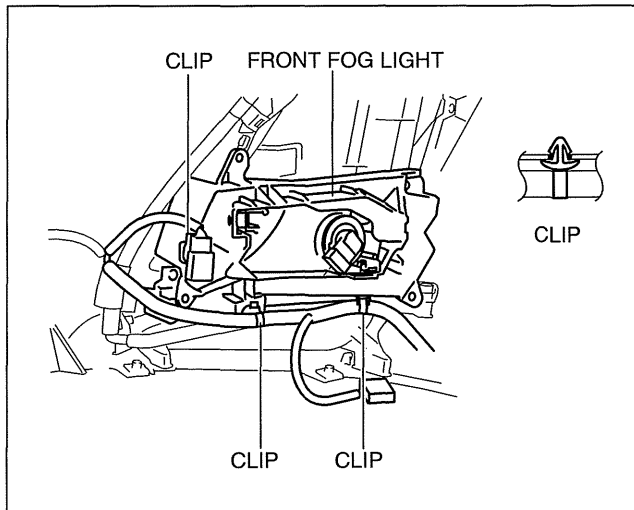
1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the screw.
5. Remove the bolt.



am3uuw0000537

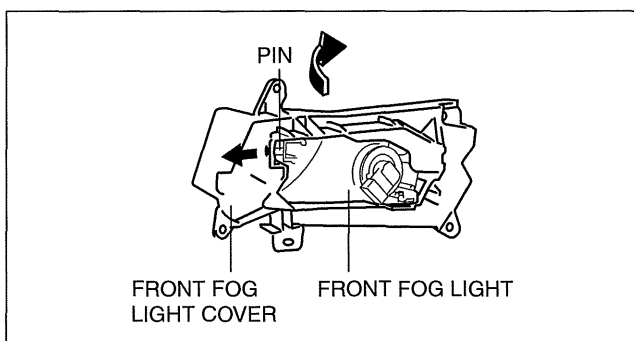
LIGHTING SYSTEMS

6. Remove the clips.



am3uuw0000538

7. Pull the front fog light in the direction of the arrow shown in the figure and remove the pin from the front fog light cover.
8. Remove the front fog light.
9. Install in the reverse order of removal.
10. Adjust the front fog light aiming. (See 09-18-24 FRONT FOG LIGHT AIMING.)

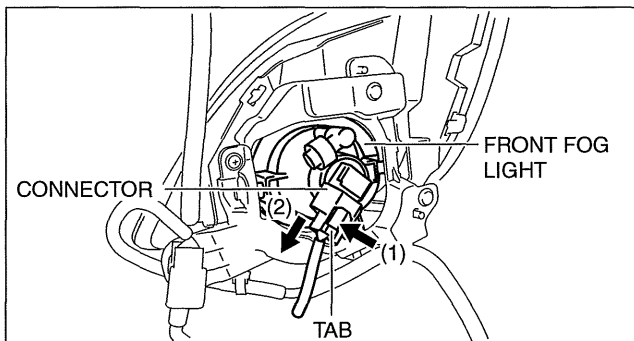


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09-18

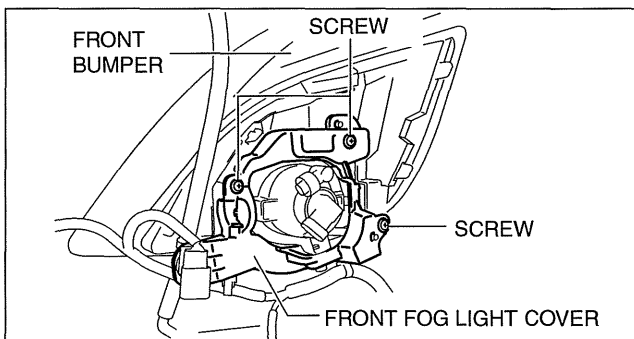
Mazdaspeed3

1. Disconnect the negative battery cable.
2. Remove the fasteners and slightly bend back the mudguard.
3. While pressing the tab in the direction of arrow (1) shown in the figure, pull the connector in the direction of arrow (2) and disconnect it.



am3uuw0000572

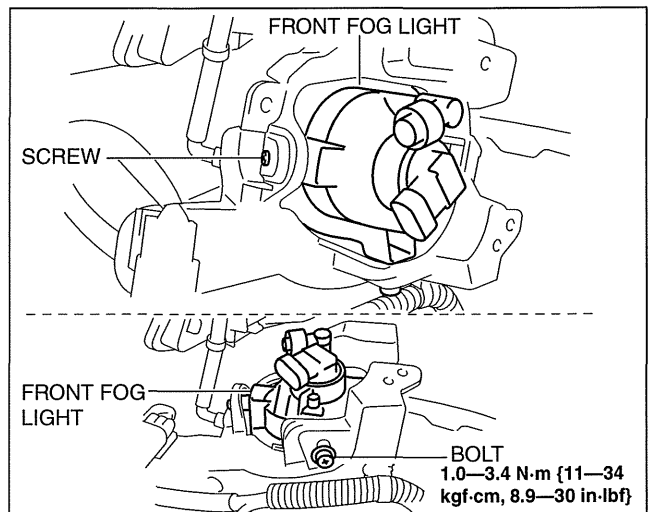
4. Remove the screws shown in the figure and remove the front fog light cover from the front bumper.



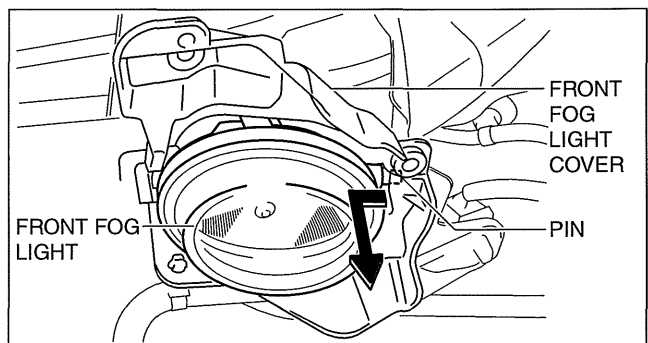
am3uuw0000572

LIGHTING SYSTEMS

5. Remove the screw and bolt shown in the figure.



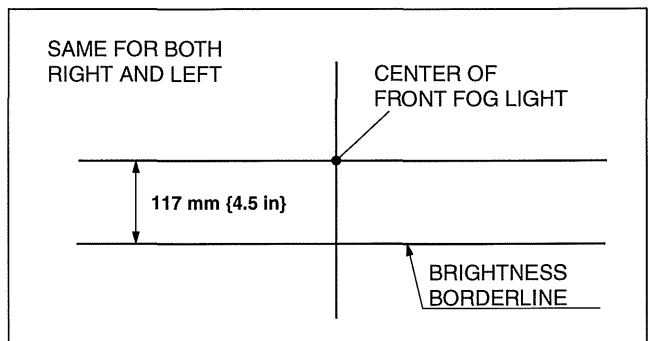
6. Pull the front fog light in the direction of the arrow shown in the figure and remove it from the front fog light cover.
7. Remove the front fog light.
8. Install in the reverse order of removal.
9. Adjust the front fog light aiming. (See 09-18-24 FRONT FOG LIGHT AIMING.)



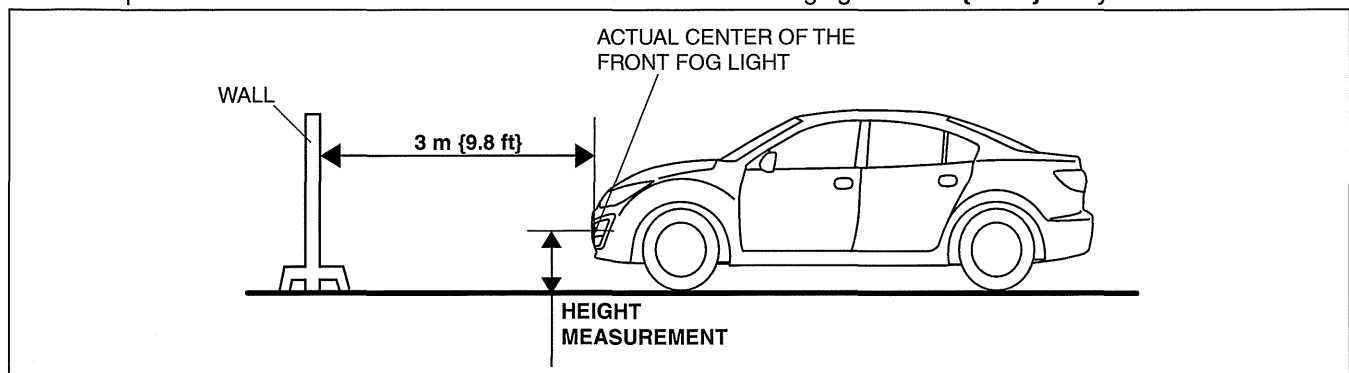
FRONT FOG LIGHT AIMING

Except Mazdaspeed3

1. Make a screen as shown in the figure using double-weight, white paper.
2. Adjust the tire pressure to the specification.
3. Position the unloaded vehicle on a flat, level surface.
4. Seat one person in the driver's seat.



5. Line up the vehicle with the wall so that the center of the front fog light is **3 m {9.8 ft}** away from the wall.

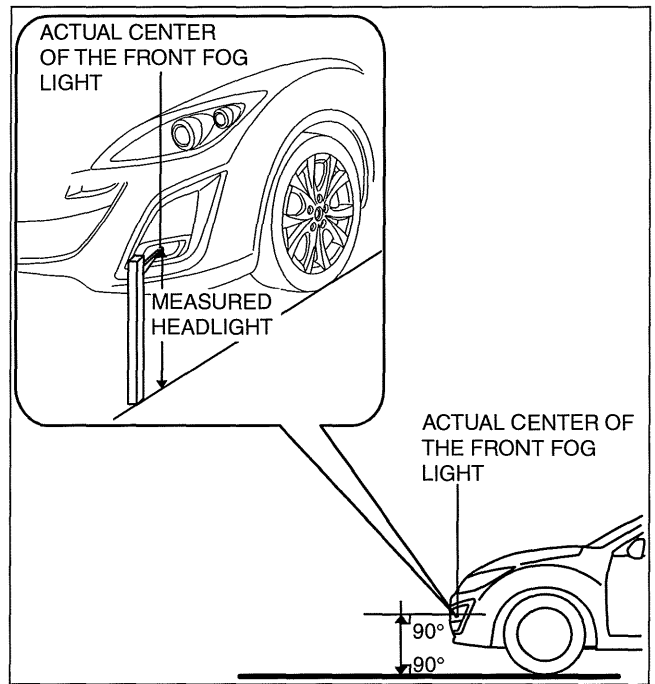


LIGHTING SYSTEMS

6. Measure the height at the center of the front fog light.

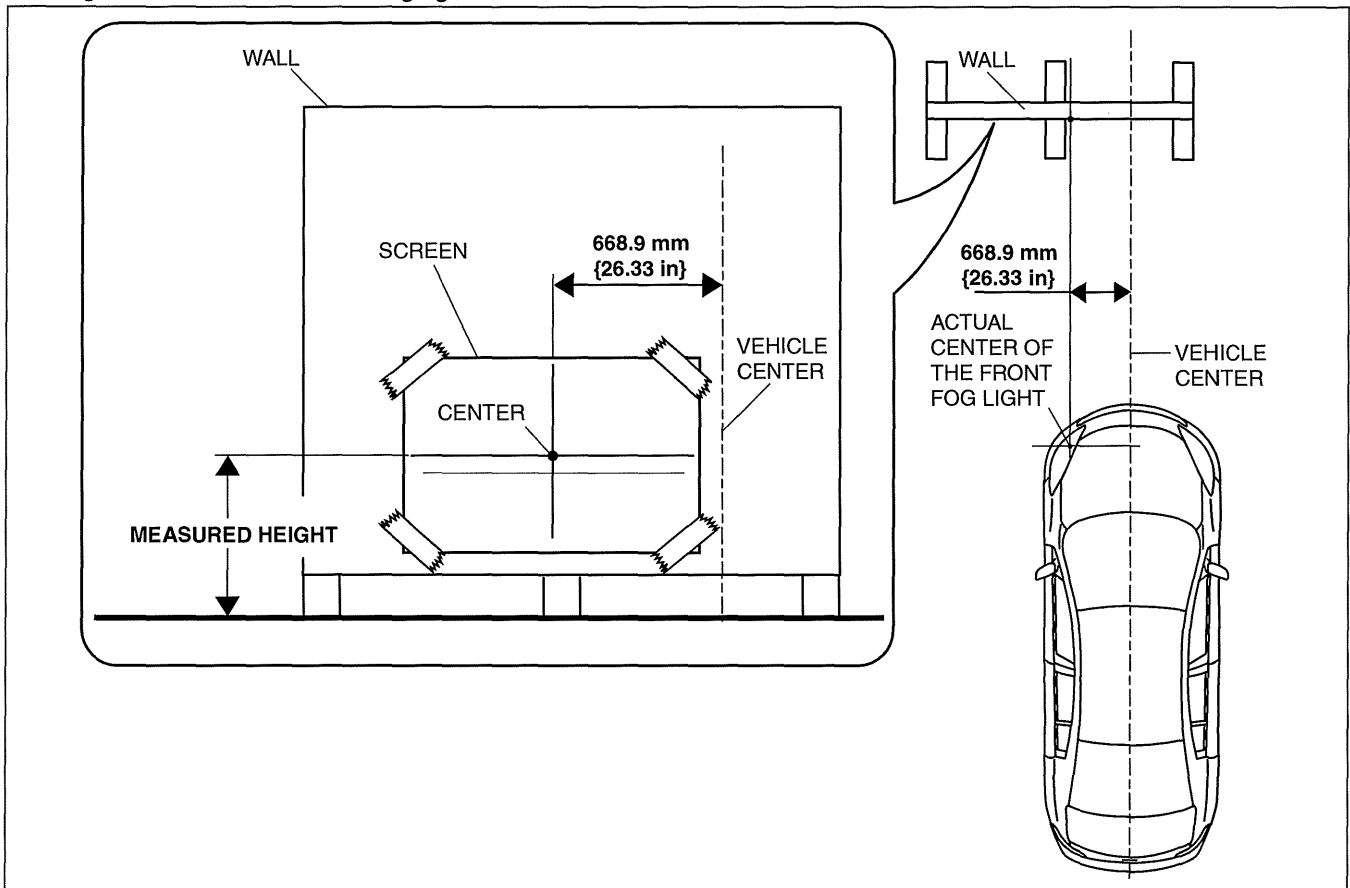
Note

- Since the height of the vehicle varies depending on the vehicle situation, measure the height of the center of the front fog light using the actual vehicle.



am3uuw0000247

7. Align the center of the front fog light with the center of the screen.



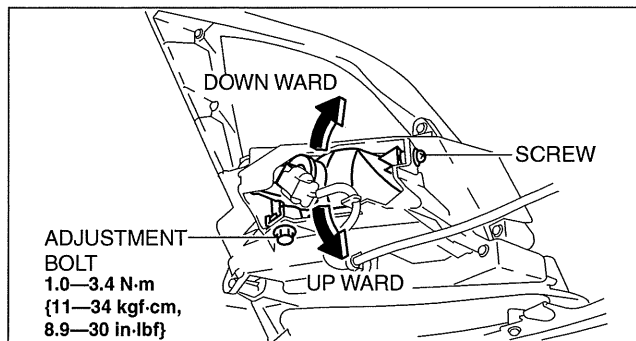
am3uuw0000256

8. Block the light of the other front fog light using a partition.
9. Start the engine so that the battery remains charged.
10. Turn the front fog lights on.

09-18

LIGHTING SYSTEMS

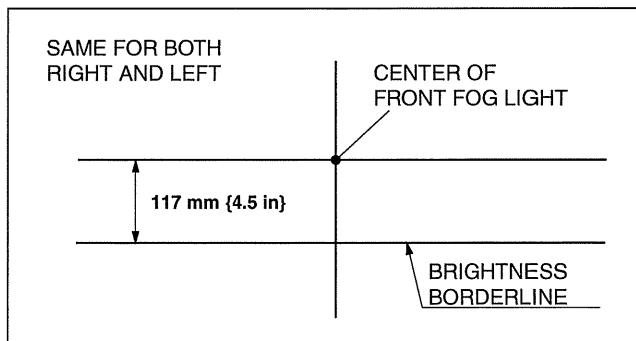
11. Verify that the brightness border line of the front fog light is at the position indicated on the adjustment screen.
 - If the brightness border line is not at the position indicated on the adjustment screen, perform the following adjustment.
 1. Loosen the adjustment bolt.
 2. Loosen the screw.
 3. Move the front fog light in the direction of the arrow shown in the figure to adjust the brightness border line to the position indicated on the adjustment screen.
 4. Tighten the screw and adjustment bolt.



am3uuw0000285

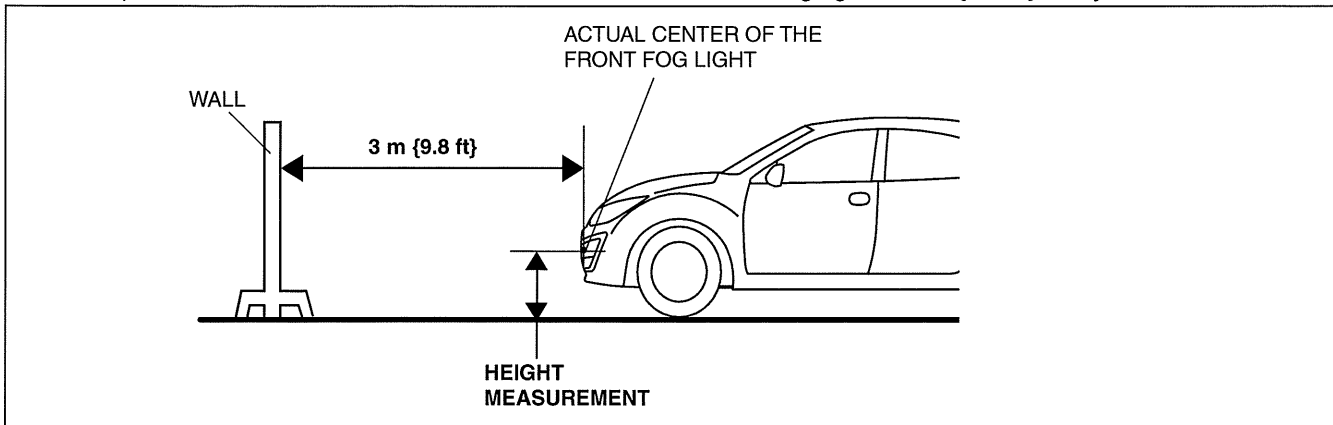
Mazdaspeed3

1. Make a screen as shown in the figure using double-weight, white paper.
2. Adjust the tire pressure to the specification.
3. Position the unloaded vehicle on a flat, level surface.
4. Seat one person in the driver's seat.



am3uuw0000612

5. Line up the vehicle with the wall so that the center of the front fog light is **3 m {9.8 ft}** away from the wall.



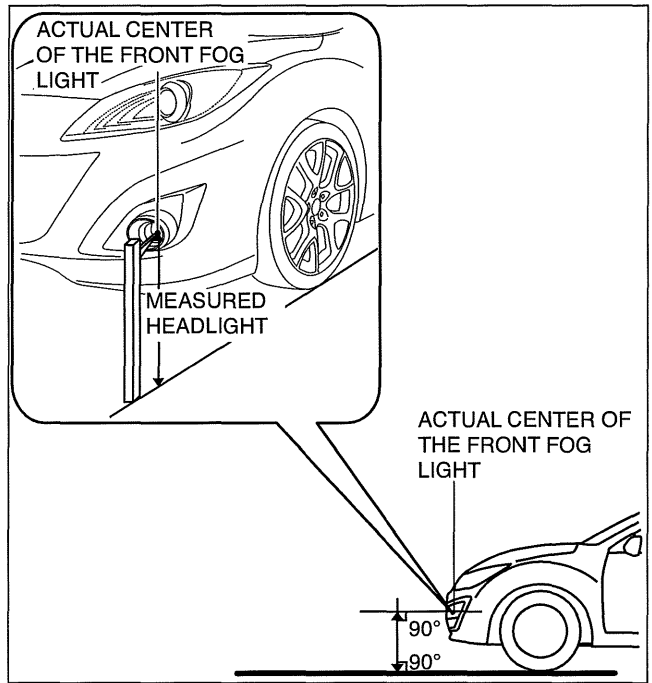
am3uuw0000596

LIGHTING SYSTEMS

6. Measure the height at the center of the front fog light.

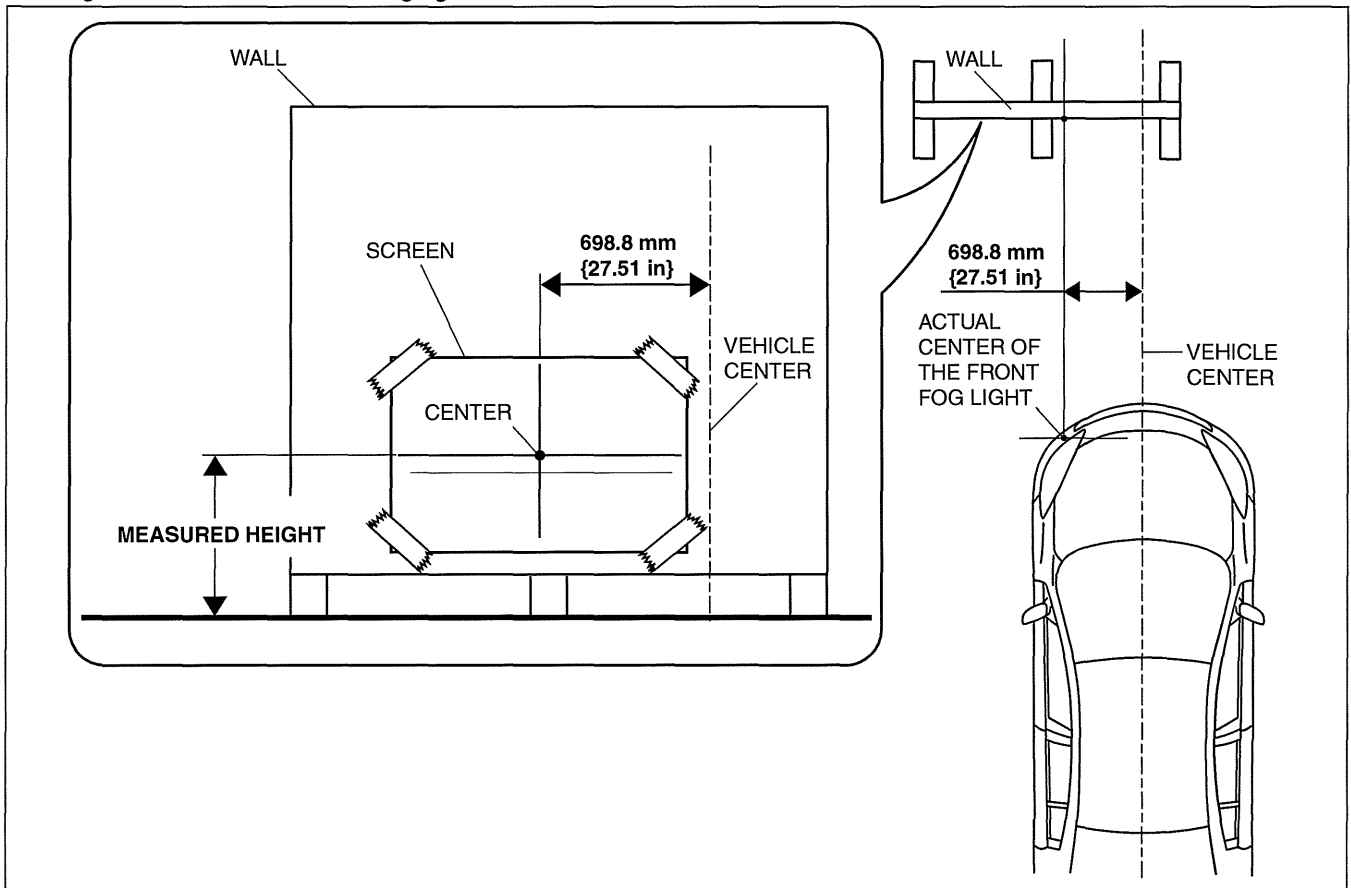
Note

- Since the height of the vehicle varies depending on the vehicle situation, measure the height of the center of the front fog light using the actual vehicle.



am3uuw0000573

7. Align the center of the front fog light with the center of the screen.



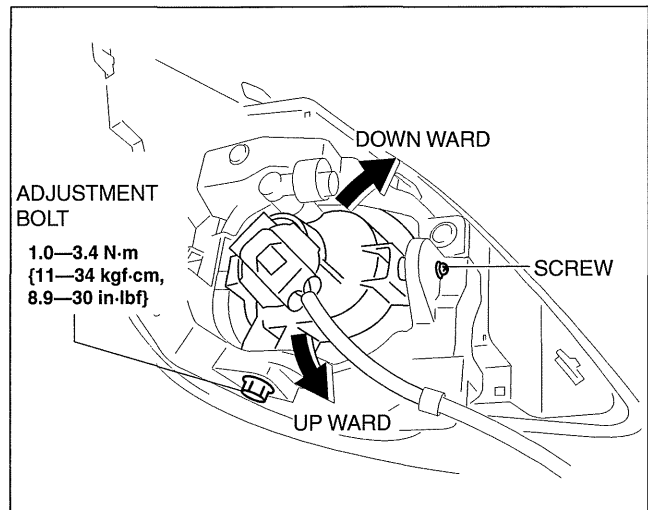
am3uuw0000596

8. Block the light of the other front fog light using a partition.
9. Start the engine so that the battery remains charged.
10. Turn the front fog lights on.

09-18

LIGHTING SYSTEMS

11. Verify that the brightness border line of the front fog light is at the position indicated on the adjustment screen.
 - If the brightness border line is not at the position indicated on the adjustment screen, perform the following adjustment.
 1. Loosen the adjustment bolt.
 2. Loosen the screw.
 3. Move the front fog light in the direction of the arrow shown in the figure to adjust the brightness border line to the position indicated on the adjustment screen.
 4. Tighten the screw and adjustment bolt.



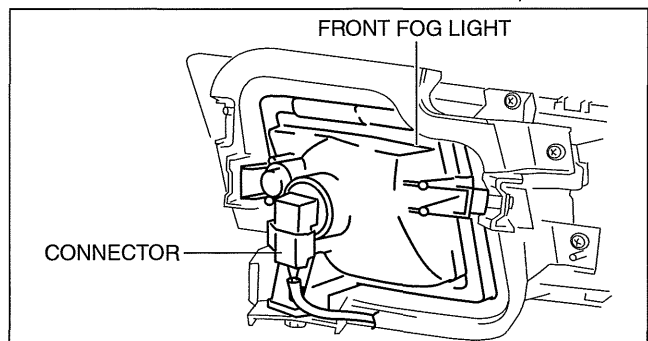
am3uuw0000613

FRONT FOG LIGHT BULB REMOVAL/INSTALLATION

id091800802300

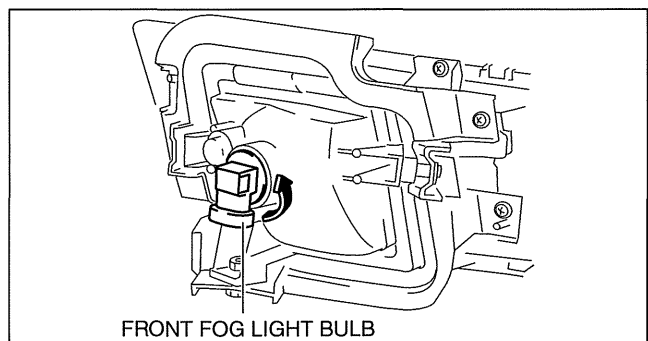
Except Mazdaspeed3

1. Disconnect the negative battery cable.
2. Slightly bend back the mudguard. (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Disconnect the connector.



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4. Rotate the front fog light bulb in the direction of the arrow shown in the figure.



am3uuw0000573

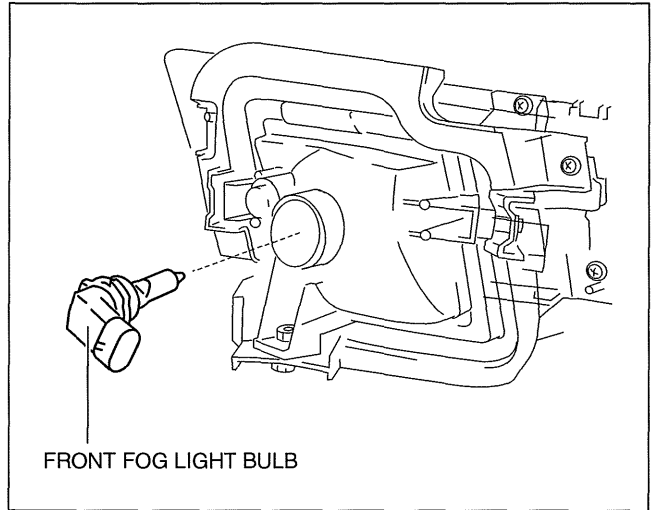
LIGHTING SYSTEMS

5. Remove the front fog light bulb.

Caution

- A halogen bulb generates extremely high heat when it is used. If the surface of the bulb is soiled, excessive heat will build up and the light's life will be shortened. When replacing the bulb, hold the metal flange, not the glass.

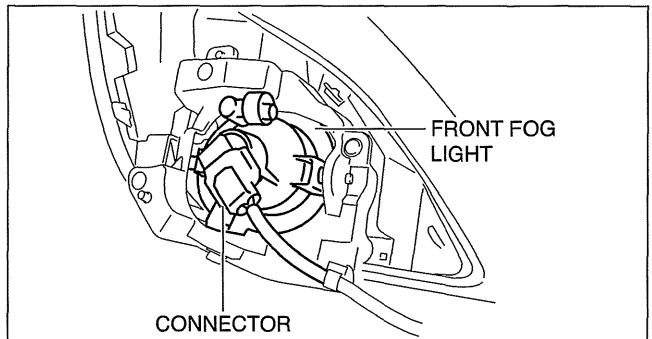
6. Install in the reverse order of removal.



am3uuw0000538

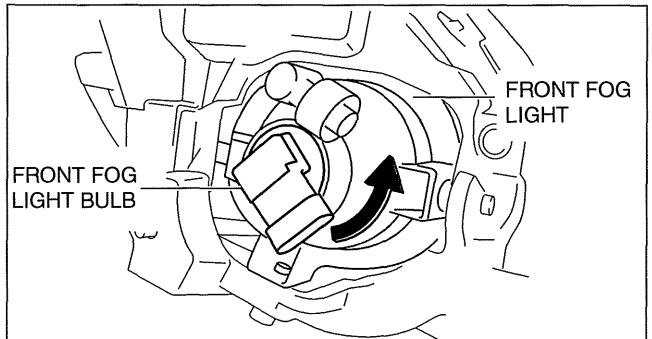
Mazdaspeed3

1. Disconnect the negative battery cable.
2. Slightly bend back the mudguard. (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Disconnect the connector.



am3uuw0000573

4. Rotate the front fog light bulb in the direction of the arrow shown in the figure.



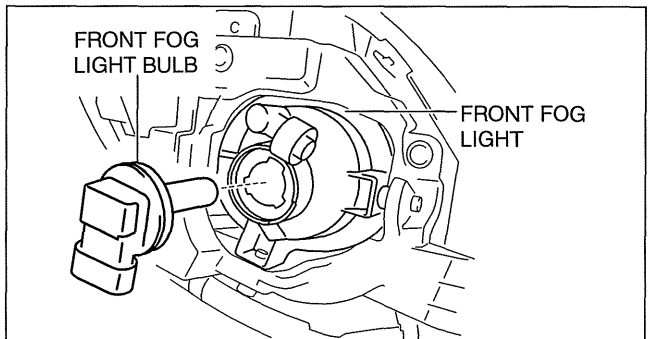
am3uuw0000573

5. Remove the front fog light bulb.

Caution

- A halogen bulb generates extremely high heat when it is used. If the surface of the bulb is soiled, excessive heat will build up and the light's life will be shortened. When replacing the bulb, hold the metal flange, not the glass.

6. Install in the reverse order of removal.



am3uuw0000573

09-18

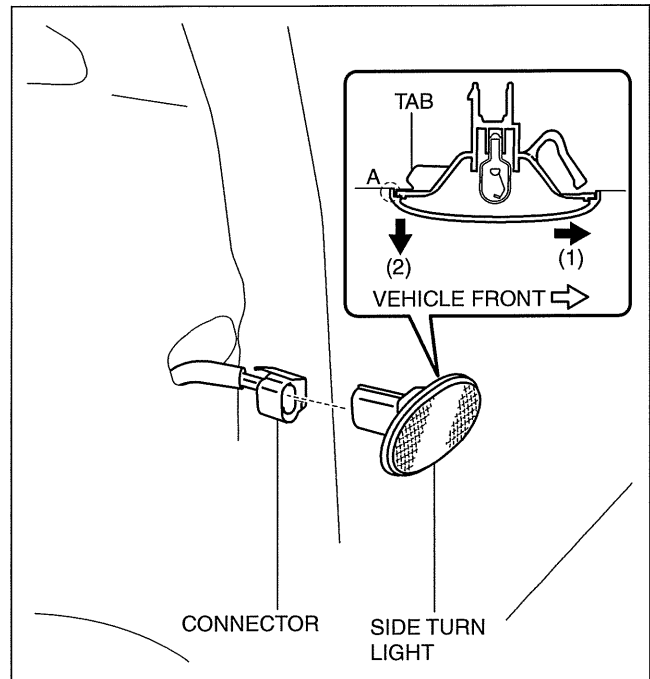
LIGHTING SYSTEMS

SIDE TURN LIGHT REMOVAL/INSTALLATION

id091800811500

Front fender panel type

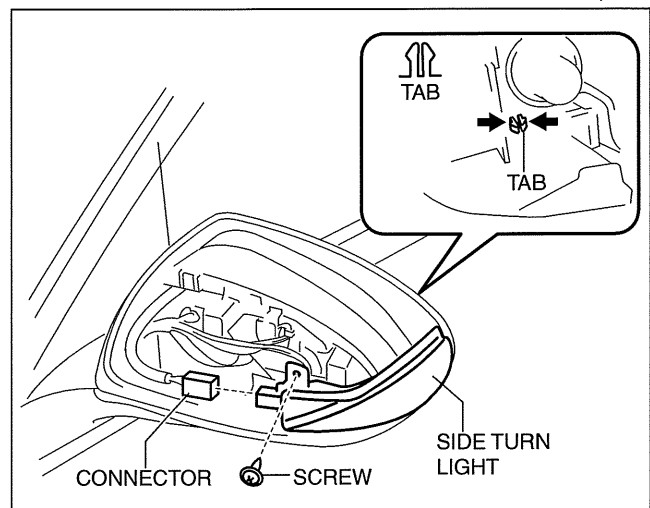
1. Disconnect the negative battery cable.
2. Move the front side turn light in the direction of the arrow (1) and detach the tab.
3. Pull area A of the front side turn light in the direction of the arrow (2) and remove the front side turn light.
4. Disconnect the connector.
5. Remove the side turn light.
6. Install in the reverse order of removal.



am3uuw0000492

Power outer mirror type

1. Disconnect the negative battery cable.
2. Remove the outer mirror glass. (See 09-12-42 OUTER MIRROR GLASS REMOVAL.) (See 09-12-43 OUTER MIRROR GLASS INSTALLATION.)
3. Remove the outer mirror garnish. (See 09-12-44 OUTER MIRROR GARNISH REMOVAL/INSTALLATION.)
4. Remove the screw.
5. Disconnect the connector.
6. Remove the side turn light while detaching tab.
7. Install in the reverse order of removal.



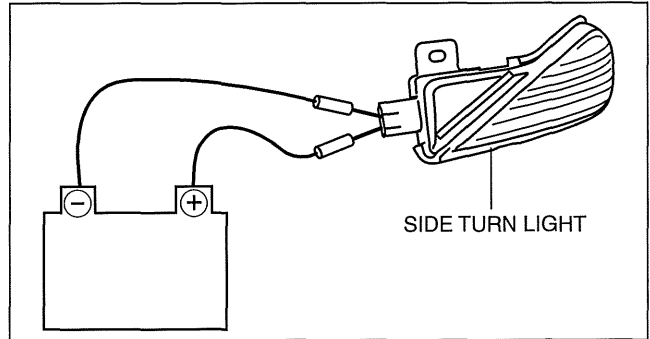
am3uuw0000596

SIDE TURN LIGHT INSPECTION

id091800811600

Side Turn Light (power outer mirror type)

1. Disconnect the negative battery cable.
2. Remove the outer mirror glass. (See 09-12-42 OUTER MIRROR GLASS REMOVAL.) (See 09-12-43 OUTER MIRROR GLASS INSTALLATION.)
3. Remove the outer mirror garnish. (See 09-12-44 OUTER MIRROR GARNISH REMOVAL/INSTALLATION.)
4. Remove the side turn light. (See 09-18-30 SIDE TURN LIGHT REMOVAL/INSTALLATION.)
5. Connect the battery voltage as shown in the figure.
 - If the side turn light does illuminate, replace it.
 - If the side turn light illuminate, inspect the short-code.



am3zzw0000799

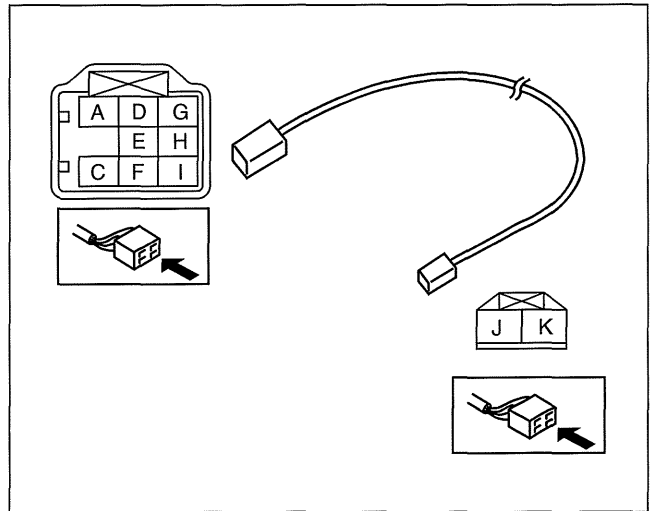
Short-code

1. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
2. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
3. Disconnect the power outer mirror connector. (See 09-12-41 POWER OUTER MIRROR REMOVAL/INSTALLATION.)
4. Verify that the continuity between side turn light terminals is as indicated in the table.
5. If not as indicated in the table, replace the power outer mirror.

○—○ : Continuity

Test condition	Terminal			
	C	E	J	K
Under any condition	○	○—○	○—○	○—○

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am3zzw0000799

09-18

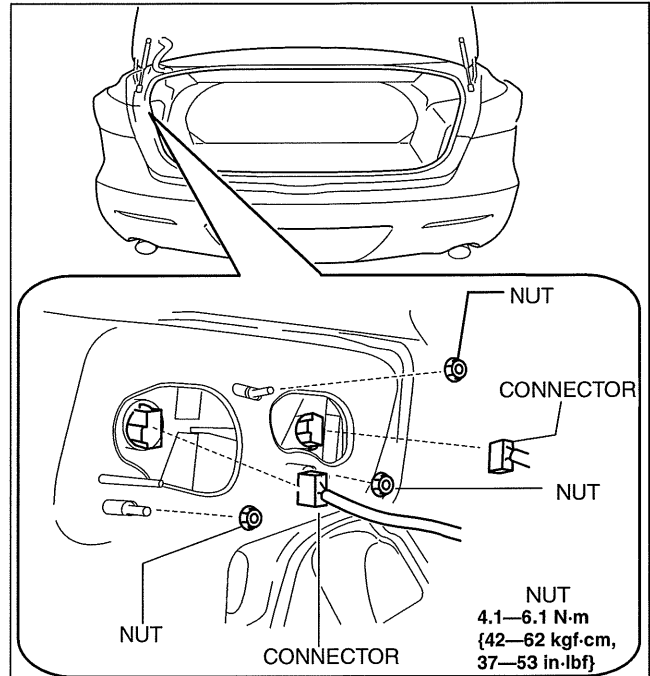
LIGHTING SYSTEMS

REAR COMBINATION LIGHT REMOVAL/INSTALLATION

id091800801000

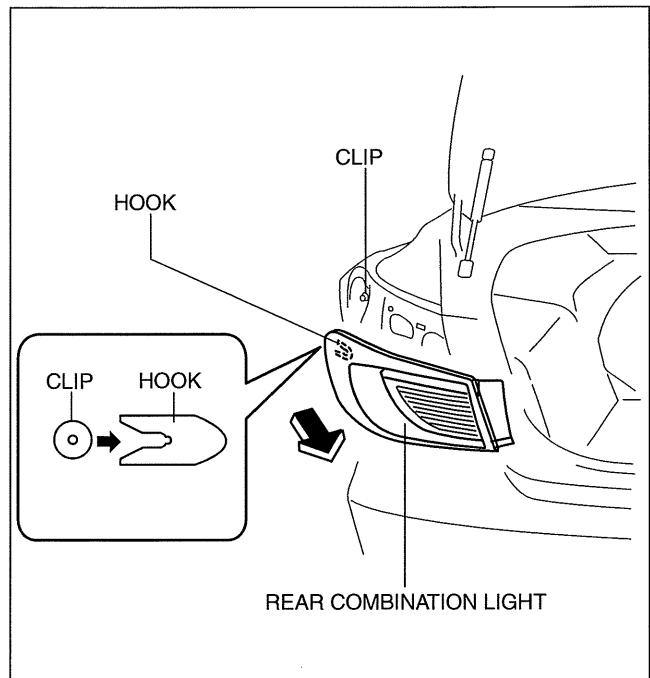
4SD

1. Disconnect the negative battery cable.
2. Remove the trunk mat. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
3. Remove the trunk board. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
4. Remove the trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
5. Remove the trunk side trim. (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
6. Disconnect the connectors shown in the figure and remove the nuts.



am3uuw0000320

7. Pull the rear combination light in the direction of the arrow to detach it from the hook.
8. Remove the rear combination light.
9. Install in the reverse order of removal.

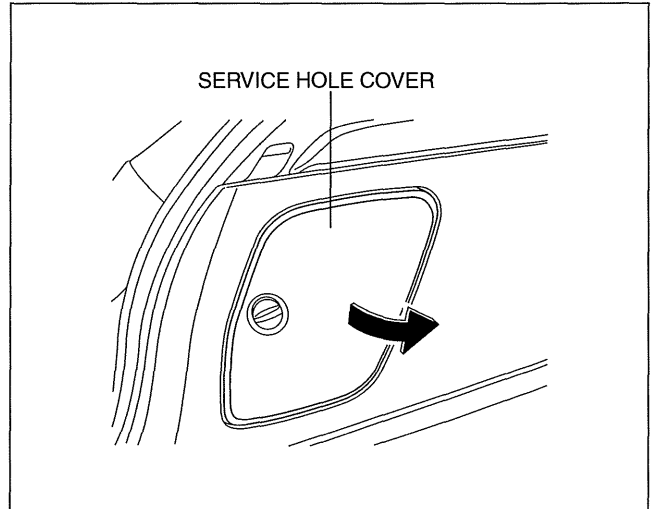


am3uuw0000537

LIGHTING SYSTEMS

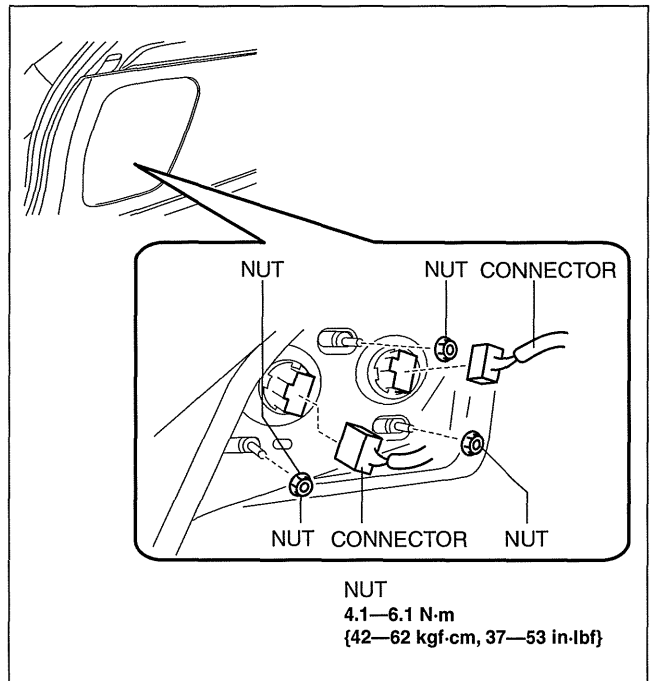
5HB

1. Disconnect the negative battery cable.
2. Remove the service hole cover.



am3uuw0000537

3. Disconnect the connectors shown in the figure and remove the nuts.

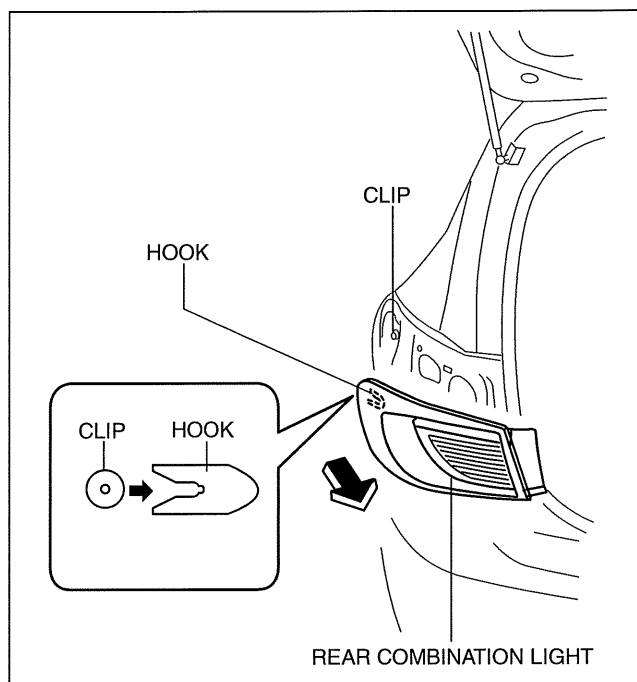


am3uuw0000537

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LIGHTING SYSTEMS

4. Pull the rear combination light in the direction of the arrow to detach it from the hook.
5. Remove the rear combination light.
6. Install in the reverse order of removal.



am3uuw0000537

REAR TURN LIGHT BULB REMOVAL/INSTALLATION

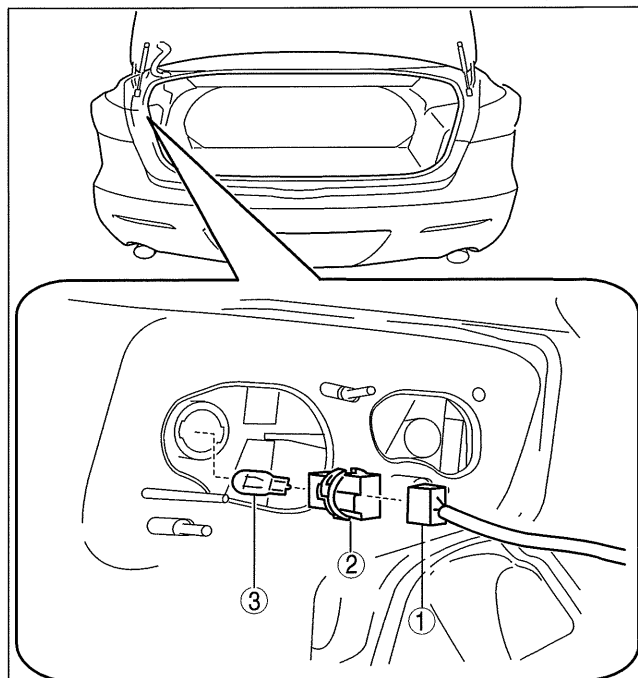
id091800813800

4SD

1. Disconnect the negative battery cable.
2. Remove the trunk mat. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
3. Remove the trunk board. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
4. Remove the trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
5. Partially peel back the trunk side trim. (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
6. Remove in the order indicated in the table.

1	Connector
2	Socket
3	Rear turn light bulb

7. Install in the reverse order of removal.

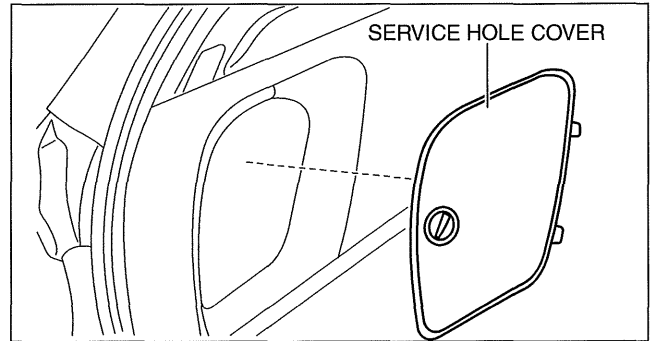


am3uuw0000321

LIGHTING SYSTEMS

5HB

1. Disconnect the negative battery cable.
2. Remove the service hole cover.

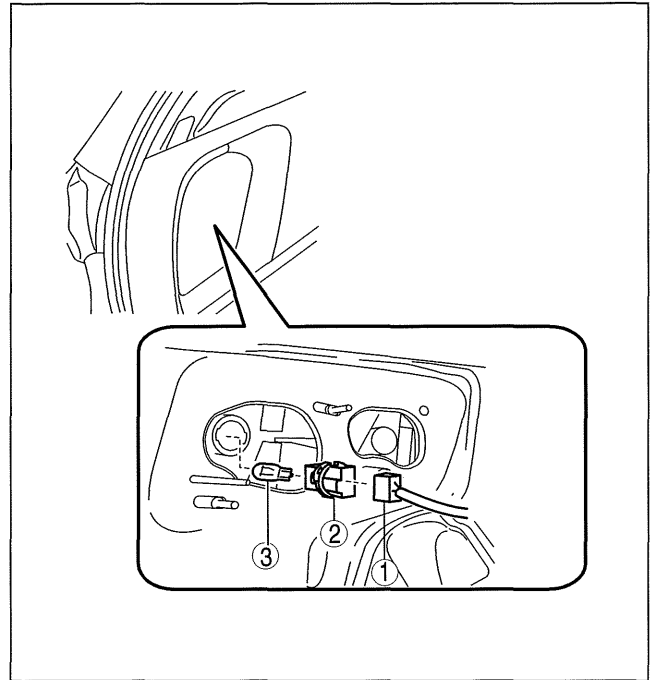


am3uuw0000475

3. Remove in the order indicated in the table.

1	Connector
2	Socket
3	Rear turn light bulb

4. Install in the reverse order of removal.



am3uuw0000475

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LIGHTING SYSTEMS

BRAKE/TAILLIGHT BULB REMOVAL/INSTALLATION

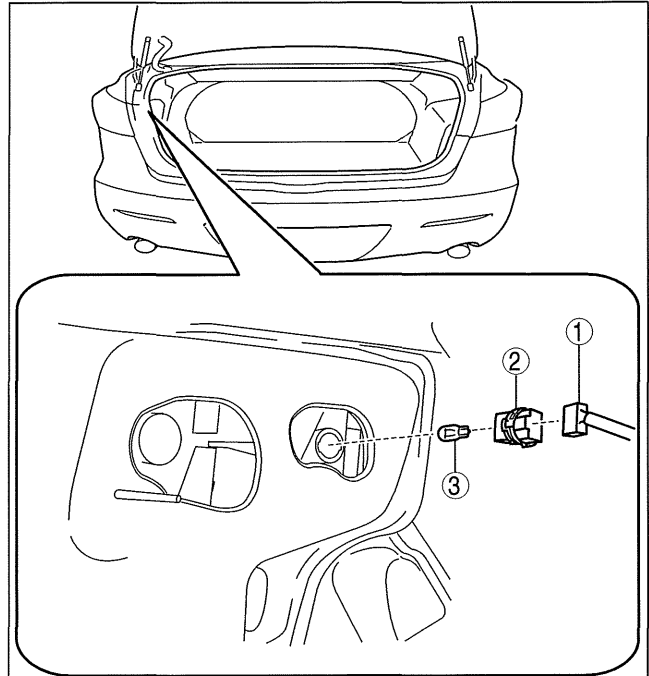
id091800813900

4SD

1. Disconnect the negative battery cable.
2. Remove the trunk mat. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
3. Remove the trunk board. (See 09-17-95 TRUNK BOARD REMOVAL/INSTALLATION.)
4. Remove the trunk end trim. (See 09-17-72 TRUNK END TRIM REMOVAL/INSTALLATION.)
5. Partially peel back the trunk side trim. (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
6. Remove in the order indicated in the table.

1	Connector
2	Socket
3	Brake/taillight bulb

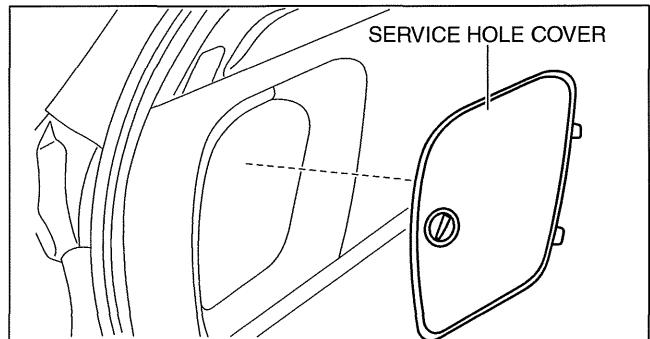
7. Install in the reverse order of removal.



am3uuw0000321

5HB

1. Disconnect the negative battery cable.
2. Remove the service hole cover.



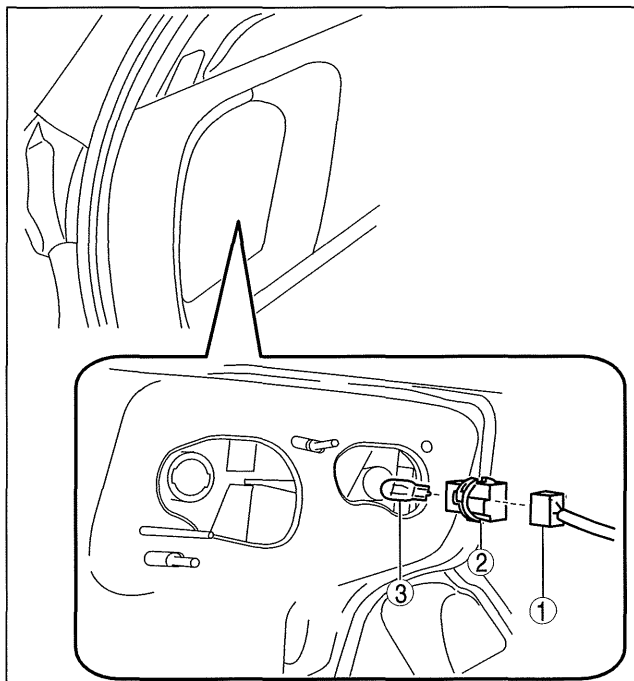
am3uuw0000476

LIGHTING SYSTEMS

3. Remove in the order indicated in the table.

1	Connector
2	Socket
3	Brake/taillight bulb

4. Install in the reverse order of removal.



am3uuw0000476

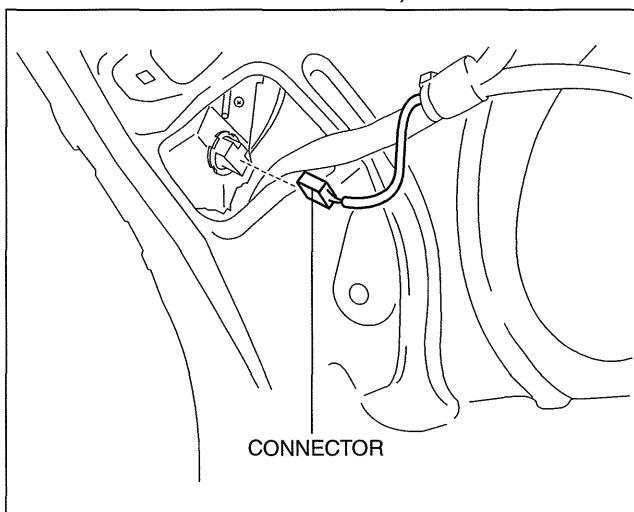
BACK-UP LIGHT BULB REMOVAL/INSTALLATION

4SD

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.

id091800810000

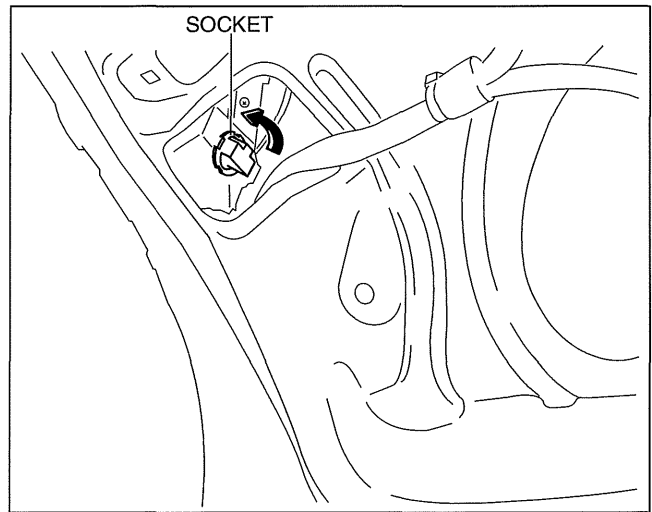
09-18



am3uuw0000538

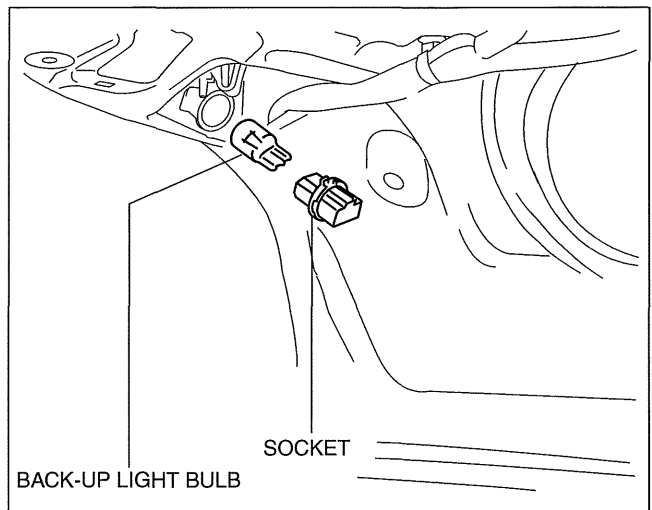
LIGHTING SYSTEMS

4. Rotate the socket in the direction of the arrow as shown in the figure to remove it.



am3uuw0000282

5. Remove the back-up light bulb.
6. Install in the reverse order of removal.

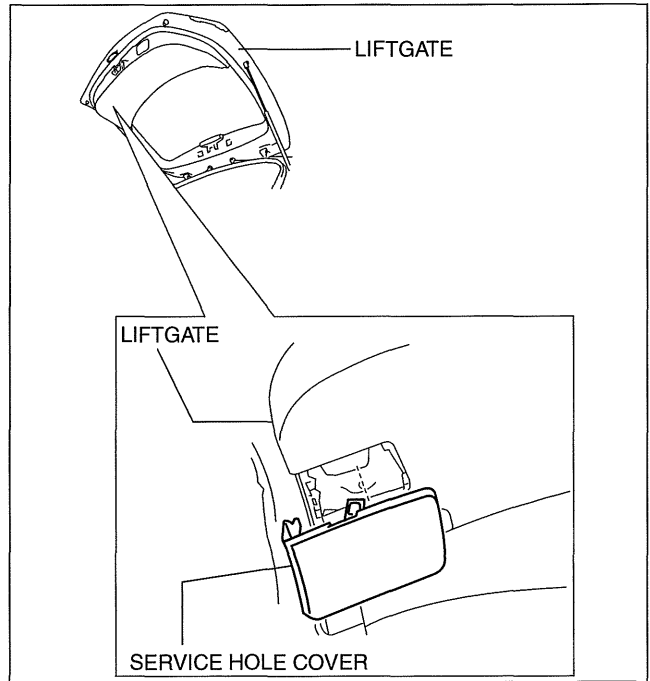


am3uuw0000276

LIGHTING SYSTEMS

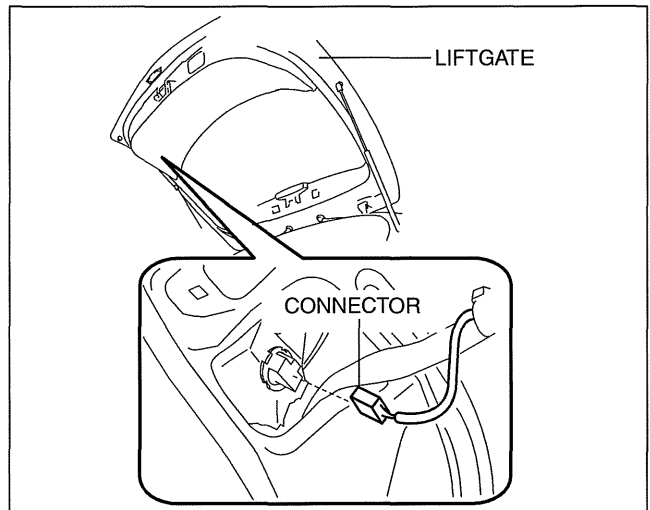
5HB

1. Disconnect the negative battery cable.
2. Remove the service hole cover.



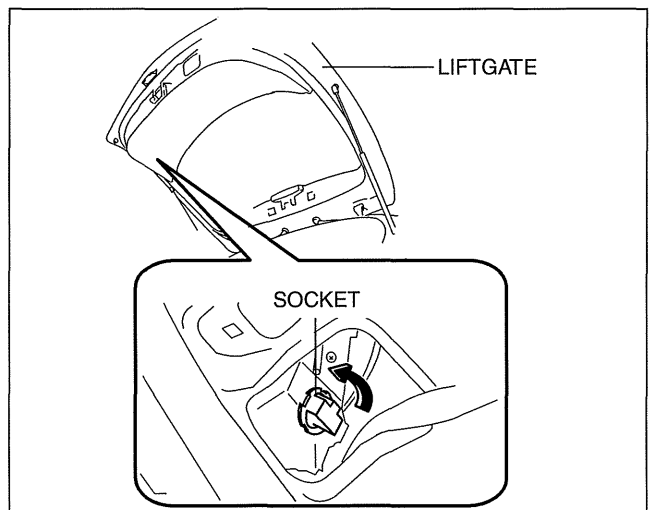
am3uuw000539

3. Disconnect the connector.



am3uuw000539

4. Rotate the socket in the direction of the arrow as shown in the figure to remove it.

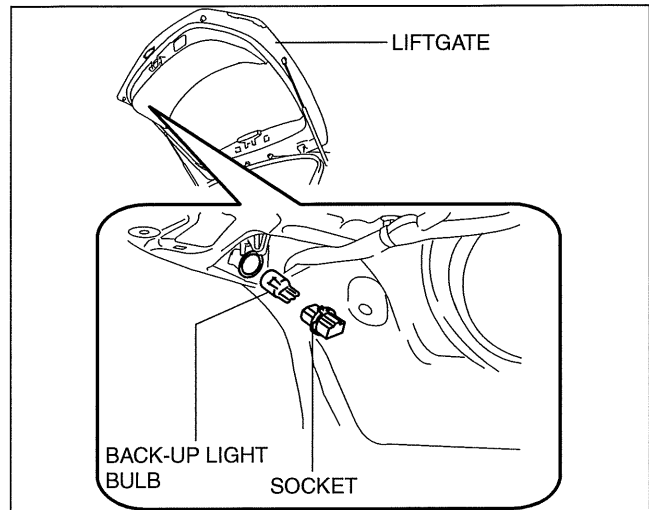


am3uuw000539

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LIGHTING SYSTEMS

5. Remove the back-up light bulb.
6. Install in the reverse order of removal.



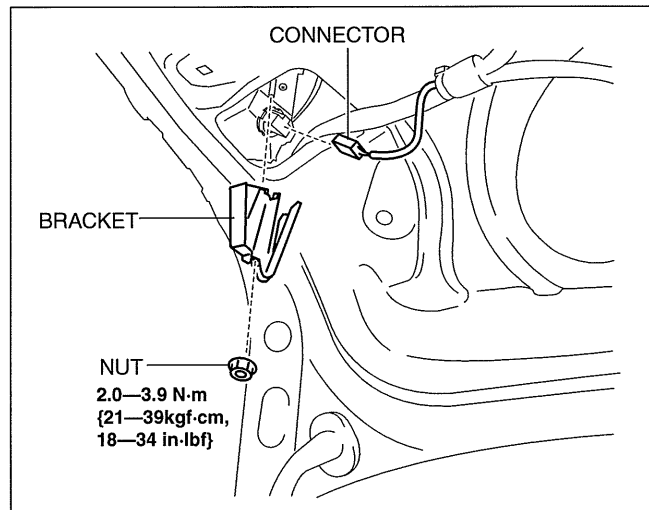
am3uuw0000441

INBOARD LIGHT REMOVAL/INSTALLATION

id091800806100

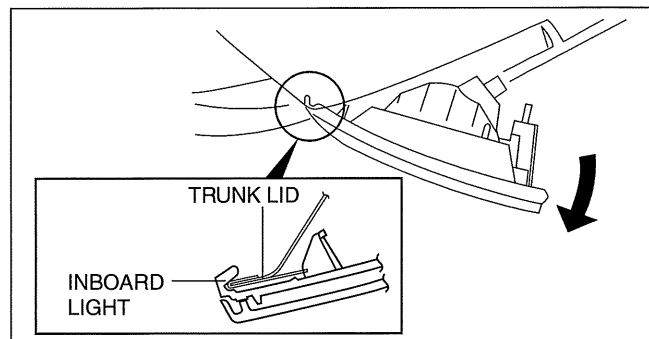
4SD

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the nut.
5. Remove the Bracket.



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6. Remove the inboard light as shown in the figure.
7. Install in the reverse order of removal. (See 09-18-42 Inboard Light Installation Note.)

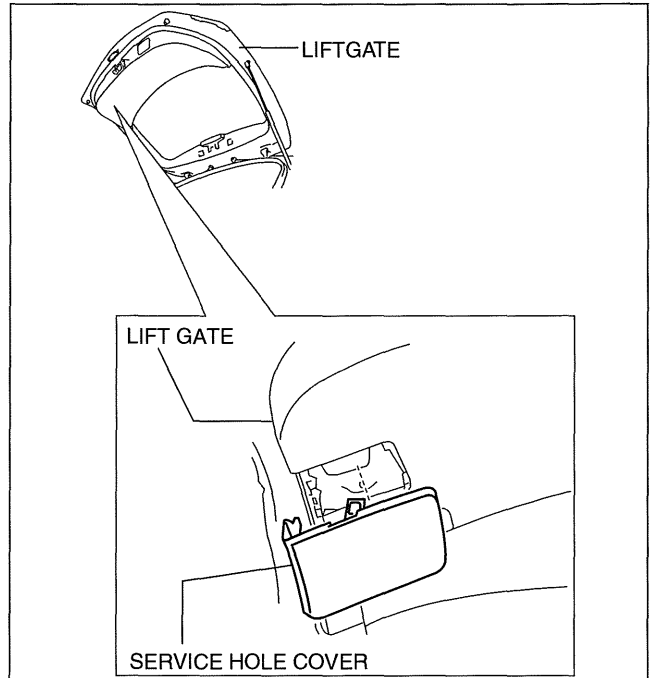


am3uuw0000558

LIGHTING SYSTEMS

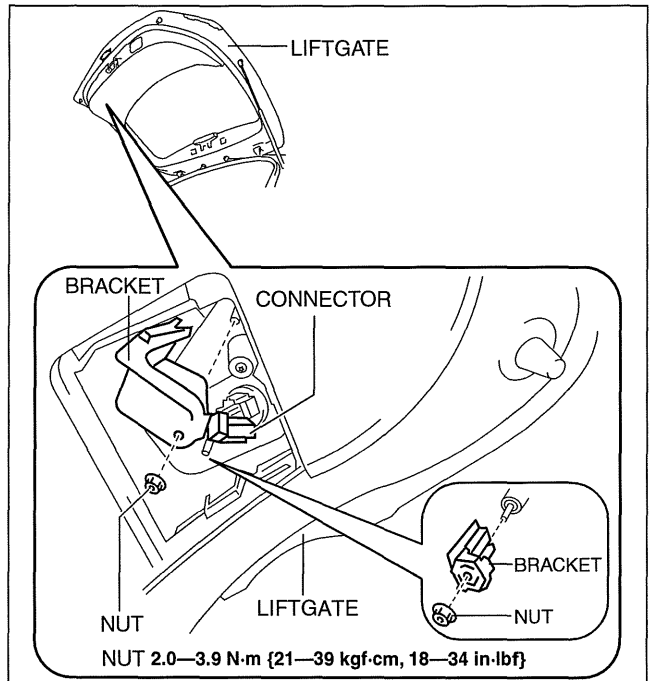
5HB

1. Disconnect the negative battery cable.
2. Remove the service hole cover.



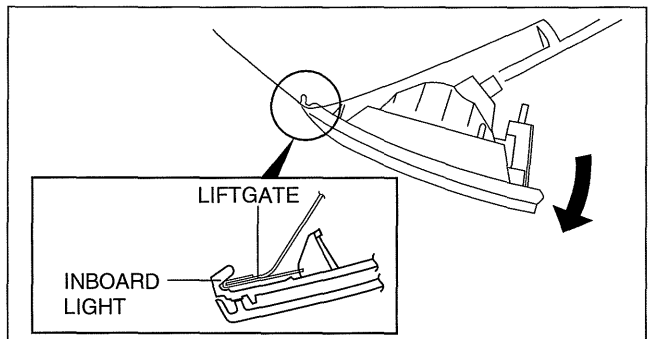
am3uuw0000538

3. Disconnect the connector.
4. Remove the nut.
5. Remove the Bracket.



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6. Remove the inboard light as shown in the figure.
7. Remove the request switch. (With Advanced keyless entry and push button start system) (See 09-14-73 REQUEST SWITCH REMOVAL/INSTALLATION.)
8. Install in the reverse order of removal. (See 09-18-42 Inboard Light Installation Note.)



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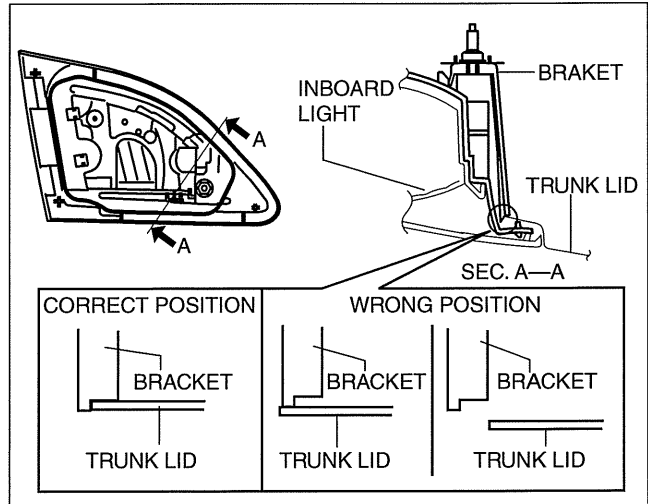
09-18

LIGHTING SYSTEMS

Inboard Light Installation Note

4SD

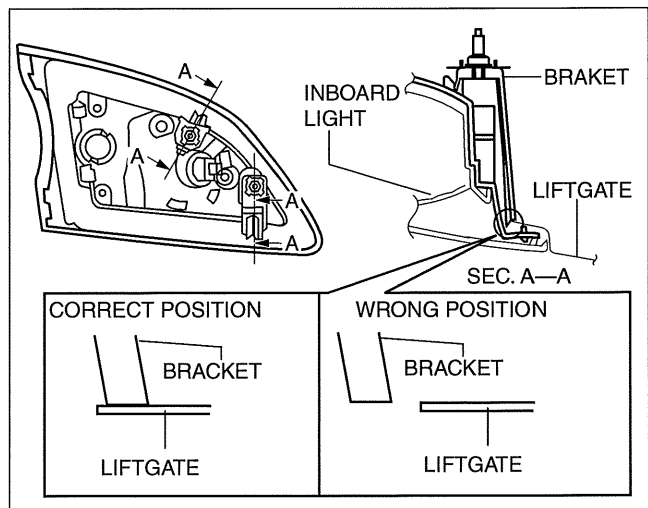
1. Push the bracket onto the trunk lid as shown in the figure and install.



am3uuw0000442

5HB

1. Push the bracket into the liftgate as shown in the figure and install.



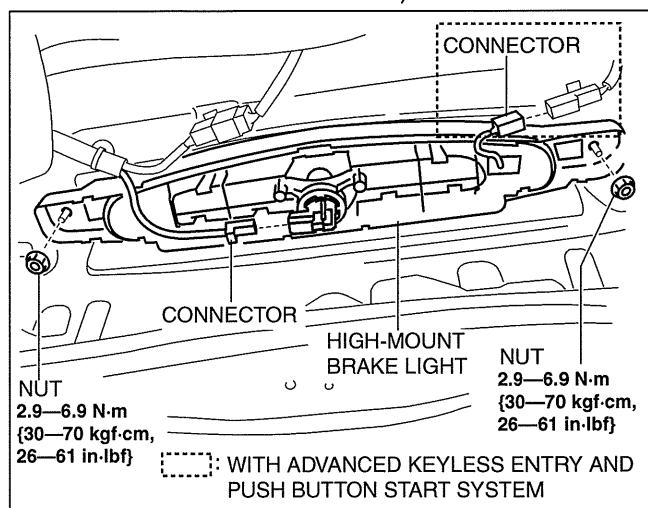
am3uuw0000548

HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION

4SD

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the nuts.

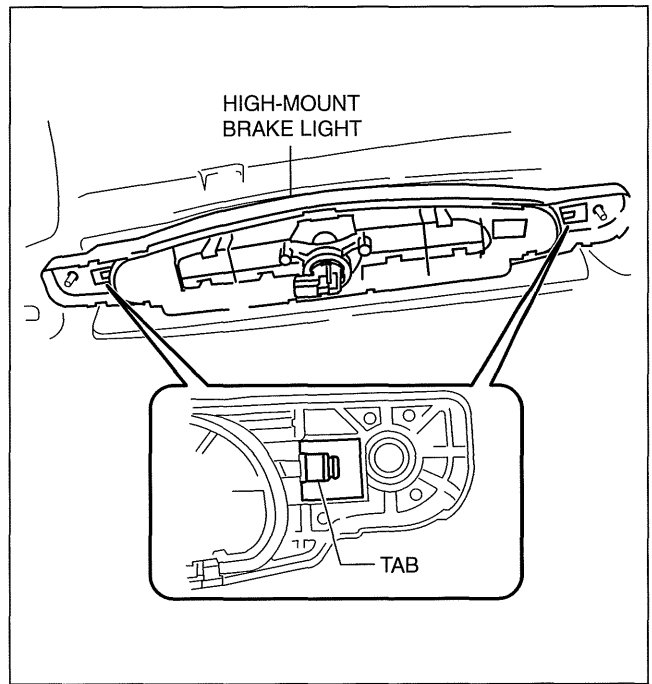
id091800802000



am3uuw0000539

LIGHTING SYSTEMS

5. While pressing the tabs shown in the figure, pull the high-mount brake light outward and remove it.
6. Remove the high-mount brake light.
7. Install in the reverse order of removal.



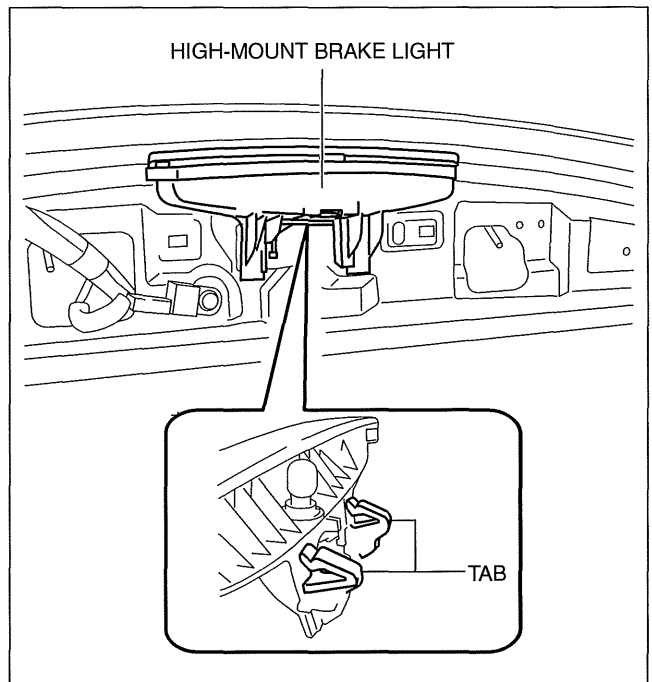
am3uuw0000539

5HB

Except Mazdaspeed3

1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. While pressing the tabs shown in the figure, pull the high-mount brake light outward and remove it.

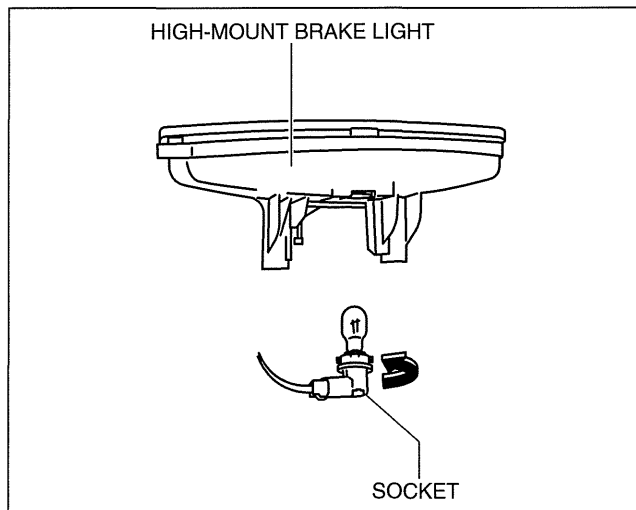
09-18



am3uuw0000539

LIGHTING SYSTEMS

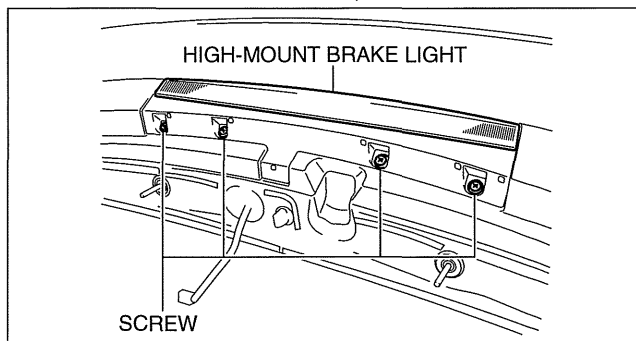
4. Remove the high-mount brake light socket.
5. Remove the high-mount brake light.
6. Install in the reverse order of removal.



am3uuw0000539

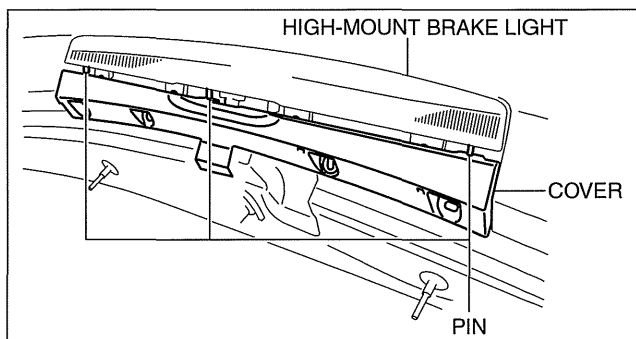
Mazdaspeed3

1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. Remove the rear spoiler. (See 09-16-21 REAR SPOILER REMOVAL/INSTALLATION.)
4. Remove the screws shown in the figure.



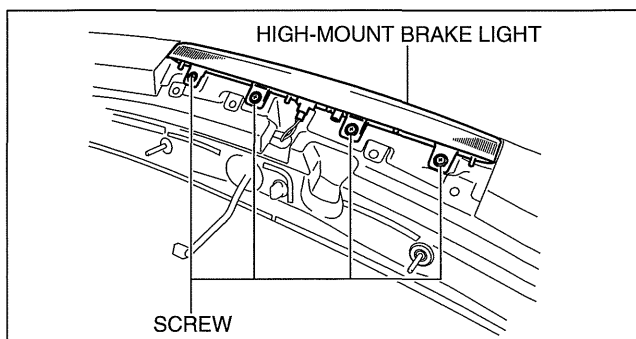
am3uuw0000572

5. Set the pin aside and remove the cover.



am3uuw0000572

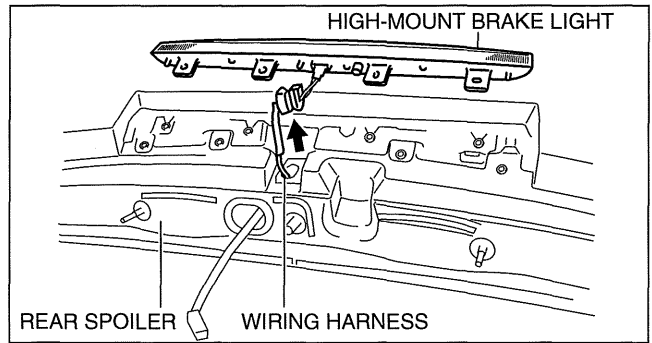
6. Remove the screws shown in the figure.



am3uuw0000572

LIGHTING SYSTEMS

7. Pull out the wiring harness from the rear spoiler.
8. Remove the high-mount brake light.
9. Install in the reverse order of removal.



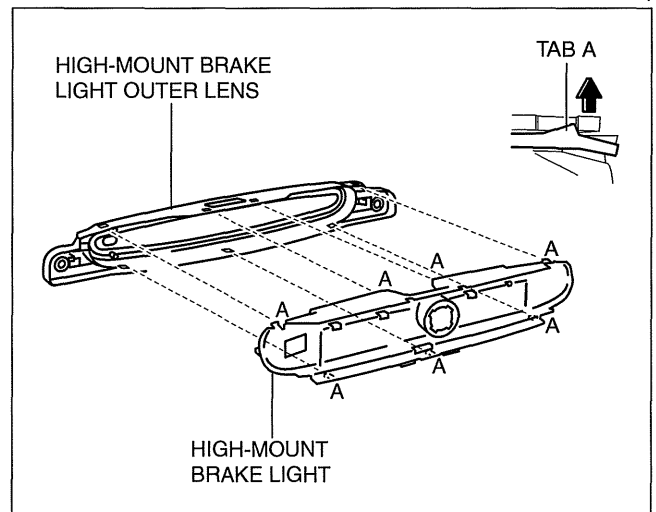
am3uuw0000572

HIGH-MOUNT BRAKE LIGHT DISASSEMBLY/ASSEMBLY

id091800864400

4SD

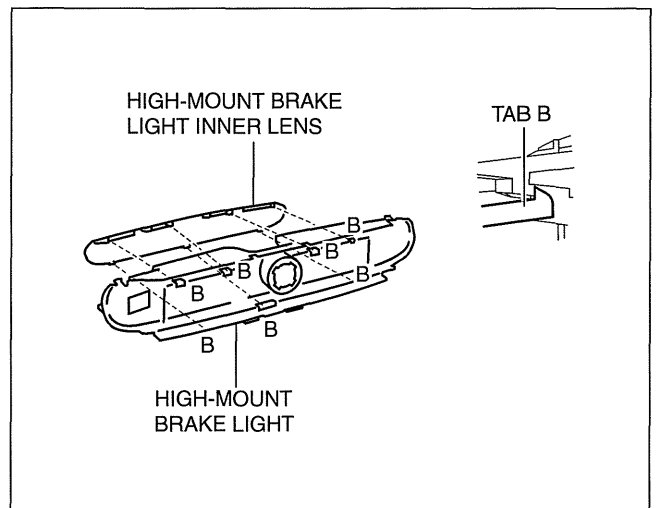
1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Remove the high-mount brake light. (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
4. Remove the high-mount brake light outer lens.



am3uuw0000539

09-18

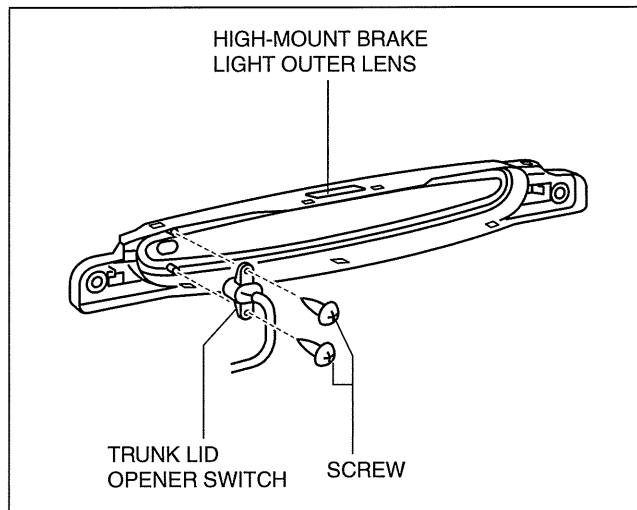
5. Remove the high-mount brake light inner lens.



am3uuw0000540

LIGHTING SYSTEMS

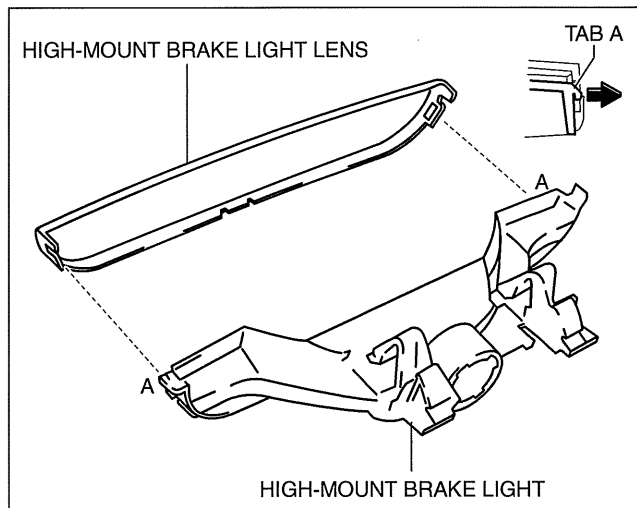
6. Remove the screws (with advanced keyless entry and push button start system).
7. Remove the trunk lid opener switch (with advanced keyless entry and push button start system).
8. Install in the reverse order of removal.



am3uuw0000322

5HB

1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. Remove the high-mount brake light. (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
4. Remove the high-mount brake light lens.
5. Install in the reverse order of removal.



am3uuw0000322

LIGHTING SYSTEMS

HIGH-MOUNT BRAKE LIGHT BULB REMOVAL/INSTALLATION

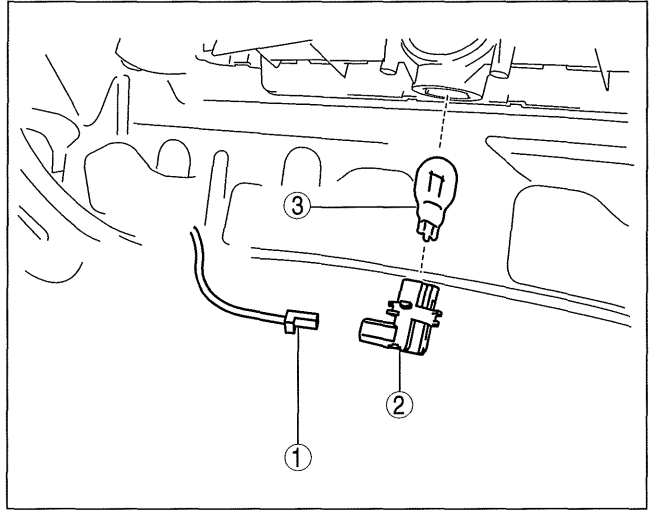
id091800866400

4SD

1. Disconnect the negative battery cable.
2. Remove the trunk lid trim. (See 09-17-104 TRUNK LID TRIM REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Connector
2	Socket
3	High-mount brake light bulb

4. Install in the reverse order of removal.



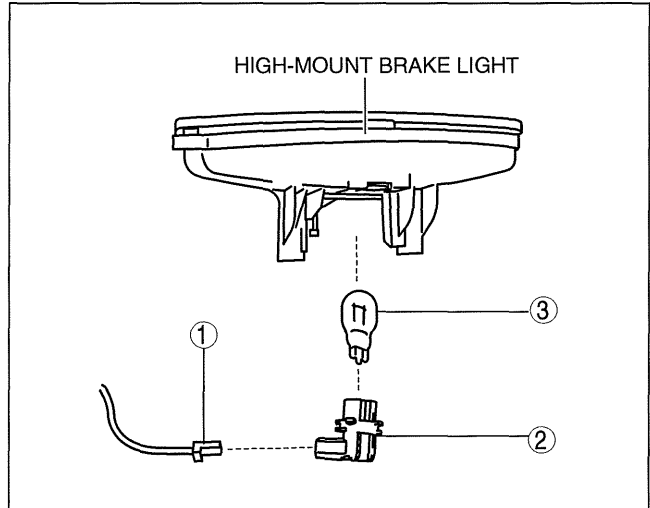
am3uuw0000389

5HB

1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. Remove the high-mount brake light. (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.

1	Connector
2	Socket
3	High-mount brake light bulb

5. Install in the reverse order of removal.



am3uuw0000557

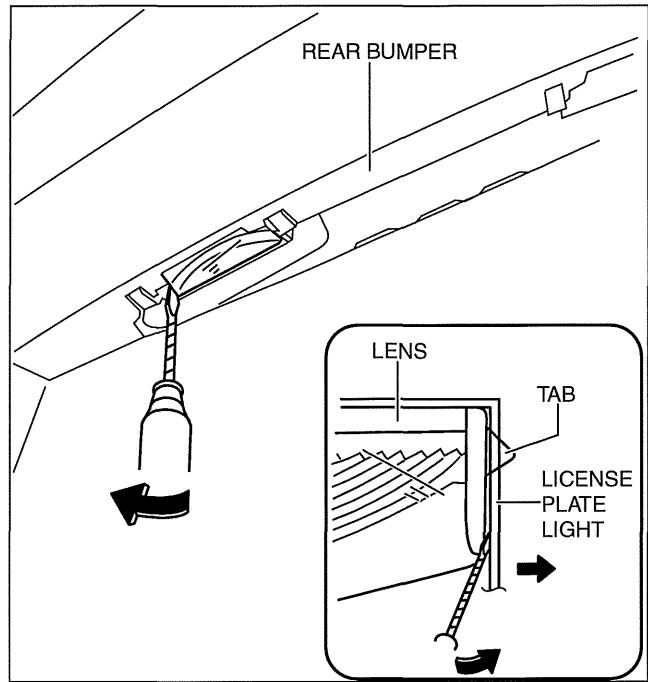
09-18

LIGHTING SYSTEMS

LICENSE PLATE LIGHT BULB REMOVAL/INSTALLATION

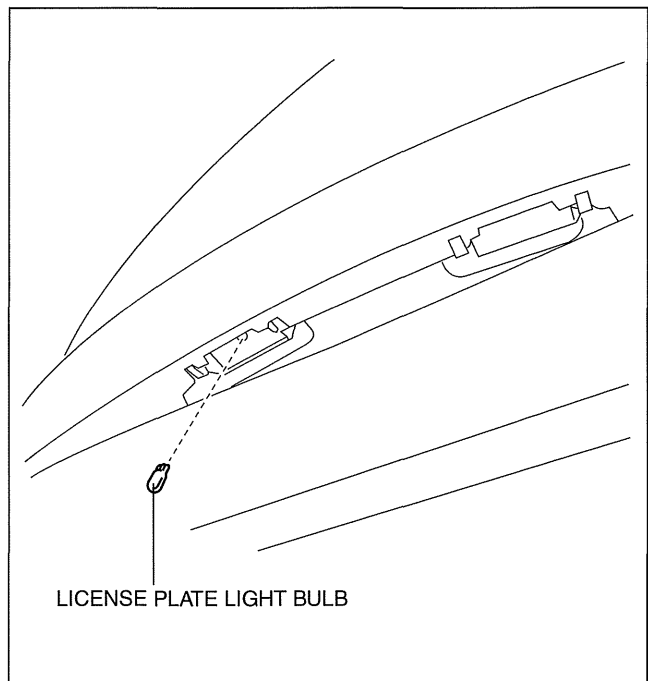
id091800857800

1. Disconnect the negative battery cable.
2. Insert a tape-wrapped fastener remover to the position shown in the figure, release the tabs, and remove the lens.



am3uuw0000437

3. Remove the license plate light bulb.
4. Install in the reverse order of removal.



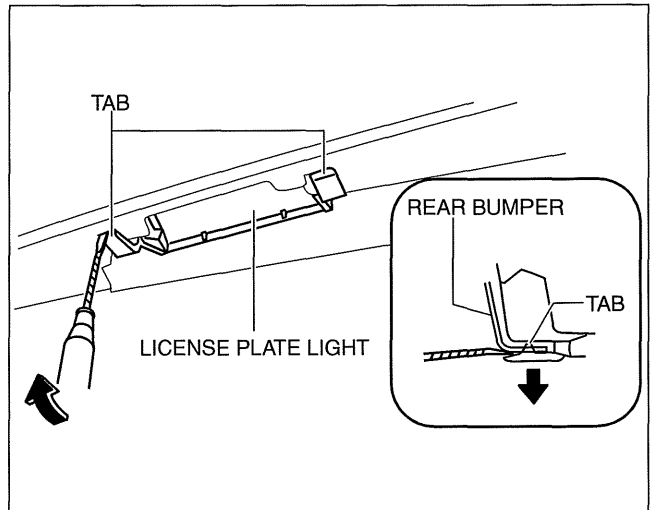
am3uuw0000540

LIGHTING SYSTEMS

LICENSE PLATE LIGHT REMOVAL/INSTALLATION

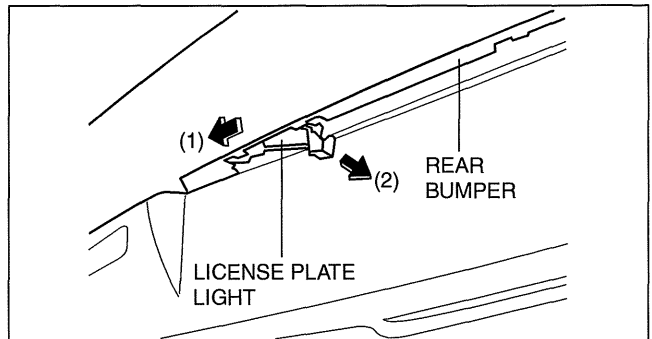
id091800801100

1. Disconnect the negative battery cable.
2. Remove the lens. (See 09-18-48 LICENSE PLATE LIGHT BULB REMOVAL/INSTALLATION.)
3. Insert a tape-wrapped fastener remover to the position shown in the figure, release the tabs.



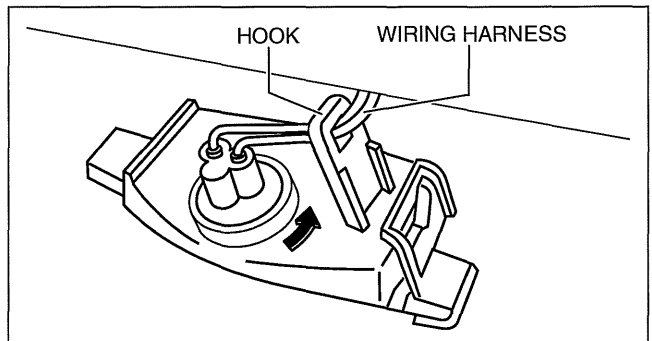
am3uuw0000540

4. Pull the rear bumper in the direction of the arrow (1) in the figure, and pull out the license plate lights in the direction of the arrow (2).



am3uuw0000540

5. Pull out the wiring harness in the direction of the arrow and set it aside from the hook.
6. Remove the license plate light.
7. Install in the reverse order of removal.



am3uuw0000438

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LIGHTING SYSTEMS

AUTO LEVELING SENSOR REMOVAL/INSTALLATION

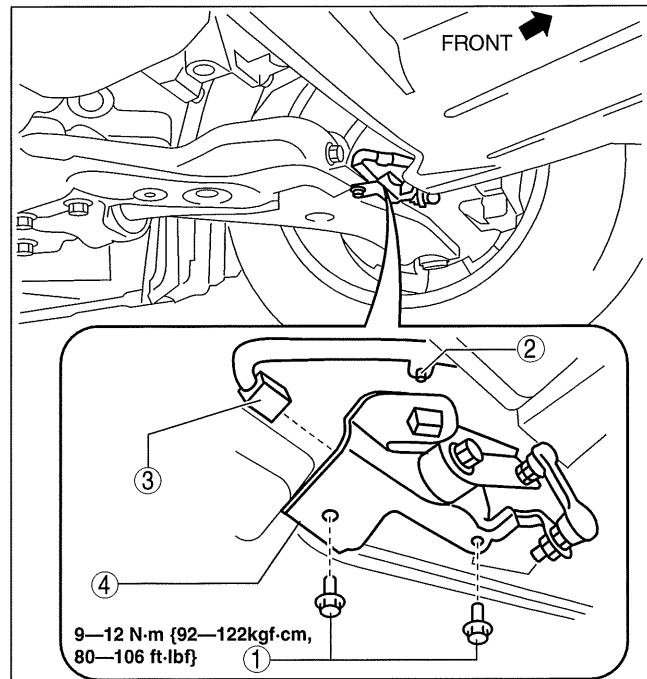
id091800805700

Front

1. Disconnect the negative battery cable.
2. Lift up the vehicle.
3. Remove in the order indicated in the table.

1	Bolt
2	Clip
3	Connector
4	Front auto leveling sensor

4. Install in the reverse order of removal.
5. Perform the auto leveling system initialization.
(See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)



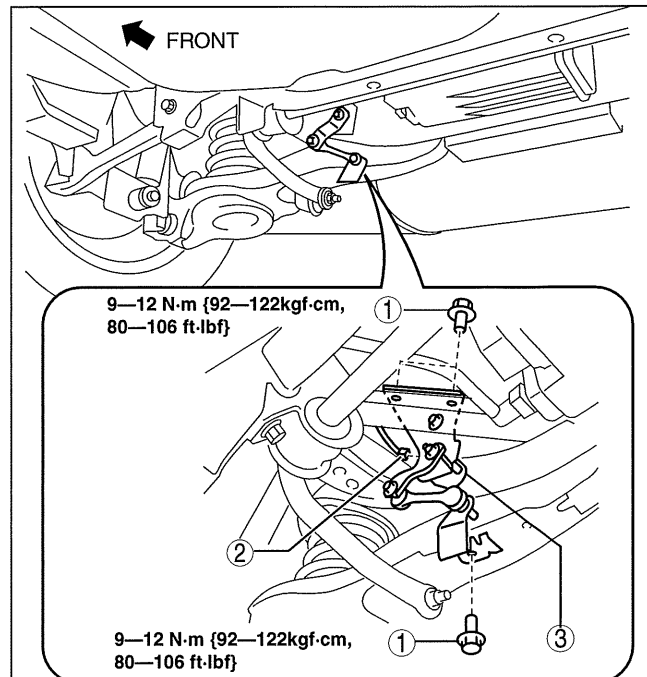
am3uuw0000442

Rear

1. Disconnect the negative battery cable.
2. Lift up the vehicle.
3. Disconnect the Charcoal canister connector. (See 01-16A-6 CHARCOAL CANISTER REMOVAL/ INSTALLATION [LF, L5].)
4. Remove in the order indicated in the table.

1	Bolt
2	Connector
3	Rear auto leveling sensor

5. Install in the reverse order of removal.
6. Perform the auto leveling system initialization.
(See 09-18-51 AUTO LEVELING SYSTEM INITIALIZATION.)



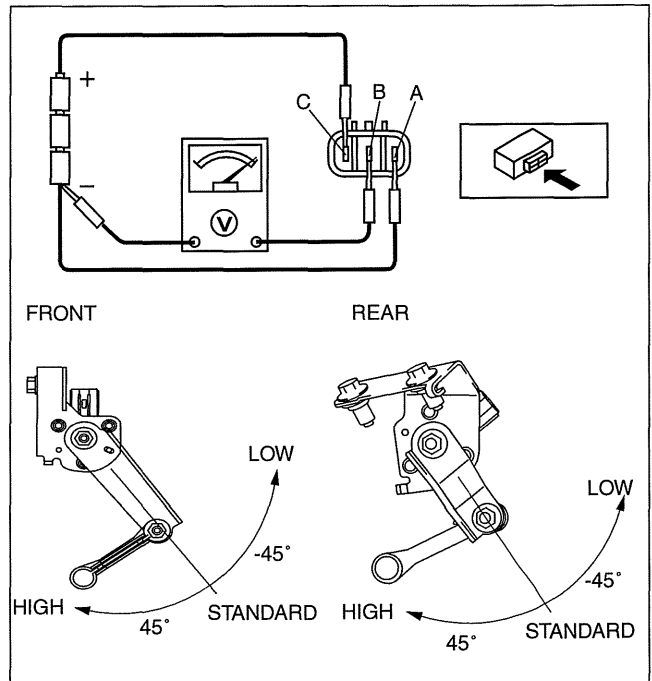
am3uuw0000443

LIGHTING SYSTEMS

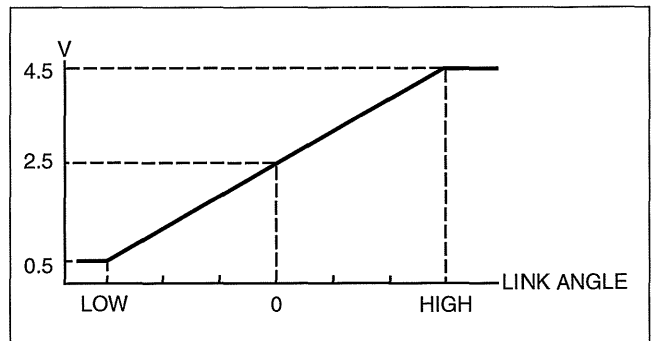
AUTO LEVELING SENSOR INSPECTION

id091800805600

1. Disconnect the negative battery cable.
2. Remove the auto leveling sensor. (See 09-18-50 AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
3. Connect the three dry cell batteries (1.5 V) in a series.
4. Connect auto leveling sensor terminal A to the battery's minus terminal, and terminal C to the battery's plus terminal, and apply 4.5 V of voltage between terminals A and C.
5. Connect the tester as shown in the figure.



6. When slowly moving the link up and down, verify that the shift is linear while the voltage is 0.5 to 4.5 V.
 - If the voltage cannot be verified as indicated in the graph, replace the auto leveling sensor.



09-18

AUTO LEVELING SYSTEM INITIALIZATION

id091800805800

Caution

- Perform with the vehicle in an unloaded condition (no occupants; spare tire, jack and tools are in designated positions.)

Without using M-MDS

Note

- If the following servicing is to be done, perform the procedure for the case where system initialization has never been done. (See 09-18-52 Initialization has never been performed.)
 - AFS control module is newly replaced.
- If the following servicing is done, perform the procedure for the case where the system is reset after initialization has already been completed. (See 09-18-52 Initialization operation implemented and resetting to be performed.)
 - Auto leveling sensor is removed/installed.
 - Auto leveling sensor is replaced.
 - Procedure for changing vehicle height is performed such as changing suspension.

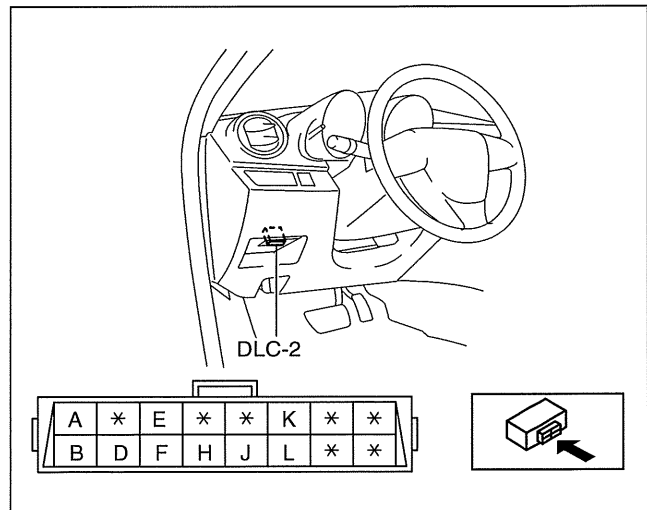
LIGHTING SYSTEMS

Initialization has never been performed

Caution

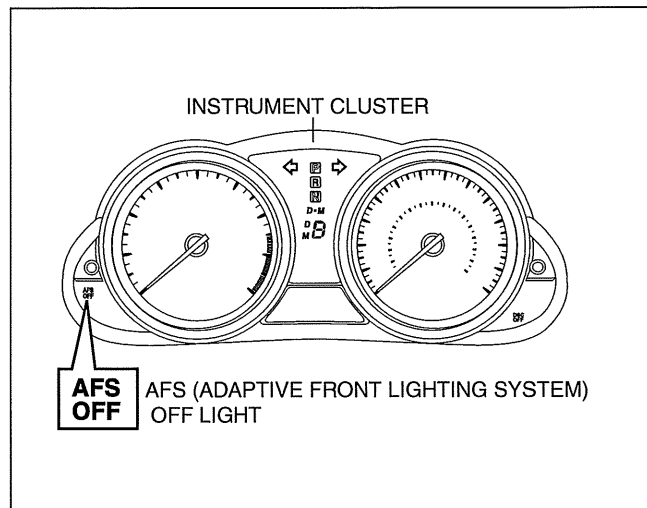
- Perform the procedures in Steps 2 to 5 within 30 s.

1. Switch the ignition to off.
2. Set a jumper wire to the DLC-2 B terminal.
3. Switch the ignition to ON.



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4. Verify that the AFS OFF light flashes every 0.5 s.
5. Ground the DLC-2 B terminal 3 times or more at 1 s intervals using the jumper wire.
6. After the AFS OFF light flashes three times at 0.5 s intervals, verify that it turns off.
 - If the AFS OFF light continues to flash at 0.5 s intervals, the following malfunction can be considered. Repair or replace the malfunctioning area, then repeat the procedure from Step 1.
 - Auto leveling sensor malfunction (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.)
 - AFS control module malfunction
 - Instrument cluster malfunction (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)
 - Malfunction in the related wiring harnesses



am3uuw0000433

7. Disconnect the jumper wire from DLC-2.
8. Verify that the AFS OFF light is not illuminated.

Initialization operation implemented and resetting to be performed

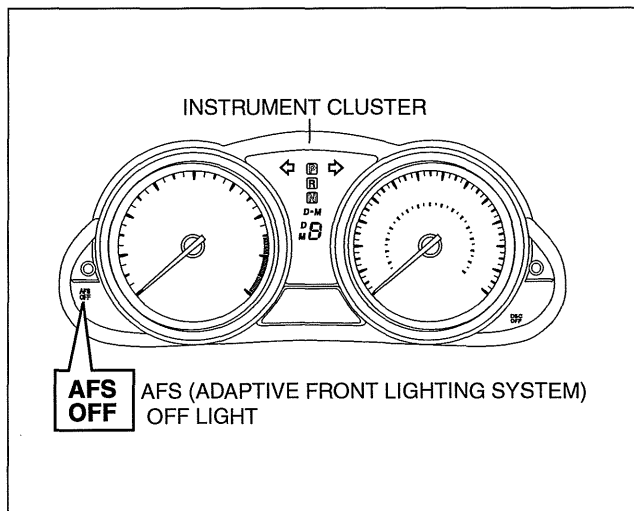
Caution

- Perform the procedures in Steps 4 to 7 within 30 s.
- Perform the procedures in Steps 6 to 7 within 5 s.

LIGHTING SYSTEMS

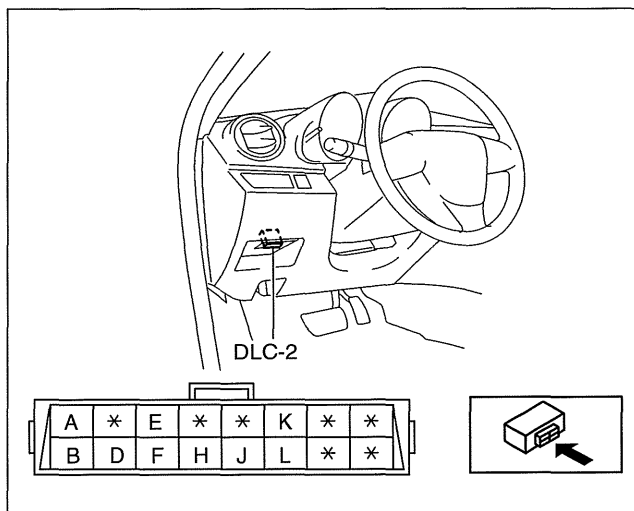
Without DRL or with DRL lamp bulb

1. Switch the ignition to off.
2. Set a jumper wire to the DLC-2 B terminal.
3. Turn off the headlights.
4. Switch the ignition to ON.
5. Verify that the AFS OFF light flashes.



am3uuw0000433

6. Connect terminal B (INIT) of the DLC-2 to terminal J (GND) using a jumper wire.
7. The headlight switch switches in the following order: OFF→ON→OFF→ON→OFF→ON→OFF
8. After the AFS OFF light flashes three times at 0.5 s intervals, verify that it turns off.
 - If the AFS OFF light continues to flash at 0.5 s intervals, the following malfunction can be considered. Repair or replace the malfunctioning area, then repeat the procedure from Step 1.
 - Auto leveling sensor malfunction (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.)
 - Instrument cluster malfunction (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)
 - AFS control module malfunction
 - Malfunction in the related wiring harnesses
9. Pull out the jumper wire from DLC-2.
10. Verify that the AFS OFF light is not illuminated.



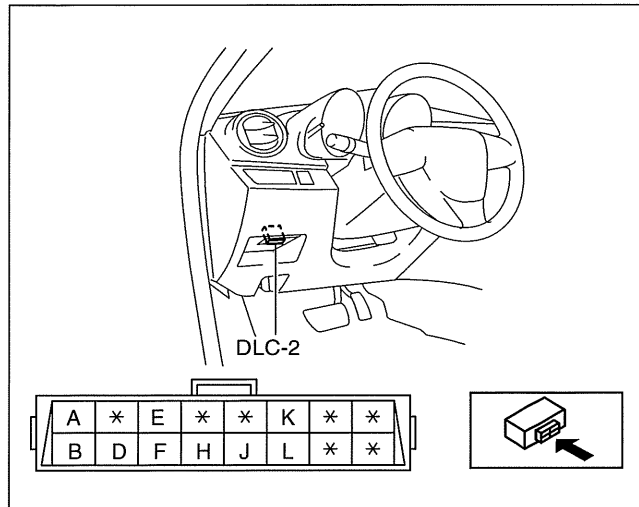
am3uuw0000288

09-18

LIGHTING SYSTEMS

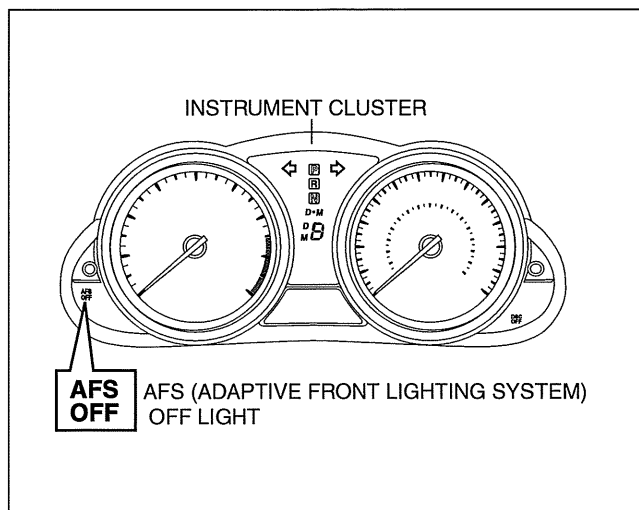
Without DRL lamp bulb

1. Switch the ignition to off.
2. Set a jumper wire to the DLC-2 B terminal.
3. Turn on the headlights TNS position.
4. Switch the ignition to ON.



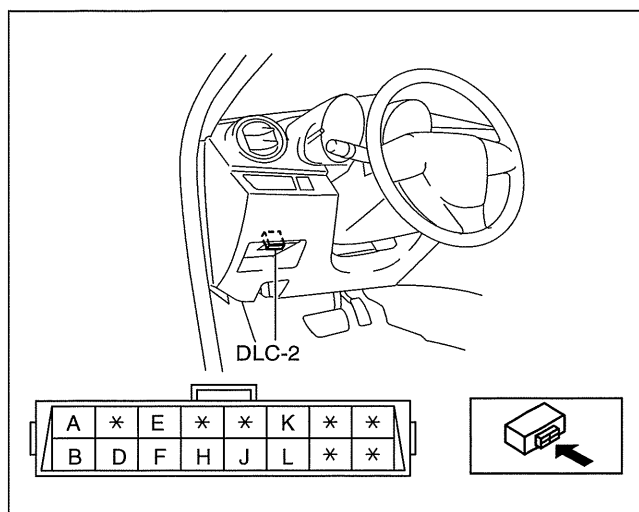
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5. Verify that the AFS OFF light flashes.



am3uuw000433

6. Connect terminal B (INIT) of the DLC-2 to terminal J (GND) using a jumper wire.
7. The headlight switch switches in the following order: TNS→ON→OFF→ON→OFF→ON→OFF
8. After the AFS OFF light flashes three times at 0.5 s intervals, verify that it turns off.
 - If the AFS OFF light continues to flash at 0.5 s intervals, the following malfunction can be considered. Repair or replace the malfunctioning area, then repeat the procedure from Step 1.
 - Auto leveling sensor malfunction (See 09-18-51 AUTO LEVELING SENSOR INSPECTION.)
 - Instrument cluster malfunction (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.)
 - AFS control module malfunction
 - Malfunction in the related wiring harnesses
9. Pull out the jumper wire from DLC-2.
10. Verify that the AFS OFF light is not illuminated.



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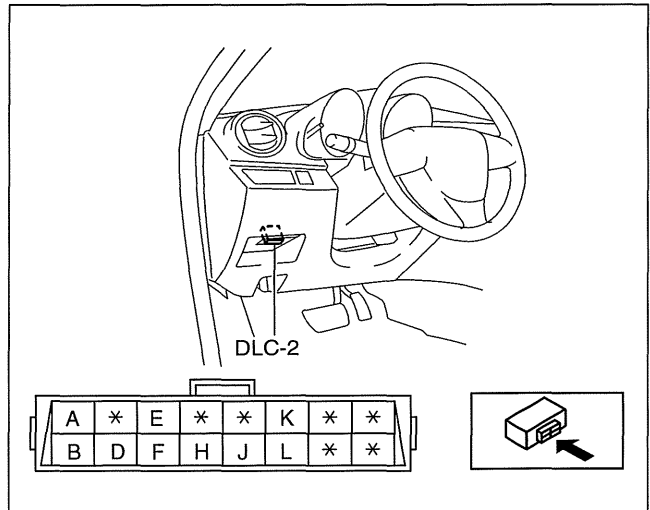
LIGHTING SYSTEMS

Using M-MDS

Caution

- Perform with the vehicle in an unloaded condition (no occupants; spare tire, jack and tools are in designated positions).

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Electrical".
 2. Select "Exterior Lighting".
 3. Select "Headlamp".
 4. Select "Auto Leveling Sensor Re-zero Procedure"
 - When using the PDS (Pocket PC)
 1. Select the "All Tests and Calibrations".
 2. Select "Auto Leveling Sensor Re-zero Procedure".
 3. Perform the procedure according to the directions on the screen.



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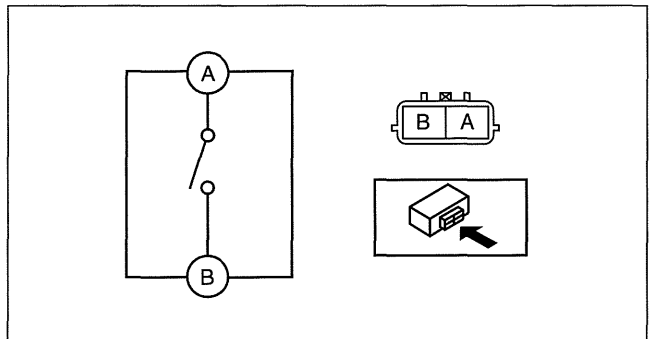
BACK-UP LIGHT SWITCH INSPECTION

1. Disconnect the negative battery cable.
2. Remove the battery and battery tray. (See 01-17A-2 BATTERY REMOVAL/INSTALLATION [LF, L5].)
3. Remove the under cover.
4. Drain the oil from the transaxle.
5. Remove the back-up light switch. (See 05-15A-2 BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G35M-R].) (See 05-15B-2 BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION [G66M-R].)
6. Verify that the continuity between the back-up light switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the back-up light switch.

○—○ : Continuity

Shift lever position	Terminal	
	A	B
Reverse	○—○	○—○
Other		

am6zzw00002730



am3uuw0000247

LIGHTING SYSTEMS

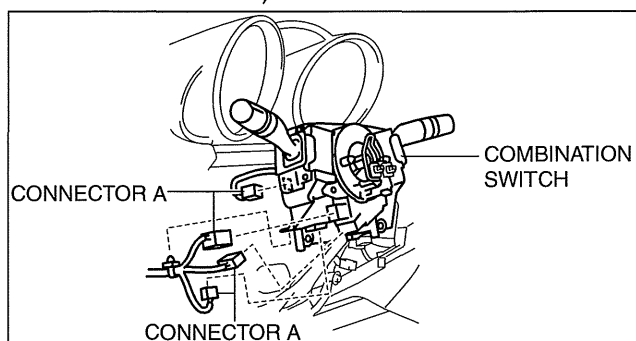
COMBINATION SWITCH REMOVAL/INSTALLATION

id091800802500

Caution

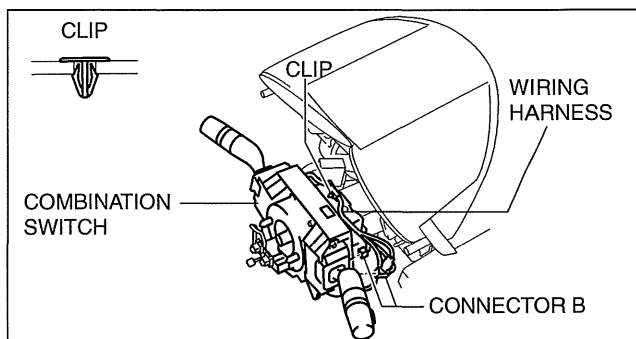
- If the disc on the combination switch is deformed or has foreign material adhering to it, performance of the steering angle sensor may be reduced, causing abnormal operation. Do not remove the clock spring except when replacing the combination switch.

1. Disconnect the negative battery cable and wait **1 min or more**.
2. Remove the following parts:
 - (1) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
 - (2) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (3) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (4) Clock spring (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
3. Disconnect the connector A.



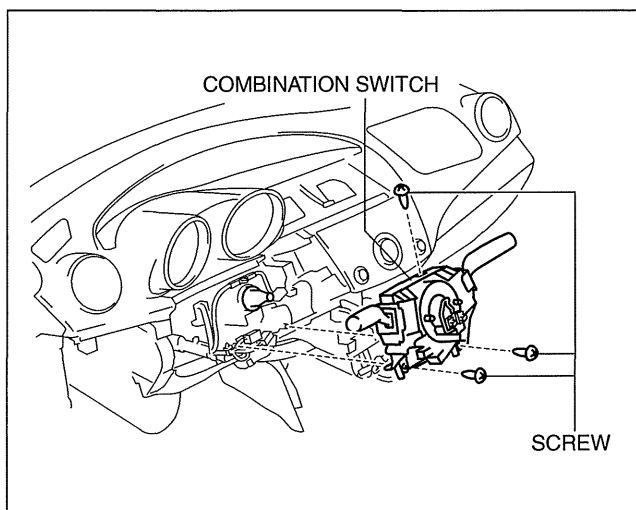
am3uuw0000507

4. Disconnect the connector B.
5. Detach the clips and set the wiring harness aside.



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6. Remove the screws.
7. Remove the combination switch.
8. Install in the reverse order of removal.



am3uuw0000540

LIGHTING SYSTEMS

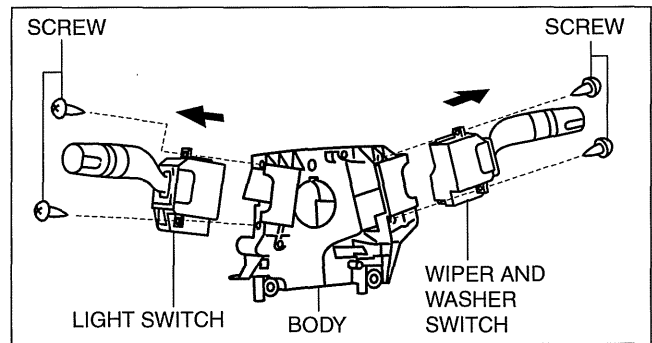
COMBINATION SWITCH DISASSEMBLY/ASSEMBLY

id091800802600

Caution

- If the disc on the combination switch is deformed or has foreign material adhering to it, performance of the steering angle sensor may be reduced, causing abnormal operation. Do not remove the clock spring except when replacing the combination switch.

1. Disconnect the negative battery cable and wait 1 min or more.
2. Remove the following parts:
 - (1) Driver-side air bag module (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
 - (2) Steering wheel (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
 - (3) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (4) Clock spring (See 08-10-21 CLOCK SPRING REMOVAL/INSTALLATION.)
 - (5) Combination switch (See 09-18-56 COMBINATION SWITCH REMOVAL/INSTALLATION.)
3. Remove the screws shown in the figures, then pull the light switch, and the wiper and washer switch in the direction of the arrow respectively to remove them.
4. Assemble in the reverse order of disassembly.



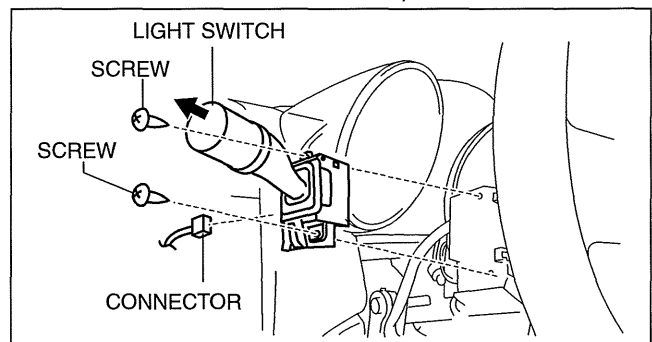
am3uuw0000302

09-18

LIGHT SWITCH REMOVAL/INSTALLATION

id091800802800

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the screws shown in the figure, then remove the light switch by pulling it in the direction of the arrow.
5. Install in the reverse order of removal.



am3uuw0000555

LIGHTING SYSTEMS

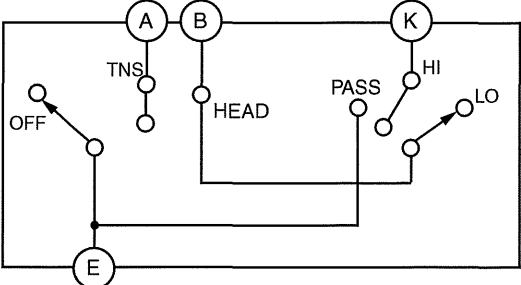
id091800802900

LIGHT SWITCH INSPECTION

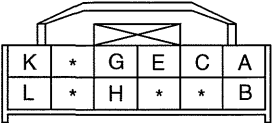
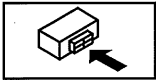
Vehicles Without Auto Light System

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Remove the light switch. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
4. Verify that the continuity between the light switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the light switch.

Headlight Switch

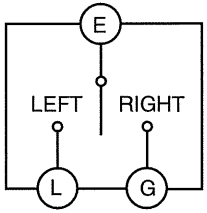


Switch position			Terminal			
Light	Dimmer	Pass	A	B	E	K
OFF	-	Off				
		On		○—○	○—○	
TNS	-	Off	○—○		○—○	
		On	○—○	○—○	○—○	○—○
HEAD	LO	Off	○—○	○—○	○—○	
		On	○—○	○—○	○—○	○—○
	HI	-	○—○	○—○	○—○	○—○

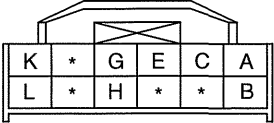
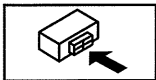



am3uuw0000549

Turn Light



Switch position	Terminal		
	E	G	L
LEFT	○—○		○—○
OFF			
RIGHT	○—○	○—○	

am3uuw0000549

LIGHTING SYSTEMS

Vehicles With Auto Light System

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Remove the light switch. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
4. Verify that the continuity between the light switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the light switch.

Headlight Switch

○—○ : Continuity

Light	Dimmer	Pass	Terminal				
			A	B	C	E	K
OFF	-	Off					
		On		○—○		○—○	○—○
TNS	-	Off	○—○			○—○	
		On	○—○	○—○		○—○	○—○
HEAD	LO	Off	○—○	○—○		○—○	
		On	○—○	○—○		○—○	○—○
	HI	-	○—○	○—○		○—○	○—○
Auto	LO	Off			○—○		
		On		○—○	○—○	○—○	

am3uuw0000553

Turn Switch

○—○ : Continuity

Switch position	Terminal		
	E	G	L
LEFT	○—○		○—○
OFF			
RIGHT	○—○	○—○	

am3uuw0000549

LIGHTING SYSTEMS

FRONT FOG LIGHT SWITCH INSPECTION

id091800803200

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Remove the light switch. (See 09-18-57 LIGHT SWITCH REMOVAL/INSTALLATION.)
4. Verify that the continuity between the front fog light switch terminals is as indicated in the table using a circuit tester.
 - If not as indicated in the table, replace the light switch.

The diagram shows a circuit with terminals H (top), OFF (middle), and E (bottom). A switch is connected between OFF and E. Below the circuit is a terminal block with terminals K, L, G, H, E, C, A, and B. A legend indicates that a circle with a line through it represents continuity. The table below shows the required continuity for the switch in OFF and ON positions.

Switch position	Terminal	
	E	H
OFF		
ON	○—○	○—○

am3uuw0000508

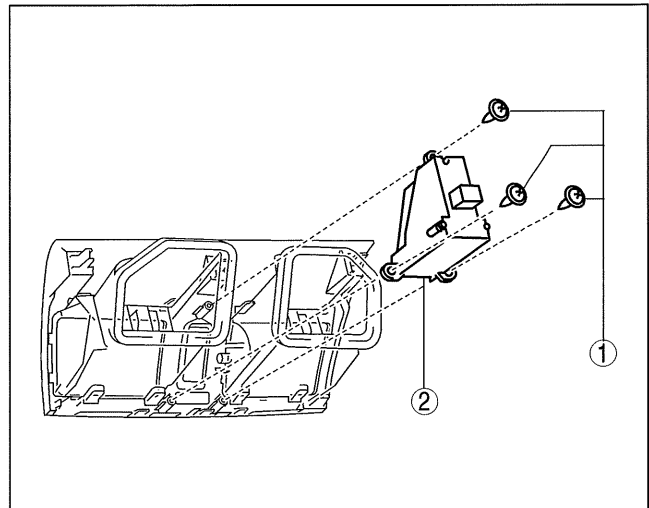
HAZARD WARNING SWITCH REMOVAL/INSTALLATION

id091800803000

1. Disconnect the negative battery cable.
2. Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Screw
2	Hazard warning switch

4. Install in the reverse order of removal.



am3uuw0000311

LIGHTING SYSTEMS

HAZARD WARNING SWITCH INSPECTION

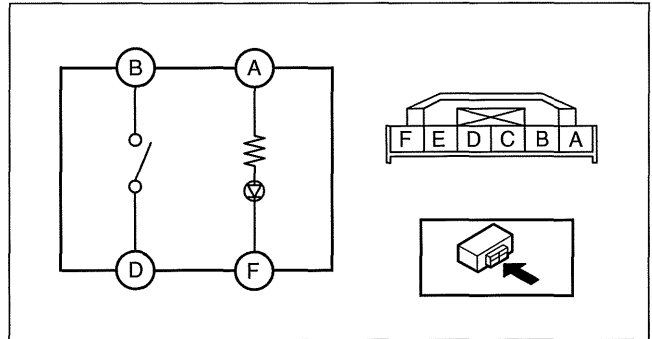
id091800803100

1. Disconnect the negative battery cable.
2. Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
3. Verify that the continuity between the hazard switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the hazard warning switch.

○—○ : Continuity

Switch position	Terminal	
	D	B
OFF		
ON	○—○	○—○

am3uuw00005088



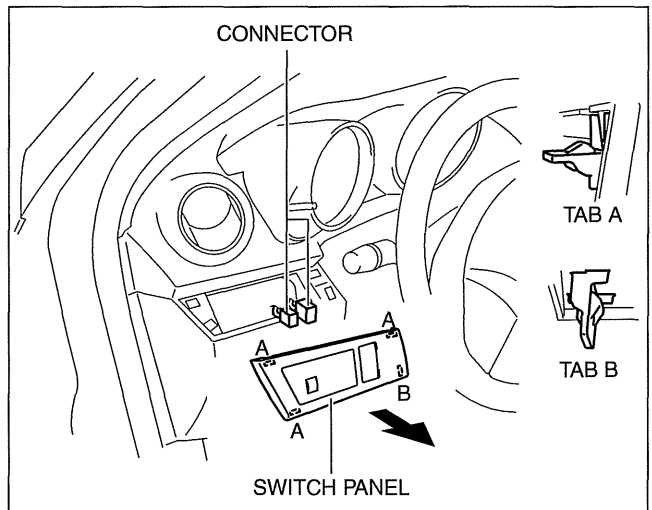
am3uuw0000256

4. Apply battery voltage to hazard switch terminal A, and connect terminal F to ground.
5. Verify that the LED illuminates.
 - If there is any malfunction, replace the hazard warning switch.

HEADLIGHT LEVELING SWITCH REMOVAL/INSTALLATION

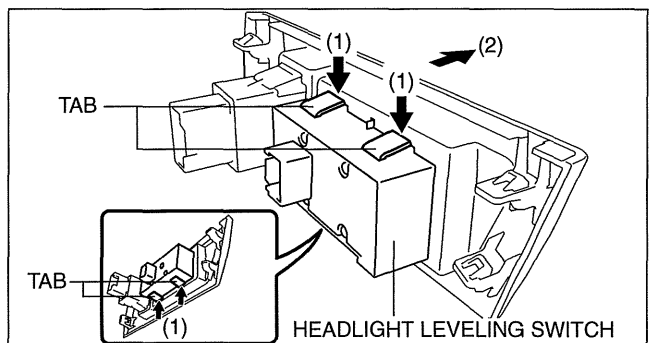
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1. Disconnect the negative battery cable.
2. Remove the switch panel in the direction of the arrow shown in the figure.
3. Disconnect the connector.



am3uuw0000529

4. Remove the headlight leveling switch in the direction of the arrow (2) shown in the figure while pressing the tabs in the direction of the arrow (1).
5. Remove the headlight leveling switch.
6. Install in the reverse order of removal.



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LIGHTING SYSTEMS

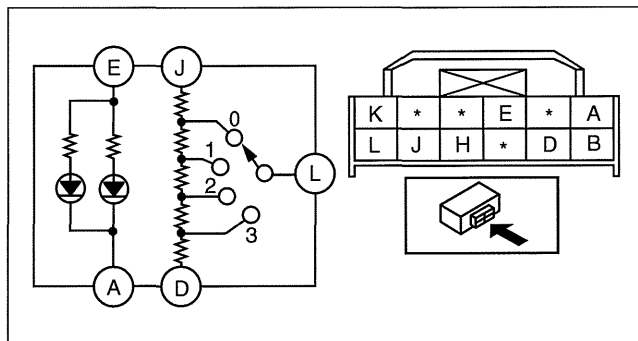
HEADLIGHT LEVELING SWITCH INSPECTION

id091800803700

1. Disconnect the negative battery cable.
2. Remove the headlight leveling switch. (See 09-18-61 HEADLIGHT LEVELING SWITCH REMOVAL/INSTALLATION.)
3. Verify that the resistance and continuity between the headlight leveling switch terminals is as indicated in the table using a tester.
 - If not as indicated in the table, or if the resistance is not within the specification, replace the headlight leveling switch.

O-W-O: RESISTANCE

SWITCH POSITION	TERMINAL		
	D	L	J
0			
1			
2			
3			



am3uuw0000541

- R_1 : 1776.68—1842.12 ohms R_2 : 196—204 ohms
 R_3 : 1513.1—1575.9 ohms R_4 : 451.78—470.22 ohms
 R_5 : 1014.1—1055.7 ohms R_6 : 951.58—990.42 ohms
 R_7 : 803.6—836.4 ohms R_8 : 1162.08—1209.72 ohms

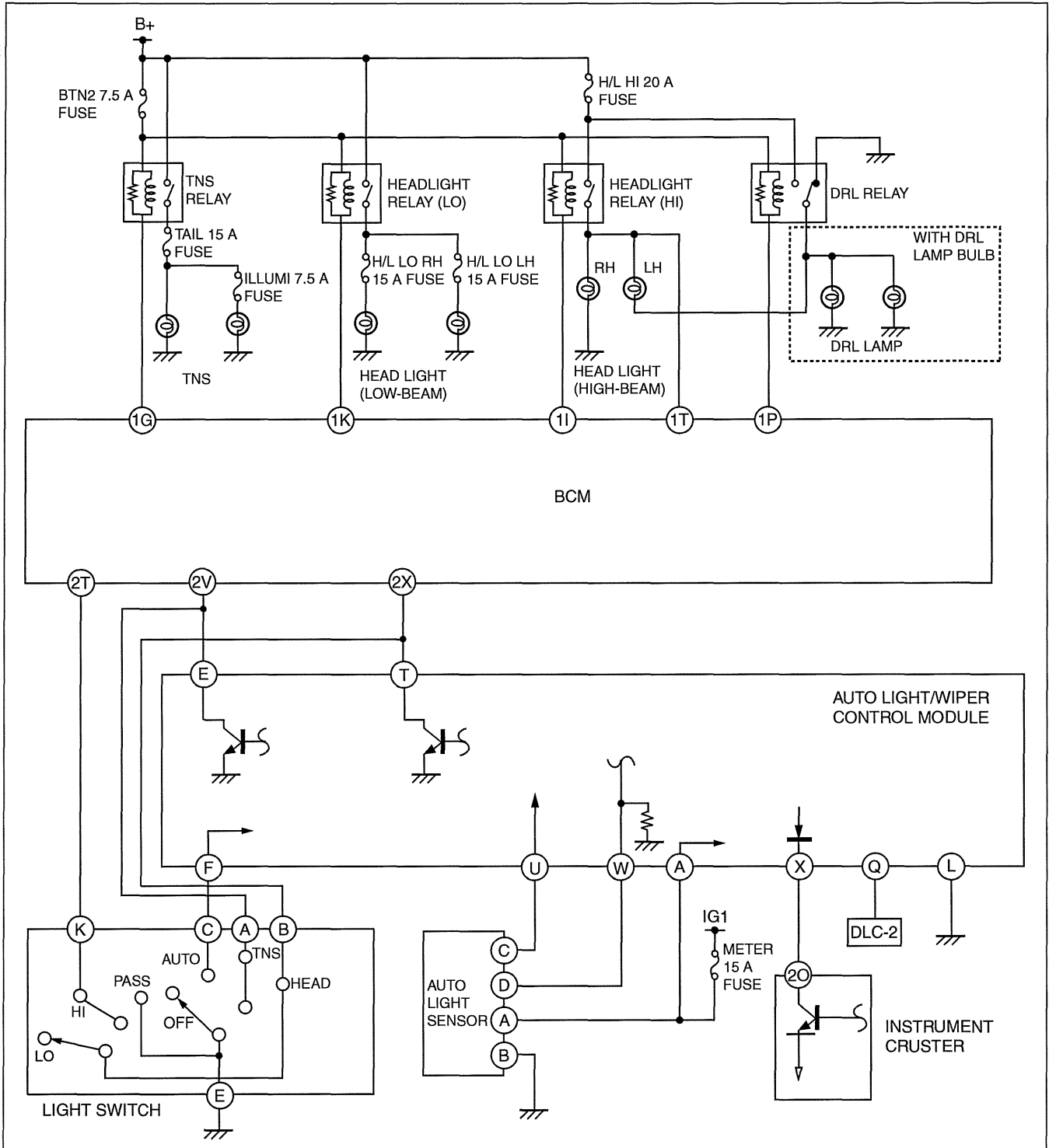
am3uuw00005499

4. Apply battery voltage to headlight leveling switch terminal E, and connect terminal A to ground.
5. Verify that the LED illuminates.
 - If there is any malfunction, replace the headlight leveling switch.

LIGHTING SYSTEMS

DRL AND AUTO LIGHT SYSTEM WIRING DIAGRAM

id091800807100



am3uun000124

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LIGHTING SYSTEMS

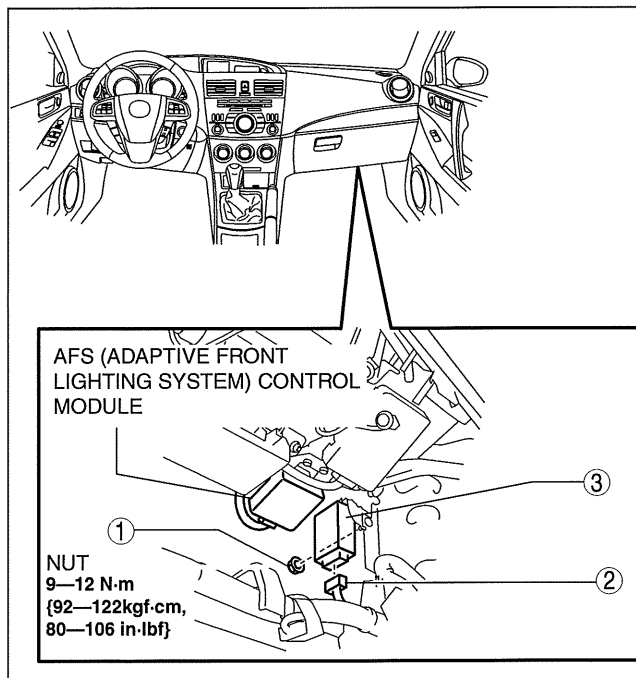
AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION

id091800809400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Nut
2	Connector
3	Auto light/wiper control module

4. Install in the reverse order of removal.



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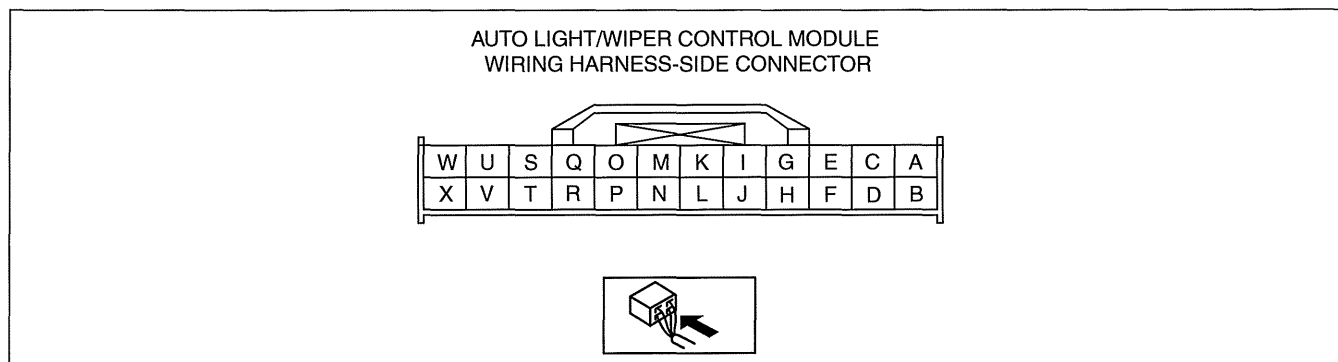
LIGHTING SYSTEMS

AUTO LIGHT/WIPER CONTROL MODULE INSPECTION

id091800809500

1. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Grove compartment (See .)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
2. Remove the auto light/wiper control module with the connector connected. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
3. Measure the voltage at the auto light/wiper control module terminals as indicated below.

Terminal Voltage List (Reference)



am3uuw0000610

Terminal	Signal	Connection	Test condition		Voltage (V)	Action
A	IG1	METER 15 A fuse	Switch the ignition to ON		B+	<ul style="list-style-type: none"> METER 15 A fuse Related wiring harnesses
			Switch the ignition from off or ACC.		1.0 or less	
B	—	—	—		—	—
C	—	—	—		—	—
D	—	—	—		—	—
E	Light switch signal (TNS)	Light switch	Switch the ignition to ON	Light switch at TNS position	1.0 or less	<ul style="list-style-type: none"> Light switch (See 09-18-58 LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Other	B+	
F	Light switch signal (Auto)	Light switch	Switch the ignition to ON	Light switch at AUTO position	1.0 or less	<ul style="list-style-type: none"> Light switch (See 09-18-58 LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Other	B+	
G	—	—	—		—	—
H	—	—	—		—	—
I	—	—	—		—	—
J	—	—	—		—	—
K	Windshield wiper switch signal (LO)	Windshield wiper and washer switch	Switch the ignition to ON	Windshield wiper switch at LO position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
				Windshield wiper switch at OFF position	B+	
L	GND	GND	Under any condition		1.0 or less	<ul style="list-style-type: none"> Related wiring harnesses

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LIGHTING SYSTEMS

Terminal	Signal	Connection	Test condition		Voltage (V)	Action
M	Windshield wiper switch signal (HI)	Windshield wiper and washer switch	Switch the ignition to ON	Windshield wiper switch at HI position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
				Windshield wiper switch at OFF position	B+	
N*1	Sensitivity adjustment volume signal	BCM	Switch the ignition to ON	Sensitivity adjustment volume turned from + position to - position	0 → 0.8 → 1.3 → 1.7 → 2.0	<ul style="list-style-type: none"> BCM Windshield wiper and washer switch (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
O	Windshield washer switch signal	Windshield wiper and washer switch	Switch the ignition to ON	Windshield washer switch on	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
				Windshield washer switch off	B+	
P	Windshield wiper switch input	BCM	Switch the ignition to ON	Wiper switch in INT position	1.0 or less	<ul style="list-style-type: none"> BCM Related wiring harnesses
				Other	B+	
Q	DLC-2 power supply	DLC-2	Under any condition		B+	<ul style="list-style-type: none"> Related wiring harnesses
R	—	—	—		—	—
S	Sensitivity adjustment volume	Windshield wiper and washer switch	Switch the ignition to ON	INT volume turned from lowest position to highest position	0 → 0.7 → 1.4 → 1.8 → 2.1 → 2.3	<ul style="list-style-type: none"> Windshield wiper and washer switch (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harness
T	High-beam on/off	Light switch	Switch the ignition to ON	Dimmer switch at high-beam position	1.0 or less	<ul style="list-style-type: none"> Light switch (See 09-18-58 LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Dimmer switch at low-beam position	B+	
U	Wiper or headlight operation request	Rain sensor	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
V	Windshield wiper switch signal (AUTO)	Windshield wiper and washer switch	Ignition switch at ON	Windshield wiper switch at AUTO position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harness
				Windshield wiper switch at OFF position	B+	
W	Wiper motor auto stop input signal	Windshield wiper motor	Wiper auto stop at ON		1.0 or less	<ul style="list-style-type: none"> Windshield wiper motor Related wiring harness
			Wiper auto stop at OFF		B+	

LIGHTING SYSTEMS

Terminal	Signal	Connection	Test condition	Voltage (V)	Action
X	Vehicle speed signal input	Instrument cluster	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible		

*1 : Without auto light/wiper system

LIGHTING SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE

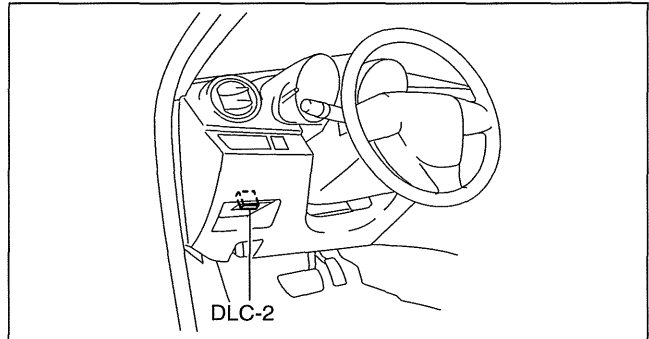
id091800439900

Auto light system

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the PERSONALIZATION FEATURES SETTING PROCEDURE.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 1. Select the "Module Programming"
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Parameters"
 2. Select "Exterior Lighting"



am3uuw0000288

4. Select the item name, and then select option.

Mazda Modular Diagnostic System (M-MDS) display	Function	Initial setting	Setting content	Control unit
Autolamp On Setting	The auto light system sensitivity can be adjusted.	Standard (Other)	Standard (Other) / Low (Other)	Auto light/wiper control module

09-18

Room Light Control System / Turn Light System

- For the room light control system and turn light system, refer to the control system personalization features setting. (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)

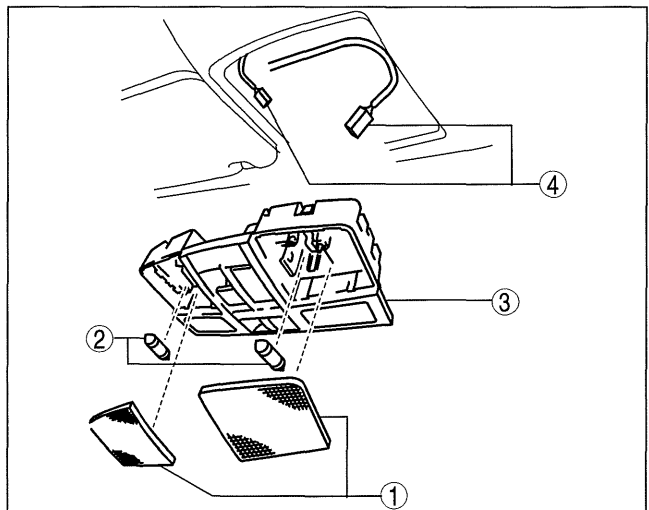
MAP LIGHT REMOVAL/INSTALLATION

id091800801200

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.

1	Lens (See 09-18-68 Lens Removal Note.)
2	Map light bulb
3	Map light (See 09-18-68 Map Light Removal Note.)
4	Connector

3. Install in the reverse order of removal.

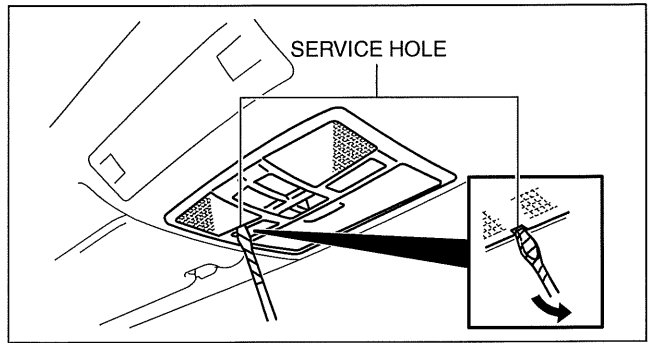


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LIGHTING SYSTEMS

Lens Removal Note

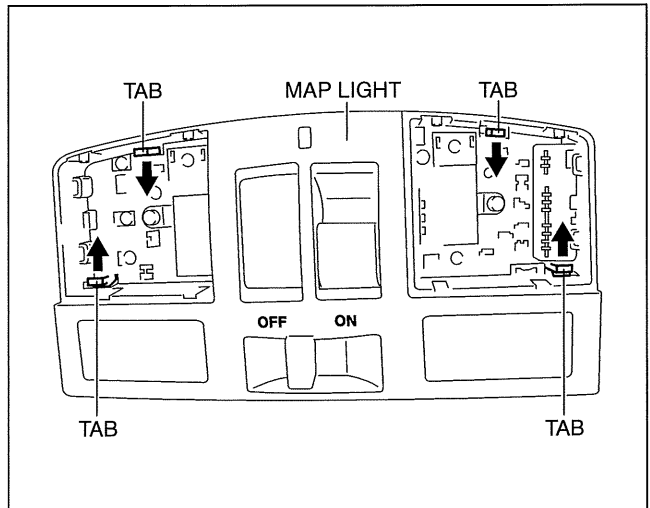
1. Insert a tape-wrapped fastener remover into the service hole and pry with the screwdriver in the direction shown by the arrow to remove the lens.



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Map Light Removal Note

1. Release the tabs by pressing them in the direction of the arrows in the figure and remove the map light.



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MAP LIGHT INSPECTION

id091800801300

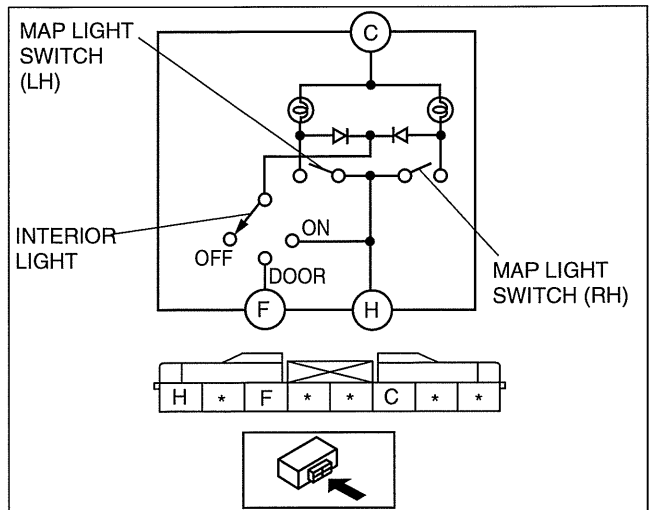
1. Disconnect the negative battery cable.
2. Remove the map light. (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
3. Verify that the continuity between the map light terminals is as indicated in the table.

○—○: Bulb

Switch position		Terminal		
Front map light switch	Interior light switch	C	F	H
ON	ON	○	○	○
-	DOOR	○	○	
	OFF			

am6xuw0000080

- If not as indicated in the table, replace the map light.



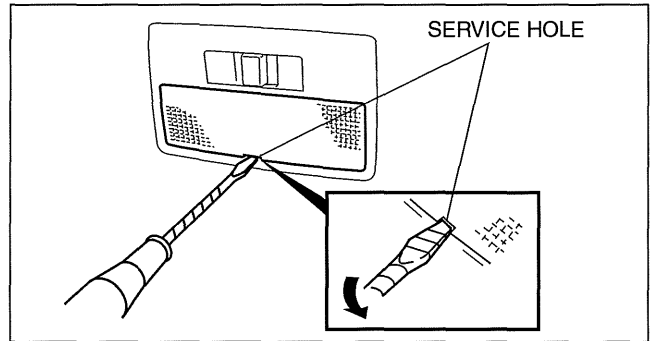
am3uuw0000540

LIGHTING SYSTEMS

INTERIOR LIGHT BULB REMOVAL/INSTALLATION

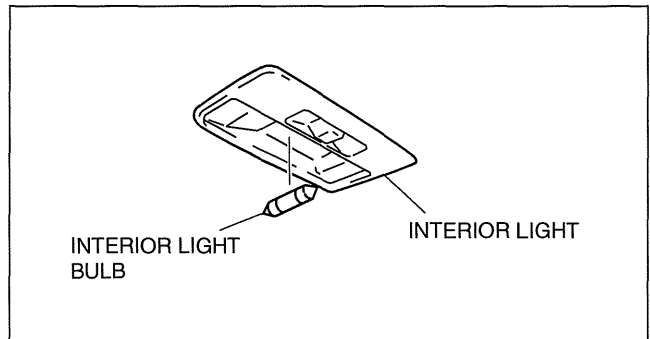
id091800801400

1. Disconnect the negative battery cable.
2. Insert a tape-wrapped fastener remover into the service hole and pry with the screwdriver in the direction shown by the arrow to remove the lens.



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3. Remove the interior light bulb.
4. Install in the reverse order of removal.



am6xuw0000090

INTERIOR LIGHT REMOVAL/INSTALLATION

id091800801500

1. Disconnect the negative battery cable.
2. Remove the rain sensor cover. (Vehicles with auto light/wiper system) (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION)
3. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

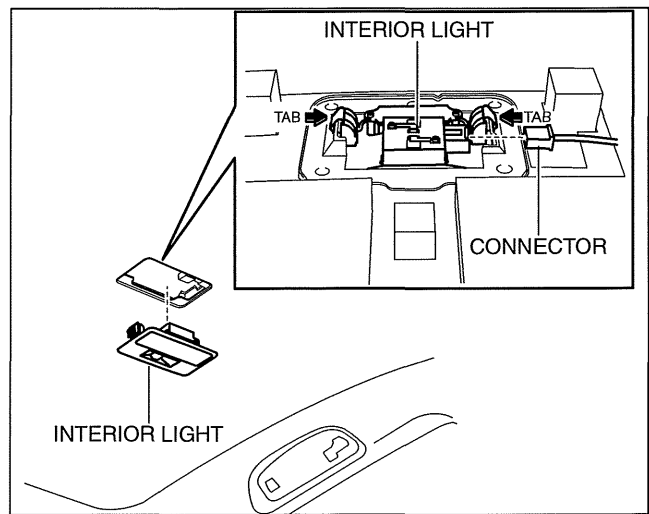
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LIGHTING SYSTEMS

4. Pull in the direction of the arrows and detach the tabs.
5. Disconnect the connector.
6. Remove the interior light.
7. Install in the reverse order of removal.

Note

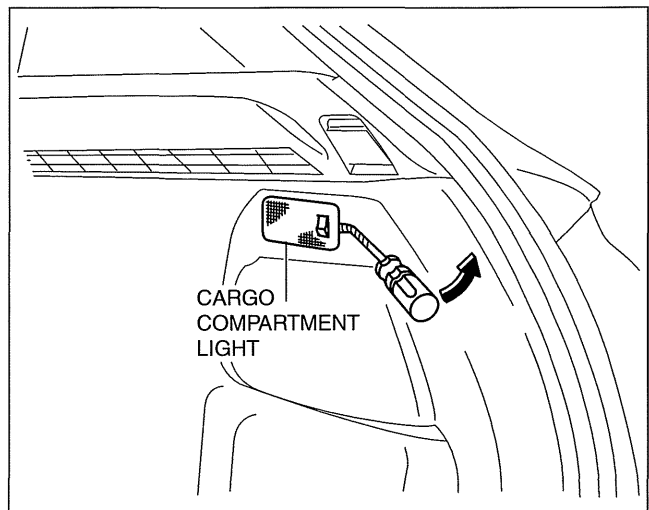
- After installing the wiring harness, reinforce the urethane that was cut when removing the valve housing with vinyl tape.



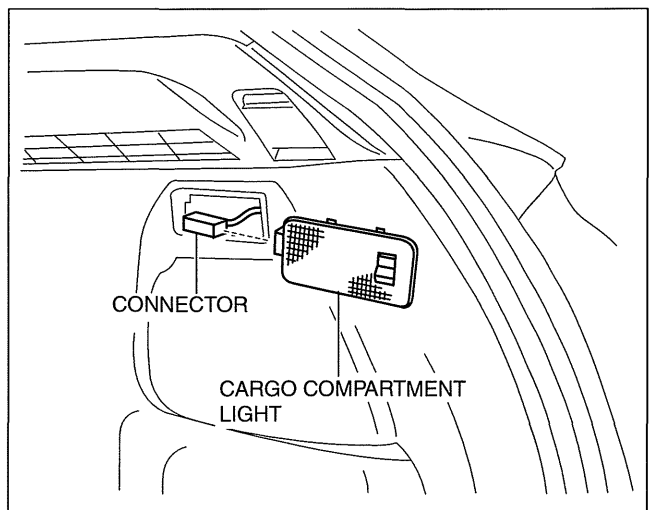
CARGO COMPARTMENT LIGHT REMOVAL/INSTALLATION

id091800801700

1. Disconnect the negative battery cable.
2. Insert a tape-wrapped fastener remover into the service hole and pry with the screwdriver in the direction shown by the arrow to remove the cargo compartment light.



3. Disconnect the connector.
4. Remove the cargo compartment light.
5. Install in the reverse order of removal.

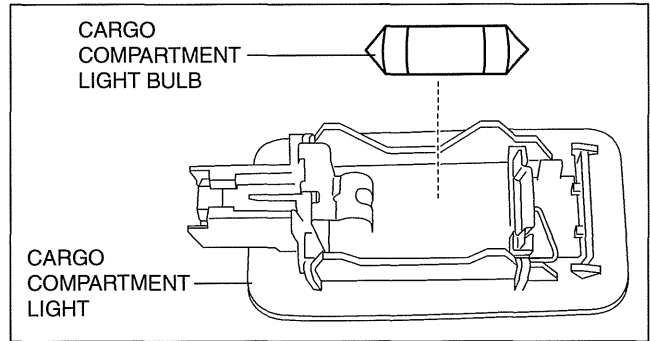


LIGHTING SYSTEMS

CARGO COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION

id091800807800

1. Disconnect the negative battery cable.
2. Remove the cargo compartment light. (See 09-18-70 CARGO COMPARTMENT LIGHT REMOVAL/INSTALLATION.)
3. Remove the cargo compartment light bulb.
4. Install in the reverse order of removal.



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CARGO COMPARTMENT LIGHT INSPECTION

id091800801800

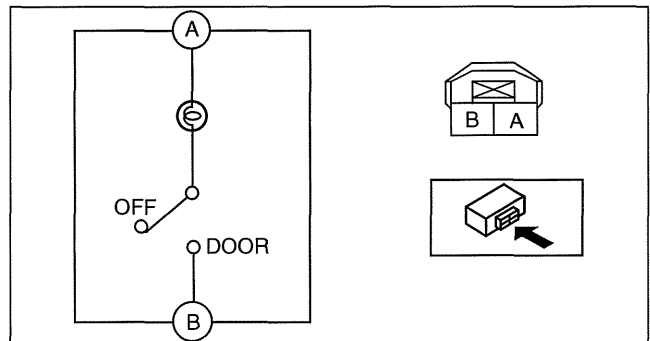
1. Disconnect the negative battery cable.
2. Remove the cargo compartment light. (See 09-18-70 CARGO COMPARTMENT LIGHT REMOVAL/INSTALLATION.)
3. Verify that the continuity between the cargo compartment light terminals is as indicated in the table.

○—○ : Bulb

Switch position	Terminal	
	A	B
DOOR	○—○	○—○
OFF	○—○	○—○

am3uuw00003600

- If not as indicated in the table, replace the cargo compartment light.



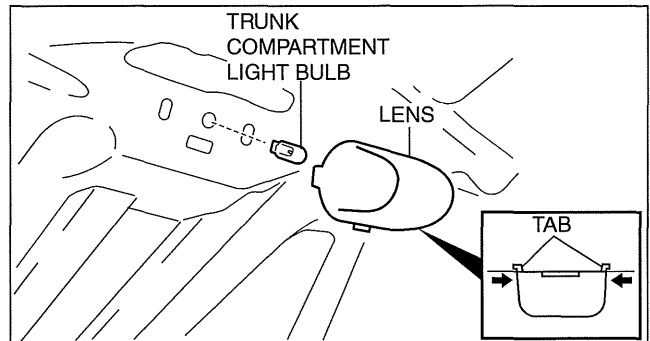
am3uuw0000540

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TRUNK COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION

id091800806200

1. Disconnect the negative battery cable.
2. Disengage the tabs by pressing both ends of the lens in the directions indicated by the arrows and remove the lens.
3. Remove the trunk compartment light bulb.
4. Install in the reverse order of removal.



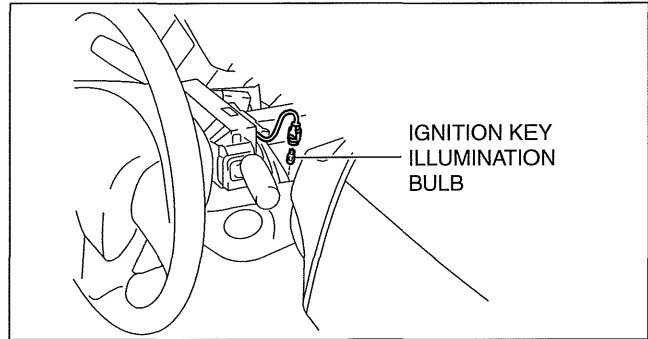
am3uuw0000540

LIGHTING SYSTEMS

IGNITION KEY ILLUMINATION REMOVAL/INSTALLATION

id091800814800

1. Disconnect the negative battery cable.
2. Remove the column cover upper. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Remove the ignition key illumination bulb.
4. Install in the reverse order of removal.

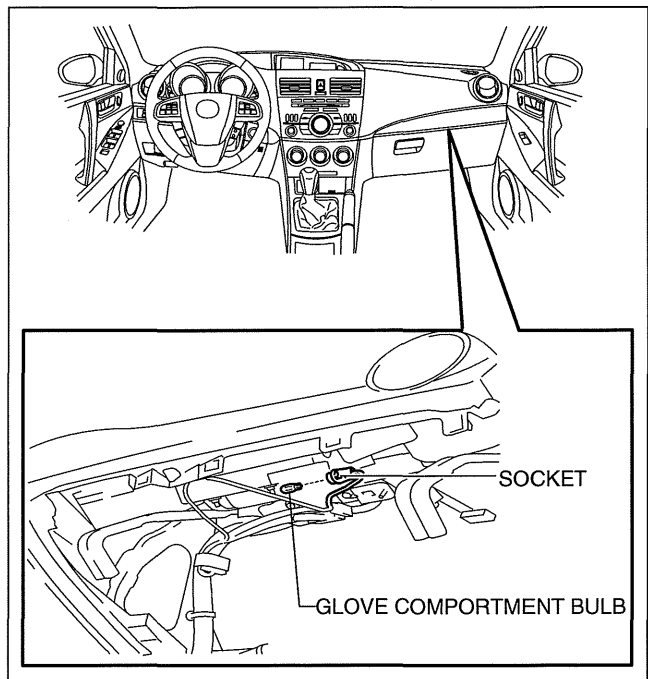


am3uuw0000316

GLOVE COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION

id091800801900

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
3. Remove the glove compartment bulb.
4. Install in the reverse order of removal.



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LIGHTING SYSTEMS

VANITY MIRROR ILLUMINATION INSPECTION

id091800808500

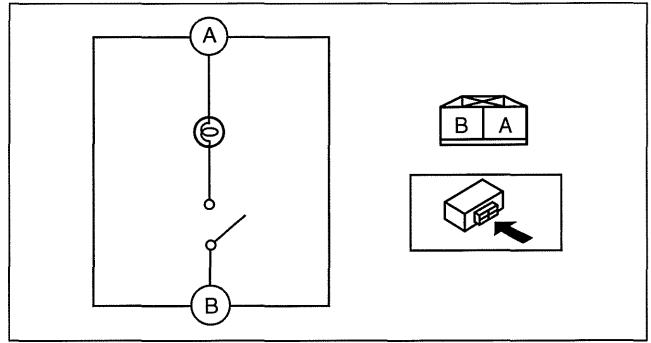
1. Disconnect the negative battery cable.
2. Remove the sunvisor. (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
3. Verify that the continuity between the vanity mirror illumination terminals is as indicated in the table.

○—⊕—○ : Bulb

Vanity mirror cover condition	Terminal	
	A	B
OPEN	○—⊕—○	
CLOSED		

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- If not as indicated in the table, inspect the bulb. If there is no malfunction, replace the sunvisor.

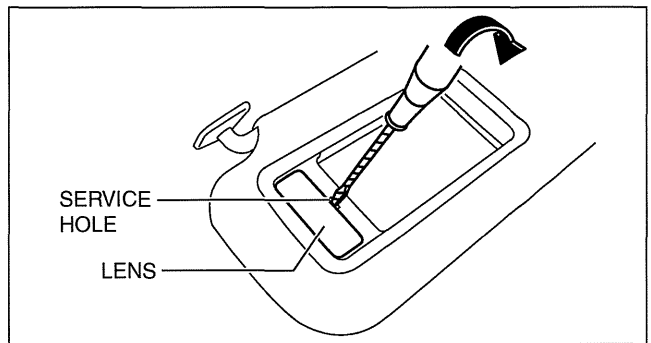


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VANITY MIRROR ILLUMINATION BULB REMOVAL/INSTALLATION

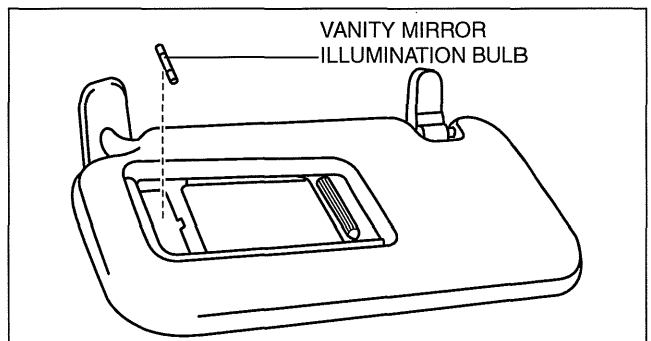
id091800808200

1. Disconnect the negative battery cable.
2. Insert a tape-wrapped fastener remover into the service hole, and pry it in the direction indicated by the arrow to remove the lens.



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3. Remove the vanity mirror illumination bulb.
4. Install in the reverse order of removal.



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09-18

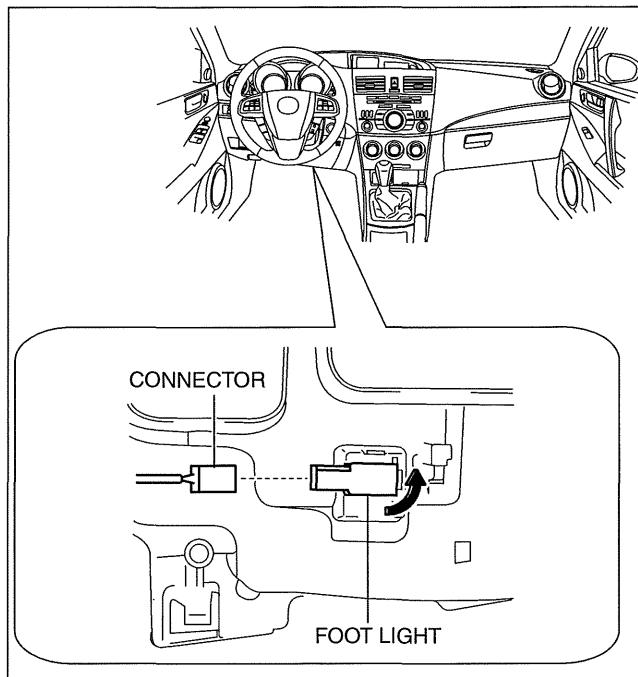
LIGHTING SYSTEMS

FOOT LIGHT REMOVAL/INSTALLATION

id091800809200

Driver-side

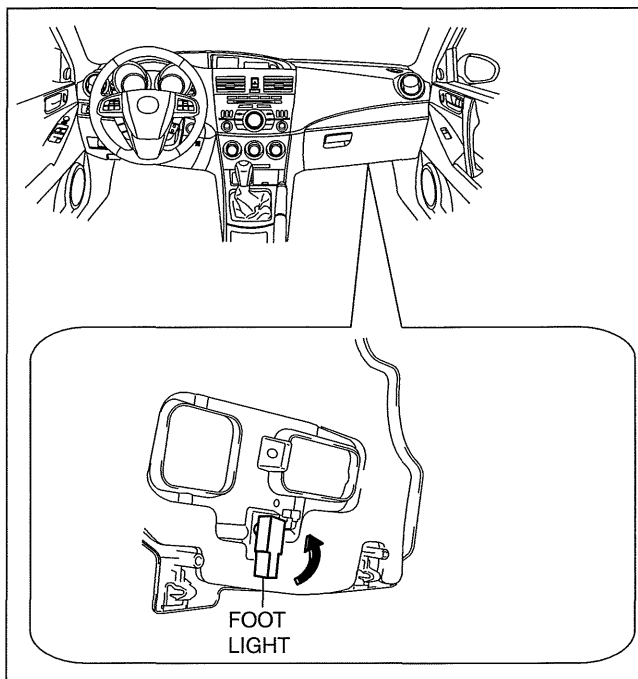
1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Rotate the front foot light in the direction of the arrow shown in the figure.
4. Remove the foot light.
5. Install in the reverse order of removal.



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Passenger-side

1. Disconnect the negative battery cable.
2. Remove the dashboard under cover. (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
3. Rotate the front foot light in the direction of the arrow shown in the figure.
4. Remove the foot light.
5. Install in the reverse order of removal.



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LIGHTING SYSTEMS

INDIRECT ILLUMINATION REMOVAL/INSTALLATION

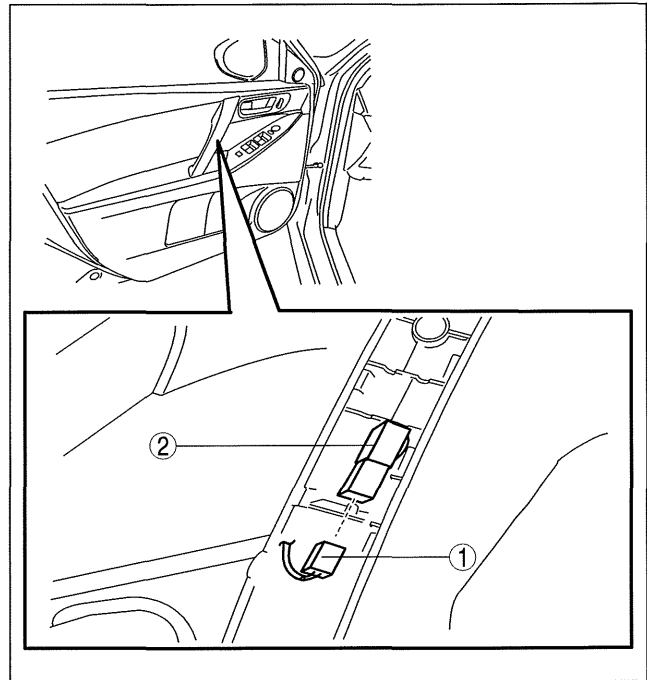
id091800819300

Power Window Switch

1. Disconnect the negative battery cable.
2. Remove the assist handle cover. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Connector
2	Power window switch indirect illumination

4. Install in the reverse order of removal.



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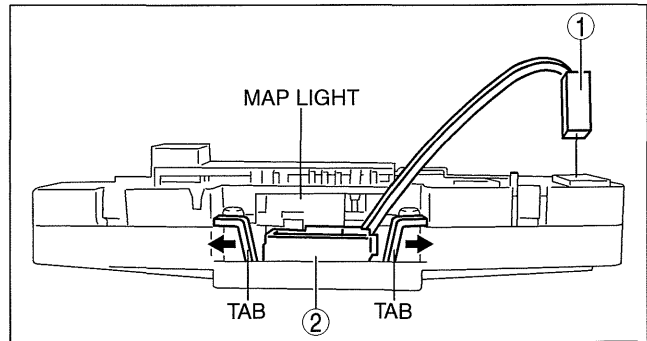
09-18

Console

1. Disconnect the negative battery cable.
2. Remove the map light. (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Connector
2	Console indirect illumination

4. Install in the reverse order of removal.



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WIPER/WASHER SYSTEM

09-19 WIPER/WASHER SYSTEM

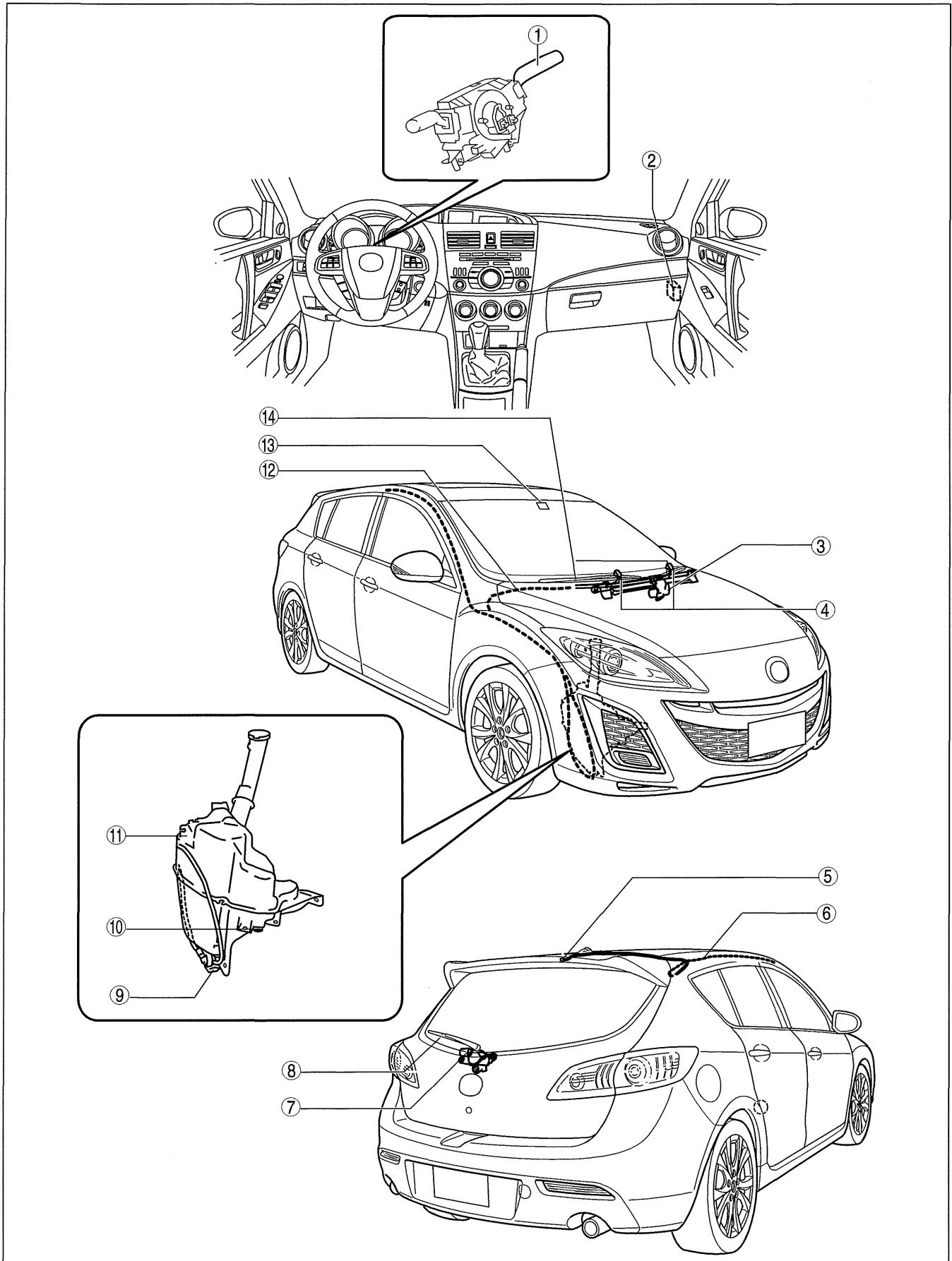
WIPER/WASHER SYSTEM		
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WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT	09-19-4	
WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION	09-19-5	
Windshield Wiper Motor Remove Note	09-19-6	
WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY	09-19-7	
Windshield Wiper Motor Assembly Note	09-19-8	
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WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION	09-19-13	
		REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION
		Rear Wiper Arm Installation Note
		REAR WIPER ARM AND BLADE ADJUSTMENT
		REAR WIPER MOTOR REMOVAL/INSTALLATION
		REAR WIPER MOTOR INSPECTION . . .
		REAR WASHER NOZZLE REMOVAL/INSTALLATION
		REAR WASHER NOZZLE ADJUSTMENT
		REAR WASHER HOSE REMOVAL/INSTALLATION
		WIPER AND WASHER SWITCH REMOVAL/INSTALLATION
		WINDSHIELD WIPER AND WASHER SWITCH INSPECTION
		REAR WIPER AND WASHER SWITCH INSPECTION
		WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION
		WASHER FLUID-LEVEL SENSOR INSPECTION
		AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION
		AUTO LIGHT/WIPER CONTROL MODULE INSPECTION
		RAIN SENSOR REMOVAL/INSTALLATION
		RAIN SENSOR REINITIALIZATION SETTING
		WIPER/WASHER SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE

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WIPER/WASHER SYSTEM

WIPER/WASHER SYSTEM LOCATION INDEX

id091900800100



am3uuw0000619

WIPER/WASHER SYSTEM

1	Wiper and washer switch (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.) (See 09-19-22 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) (See 09-19-24 REAR WIPER AND WASHER SWITCH INSPECTION.)
2	Auto light/wiper control module (See 09-19-25 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-19-25 AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.)
3	Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.) (See 09-19-7 WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY.) (See 09-19-9 WINDSHIELD WIPER MOTOR INSPECTION.)
4	Windshield washer nozzle (See 09-19-13 WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION.)
5	Rear washer nozzle (See 09-19-17 REAR WASHER NOZZLE REMOVAL/INSTALLATION.) (See 09-19-17 REAR WASHER NOZZLE ADJUSTMENT.)
6	Rear washer hose (See 09-19-18 REAR WASHER HOSE REMOVAL/INSTALLATION.)
7	Rear wiper motor (See 09-19-16 REAR WIPER MOTOR REMOVAL/INSTALLATION.) (See 09-19-16 REAR WIPER MOTOR INSPECTION.)

8	Rear wiper arm and blade (See 09-19-15 REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION.) (See 09-19-15 REAR WIPER ARM AND BLADE ADJUSTMENT.)
9	Washer motor (See 09-19-12 WASHER MOTOR REMOVAL/INSTALLATION.) (See 09-19-12 WASHER MOTOR INSPECTION.)
10	Washer fluid-level sensor (See 09-19-24 WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION.) (See 09-19-25 WASHER FLUID-LEVEL SENSOR INSPECTION.)
11	Washer tank (See 09-19-10 WASHER TANK REMOVAL/INSTALLATION.)
12	Windshield washer hose (See 09-19-13 WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION.)
13	Rain sensor (See 09-19-25 RAIN SENSOR REMOVAL/INSTALLATION.) (See 09-19-28 RAIN SENSOR REINITIALIZATION SETTING.)
14	Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.) (See 09-19-4 WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT.)

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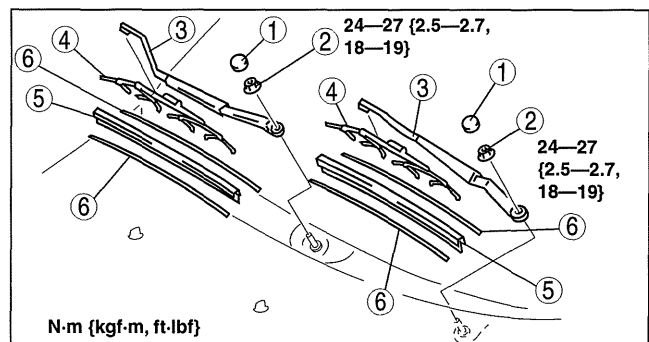
WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION

id091900800700

1. Remove in the order indicated in the table.

1	Cap
2	Nut
3	Windshield wiper arm (See 09-19-4 Windshield Wiper Arm Installation Note.)
4	Windshield wiper blade
5	Rubber brush
6	Backing plate

2. Install in the reverse order of removal.
3. Adjust the windshield wiper arm and blade. (See 09-19-4 WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT.)

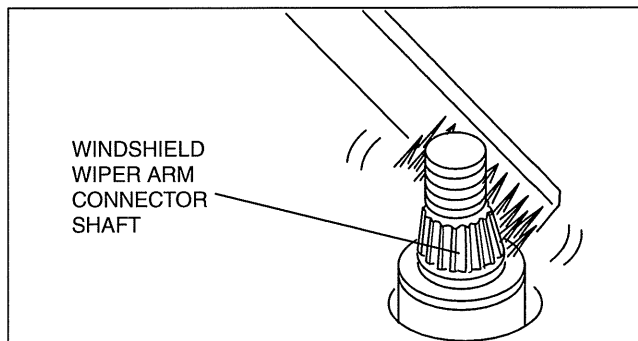


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WIPER/WASHER SYSTEM

Windshield Wiper Arm Installation Note

1. Clean the windshield wiper arm connector shafts using a wire brush before installing the windshield wiper arms.

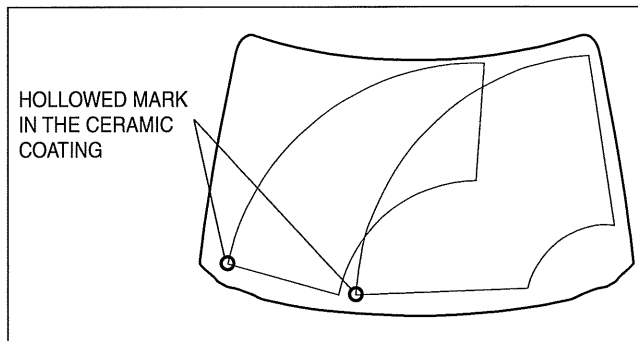


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WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT

id091900800800

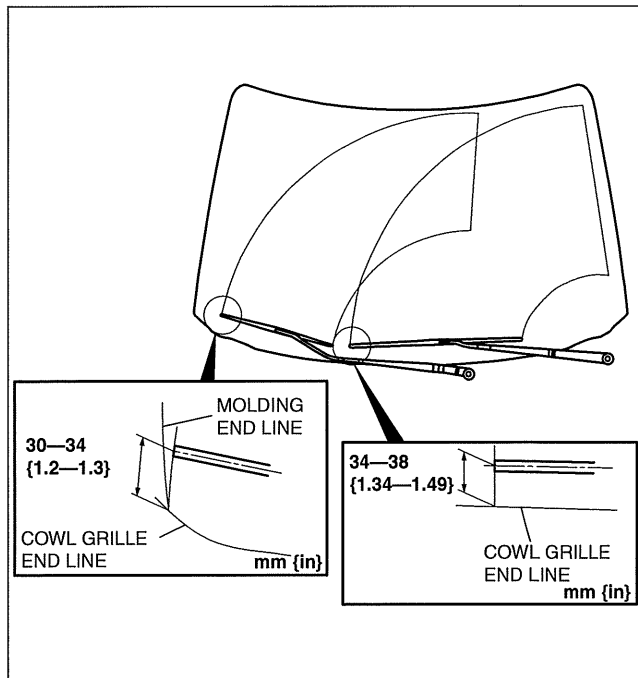
1. Operate the windshield wipers, and then turn off the windshield wiper motor to set the wipers in the park position.
2. Slide the serrated connecting part and adjust the windshield wiper arm and blade so that its end is aligned with the hollowed mark in the ceramic coating.



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Note

- If the hollowed mark in the ceramic coating cannot be located, measure the distance from the cowl grille end line, and adjust the windshield wiper arm and blade.



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WIPER/WASHER SYSTEM

WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION

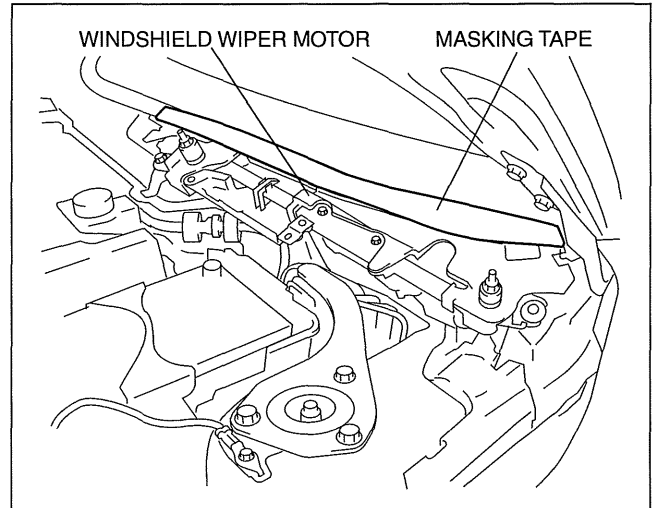
id091900800900

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (3) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Center cowl grille No1, No2
3. Stick masking tape on the figure.

Caution

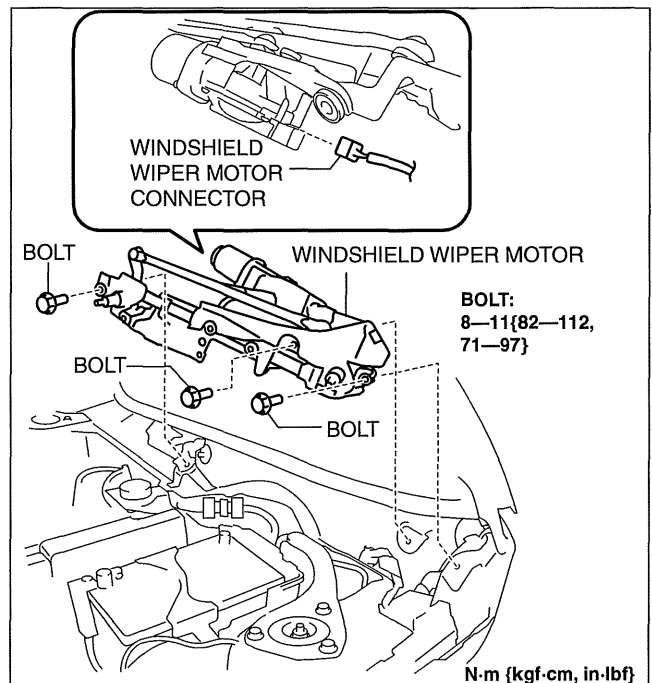
- If the front wiper motor is removed without affixing protective tape to the windshield, the motor may contact the windshield and damage it. Always affix protective tape along the edge of the windshield when removing the front wiper motor.
- Stick masking tape on the position to show in the figure of the windshield.

4. Remove the bolts.
5. Disconnect the windshield wiper motor connector.



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6. Remove the windshield wiper motor. (See 09-19-6 Windshield Wiper Motor Remove Note.)
7. Install in the reverse order of removal.



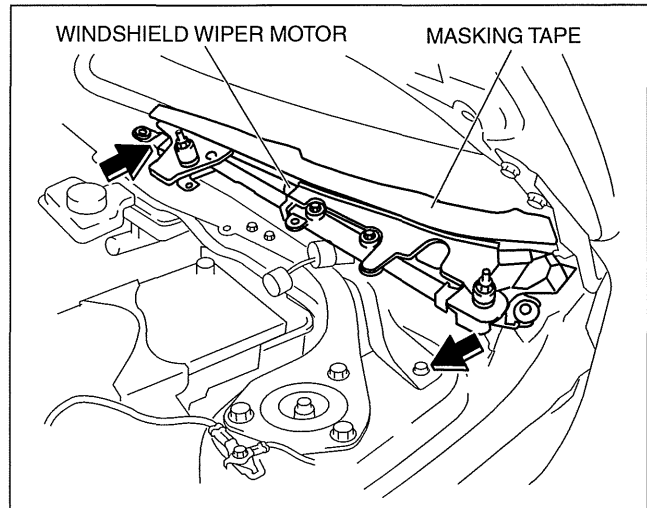
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WIPER/WASHER SYSTEM

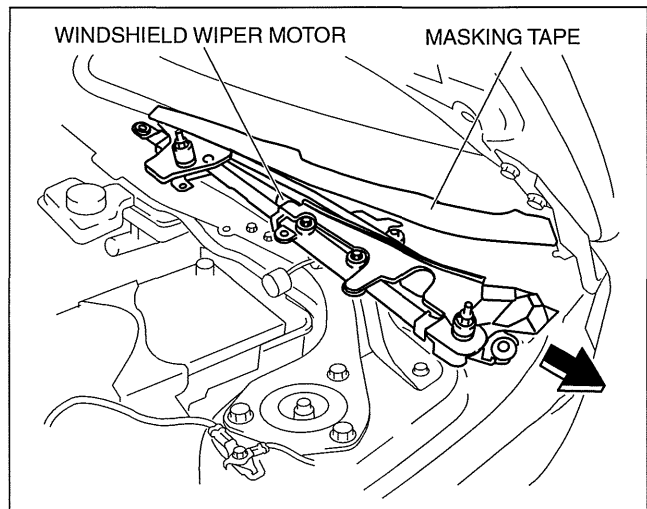
Windshield Wiper Motor Remove Note

1. Slide the windshield wiper motor in the direction of the left front fender and pull it out from between the windshield and the cowl panel.



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2. Be careful when removing the windshield wiper motor so that it does not strike the windshield. If the windshield wiper motor hits the windshield, it could cause damage to the windshield.



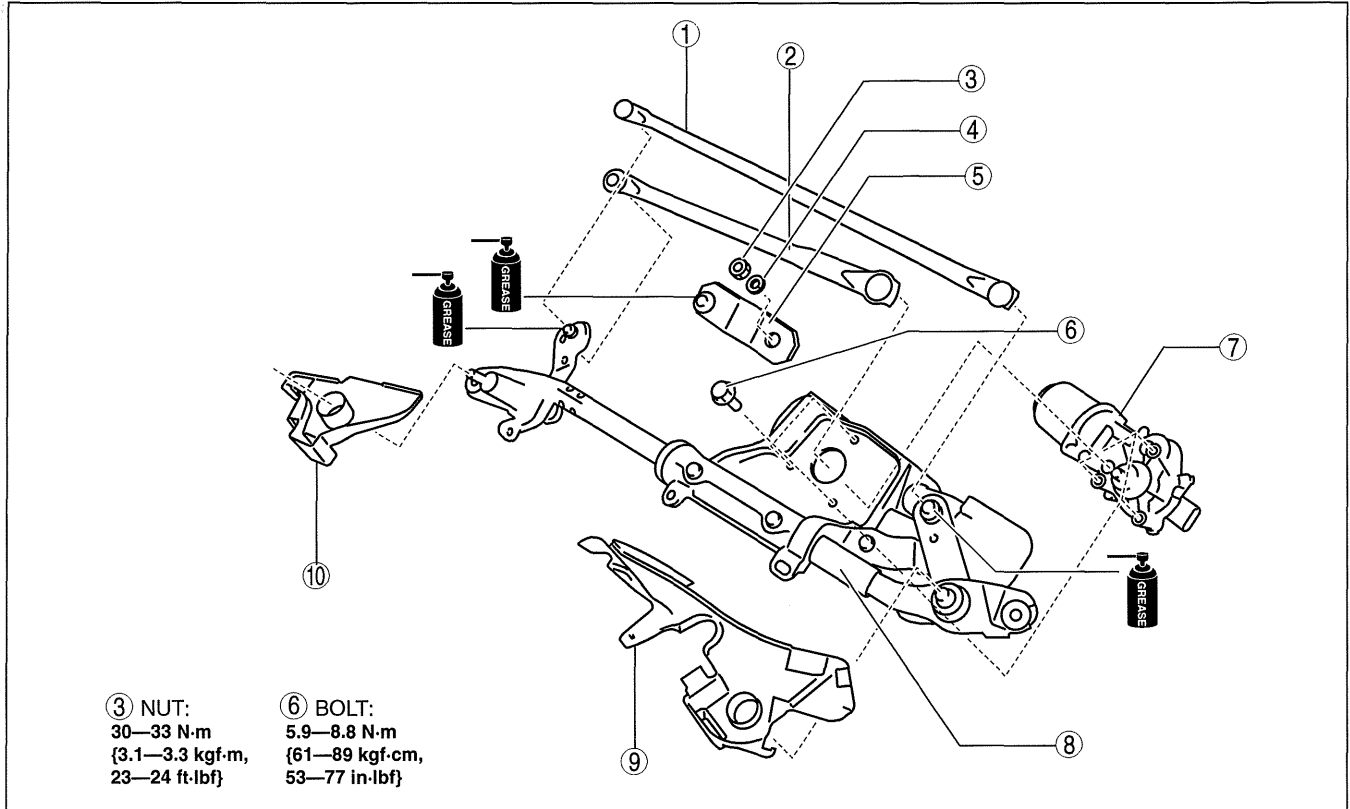
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WIPER/WASHER SYSTEM

WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY

id091900801000

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



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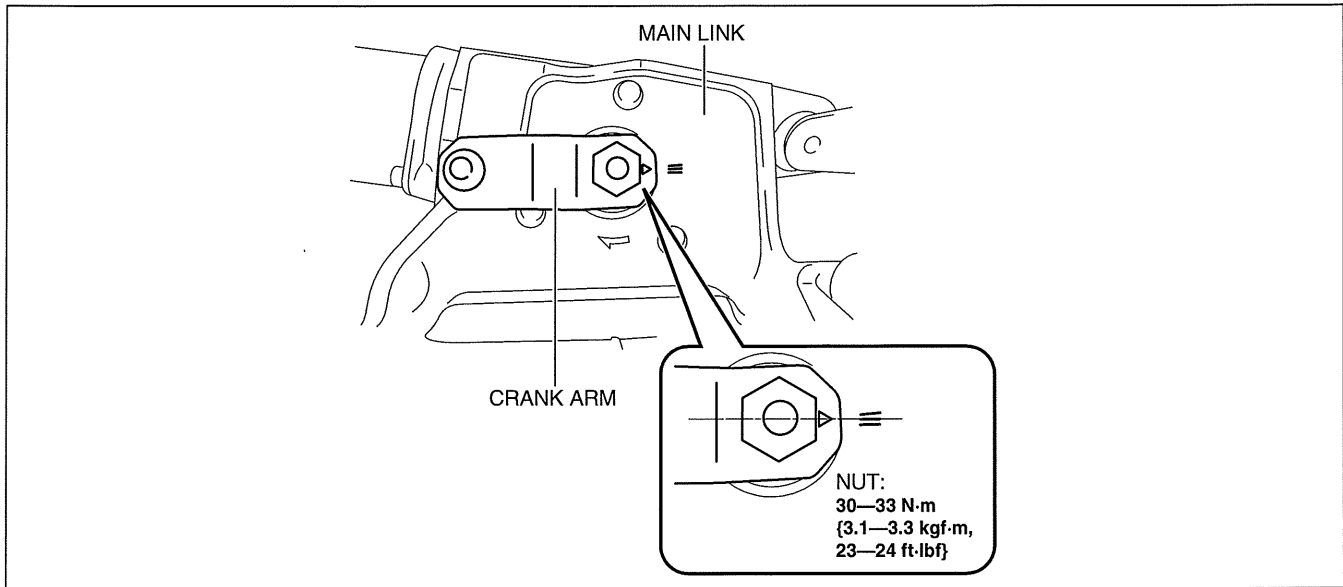
1	Wiper link No.1 (See 09-19-8 Ball Joint Assembly Note.)
2	Wiper link No.2 (See 09-19-8 Ball Joint Assembly Note.)
3	Nut
4	Washer
5	Crank arm

6	Bolt
7	Windshield wiper motor
8	Main link (See 09-19-8 Ball Joint Assembly Note.)
9	Windshield wiper motor cover No.1
10	Windshield wiper motor cover No.2

WIPER/WASHER SYSTEM

Windshield Wiper Motor Assembly Note

1. Connect the windshield wiper motor to the vehicle wiring harness connector, operate the windshield wipers, and then stop them at the auto-stop position.
2. Disconnect the windshield wiper motor connector.
3. Install the windshield wiper motor to the main link and tighten the bolt.
4. Assemble the crank arm such that the crank arm and main link markings are aligned as shown in the figure.

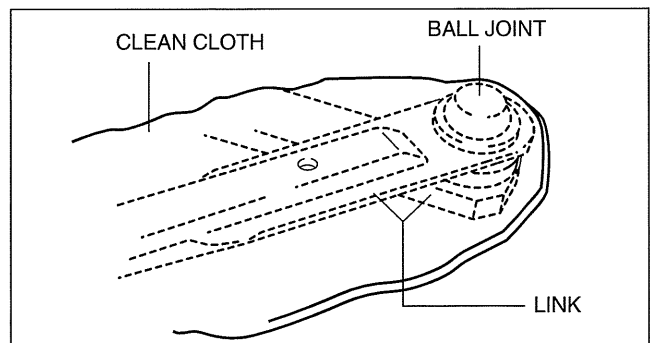


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5. Install the washer and nut.

Ball Joint Assembly Note

1. Use a clean cloth to protect the link, and squeeze using pliers.



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WIPER/WASHER SYSTEM

id091900801100

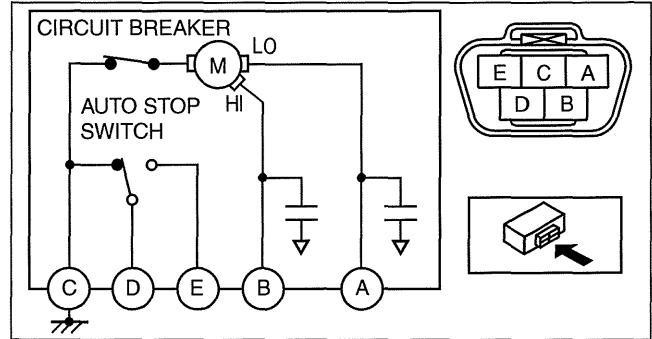
WINDSHIELD WIPER MOTOR INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (3) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Center cowl grille No.1, No.2
 - (5) Cowl panel (See 09-10-45 COWL PANEL REMOVAL/INSTALLATION.)
 - (6) Windshield wiper motor (See 09-19-5 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)

3. Connect battery positive voltage to windshield wiper motor terminal A or B, and ground to terminal D, then verify that the windshield wipers operate as shown in the table.

- If the windshield wipers do not operate as indicated in the table, replace the windshield wiper motor.

Terminal connected to battery positive voltage	Operation condition
A	LO
B	HI



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4. Disconnect battery positive voltage from the motor terminal A while the wipers are operating.
5. Verify that the wipers do not stop in the park position.
6. Short between the motor terminals A and C, and connect battery positive voltage to the motor terminal E.
7. Verify that the wipers operate at low speed again, then stop in the park position.
 - If there is any malfunction, replace the windshield wiper motor.

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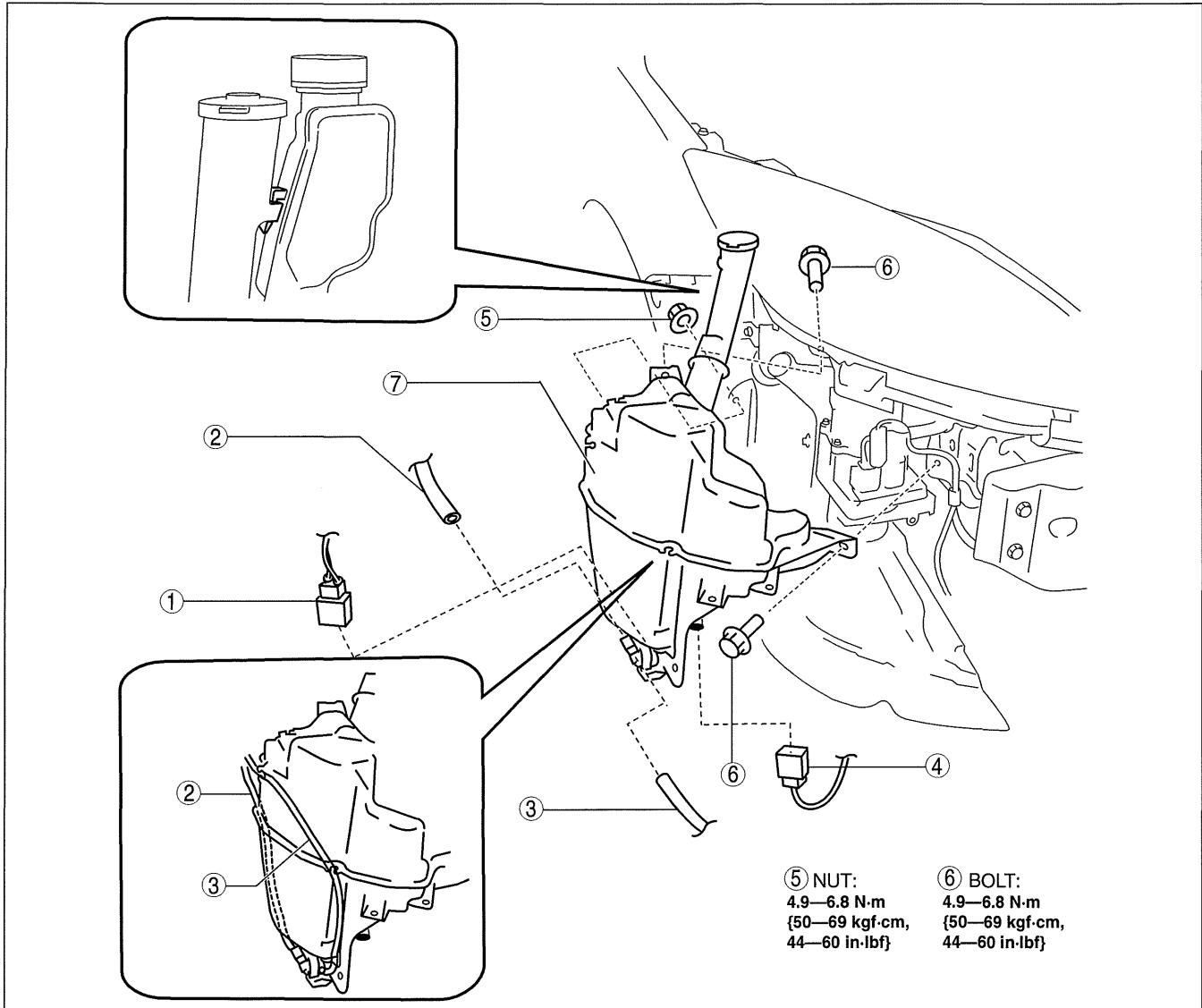
WIPER/WASHER SYSTEM

WASHER TANK REMOVAL/INSTALLATION

id091900801700

Vehicles with the washer fluid-level sensor

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



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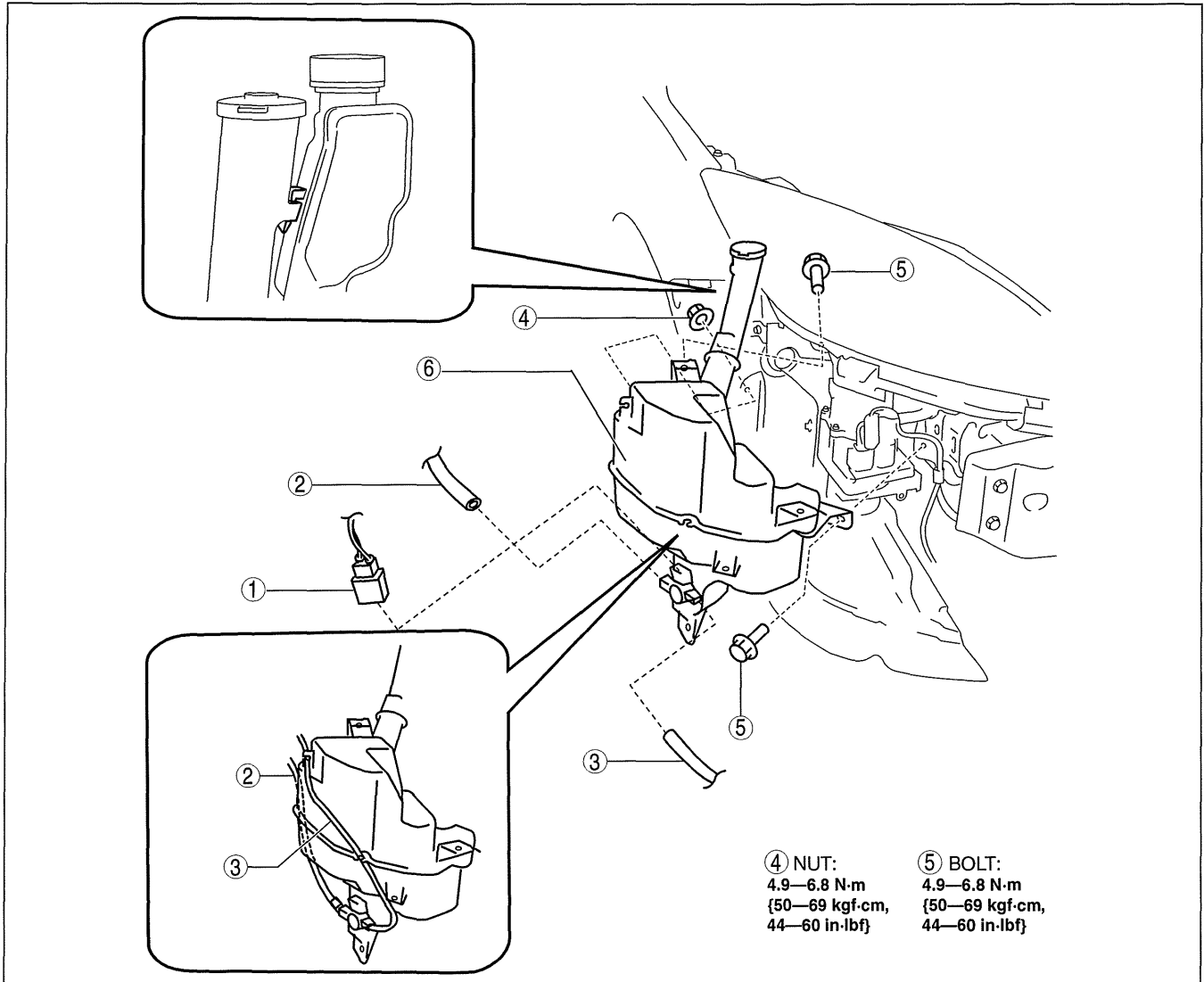
1	Washer motor connector
2	Windshield washer hose
3	Rear washer hose (Vehicles with rear washer system)
4	Washer fluid-level sensor connector

5	Nut
6	Bolt
7	Washer tank

WIPER/WASHER SYSTEM

Vehicles without the washer fluid-level sensor

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



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1	Washer motor connector
2	Windshield washer hose
3	Rear washer hose (Vehicles with rear washer system)

4	Nut
5	Bolt
6	Washer tank

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WIPER/WASHER SYSTEM

WASHER MOTOR REMOVAL/INSTALLATION

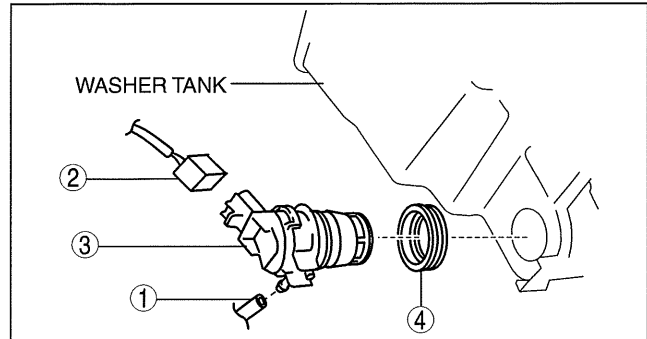
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Vehicles Without Rear Washer System

1. Disconnect the negative battery cable.
2. Remove the front mudguard (RH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Windshield washer hose
2	Washer motor connector
3	Washer motor
4	Grommet

4. Install in the reverse order of removal.



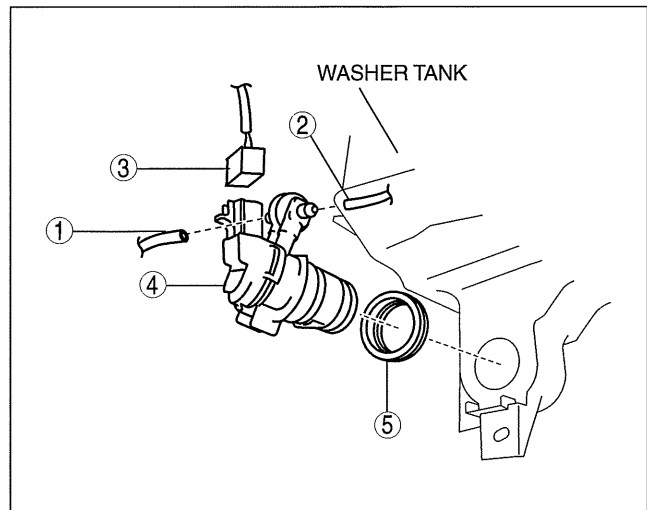
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Vehicles With Rear Washer System

1. Disconnect the negative battery cable.
2. Remove the front mudguard (RH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Windshield washer hose
2	Rear washer hose
3	Washer motor connector
4	Washer motor
5	Grommet

4. Install in the reverse order of removal.

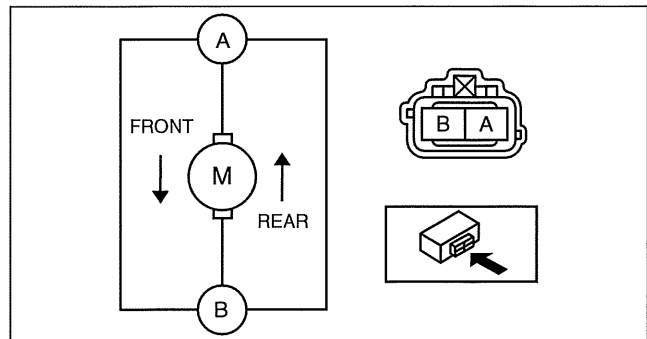


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WASHER MOTOR INSPECTION

id091900805100

1. Disconnect the negative battery cable.
2. Remove the front mudguard (RH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Disconnect the washer motor connector.
4. After connecting washer motor terminal A to the positive battery terminal, and terminal B to the negative battery terminal, verify that washer fluid flows to the windshield washer hose.
 - If there is any malfunction, replace the washer motor.
5. After connecting washer motor terminal B to the positive battery terminal, and terminal A to the negative battery terminal, verify that washer fluid flows to the rear washer hose. (Vehicles with rear washer system.)
 - If there is any malfunction, replace the washer motor.



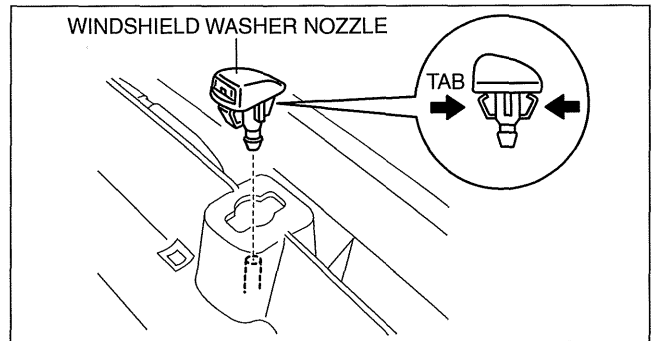
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WIPER/WASHER SYSTEM

WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION

id091900802000

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Front fender molding
 - (3) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
3. Remove the windshield washer hose from the windshield washer nozzle.
4. Squeeze the tabs of the windshield washer nozzle.
5. Pull the windshield washer nozzle out to remove it.
6. Install in the reverse order of removal.



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WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION

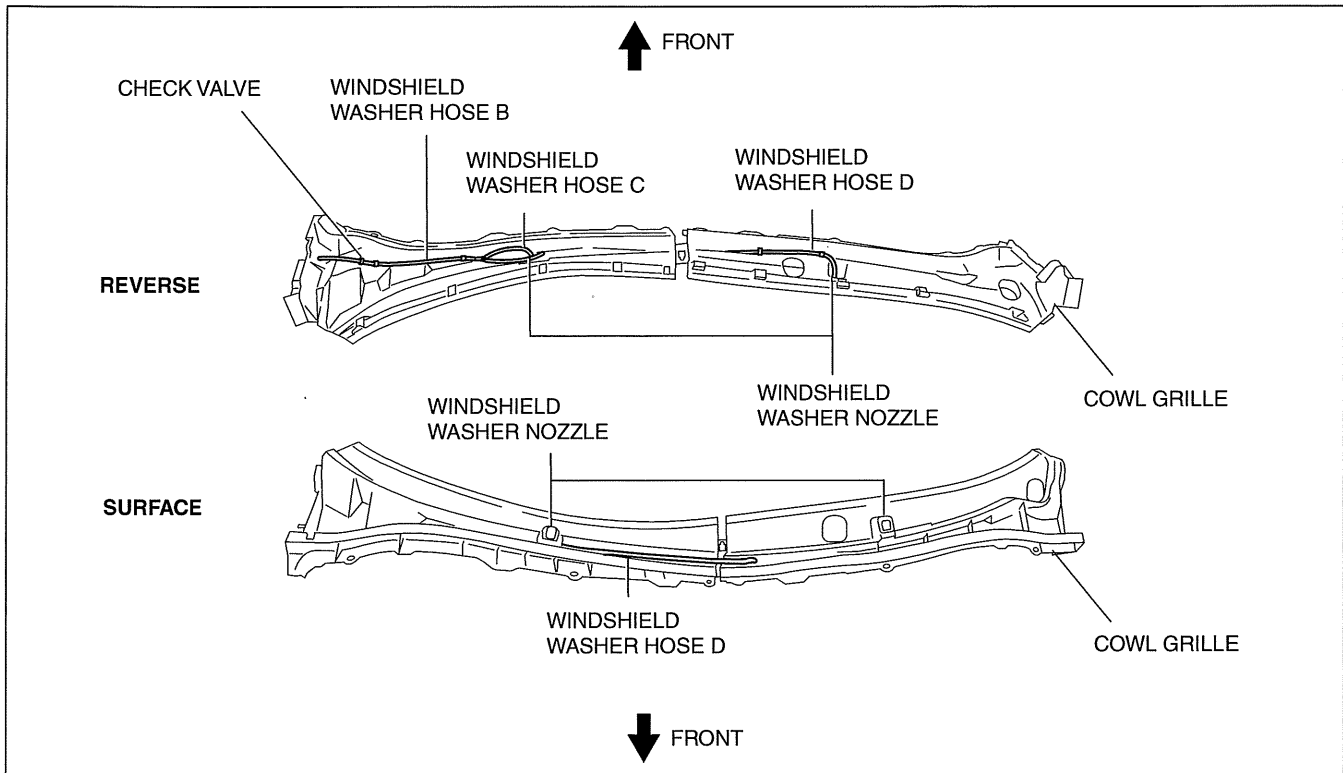
id091900802100

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Front fender molding (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (3) Cowl grille (See 09-16-4 COWL GRILLE REMOVAL/INSTALLATION.)
 - (4) Front mudguard (RH) (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Disconnect joint pipes, then remove windshield washer hose B, C and D.
4. Remove the windshield washer hose B.
5. Disconnect windshield washer hose C from the washer nozzle.
6. Remove the windshield washer hose C.
7. Disconnect windshield washer hose D from the washer nozzle.

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WIPER/WASHER SYSTEM

8. Remove the windshield washer hose D.



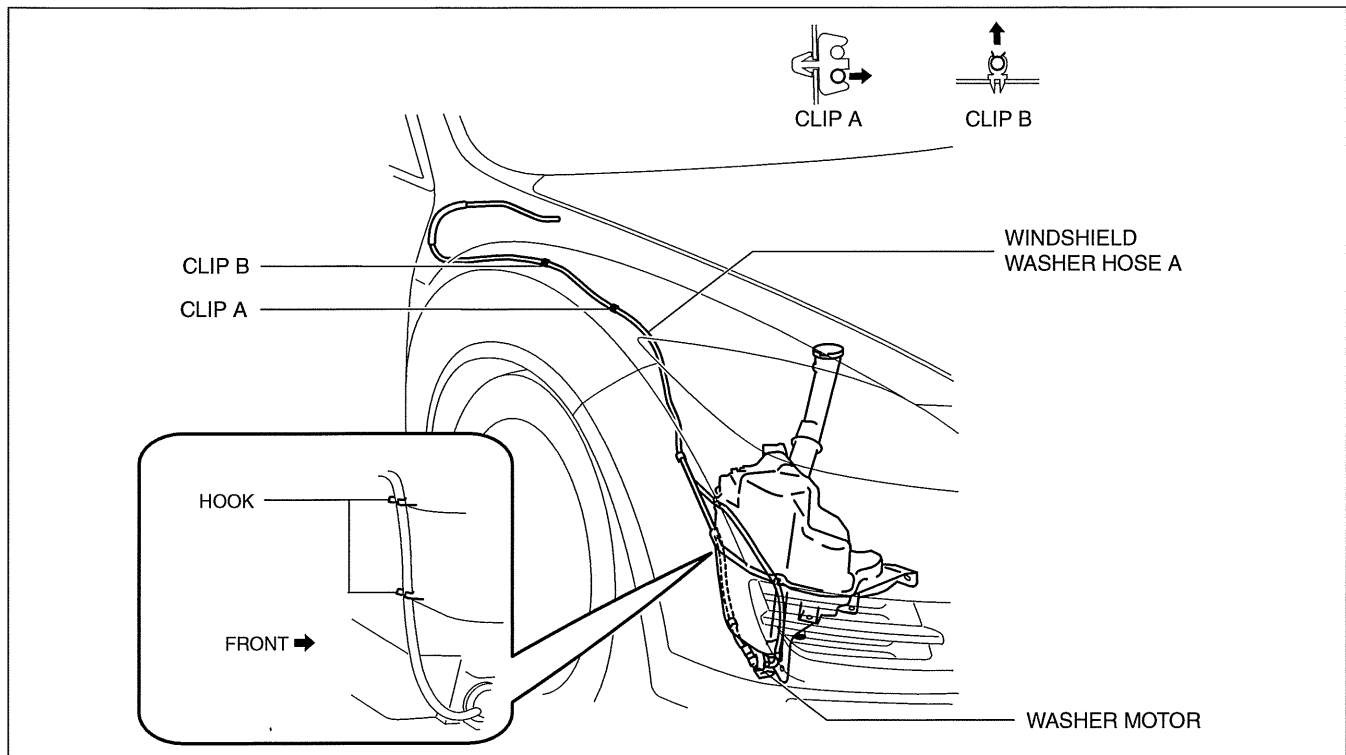
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9. Disconnect the windshield washer hose A from the windshield washer motor.

10. Remove the clip A and B.

11. Disconnect joint pipes, then remove windshield washer hose A.

12. Remove the windshield washer hose A.



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13. Install in the reverse order of removal.

WIPER/WASHER SYSTEM

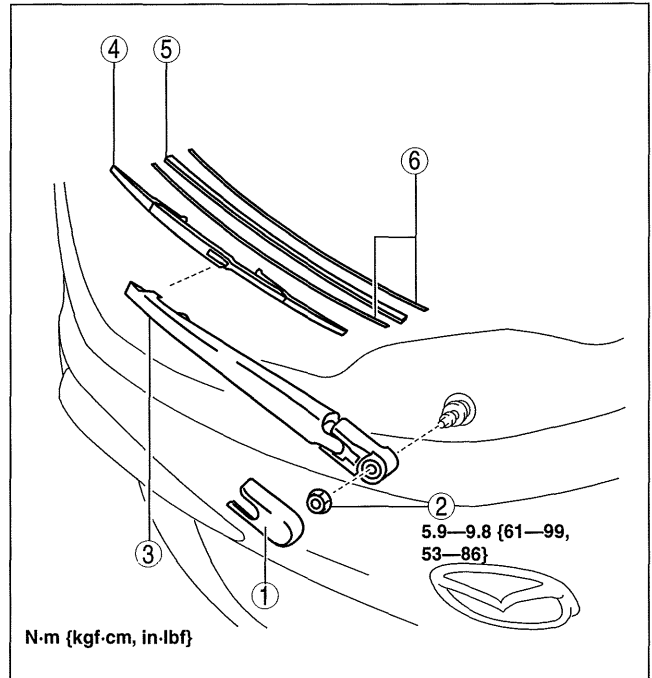
REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION

id091900801200

1. Remove in the order indicated in the table.

1	Cap
2	Nut
3	Rear wiper arm (See 09-19-15 Rear Wiper Arm Installation Note.)
4	Rear wiper blade
5	Rubber brush
6	Backing plate

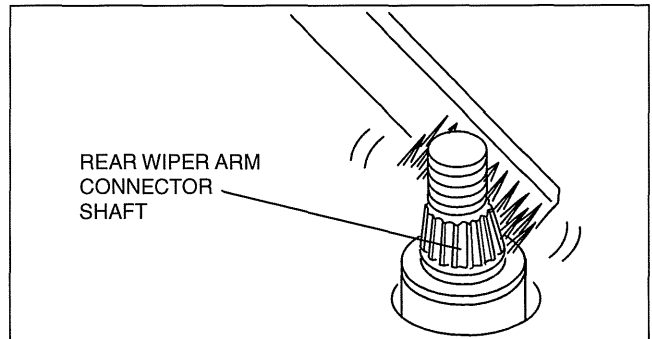
2. Install in the reverse order of removal.
3. Adjust the rear wiper arm and blade. (See 09-19-15 REAR WIPER ARM AND BLADE ADJUSTMENT.)



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Rear Wiper Arm Installation Note

1. Clean the rear wiper arm connector shaft using a wire brush before installing the rear wiper arm.

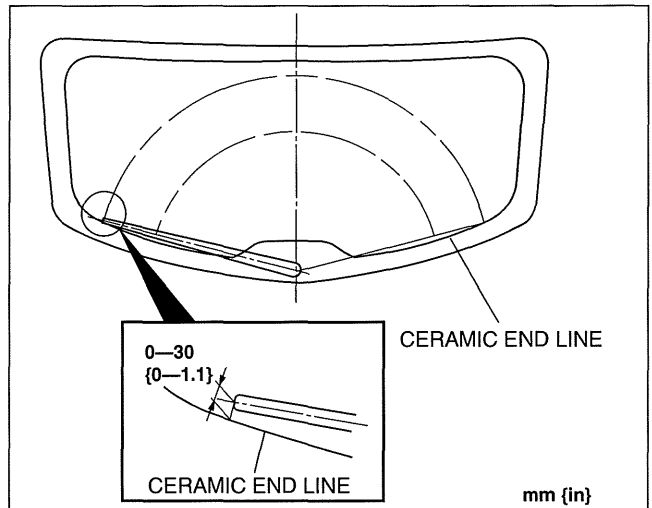


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REAR WIPER ARM AND BLADE ADJUSTMENT

id091900801300

1. Turn off the rear wiper switch while operating the rear wiper motor, and then stop the rear wiper at the auto-stop position.
2. Set the rear wiper arm onto the ceramic end line.



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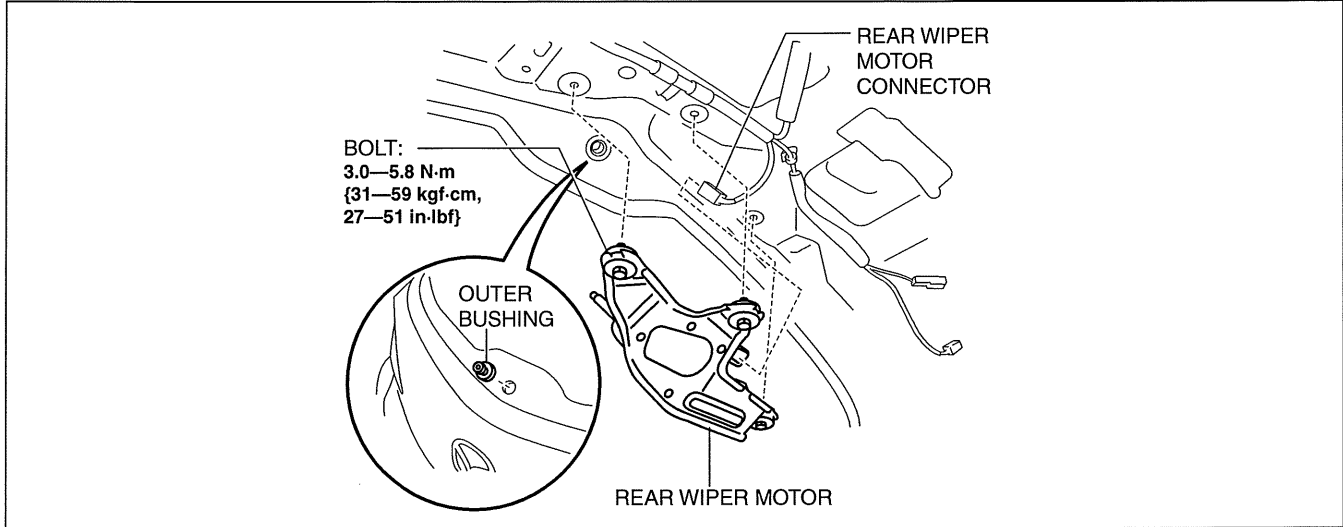
09-19

WIPER/WASHER SYSTEM

REAR WIPER MOTOR REMOVAL/INSTALLATION

id091900801400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear wiper arm and blade (See 09-19-15 REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
3. Disconnect the rear wiper motor connector.



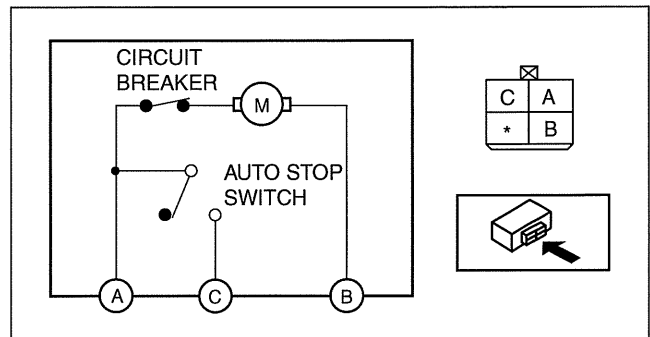
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4. Remove the bolts, then remove the rear wiper motor.
5. Remove the outer bushing.
6. Install in the reverse order of removal.

REAR WIPER MOTOR INSPECTION

id091900801500

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear wiper arm and blade (See 09-19-15 REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
 - (2) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (3) Liftgate side trim (See 09-17-99 LIFTGATE SIDE TRIM REMOVAL/INSTALLATION.)
 - (4) Liftgate lower trim (See 09-17-102 LIFTGATE LOWER TRIM REMOVAL/INSTALLATION.)
3. Disconnect the rear wiper motor connector.
4. Apply battery positive voltage to rear wiper motor connector terminal B, and connect terminals A and C to the ground.
5. Verify that the rear wiper motor operates.
 - If there is any malfunction, replace the rear wiper motor.
6. Disconnect the ground to the terminal A while the rear wiper is operating.
7. Verify that the rear wiper stops in the park position.
 - If there is any malfunction, replace the rear wiper motor.

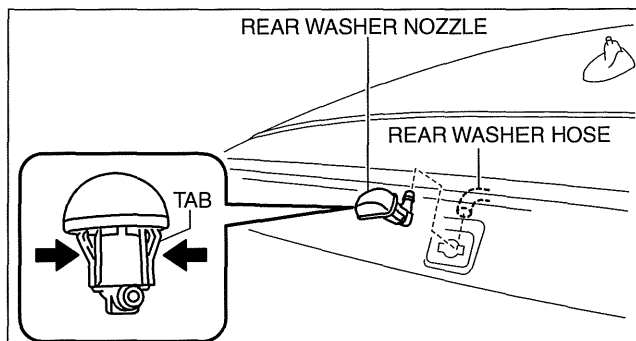


WIPER/WASHER SYSTEM

REAR WASHER NOZZLE REMOVAL/INSTALLATION

id091900802200

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Liftgate upper trim (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
 - (2) Rear spoiler (See 09-16-21 REAR SPOILER REMOVAL/INSTALLATION.)
 - (3) High-mount brake light (See 09-18-42 HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
3. Disconnect the rear washer hose.
4. Press the tabs and remove the rear washer nozzle.
5. Install in the reverse order of removal.
6. Adjust the rear washer nozzle. (See 09-19-17 REAR WASHER NOZZLE ADJUSTMENT.)

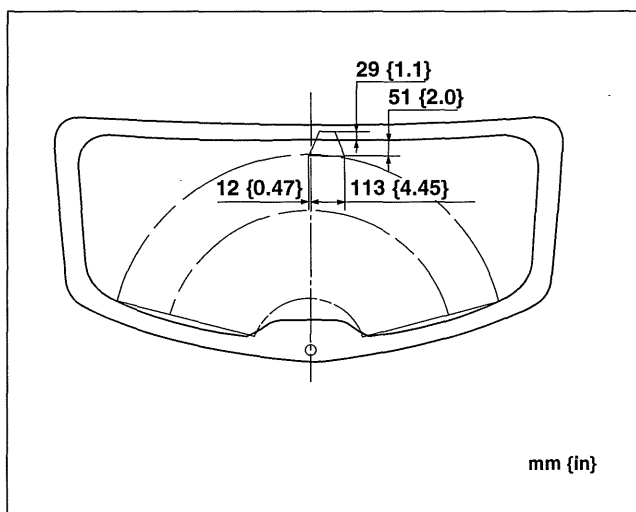


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REAR WASHER NOZZLE ADJUSTMENT

id091900802300

1. Insert a needle or an equivalent tool into the spray hole of the rear washer nozzle and adjust the nozzle direction as shown.



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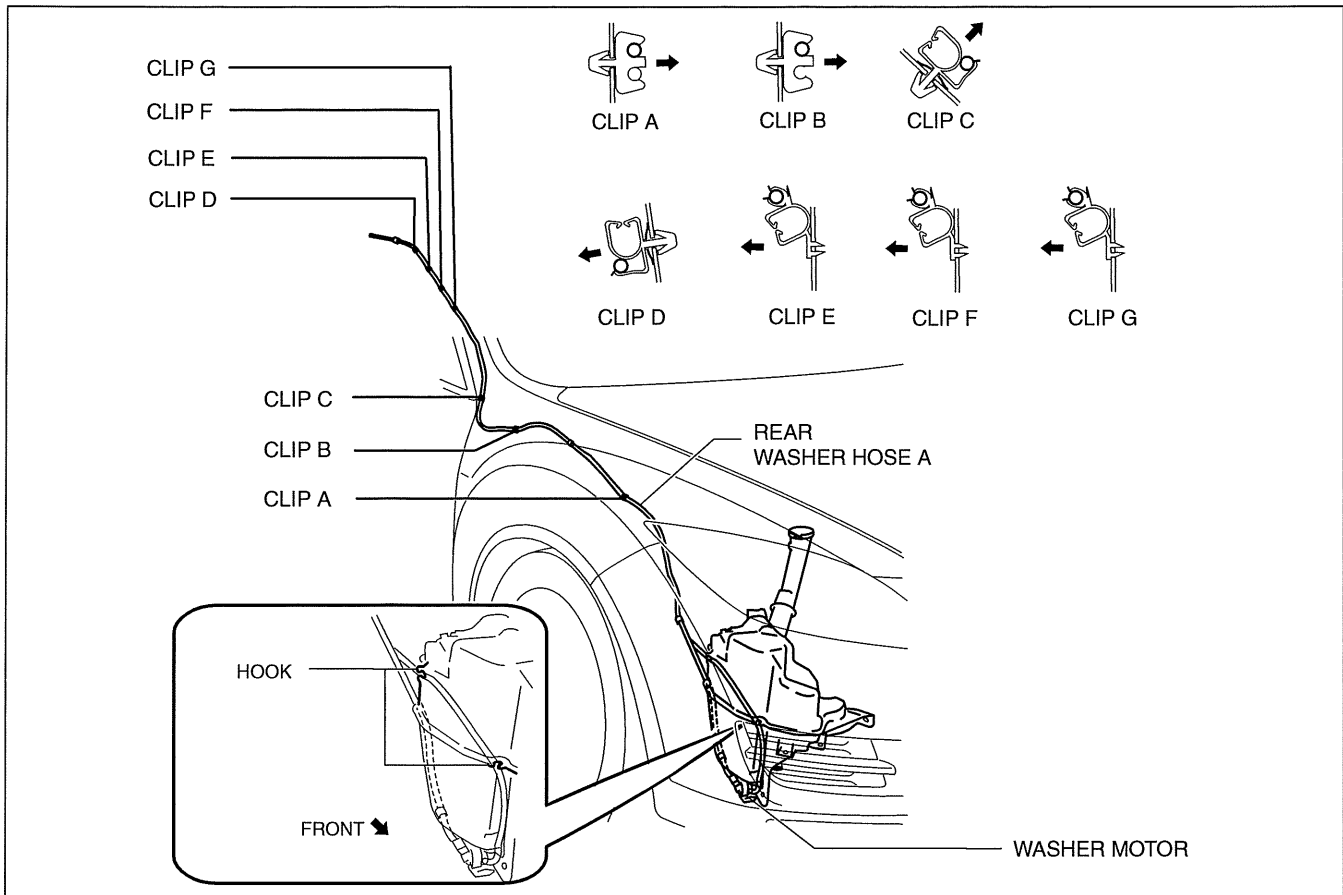
09-19

WIPER/WASHER SYSTEM

REAR WASHER HOSE REMOVAL/INSTALLATION

id091900801600

1. Disconnect the negative battery cable.
2. Remove the front mudguard (RH). (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Disconnect rear washer hose A from the washer motor.

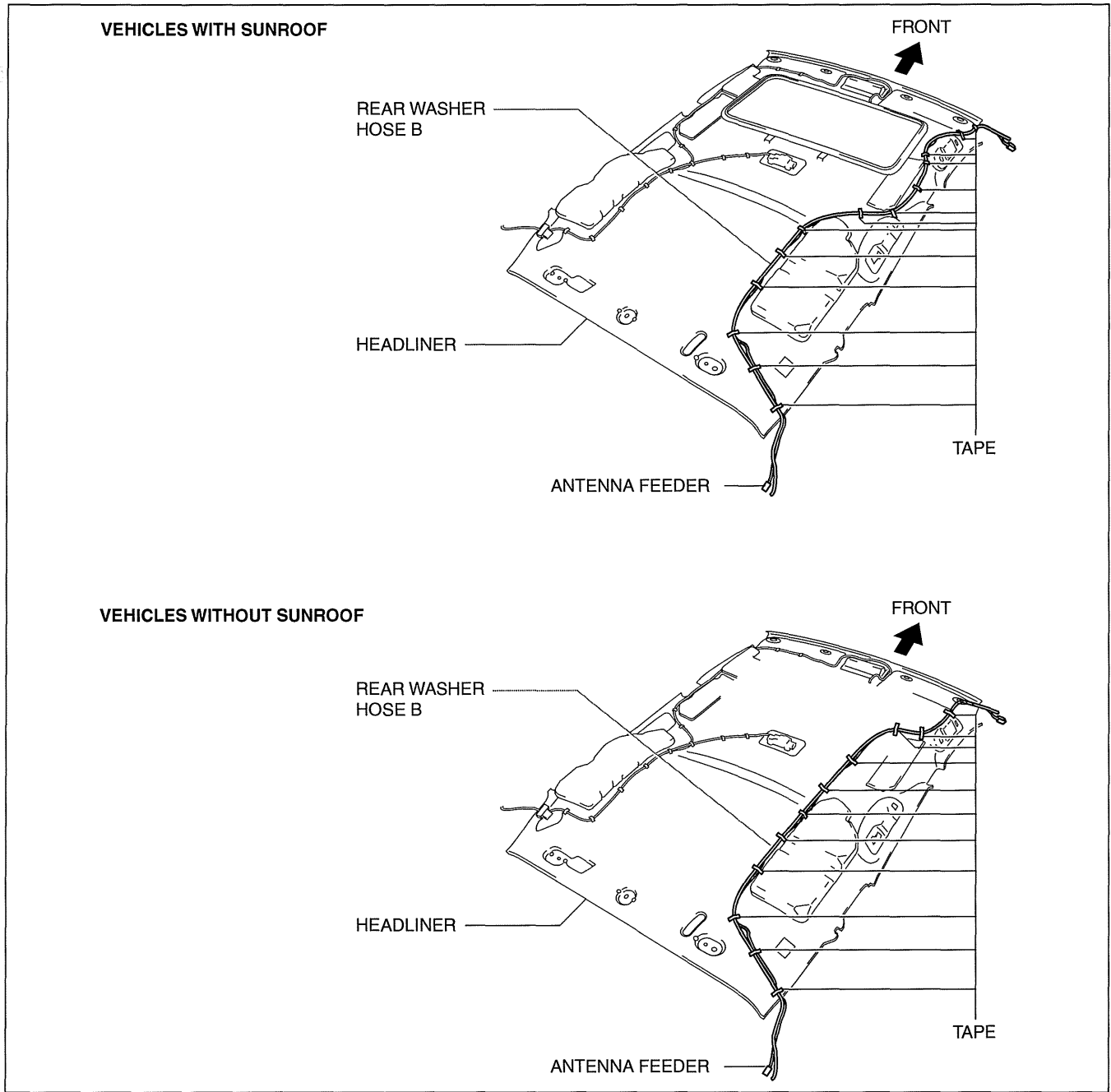


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4. Remove the rear washer hose A from clip A, B, C, D, E, F, G.
5. Disconnect joint pipes and remove rear washer hose A.
6. Partially peel back the seaming welts.
7. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof only)
 - (2) A-pillar trims (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-31 REAR SEAT BACK REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Interior light (See 09-18-69 INTERIOR LIGHT REMOVAL/INSTALLATION.)
 - (14) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (15) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (16) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

WIPER/WASHER SYSTEM

8. Peel off the tape and remove rear washer hose B.



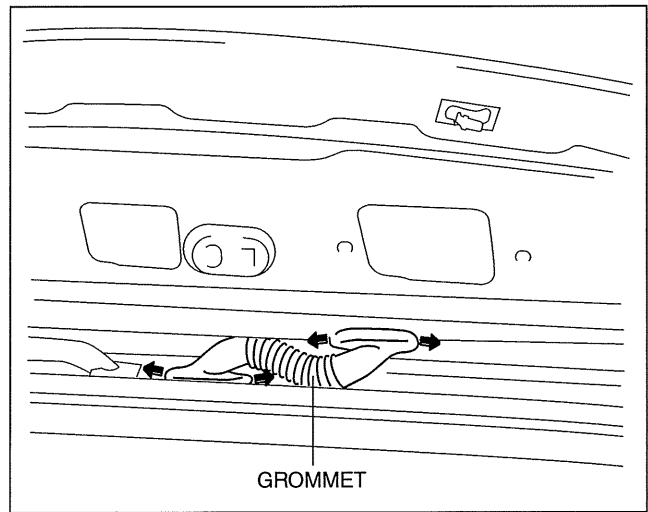
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9. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)

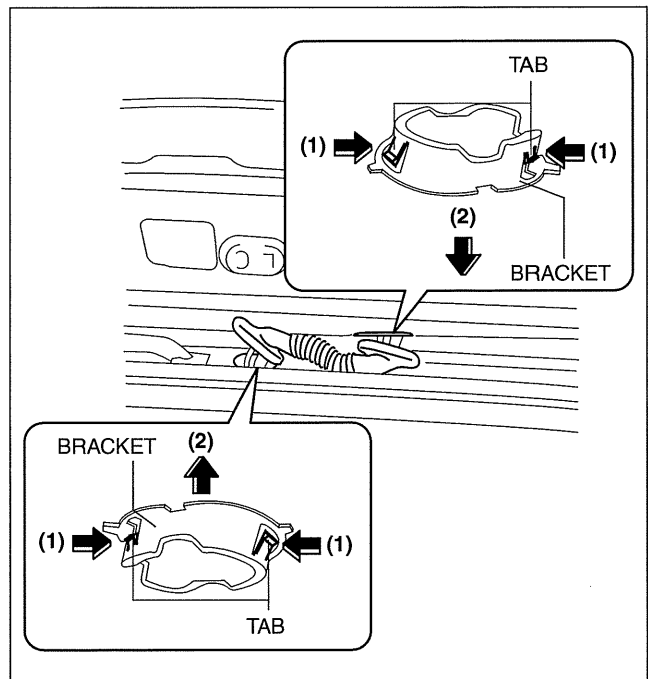
WIPER/WASHER SYSTEM

10. Partially peel back the grommet.



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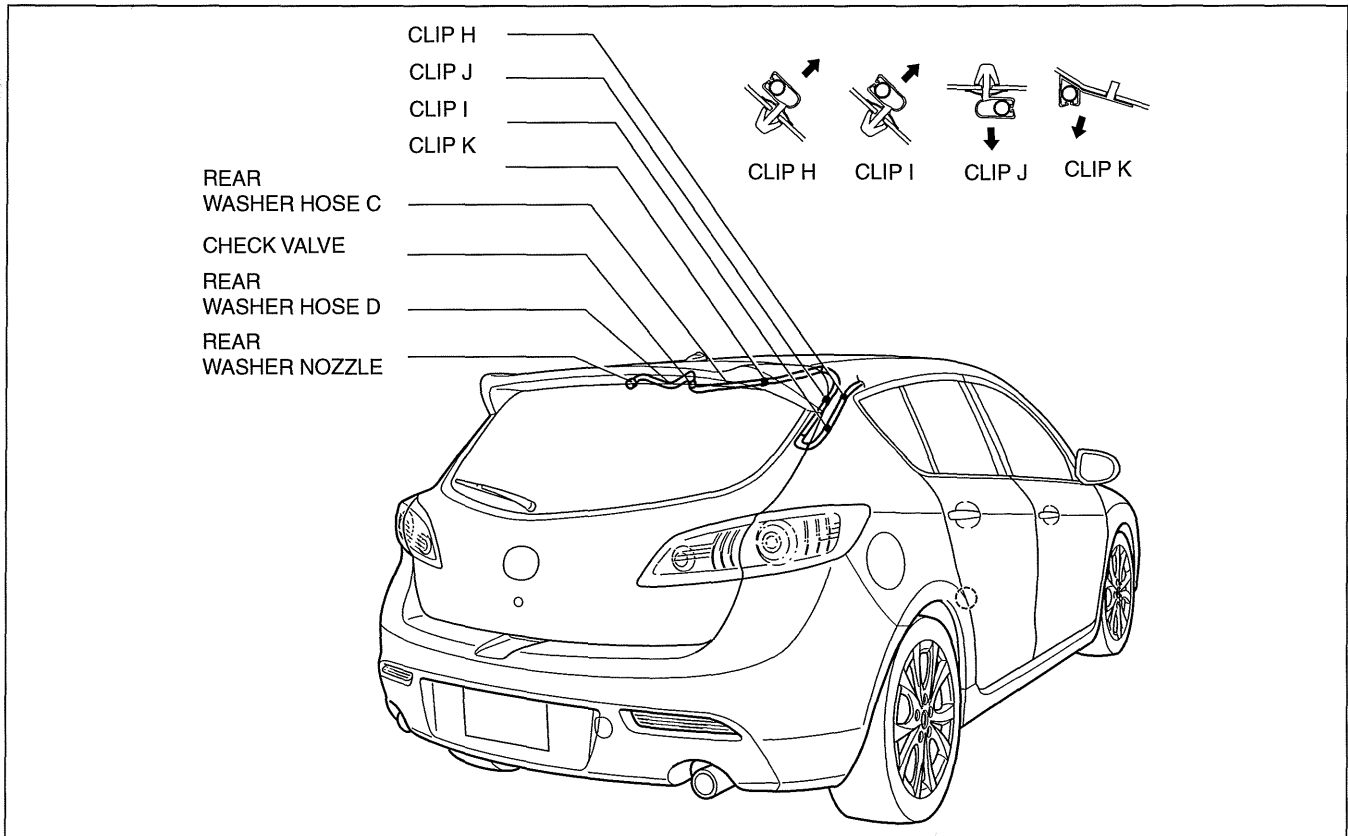
11. Remove the bracket in the direction of the arrow (2) shown in the figure while pressing the bracket tabs in the direction of the arrow (1).



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WIPER/WASHER SYSTEM

12. Remove the rear washer hose C from clip H, I, J, K.



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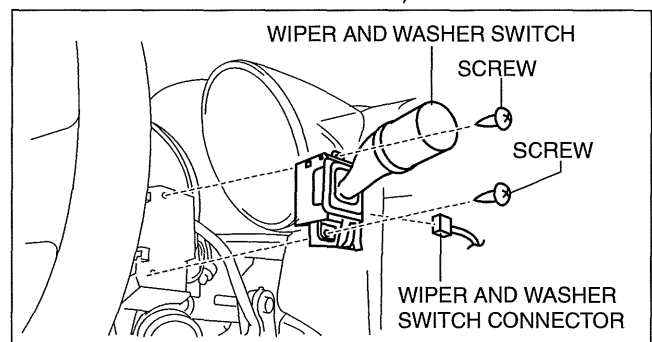
09-19

13. Disconnect joint pipes and remove rear washer hose C.
14. Disconnect check valve and remove rear washer hose C.
15. Remove rear washer hose D from the rear washer nozzle.
16. Install in the reverse order of removal.

WIPER AND WASHER SWITCH REMOVAL/INSTALLATION

id091900800200

1. Disconnect the negative battery cable.
2. Remove the Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Disconnect the wiper and washer switch connector.
4. Remove the screws.
5. Remove the wiper and washer switch.
6. Install in the reverse order of removal.



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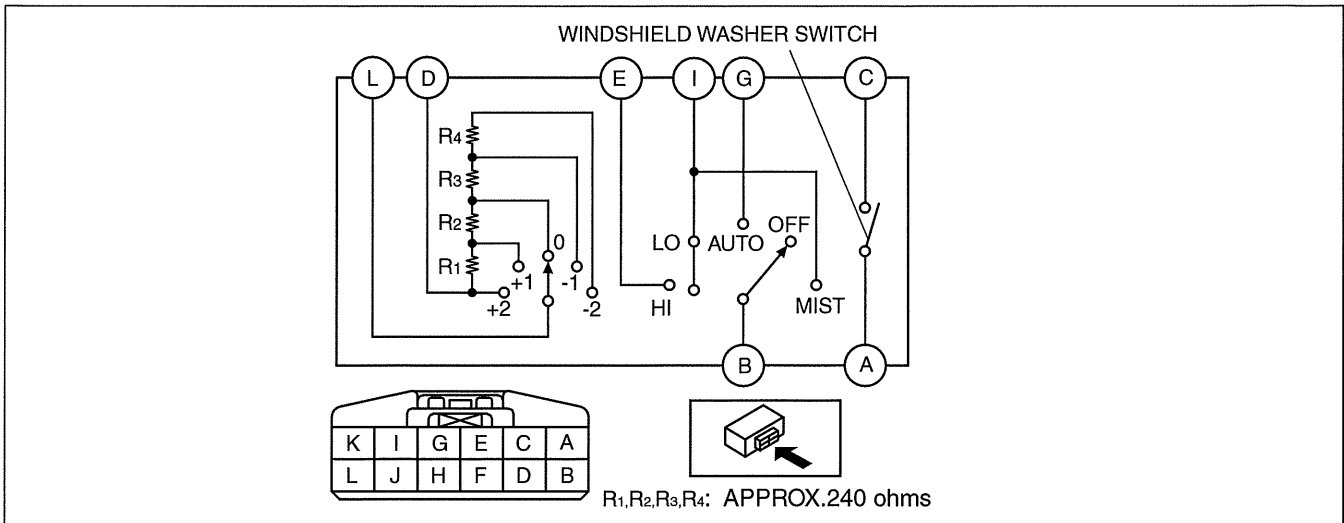
WIPER/WASHER SYSTEM

id091900800300

WINDSHIELD WIPER AND WASHER SWITCH INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (Driver's side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Driver's side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (4) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (5) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION)
 - (6) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (9) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (10) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (11) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (12) Wiper and washer switch (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
3. Verify that the resistance and continuity between the windshield wiper and washer switch terminals as indicated in the table.
 - If the continuity is not as indicated in the table, or if the resistance is not within the specification, replace the windshield wiper and washer switch.

Vehicles With Auto Wiper System



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○—○ : CONTINUITY

SWITCH POSITION		TERMINAL						
		I	G	J	B	E	A	C
WINDSHIELD WIPER SWITCH	OFF							
	MIST	○	—		○			
	AUTO		○	—	○			
	LO	○	—		○			
	HI	○	—		○	—	○	
WINDSHIELD WASHER SWITCH	ON						○	○

am3uuw00004806

WIPER/WASHER SYSTEM

O-W-O : RESISTANCE

SWITCH POSITION	TERMINAL		RESISTANCE (ohm)
	D	L	
+2			0
+1			228—252
0			456—504
-1			684—756
-2			912—1008

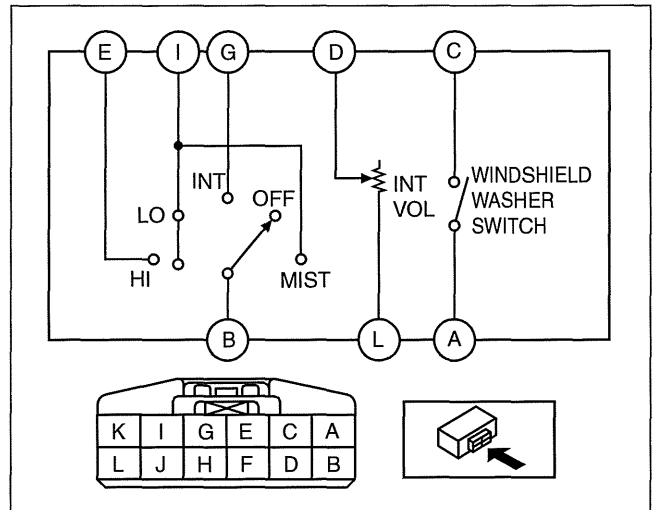
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Vehicles Without Auto Wiper System

O—O : CONTINUITY

SWITCH POSITION		TERMINAL						
		I	G	J	B	E	A	C
WINDSHIELD WIPER SWITCH	OFF							
	MIST							
	INT							
	LO							
	HI							
WINDSHIELD WASHER SWITCH	ON							

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am3uuw0000304

O-W-O : RESISTANCE

INT VOLUME	TERMINAL		RESISTANCE (ohm)
	D	L	
MAX HI			0
MAX LO			700—1300

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WIPER/WASHER SYSTEM

REAR WIPER AND WASHER SWITCH INSPECTION

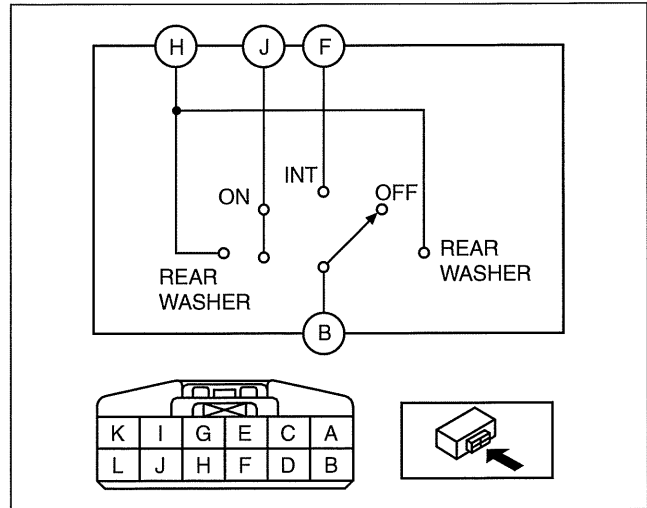
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1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (Driver's side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Driver's side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (4) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (5) Column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (6) Wiper and washer switch (See 09-19-21 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)
3. Verify that the continuity between the rear wiper and washer switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the wiper and washer switch.

○—○ : CONTINUITY

SWITCH POSITION		TERMINAL			
		B	F	H	J
REAR WIPER SWITCH	OFF				
	INT	○—○			
	ON	○—○			○—○
REAR WASHER SWITCH	ON	○—○	○—○		
		○—○	○—○	○—○	○—○

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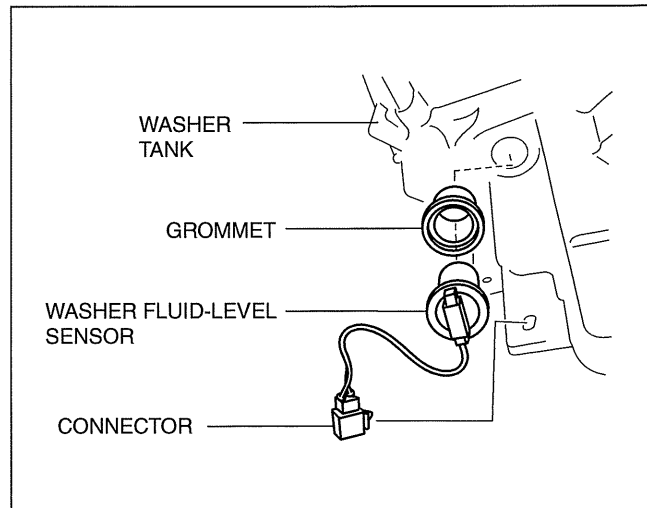


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WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION

id091900801800

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Remove the washer tank. (See 09-19-10 WASHER TANK REMOVAL/INSTALLATION.)
4. Remove the connector of the washer fluid-level sensor from the washer tank.
5. Remove the washer fluid-level sensor.
6. Remove the grommet.
7. Install in the reverse order of removal.



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WIPER/WASHER SYSTEM

WASHER FLUID-LEVEL SENSOR INSPECTION

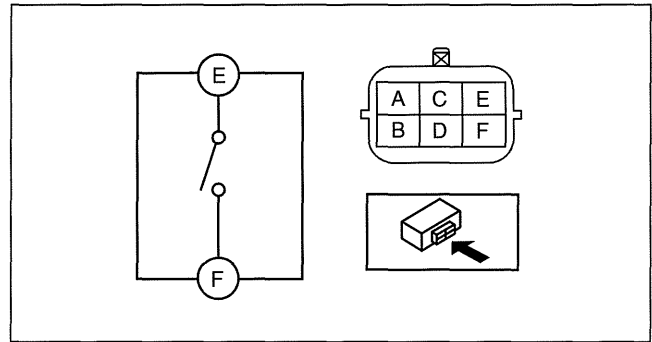
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1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Verify that continuity between the washer fluid-level sensor terminals is as indicated in the table.
 - If not as specified, replace the washer fluid-level sensor.

○—○ : Continuity

Fluid level	Terminal	
	E	F
Above low		
Below low	○—○	○—○

am6zzw00002810



AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION

id091900809000

Note

- Auto wiper system are integrated with the auto light/wiper control module.

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
3. Remove the auto light/wiper control module. (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
4. Install in the reverse order of removal.

AUTO LIGHT/WIPER CONTROL MODULE INSPECTION

id091900809100

Note

- Auto wiper system are integrated with the auto light/wiper control module.

1. Auto light/wiper control module inspection. (See 09-18-65 AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.)

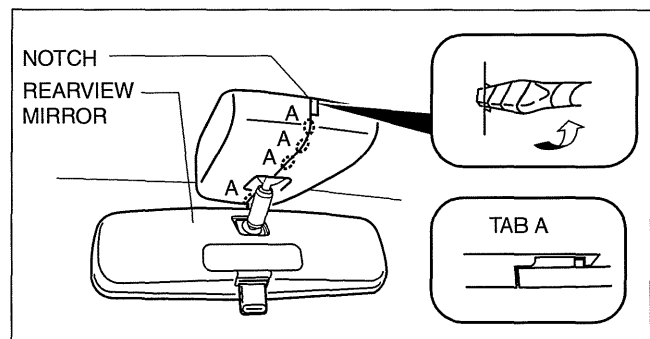
RAIN SENSOR REMOVAL/INSTALLATION

id091900800500

Caution

- The reflection rate at the moment the ignition switch is first turned to the ON position after replacing the rain sensor with a new one is stored as the condition indicating no precipitation on the windshield. Therefore, remove water and dirt from the windshield before turning on the ignition switch.
- Perform the rain sensor initialization in the following cases: (See 09-19-28 RAIN SENSOR REINITIALIZATION SETTING.)
 - The windshield is replaced and the rain sensor is reused
 - The auto wiper system operates incorrectly

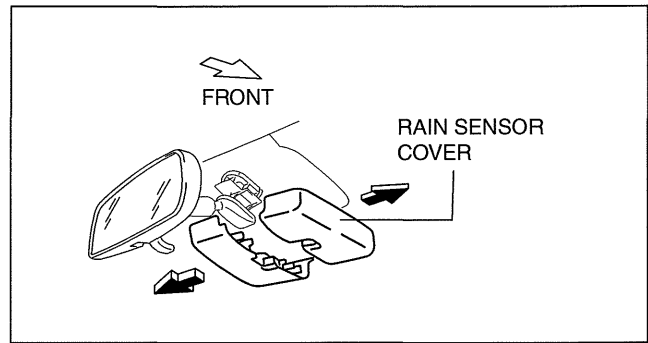
1. Disconnect the negative battery cable.
2. Insert a tape-wrapped flathead screwdriver into the notch on the rain sensor cover, turn it in the direction of the arrow shown in the figure, and detach the tab A.



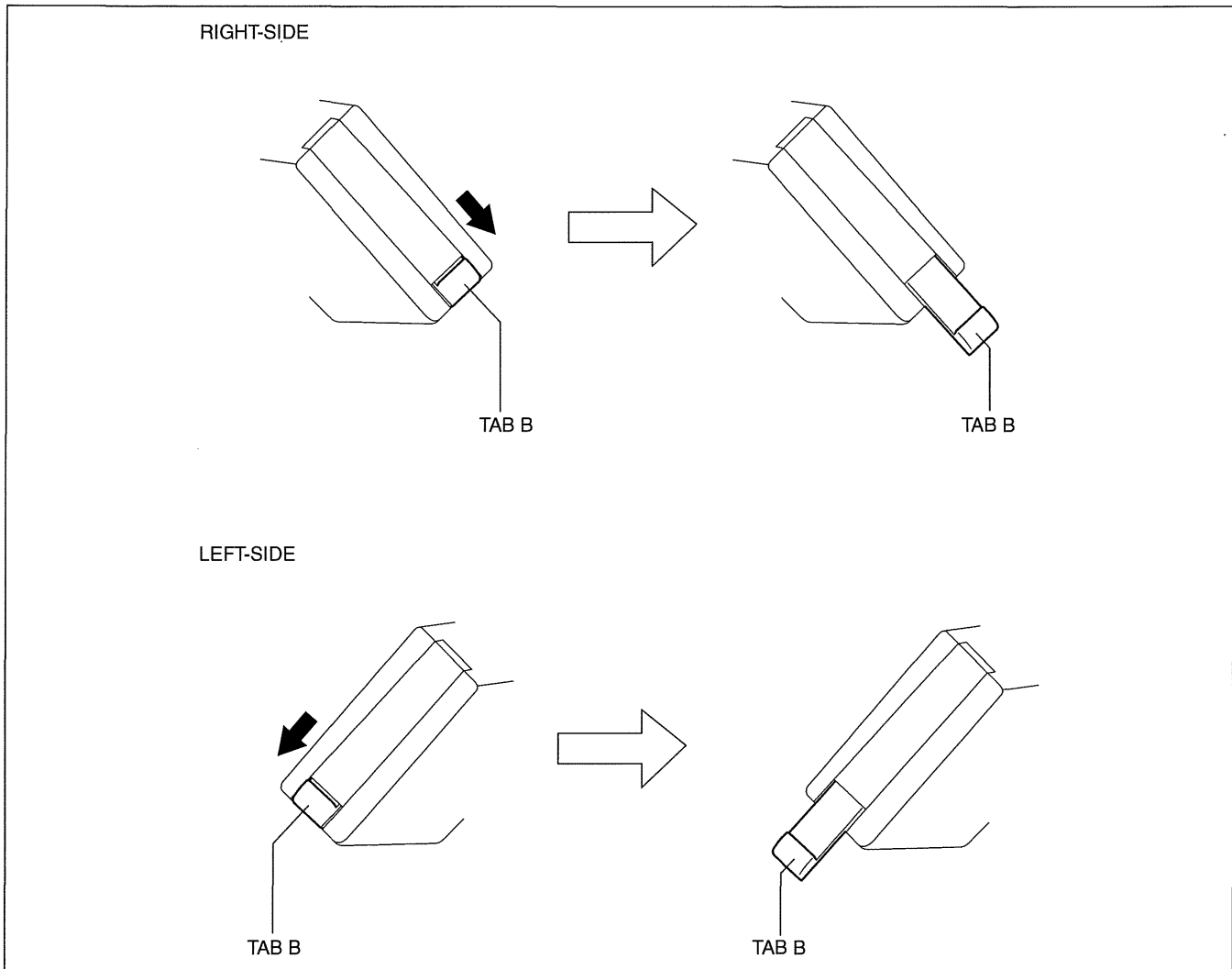
09-19

WIPER/WASHER SYSTEM

3. Remove the rain sensor cover in the direction shown in the figure.
4. Slide the tab B in the direction of the arrow and remove the rain sensor while supporting it with the hand.



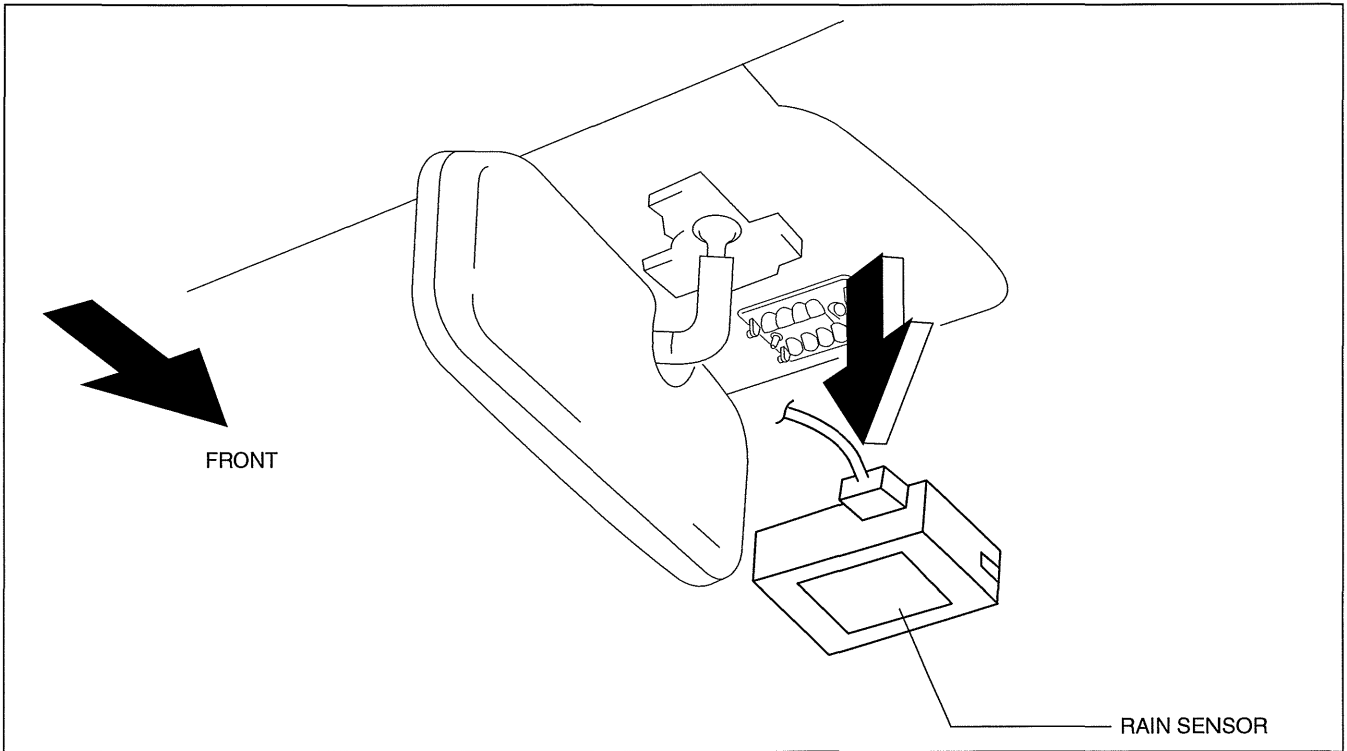
adejjw00003422



am2zzw0000262

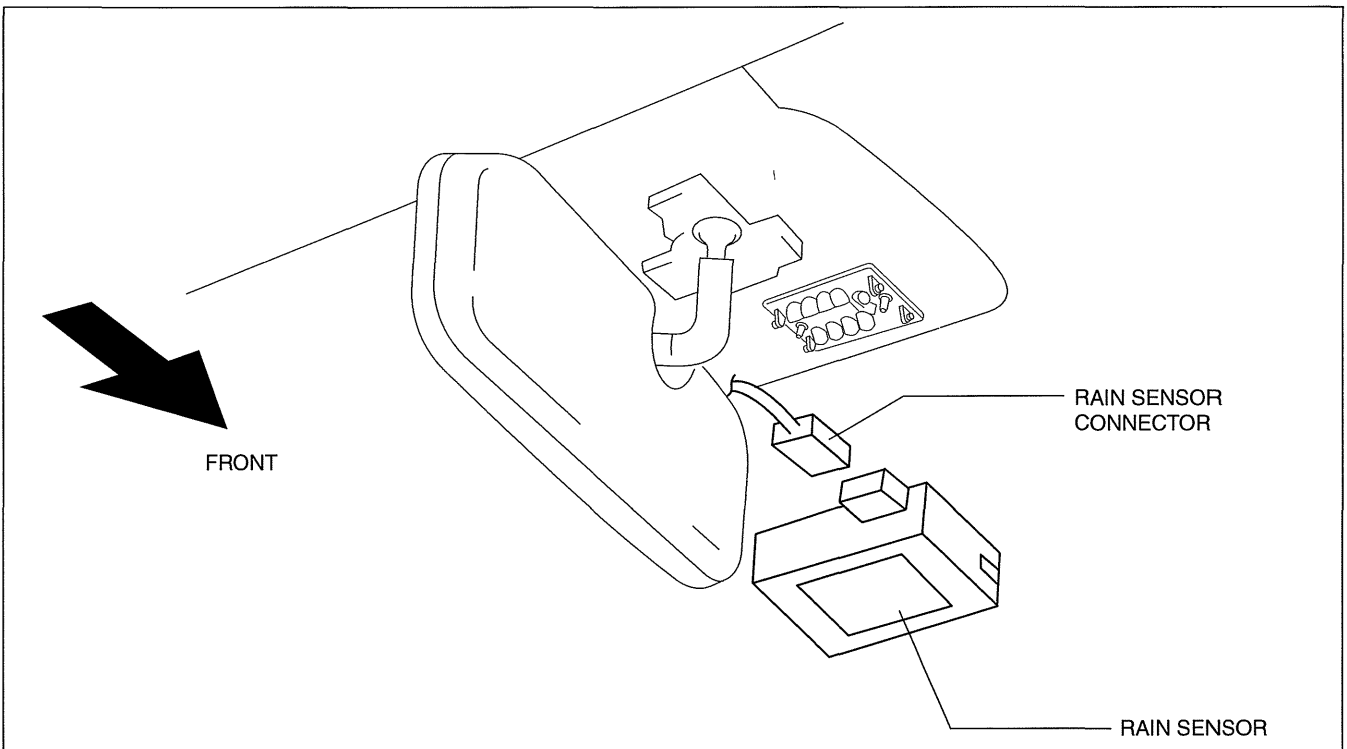
WIPER/WASHER SYSTEM

5. Remove the rain sensor in the direction of the arrow shown in the figure.



am3zzw0000818

6. Disconnect the rain sensor connector.



am3zzw0000818

7. Install in the reverse order of removal.

09-19

WIPER/WASHER SYSTEM

RAIN SENSOR REINITIALIZATION SETTING

id091900810000

Caution

- **If the initialization is performed again with water or dirt on the windshield, the rain sensor may not operate normally. Before performing the rain sensor initialization again, remove water and dirt from the windshield.**

Note

- When the ignition switch is first turned on after replacing the rain sensor with a new one, the windshield condition is verified and the initial setting is stored.
- Perform the initial setting again in the following cases:
 - The windshield is replaced and the rain sensor is reused.
 - The auto wiper system operates incorrectly.

1. Remove water and dirt from the windshield surface.
2. Switch the ignition to off.
3. Turn the windshield wiper switch to the AUTO position.
4. Within 10 s after turning the ignition switch to the ON position, turn the windshield wiper switch from the AUTO to the OFF position for five times and return it to the AUTO position. When the initial setting is performed correctly, the windshield wiper operates once at low speed.

Caution

- **If the operation is too fast, the windshield wiper switch position cannot be detected and the initial setting may not be performed. Operate the windshield wiper switch for one cycle (AUTO→OFF→AUTO) per 1 s.**

WIPER/WASHER SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE

id091900804100

1. Refer to the control system personalization features setting. (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)

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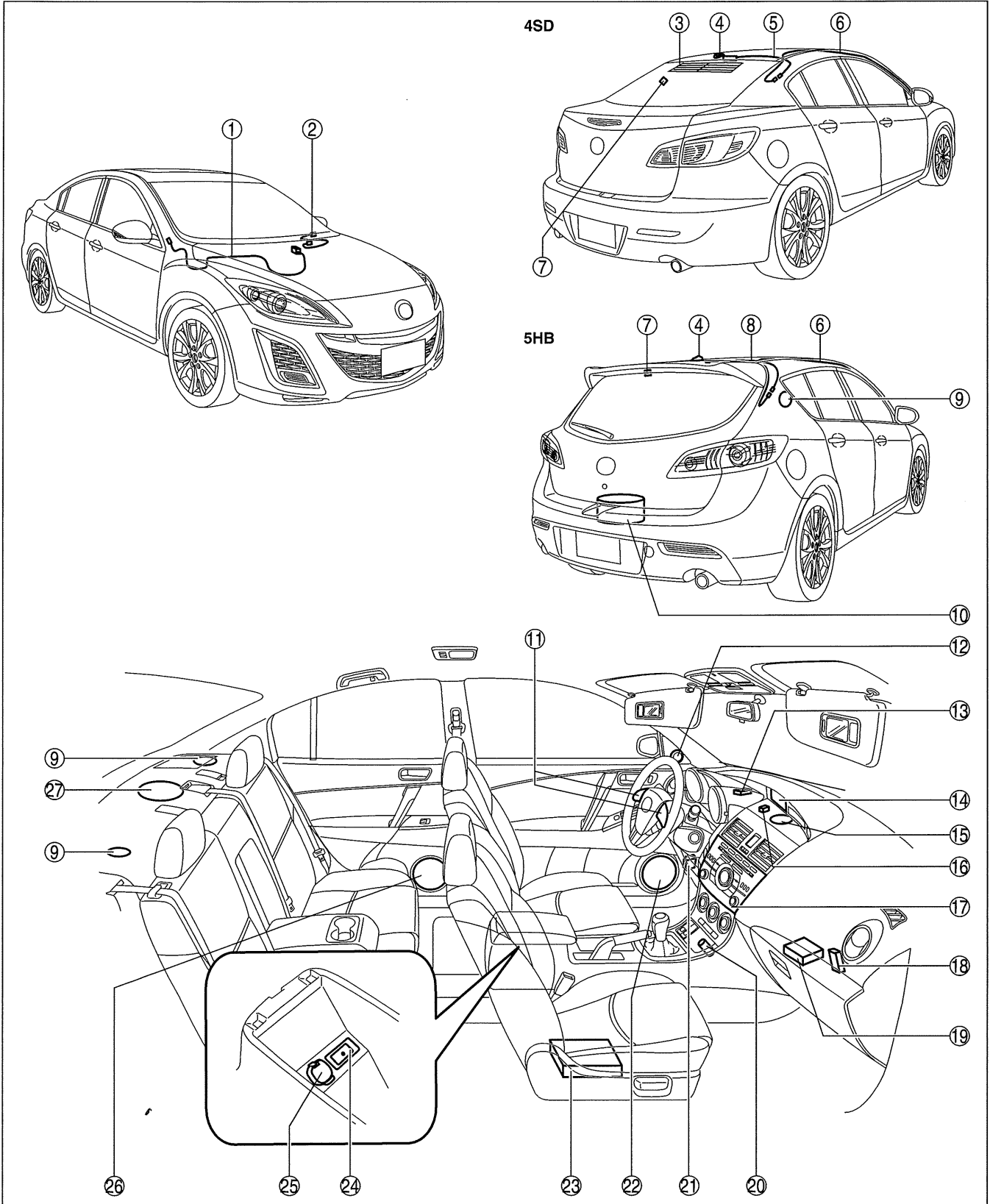
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ENTERTAINMENT

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id092000800100



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ENTERTAINMENT

1	Antenna feeder No.1 (See 09-20-31 ANTENNA FEEDER LOCATION.) (See 09-20-32 ANTENNA FEEDER NO.1 REMOVAL/INSTALLATION.) (See 09-20-34 ANTENNA FEEDER NO.1 INSPECTION.)
2	GPS antenna feeder (See 09-20-31 ANTENNA FEEDER LOCATION.) (See 09-20-43 GPS ANTENNA FEEDER REMOVAL/INSTALLATION.) (See 09-20-43 GPS ANTENNA FEEDER INSPECTION.)
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5	Antenna amplifier (4SD) (See 09-20-27 ANTENNA AMPLIFIER REMOVAL/INSTALLATION.) (See 09-20-28 ANTENNA AMPLIFIER INSPECTION.)
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9	Rear speaker (with Bose®) (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-16 REAR SPEAKER INSPECTION.)
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13	GPS antenna (See 09-20-42 GPS ANTENNA REMOVAL/INSTALLATION.)
14	Car-navigation unit (See 09-20-6 CAR-NAVIGATION UNIT REMOVAL/INSTALLATION.)

15	Front center speaker (with Bose®) (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-13 FRONT CENTER SPEAKER INSPECTION.)
16	Microphone (See 09-20-50 MICROPHONE REMOVAL/INSTALLATION.)
17	Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.) (See 09-20-5 AUDIO UNIT DISASSEMBLY/ASSEMBLY.) (See 09-20-5 ENTERTAINMENT PERSONALIZATION FEATURES SETTING PROCEDURE.)
18	Bluetooth unit (See 09-20-50 Bluetooth UNIT REMOVAL/INSTALLATION.)
19	SIRIUS satellite radio unit (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.) (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION.) (See 09-20-41 SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.)
20	Accessory socket (front) (See 09-20-51 ACCESSORY SOCKET REMOVAL/INSTALLATION.) (See 09-20-53 ACCESSORY SOCKET INSPECTION.)
21	AudioPilot®2 microphone (with Bose®) (See 09-20-19 AudioPilot®2 MICROPHONE REMOVAL/INSTALLATION.)
22	Front door speaker (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-10 FRONT DOOR SPEAKER INSPECTION.)
23	Audio amplifier (with Bose®) (See 09-20-7 AUDIO AMPLIFIER REMOVAL/INSTALLATION.)
24	Auxiliary jack (See 09-20-54 AUXILIARY JACK REMOVAL/INSTALLATION.) (See 09-20-54 AUXILIARY JACK INSPECTION.)
25	Accessory socket (rear) (See 09-20-51 ACCESSORY SOCKET REMOVAL/INSTALLATION.) (See 09-20-53 ACCESSORY SOCKET INSPECTION.)
26	Rear door speaker (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.) (See 09-20-12 REAR DOOR SPEAKER INSPECTION.)
27	Rear center speaker (4SD, with Bose®) (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.) (See 09-20-14 REAR CENTER SPEAKER INSPECTION.)

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ENTERTAINMENT

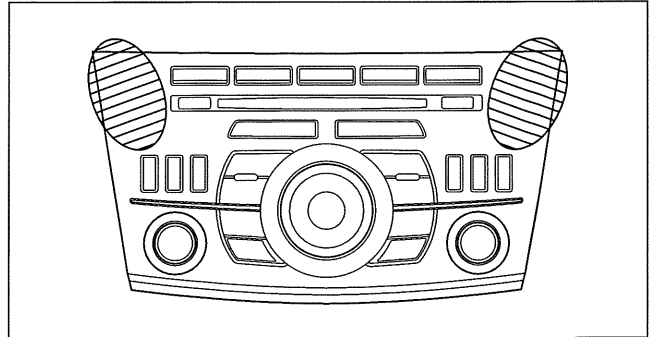
AUDIO UNIT REMOVAL/INSTALLATION

id092000805500

Caution

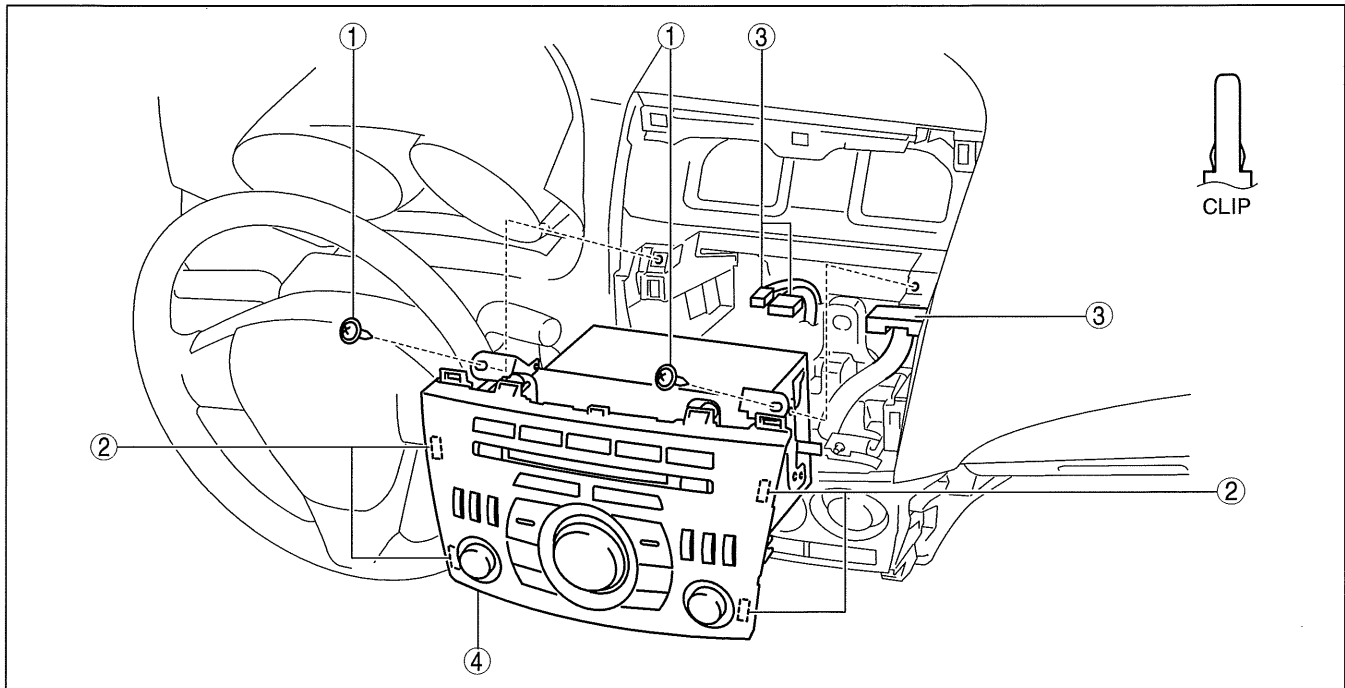
- When installing the audio unit, make sure that the wiring harness and antenna feeder are not caught between the unit and dashboard. If the wiring harness or the antenna feeder is caught between the unit and dashboard, it may cause malfunctions.
- Pressing the switch area of the audio unit when installing it could result in a malfunction. Therefore only press the hatched area shown in the figure.

1. Disconnect the negative battery cable.
2. Remove the center panel. (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)



am3uuw000244

3. Remove in the order indicated in the table.



am3uuw000269

1	Screw
2	Clip

3	Connector
4	Audio unit

4. Install in the reverse order of removal.

ENTERTAINMENT

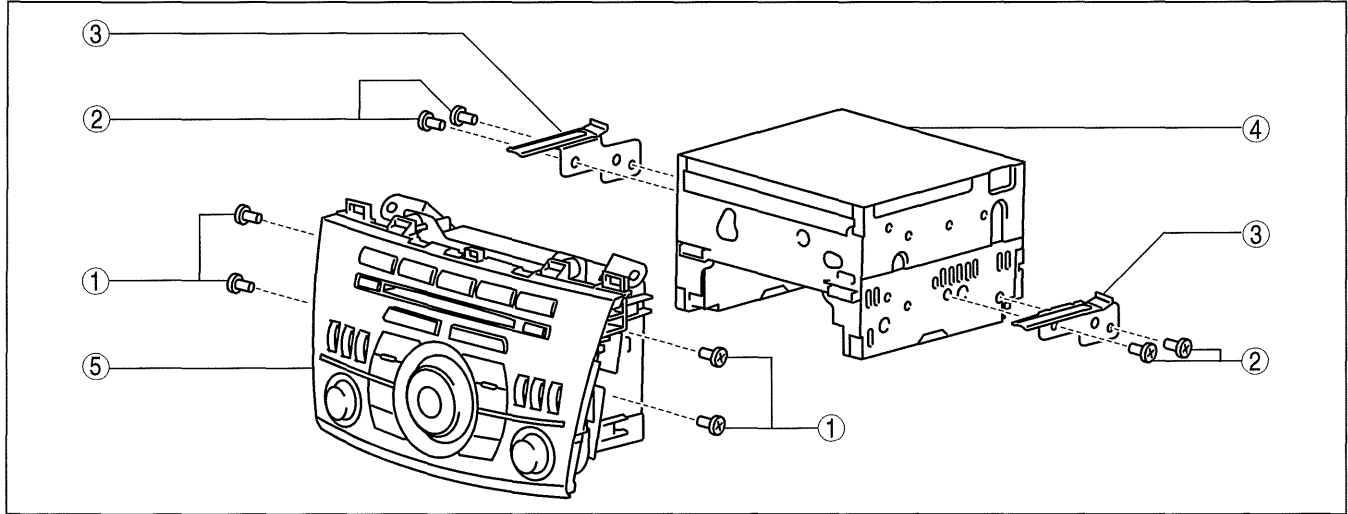
AUDIO UNIT DISASSEMBLY/ASSEMBLY

id092000800800

Caution

- When disassembling the audio unit, it could get scratched if it is placed directly on the ground. When disassembling the audio unit, spread a soft cloth underneath to perform the work.

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



am3uuw0000269

1	Screw A
2	Screw B
3	Bracket

4	Audio unit
5	Audio panel

09-20

ENTERTAINMENT PERSONALIZATION FEATURES SETTING PROCEDURE

id092000833900

Welcome Mode ON/OFF Setting

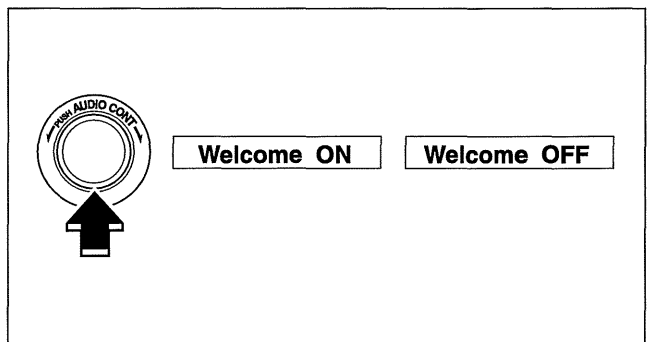
Note

- WELCOME mode is controlled by the instrument cluster. Refer to the instrument cluster description.

1. Refer to 09-22-11 INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE.

Welcome Sound ON/OFF Setting

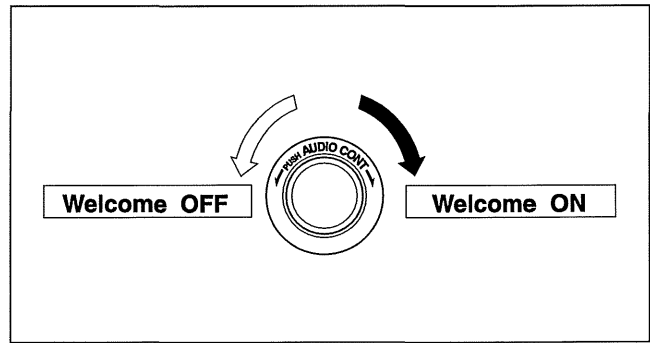
1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. Press the AUDIO CONT switch.
4. Select "Welcome ON" or "Welcome OFF".
5. Press the AUDIO CONT switch.



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ENTERTAINMENT

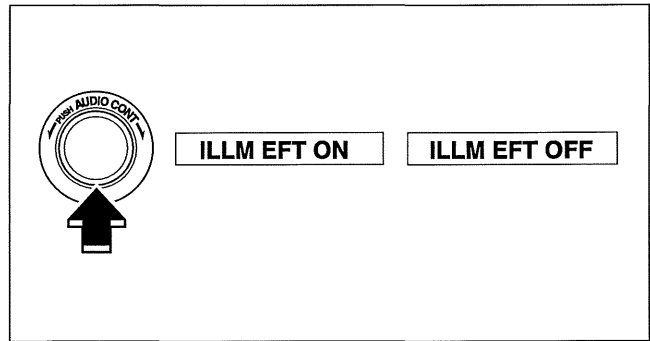
6. Select "ON" or "OFF".



am3uuw0000502

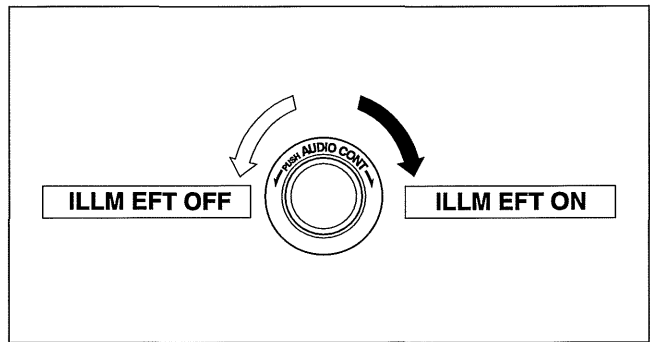
Action Illumination ON/OFF Setting

1. Switch the ignition to ACC or ON.
2. Turn the audio unit power to ON.
3. Press the AUDIO CONT switch.
4. Select "ILLM EFT ON" or "ILLM EFT OFF".
5. Press the AUDIO CONT switch.



am3uuw0000502

6. Select "ON" or "OFF".



am3uuw0000502

CAR-NAVIGATION UNIT REMOVAL/INSTALLATION

id092000801000

Note

- Car-navigation unit is integrated with the multi information display.

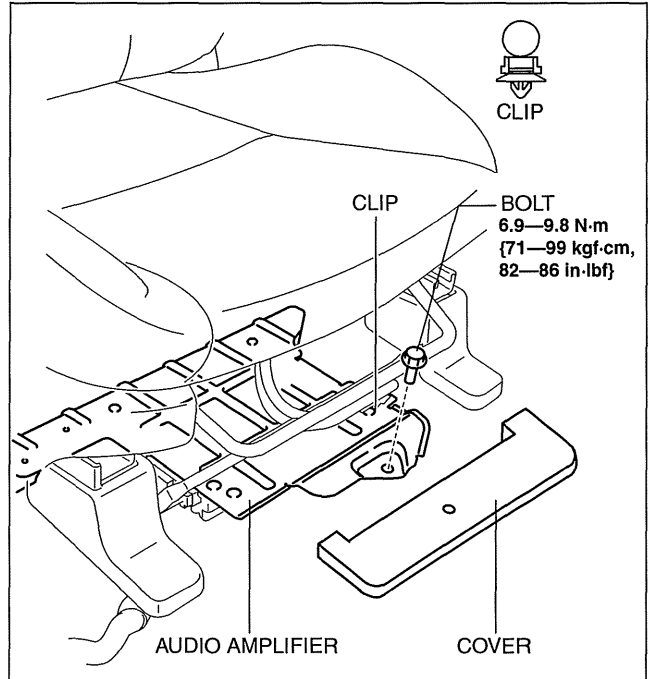
1. Refer to 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.

ENTERTAINMENT

AUDIO AMPLIFIER REMOVAL/INSTALLATION

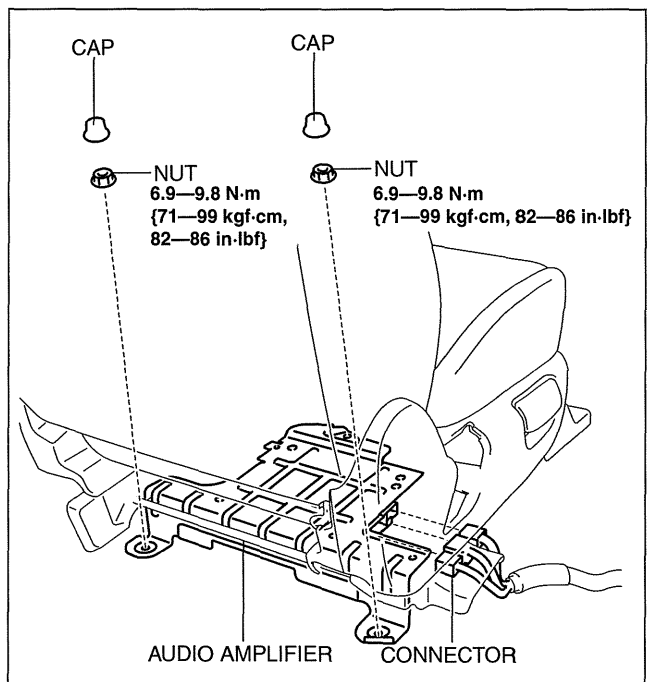
id092000801100

1. Slide the passenger seat rearward.
2. Remove the cover.
3. Remove the bolt.
4. Detach the clips and set the vehicle wiring harness aside.
5. Slide the passenger seat forward.
6. Disconnect the negative battery cable.



am3uuw0000269

7. Remove the cap.
8. Remove the nut.
9. Disconnect the connector.
10. Remove the audio amplifier.
11. Install in the reverse order of removal.



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09-20

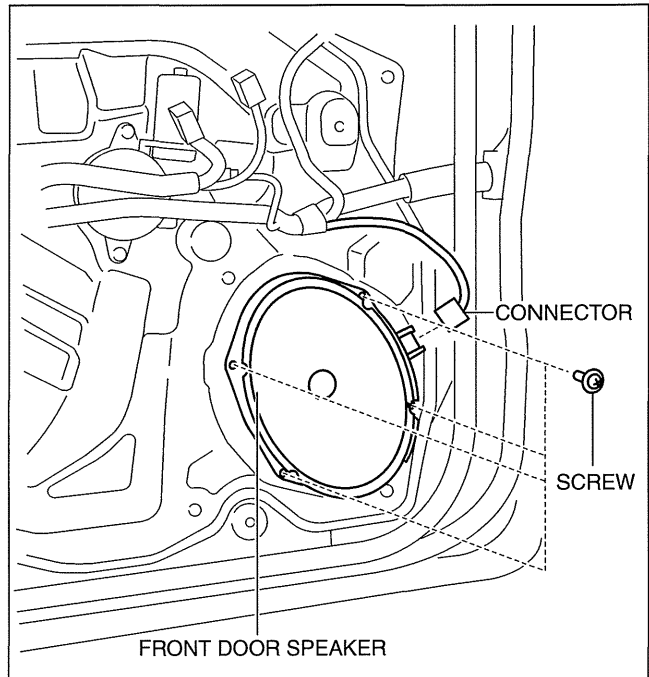
ENTERTAINMENT

FRONT DOOR SPEAKER REMOVAL/INSTALLATION

id092000802200

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Disconnect the connector.

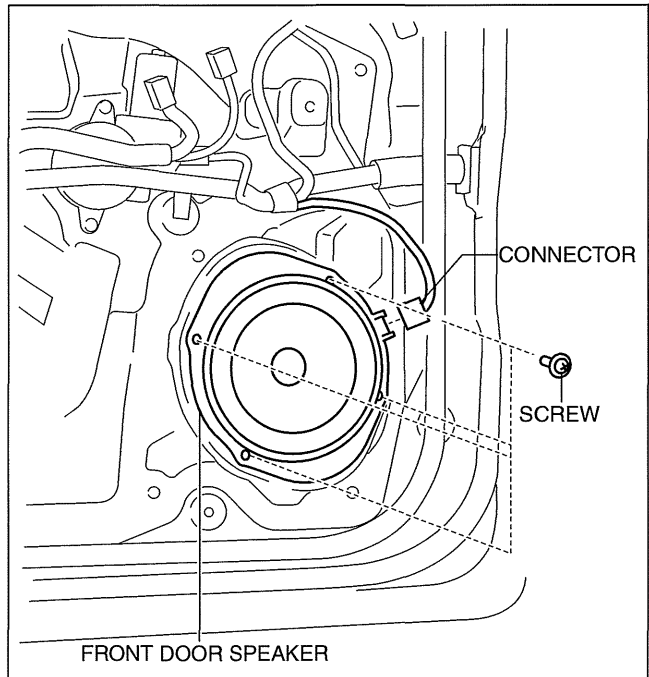
Without Bose®



am3uuw0000269

With Bose®

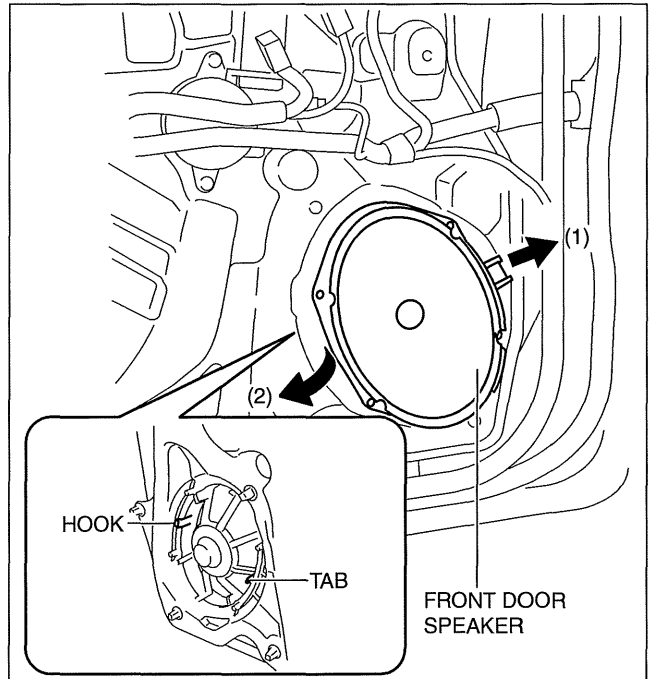
5. Remove the screw.
6. Remove the front door speaker in the direction of the arrow shown in the figure.



am3uuw0000269

ENTERTAINMENT

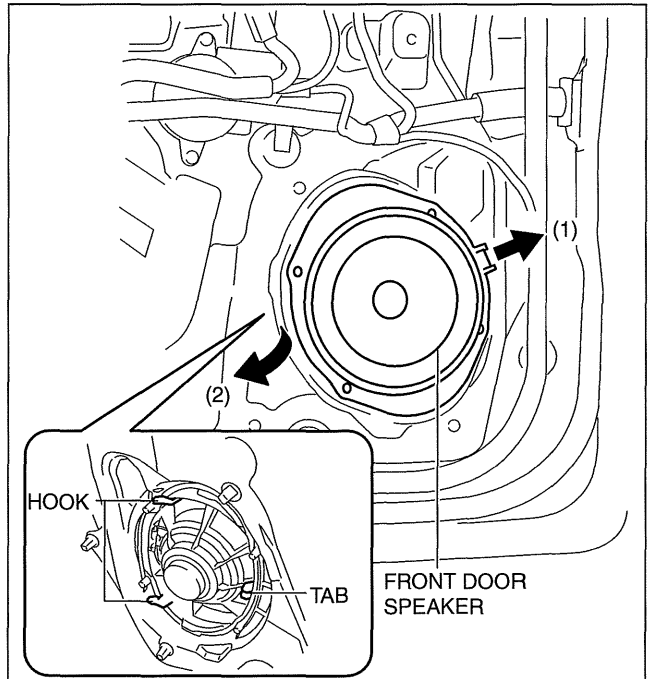
Without Bose®



am3uuw0000269

With Bose®

7. Install in the reverse order of removal.



am3uuw0000269

09-20

ENTERTAINMENT

FRONT DOOR SPEAKER INSPECTION

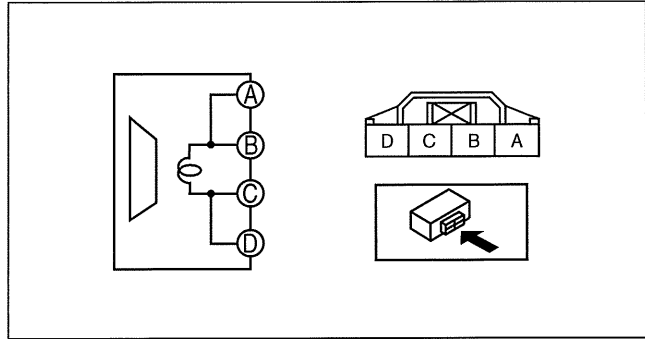
id092000802300

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the front door trim. (See 09-17-79 FRONT DOOR TRIM REMOVAL/INSTALLATION.)
4. Remove the front door speaker. (See 09-20-8 FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
5. Verify the resistance between the front door speaker terminals.
 - If not within the specification, replace the front door speaker.

○/○ : Resistance

Test condition	Terminal			
	A	B	C	D
Under any condition	○	○	○	○

am6xuw0000880



am3uuw0000494

Resistance

Without Bose®: 4.0 ohms

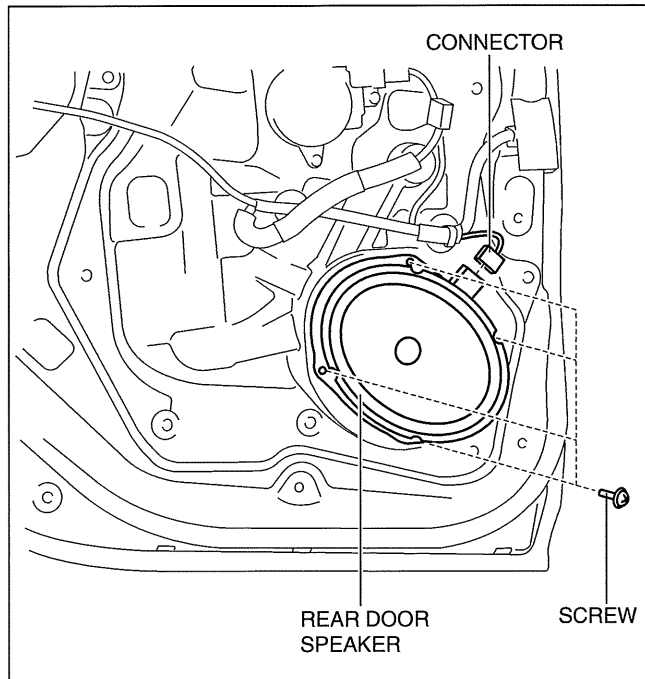
With Bose®: 2.15 ohms

REAR DOOR SPEAKER REMOVAL/INSTALLATION

id092000805000

1. Disconnect the negative battery cable.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.

Without Bose®

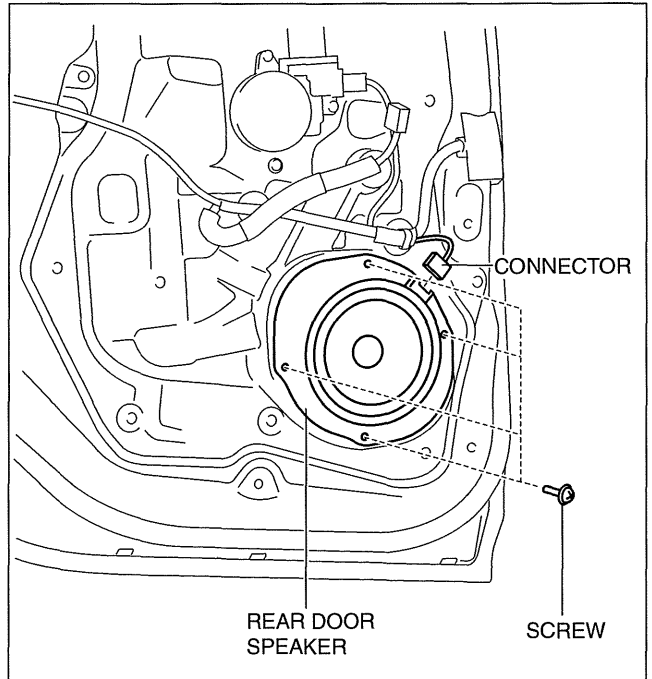


am3uuw0000283

ENTERTAINMENT

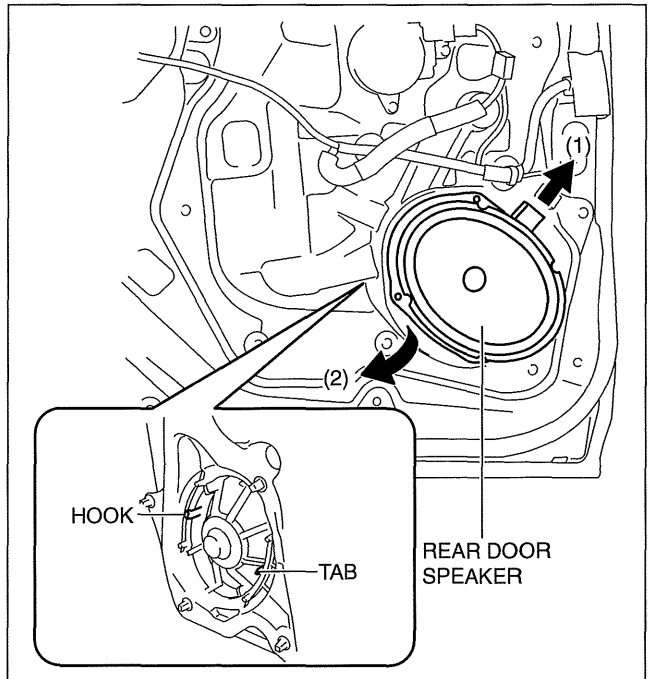
With Bose®

4. Remove the screw.
5. Remove the rear door speaker in the direction of the arrow shown in the figure.



am3uuw0000282

Without Bose®



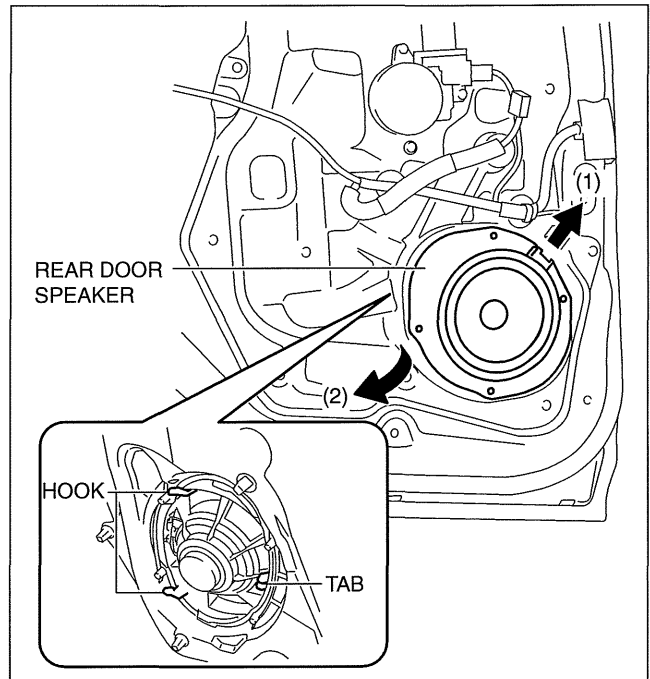
am3uuw0000283

09-20

ENTERTAINMENT

With Bose®

6. Install in the reverse order of removal.



am3uuw0000283

REAR DOOR SPEAKER INSPECTION

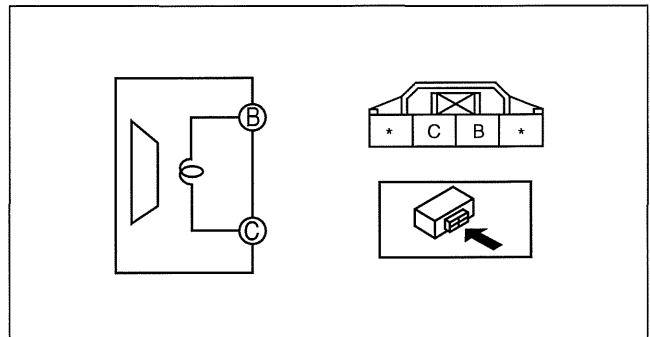
id092000804900

1. Disconnect the negative battery cable.
2. Remove the rear door trim. (See 09-17-88 REAR DOOR TRIM REMOVAL/INSTALLATION.)
3. Remove the rear door speaker. (See 09-20-10 REAR DOOR SPEAKER REMOVAL/INSTALLATION.)
4. Verify the resistance between the rear door speaker terminals.
 - If not within the specification, replace the rear door speaker.

○—○ : Resistance

Test condition	Terminal	
	B	C
Under any condition	○—○	○—○

am2zzw00000301



adejiw00001161

Resistance

Without Bose®: 4.0 ohms

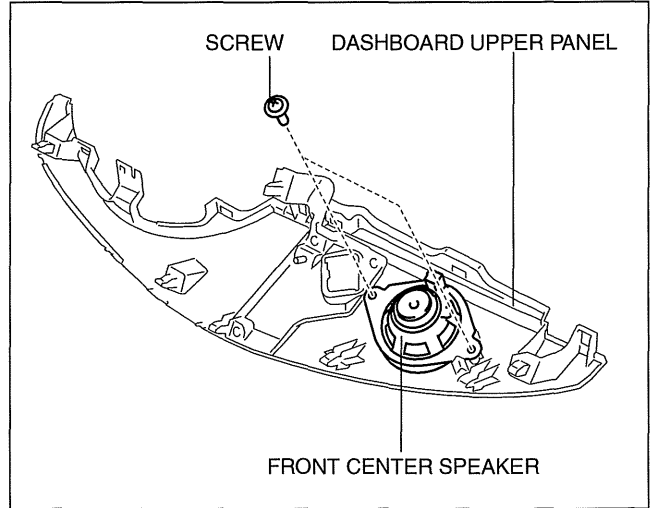
With Bose®: 3.4 ohms

ENTERTAINMENT

FRONT CENTER SPEAKER REMOVAL/INSTALLATION

id092000866600

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (5) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
3. Remove the screw.
4. Remove the front center speaker.
5. Install in the reverse order of removal.



am3uuw0000270

FRONT CENTER SPEAKER INSPECTION

id092000866700

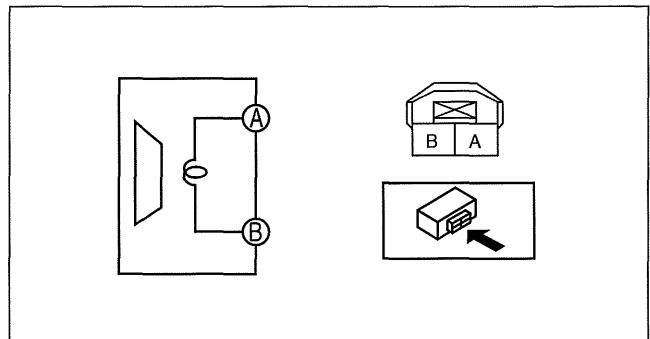
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (5) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (6) Front center speaker (See 09-20-13 FRONT CENTER SPEAKER REMOVAL/INSTALLATION.)
3. Verify the resistance between the front center speaker terminals.
 - If not within the specification, replace the front center speaker.

○—○ : Resistance

Test condition	Terminal	
	A	B
Under any condition		

am6zzw00001613

Resistance
3.6 ohms



am6zzw0000161

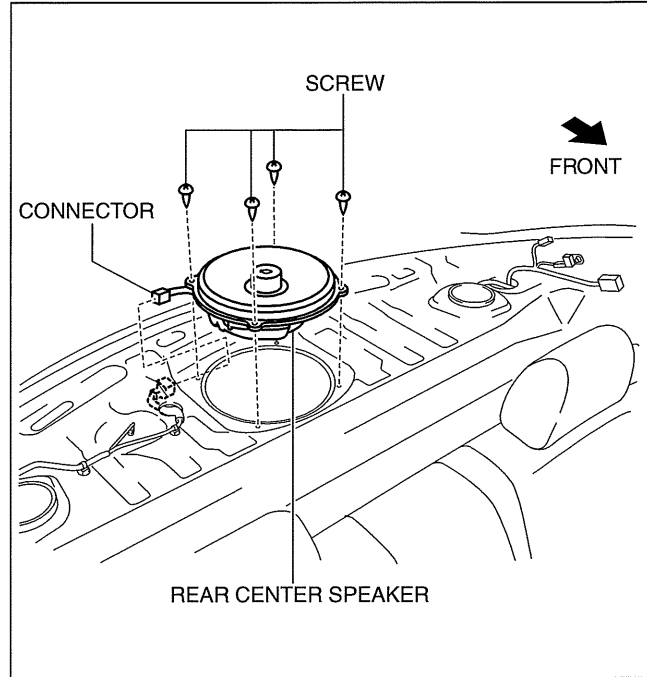
09-20

ENTERTAINMENT

REAR CENTER SPEAKER REMOVAL/INSTALLATION

id092000866800

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (5) Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
3. Remove the screw.
4. Disconnect the connector.
5. Remove the rear center speaker.
6. Install in the reverse order of removal.



am3uuw000283

REAR CENTER SPEAKER INSPECTION

id092000866900

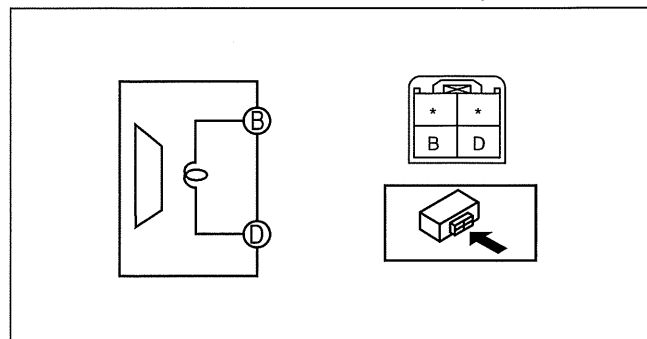
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (5) Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
 - (6) Rear center speaker (See 09-20-14 REAR CENTER SPEAKER REMOVAL/INSTALLATION.)
3. Verify the resistance between the rear center speaker terminals.
 - If not within the specification, replace the rear center speaker.

Ω : Resistance

Test condition	Terminal	
	B	D
Under any condition		

am6zzw00001610

Resistance
1.0 ohms



am6zzw0000160

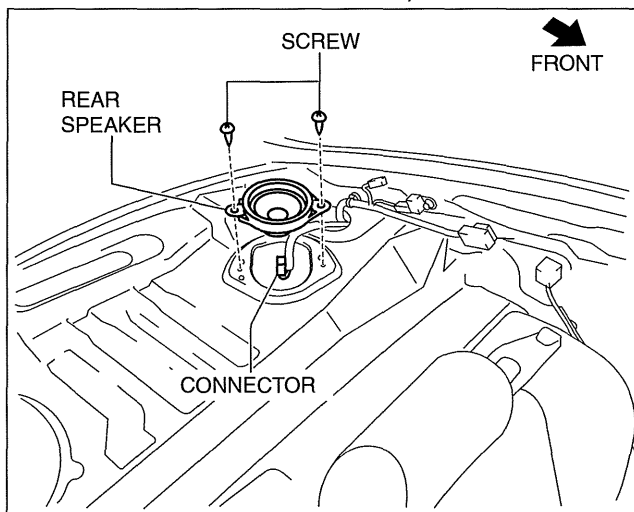
ENTERTAINMENT

REAR SPEAKER REMOVAL/INSTALLATION

id092000802400

4SD

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (5) Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
3. Remove the screw.
4. Disconnect the connector.
5. Remove the rear speaker.
6. Install in the reverse order of removal.

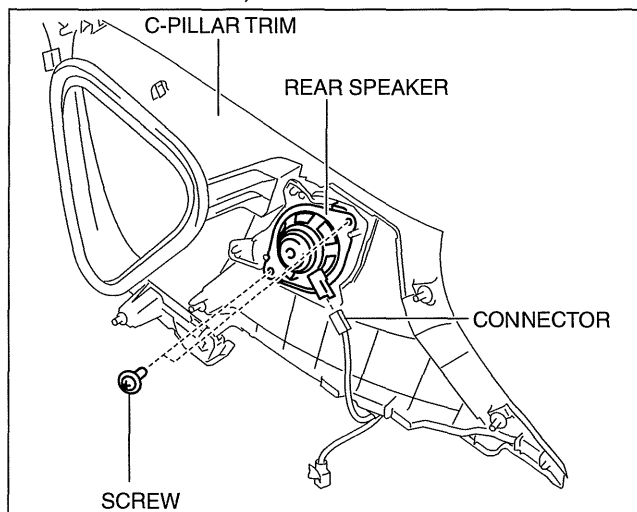


am3uuw0000283

09-20

5HB

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (3) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (4) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (5) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
3. Remove the screw.
4. Disconnect the connector.
5. Remove the rear speaker.
6. Install in the reverse order of removal.



am3uuw0000273


ENTERTAINMENT



id092000802500

REAR SPEAKER INSPECTION

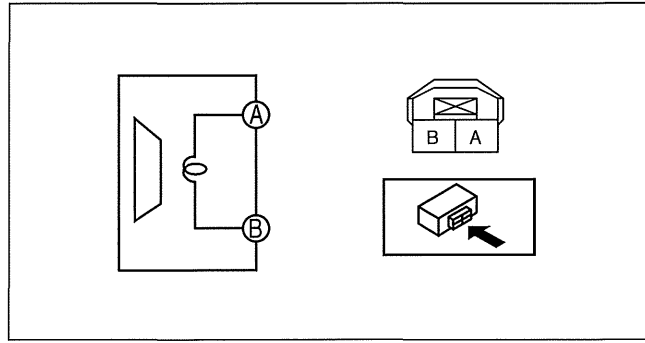
4SD

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (5) Rear package trim (See 09-17-57 REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
 - (6) Rear speaker (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.)
3. Verify the resistance between the rear speaker terminals.
 - If not within the specification, replace the rear speaker.

 : Resistance

Test condition	Terminal	
	A	B
Under any condition		

am6zzw00001613






am6zzw0000161

Resistance
3.6 ohms

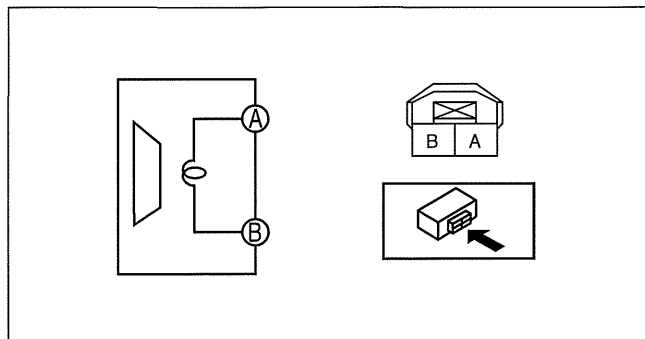
5HB

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (3) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (4) Trunk side trim (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (5) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (6) Rear speaker (See 09-20-15 REAR SPEAKER REMOVAL/INSTALLATION.)
3. Verify the resistance between the rear speaker terminals.
 - If not within the specification, replace the rear speaker.

 : Resistance

Test condition	Terminal	
	A	B
Under any condition		

am6zzw00001613



am6zzw0000161

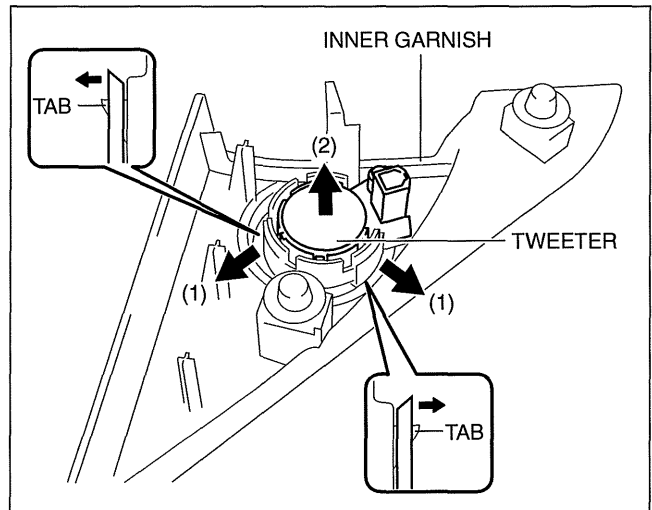
Resistance
3.6 ohms

ENTERTAINMENT

TWEETER REMOVAL/INSTALLATION

id092000808000

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the tweeter in the direction of the arrow shown in the figure.
4. Install in the reverse order of removal.



am3uuw0000270

TWEETER INSPECTION

id092000808100

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See 09-17-69 INNER GARNISH REMOVAL/INSTALLATION.)
3. Remove the tweeter. (See 09-20-17 TWEETER REMOVAL/INSTALLATION.)
4. Verify the resistance between tweeter terminals.
 - If not within the specification, replace the tweeter.

○—○ : Resistance

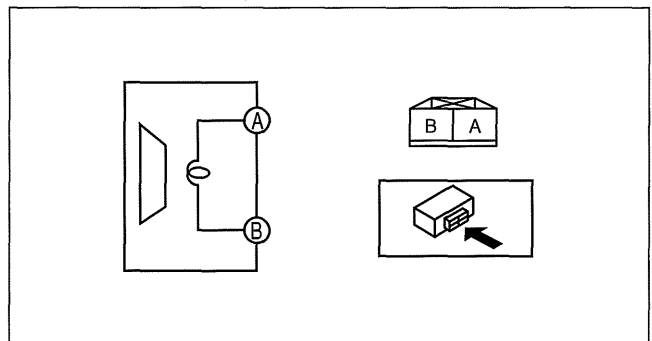
Test condition	Terminal	
	A	B
Under any condition	○—○	

am2zzw00000303

Resistance

Without Bose®: 4.0 ohms

With Bose®: 3.4 ohms



am6zzw0000204

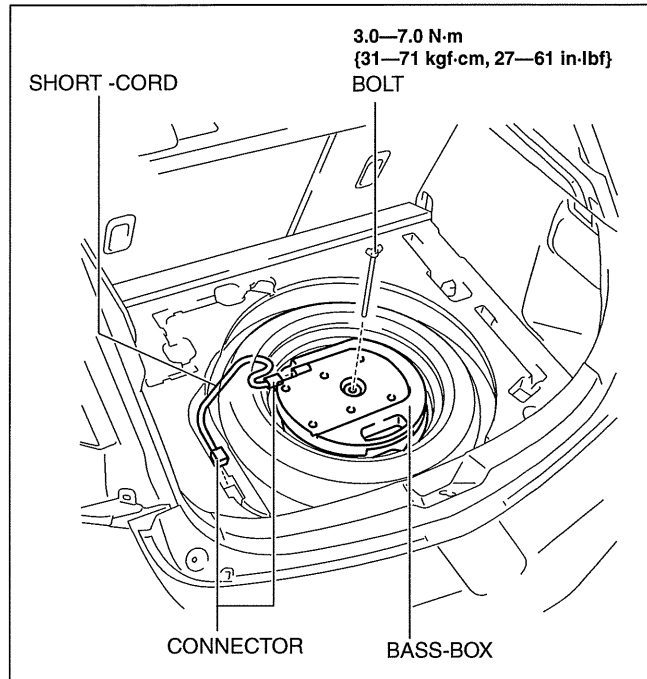
09-20

ENTERTAINMENT

BASS-BOX REMOVAL/INSTALLATION

id092000815200

1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Remove the short-cord.
4. Remove the bolt.
5. Remove the bass-box.
6. Install in the reverse order of removal.



am3uuw0000558

BASS-BOX INSPECTION

id092000815100

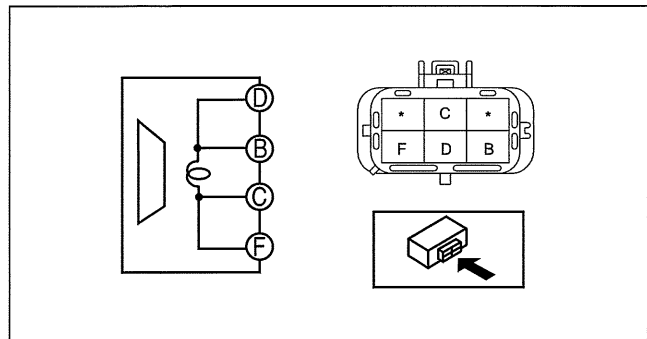
1. Disconnect the negative battery cable.
2. Disconnect the connector. (See 09-20-18 BASS-BOX REMOVAL/INSTALLATION.)
3. Verify the resistance between bass-box terminals.
 - If not within the specification, replace the bass-box.

○—○ : Resistance

Test condition	Terminal			
	B	C	D	F
Under any condition	○—○		○—○	

am6zzw00002196

Resistance
1.0 ohms



am6zzw0000219

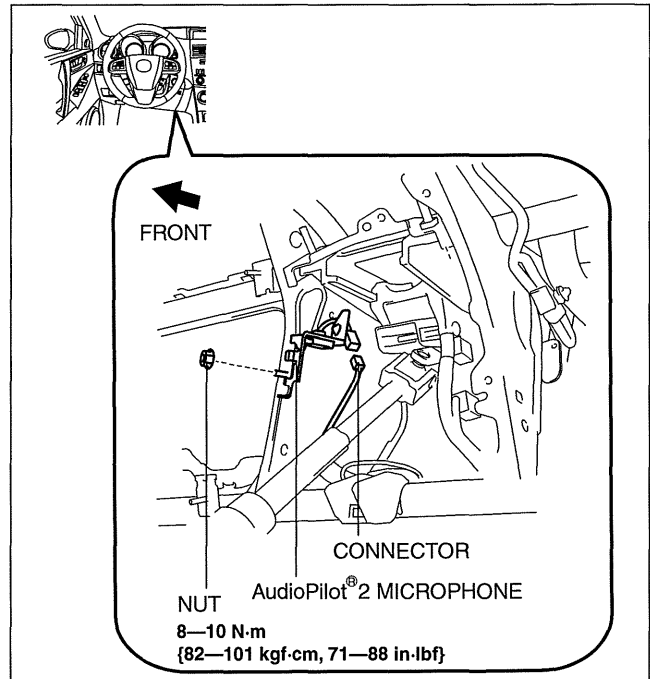
AudioPilot®2 MICROPHONE REMOVAL/INSTALLATION

id092000866300

Note

- AudioPilot® 2 is a registered trademark of Bose® Corporation.

1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Remove the nut.
4. Remove the AudioPilot® 2 microphone.
5. Install in the reverse order of removal.



am3uuw0000273

id092000801600

CENTER ROOF ANTENNA REMOVAL/INSTALLATION

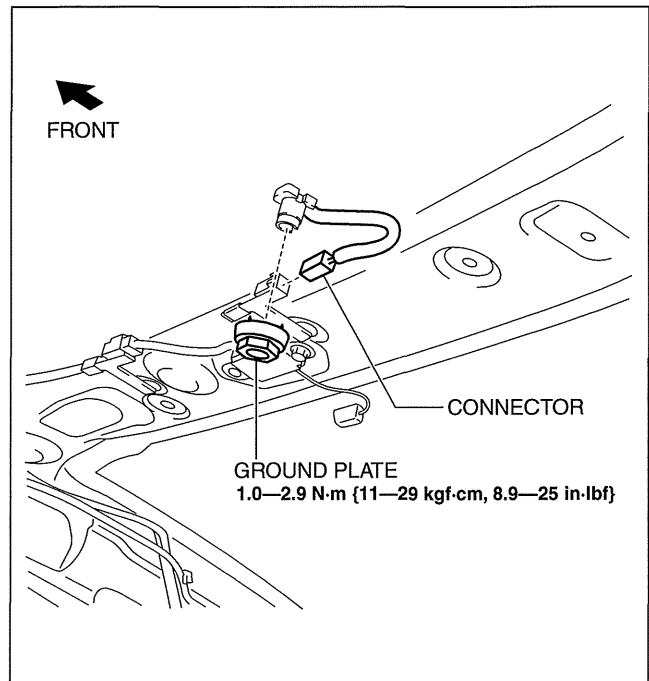
4SD

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (11) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (12) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (13) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (14) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

09-20

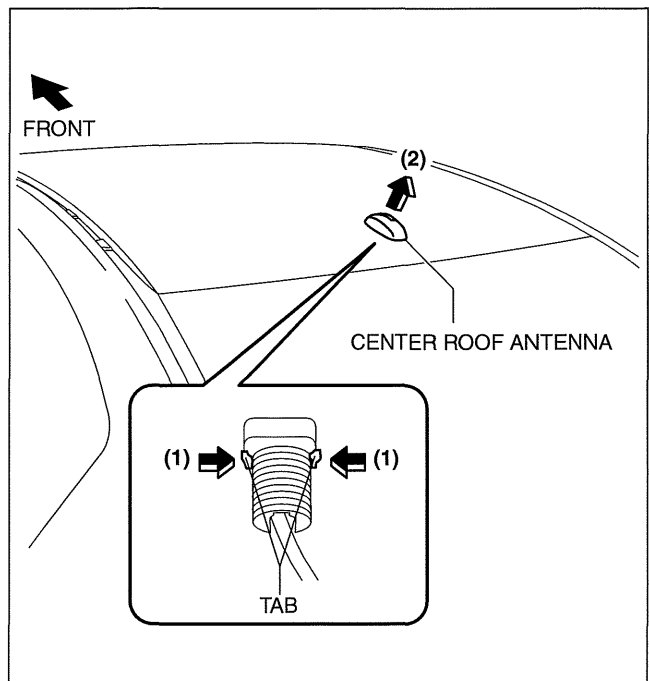
ENTERTAINMENT

3. Disconnect the connector.
4. Remove the ground plate.



am3uuw0000284

5. Remove the center roof antenna in the direction of the arrow (2) shown in the figure while pressing the center roof antenna tabs in the direction of the arrow (1).
6. Remove the center roof antenna.
7. Install in the reverse order of removal.
8. After installation, verify that the rubber of the center roof antenna is installed to the roof panel with no space between them.



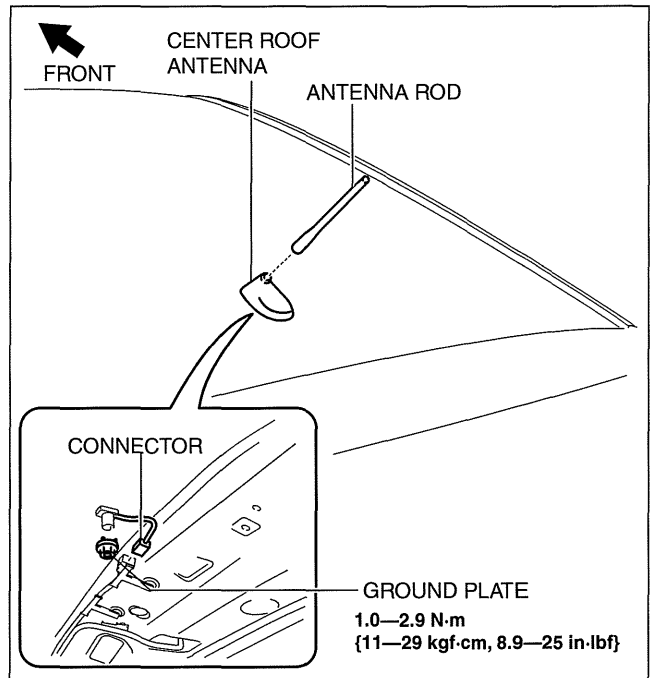
am3uuw0000284

ENTERTAINMENT

5HB

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Disconnect the connector.

AM/FM type



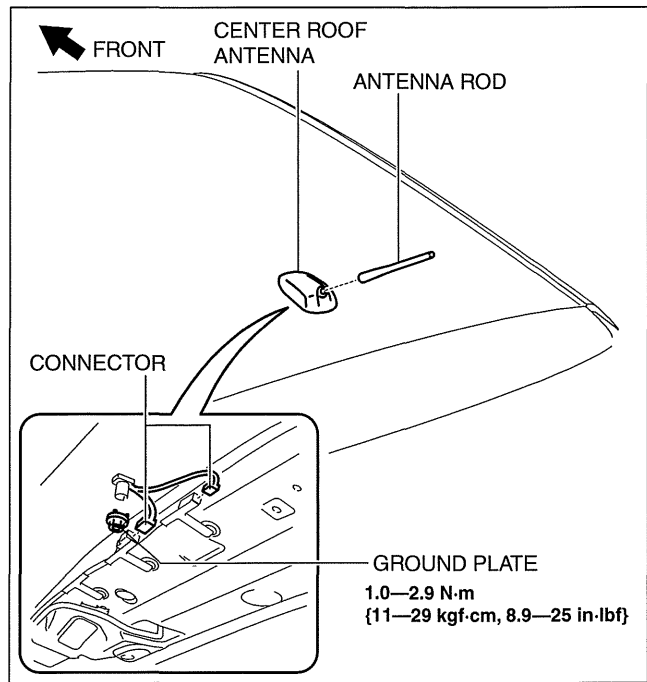
am3uuw0000271

09-20

ENTERTAINMENT

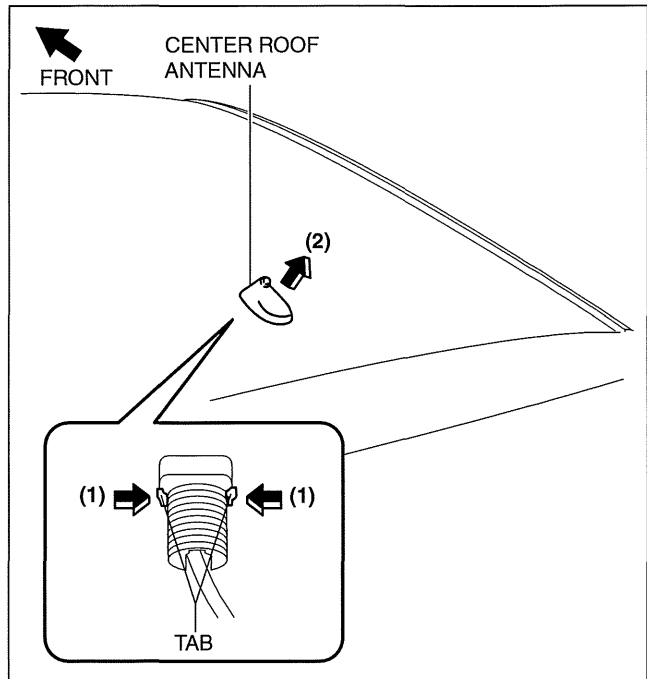
AM/FM/SIRIUS type

4. Remove the ground plate.
5. Remove the antenna rod.
6. Remove the center roof antenna in the direction of the arrow (2) shown in the figure while pressing the center roof antenna tabs in the direction of the arrow (1).



am3uuw0000271

AM/FM type

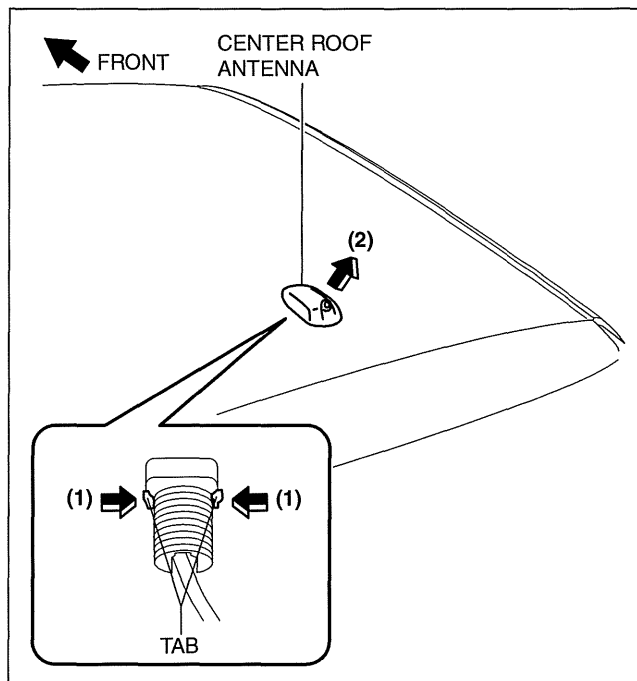


am3uuw0000271

ENTERTAINMENT

AM/FM/SIRIUS type

7. Remove the center roof antenna.
8. Install in the reverse order of removal.
9. After installation, verify that the rubber of the center roof antenna is installed to the roof panel with no space between them.



am3uuw000271

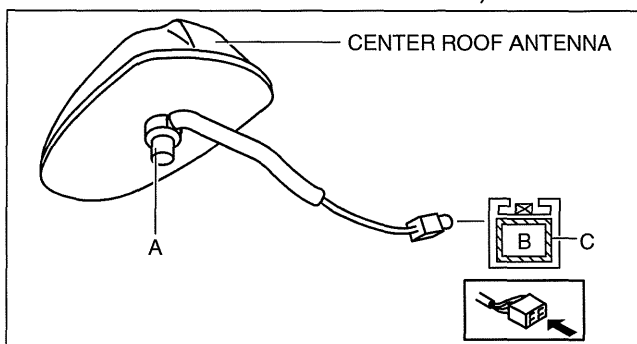
CENTER ROOF ANTENNA INSPECTION

id092000801700

4SD

09-20

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (11) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (12) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (13) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (14) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
 - (15) Center roof antenna (See 09-20-19 CENTER ROOF ANTENNA REMOVAL/INSTALLATION.)
3. Verify that there is no continuity between the center roof antenna terminals A and B using an ohmmeter.
4. Inspect for continuity between the center roof antenna terminals using an ohmmeter.
 - If not as indicated in the table, replace the center roof antenna.



am3uuw000320

○—○: Continuity

Test condition	Terminal			Body GND
	A	B	C	
Under any condition	○—○	○—○	○—○	○—○

am3uuw0003206

ENTERTAINMENT

5HB

Note

- The center roof antenna has a built-in antenna amplifier.

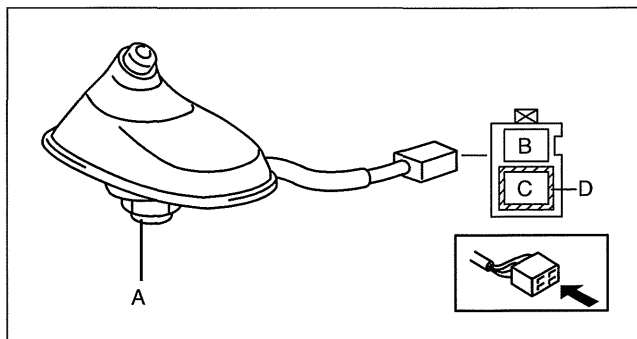
Antenna Amplifier Inspection

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Connect the negative battery cable.
4. Switch the ignition to ON.
5. Turn the audio unit power to ON.
6. Tune in the radio.
7. Verify that voltage is B+ at the antenna amplifier terminal B.
 - If not as replace center roof antenna.

Feeder Line Inspection

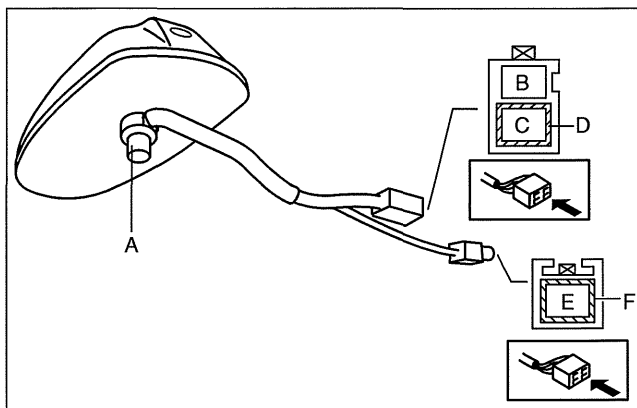
1. Remove the center roof antenna. (See 09-20-19 CENTER ROOF ANTENNA REMOVAL/INSTALLATION.)
2. Verify that there is no continuity between the center roof antenna terminals A and C using an ohmmeter.

AM/FM type



AM/FM/SIRIUS type

3. Inspect for continuity between the center roof antenna terminals using an ohmmeter.
 - If not as indicated in the table, replace the center roof antenna.



ENTERTAINMENT

AM/FM type

○—○: Continuity

Test condition	Terminal				Body GND
	A	B	C	D	
Under any condition	○	—	—	○	○

am3uuw00003211

AM/FM/SIRIUS type

○—○: Continuity

Test condition	Terminal						Body GND
	A	B	C	D	E	F	
Under any condition	○	—	—	○	—	○	○

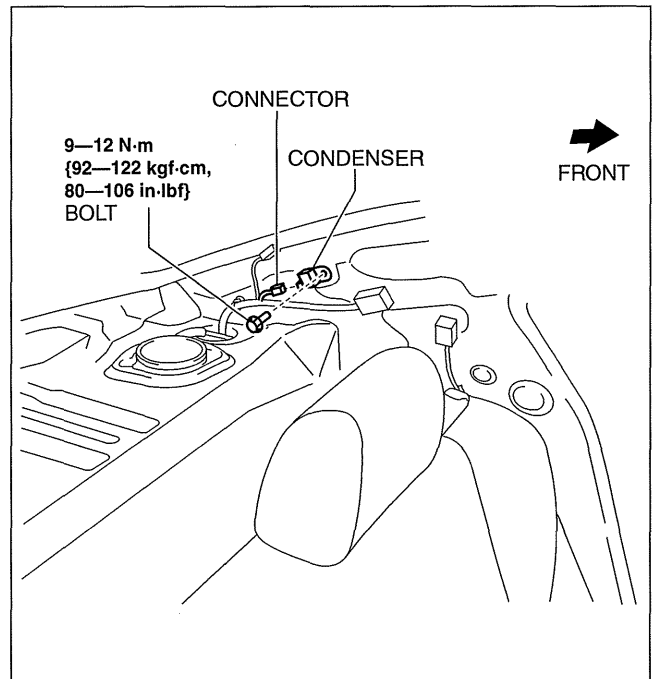
am3uuw00003208

CONDENSER REMOVAL/INSTALLATION

id092000803000

4SD

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (2) Rear scuff plate (LH) (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (3) Tire house trim (LH) (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (4) C-pillar trim (LH) (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the bolt.
5. Remove the condenser.
6. Install in the reverse order of removal.



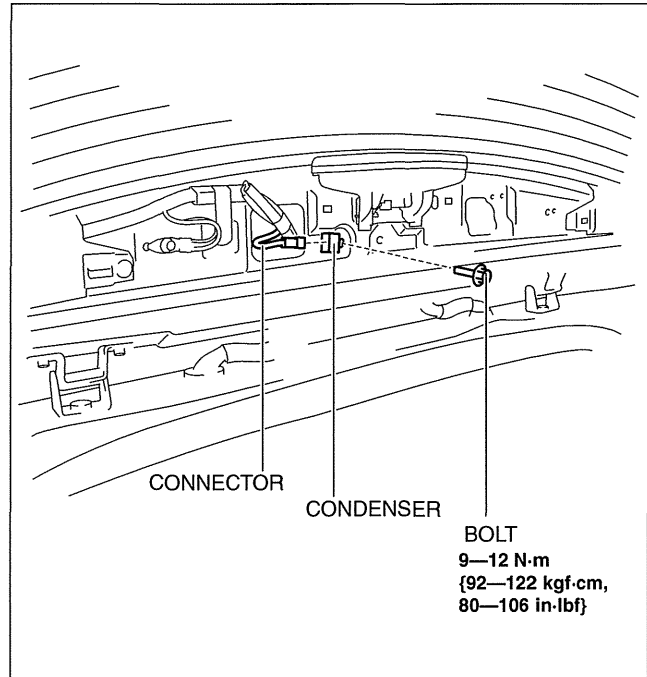
am3uuw0000284

09-20

ENTERTAINMENT

5HB

1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See 09-17-97 LIFTGATE UPPER TRIM REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the bolt.
5. Remove the condenser.
6. Install in the reverse order of removal.



am3uuw0000284

GLASS ANTENNA INSPECTION

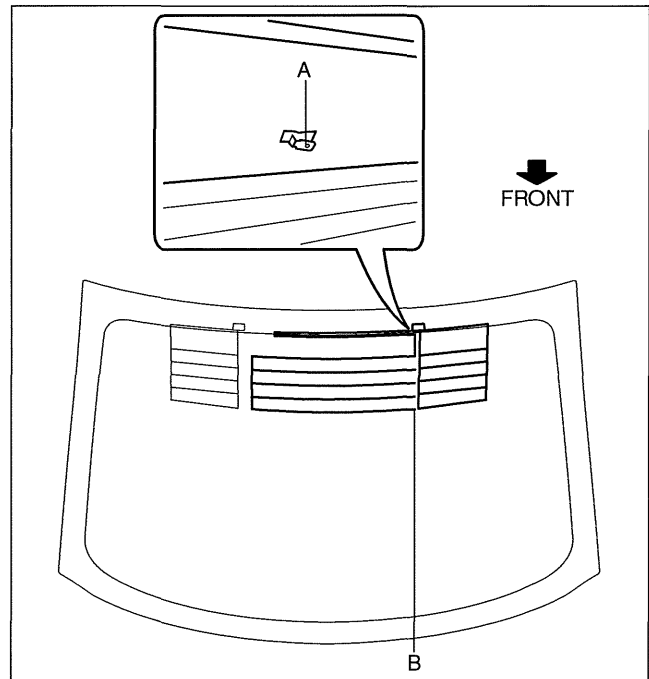
id092000806200

1. Disconnect the negative battery cable.
2. Disconnect the antenna amplifier connector B. (See 09-20-27 ANTENNA AMPLIFIER REMOVAL/INSTALLATION.)
3. Inspect the glass antenna for damage visually.
4. Inspect for continuity between the glass antenna terminals using an ohmmeter.
 - If not as specified, repair the glass antenna. (See 09-12-39 FILAMENT REPAIR.)

○—○ : Continuity

Test condition	Terminal	
	A	B
Under any condition	○—○	○—○

ac9uuw00000591

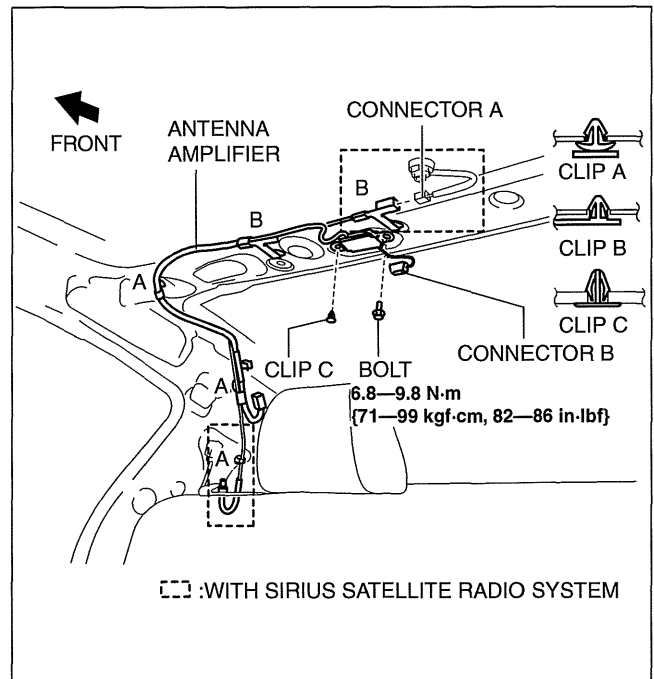


am3uuw0000320

ANTENNA AMPLIFIER REMOVAL/INSTALLATION

id092000813300

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (11) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (12) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (13) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (14) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Remove the clip A and B.
4. Disconnect the connector A. (with SIRIUS satellite radio system)
5. Disconnect the connector B. (See 09-20-28 Connector B Removal Note.)
6. Remove the clip C.
7. Remove the bolt.
8. Remove the Antenna amplifier.
9. Install in the reverse order of removal.



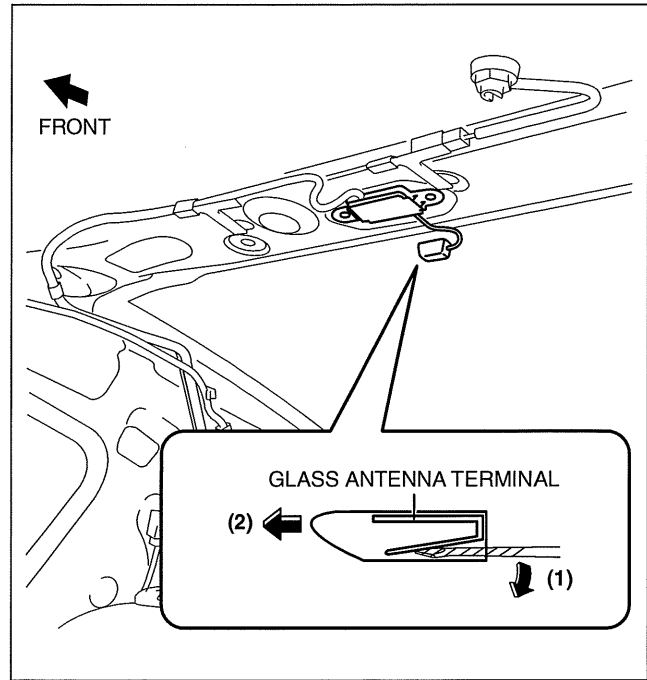
am3uuw0000285

09-20

ENTERTAINMENT

Connector B Removal Note

1. Remove the connector B in the direction of the arrow (2) shown in the figure while pressing the glass antenna terminal in the direction of the arrow (1).



am3uuw0000285

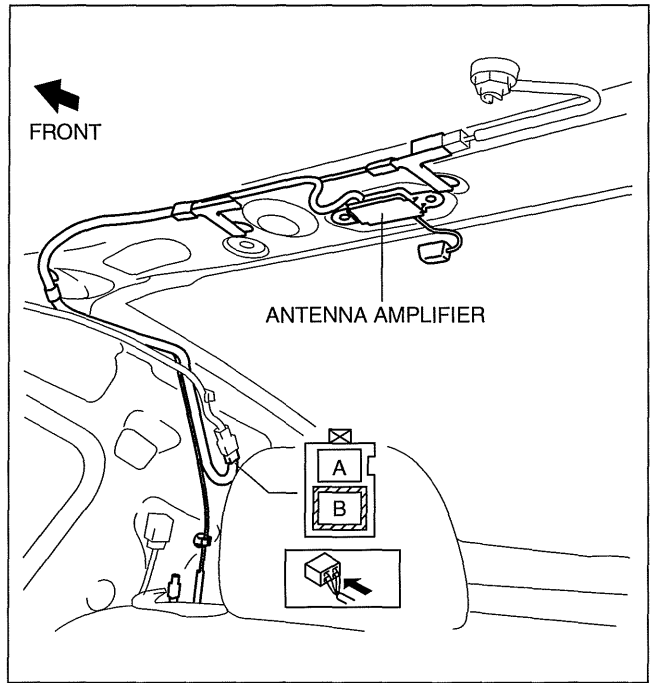
ANTENNA AMPLIFIER INSPECTION

id092000813400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (11) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (12) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (13) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (14) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Connect the negative battery cable.
4. Switch the ignition to ON.
5. Turn the audio unit power to ON.
6. Tune in the radio.

ENTERTAINMENT

7. Verify that voltage is B+ at the antenna amplifier terminal A.
 - If not as replace antenna amplifier.



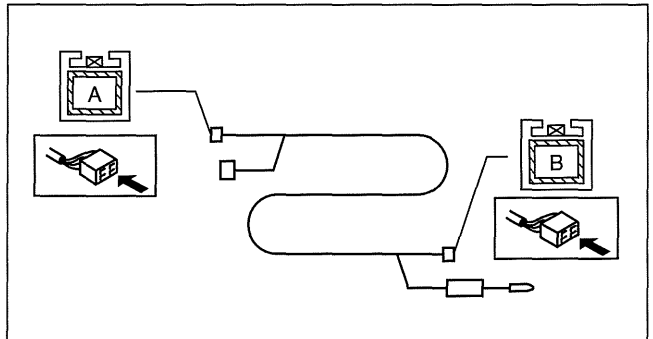
am3uuw0000285

8. Verify that the continuity between antenna amplifier terminals is as indicated in the table. (with SIRIUS satellite radio system)
 - If not as indicated in the table, replace antenna amplifier.

○—○ : Continuity

Test condition	Terminal	
	A	B
Under any condition	○—○	○—○

am3uuw00005454



am3uuw0000545

ENTERTAINMENT

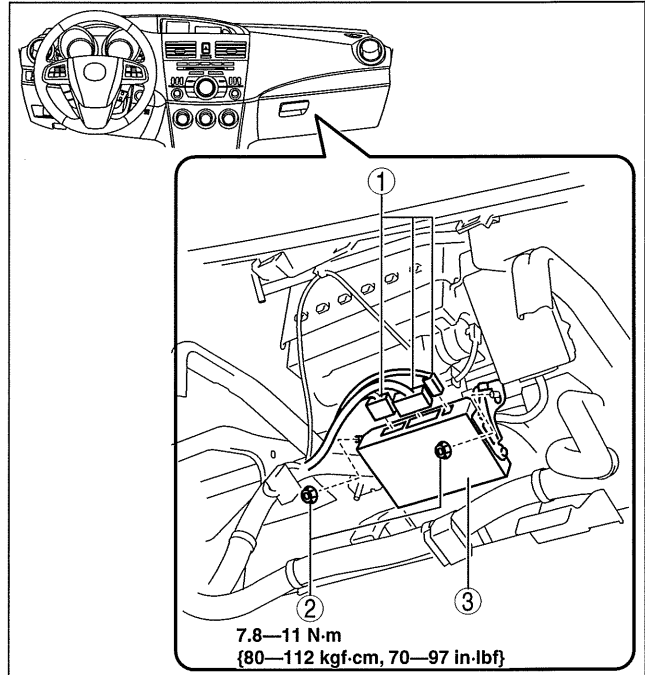
SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION

id092000829300

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Connector
2	Nut
3	SIRIUS satellite radio unit

4. Install in the reverse order of removal.



am3uuw0000275

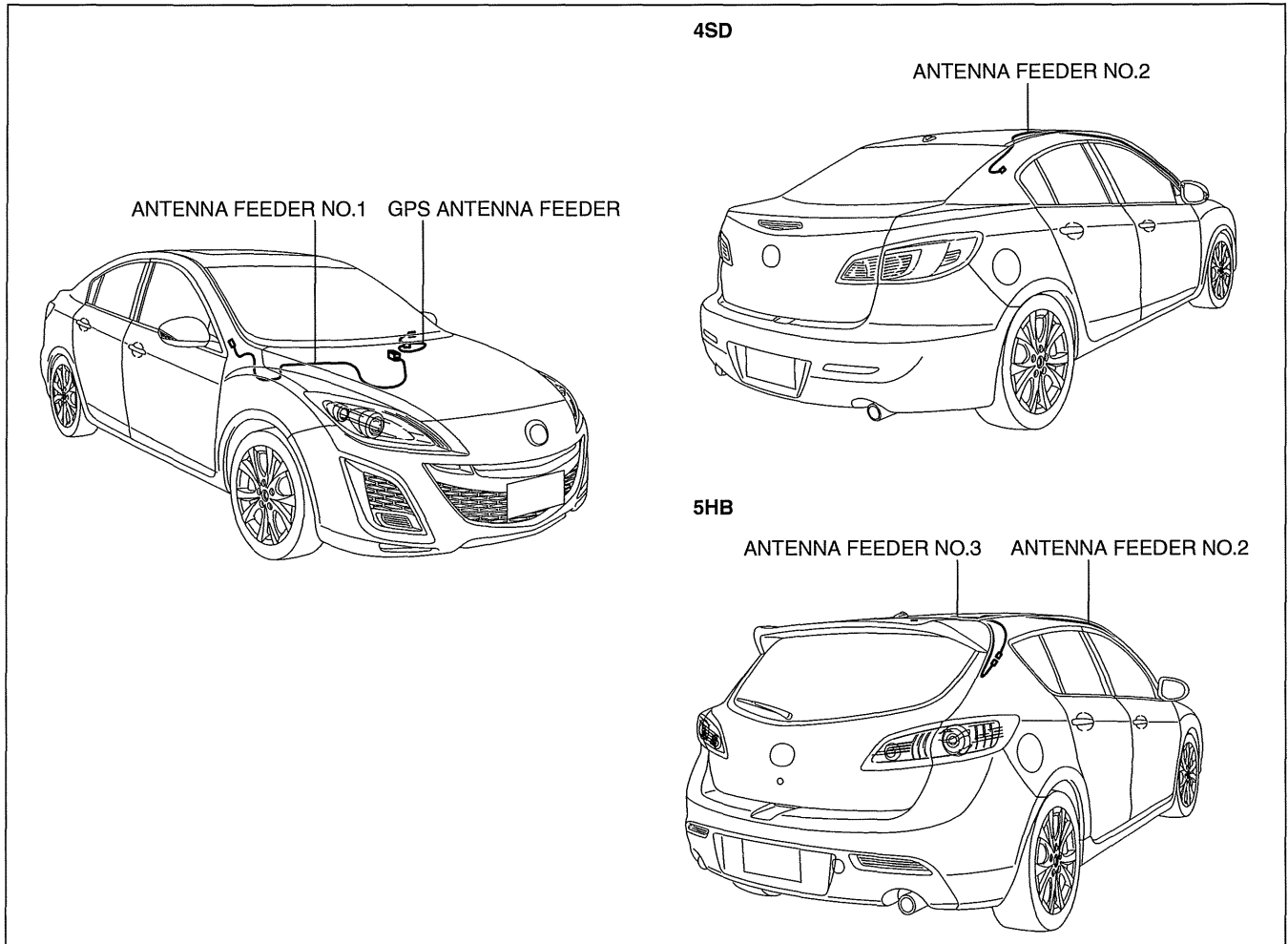
ENTERTAINMENT

ANTENNA FEEDER LOCATION

id092000801800

Note

- SIRIUS satellite radio antenna feeder No.1 is integrated with the dashboard wiring harness.
- SIRIUS satellite radio antenna feeder No.2 is integrated with the antenna feeder No.2.
- SIRIUS satellite radio antenna feeder No.3 is integrated with the antenna feeder No.3. (5HB)



am3uuw0000275

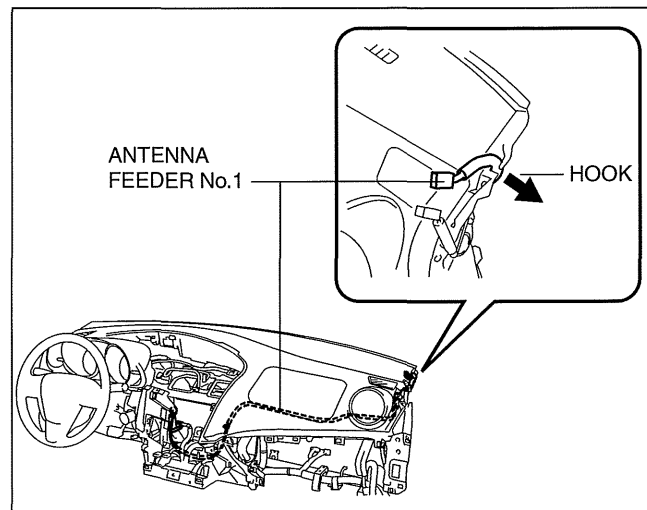
09-20

ENTERTAINMENT

ANTENNA FEEDER NO.1 REMOVAL/INSTALLATION

id092000812200

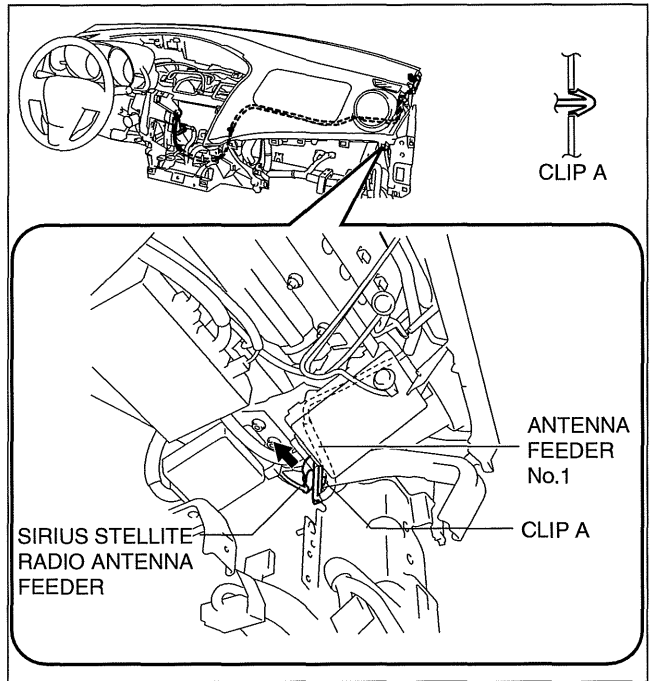
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift lever knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (9) Shift lever component (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (10) Selector lever component (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (11) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (12) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (13) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (14) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (15) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (16) Climate control unit (See 07-40A-26 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See 07-40B-17 CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
 - (17) A-pillar trim (RH) (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (18) Auto light/wiper control module (with auto light/wiper system) (See 09-18-64 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
3. Partially peel back the hook.



am3uuw0000444

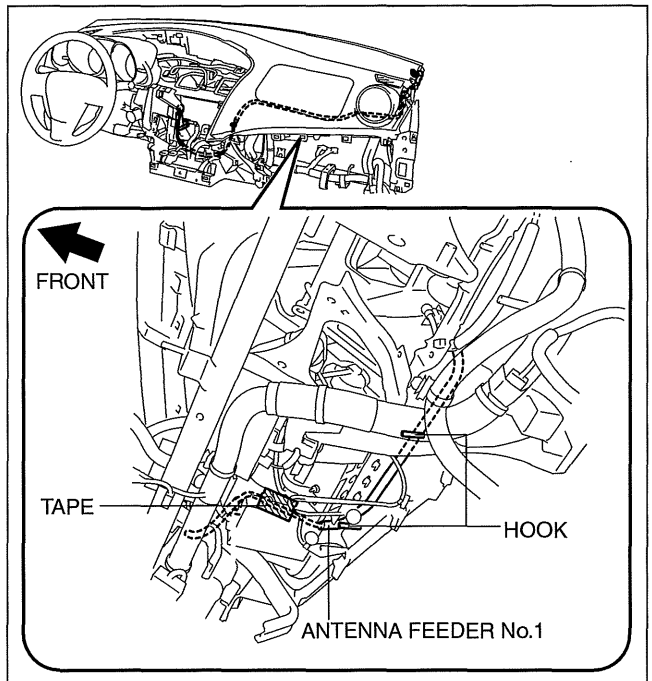
ENTERTAINMENT

- Partially peel back the SIRIUS satellite radio antenna feeder.
- Remove the clip A.



am3uuw0000444

- Peel off the tape.
- Partially peel back the hook.

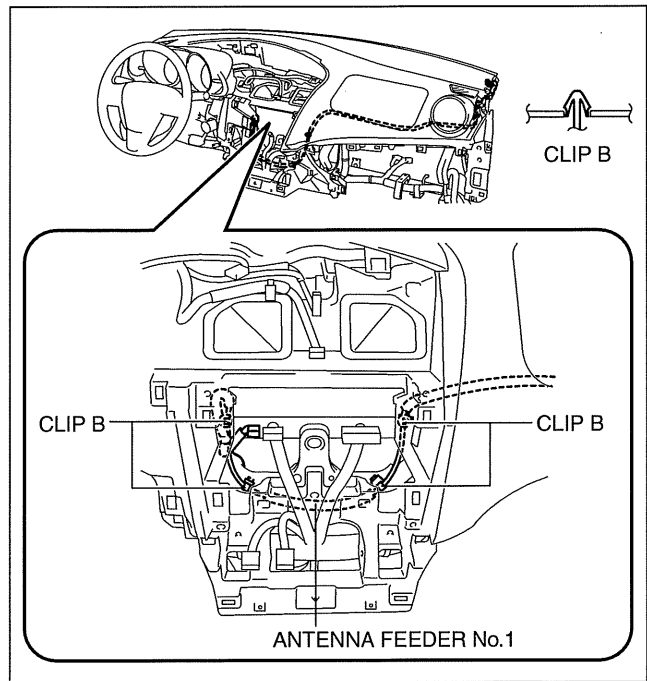


am3uuw0000444

09-20

ENTERTAINMENT

8. Remove the clips B.
9. Remove the antenna feeder No.1.
10. Install in the reverse order of removal.

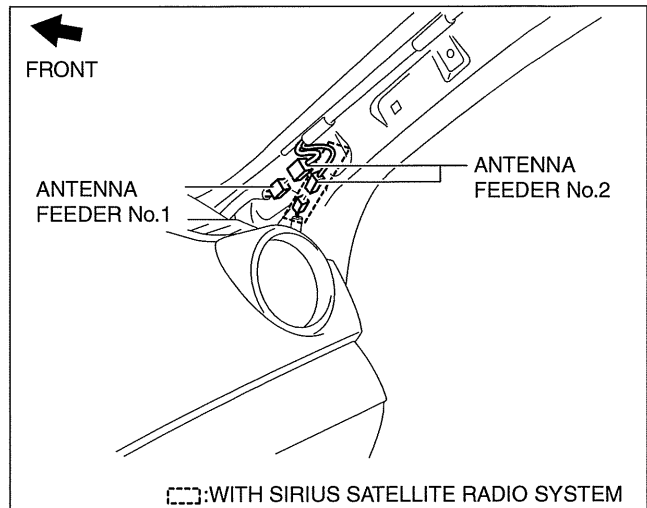


am3uuw0000444

ANTENNA FEEDER NO.1 INSPECTION

id092000812400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (2) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (3) A-pillar trim (RH) (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
3. Disconnect antenna feeder No.2.



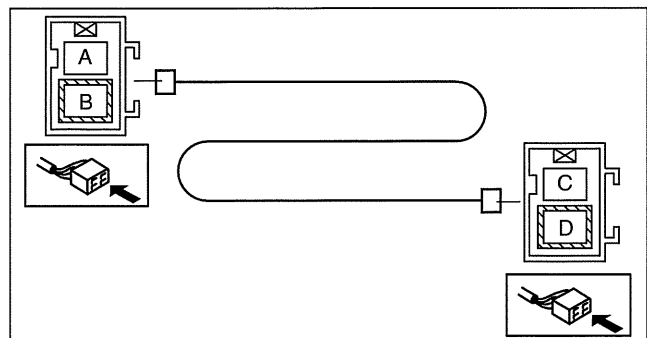
am3uuw0000286

4. Verify that the continuity between antenna feeder No.1 terminals is as indicated in the table.
 - If not as indicated in the table, replace antenna feeder No.1.

○—○ : Continuity

Test condition	Terminal			
	A	B	C	D
Under any condition	○	○	○	
		○	○	○

am3uuw00004399



am3uuw0000286

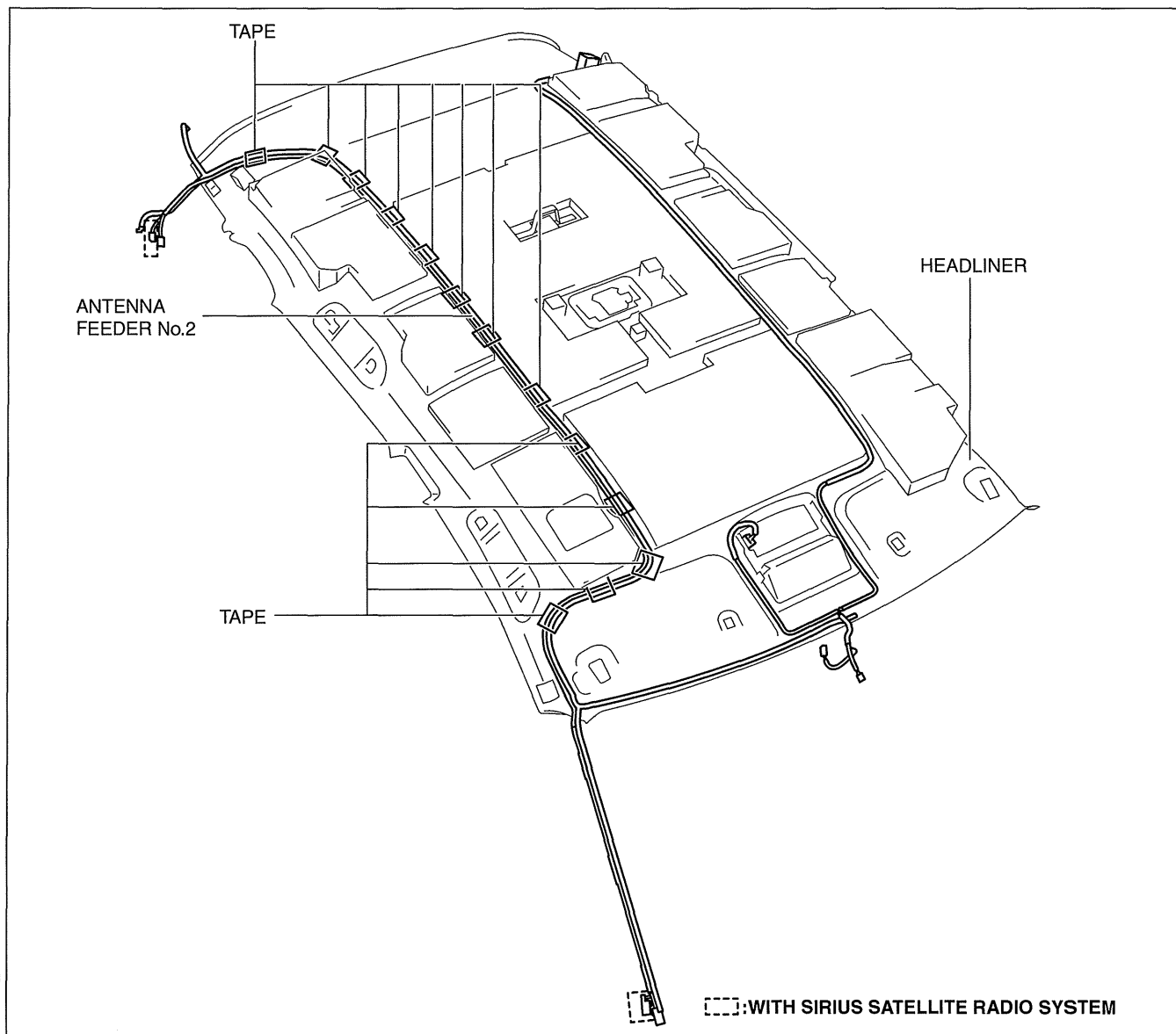
ENTERTAINMENT

id092000812300

ANTENNA FEEDER NO.2 REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
3. Remove the antenna feeder No.2.
4. Install in the reverse order of removal.

Without sunroof

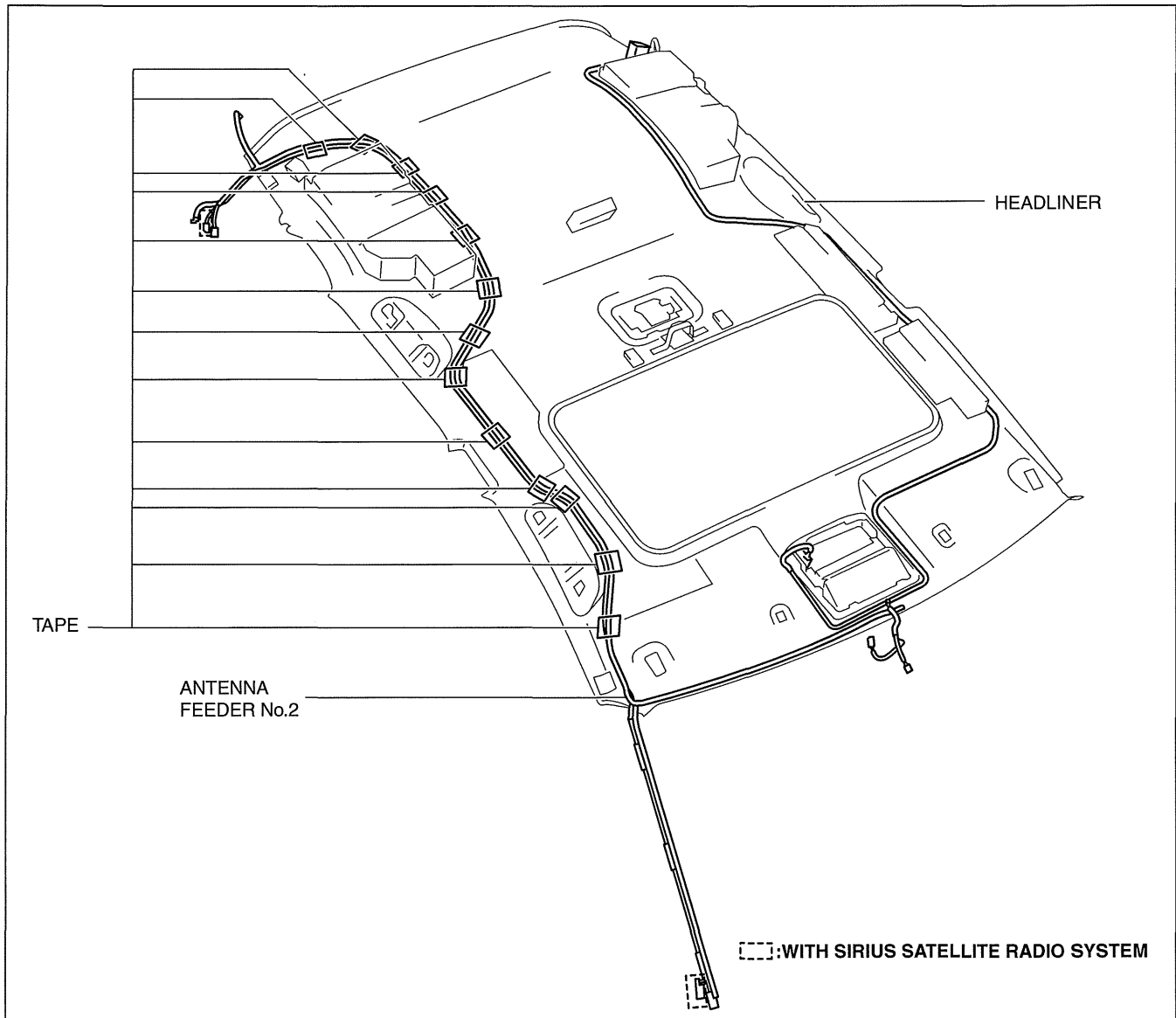


09-20

am3uuw0000286

ENTERTAINMENT

With sunroof



am3uuw0000286

ANTENNA FEEDER NO.2 INSPECTION

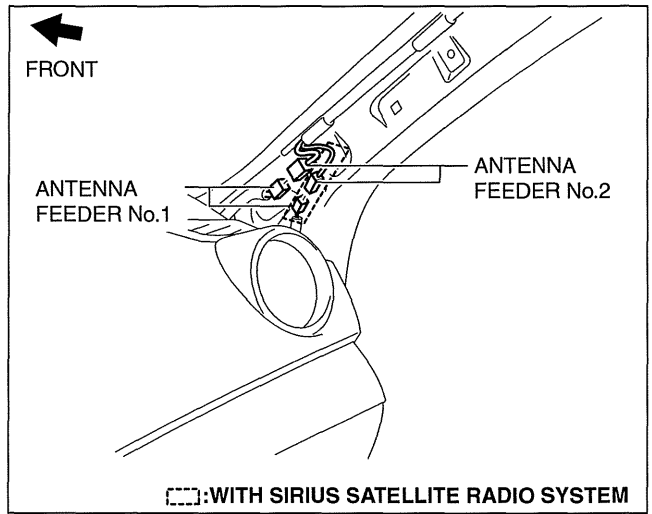
id092000812500

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) A-pillar trim (RH) (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (2) Rear seat cushion (4SD) (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (3) Rear scuff plate (RH) (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Tire house trim (RH) (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (5) Trunk side upper trim (5HB, RH) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (6) Trunk side trim (5HB, RH) (See 09-17-74 TRUNK SIDE TRIM REMOVAL/INSTALLATION.)
 - (7) C-pillar trim (RH) (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)

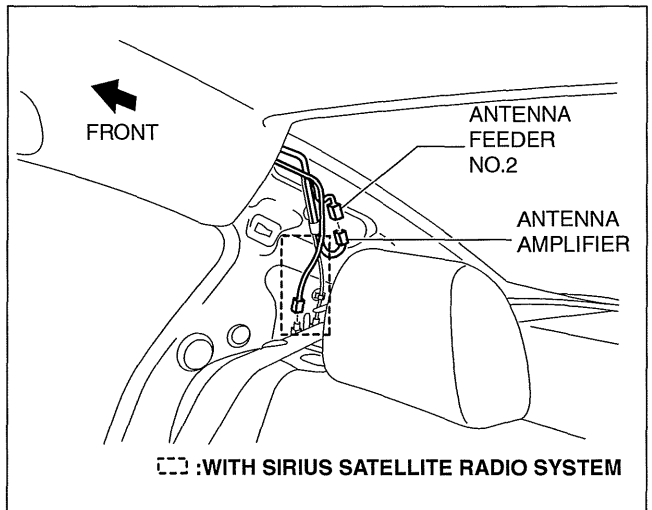
ENTERTAINMENT

3. Disconnect the antenna feeder No.1.
4. Disconnect the antenna feeder No.3.

4SD



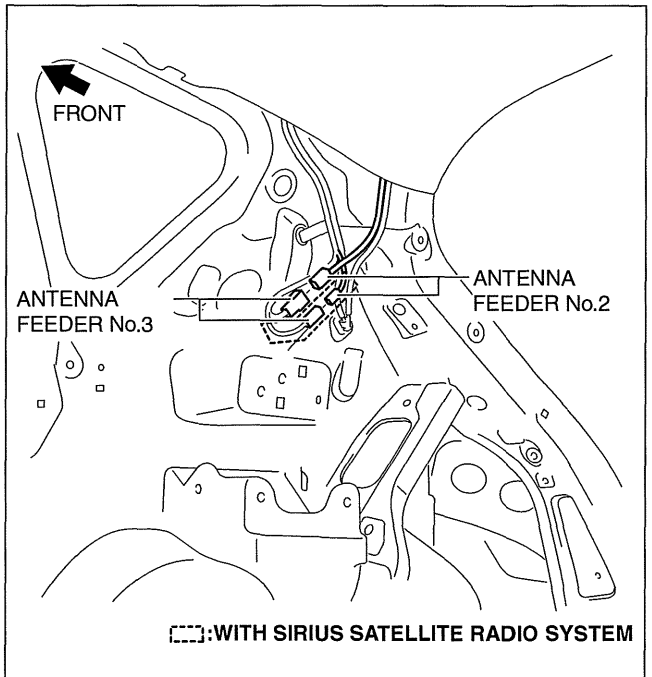
am3uuw0000286



am3uuw0000320

09-20

5HB



am3uuw0000287

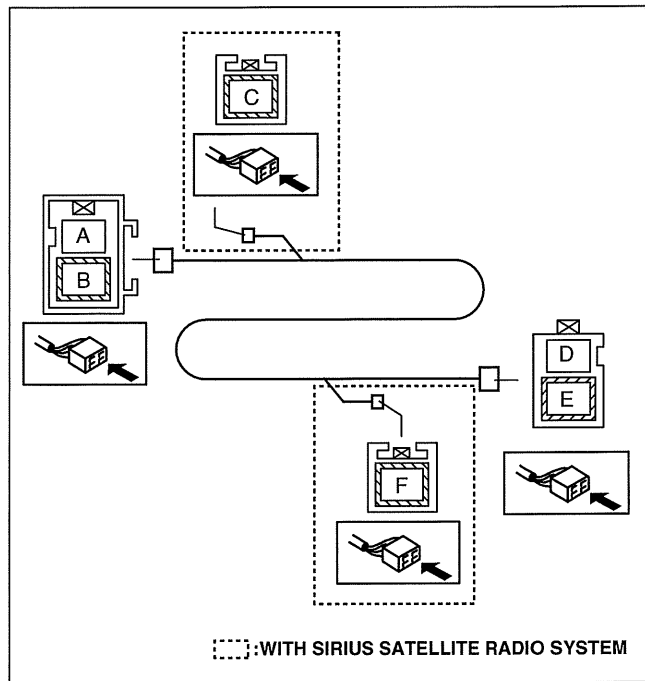
ENTERTAINMENT

5. Verify that the continuity between antenna feeder No.2 terminals is as indicated in the table.
- If not as indicated in the table, replace antenna feeder No.2.

○—○ : Continuity

Test condition	Terminal					
	A	B	C	D	E	F
Under any condition	○			○		
		○			○	
			○			○*

* : WITH SIRIUS SATELLITE RADIO SYSTEM
am3uuw00002868



am3uuw0000287

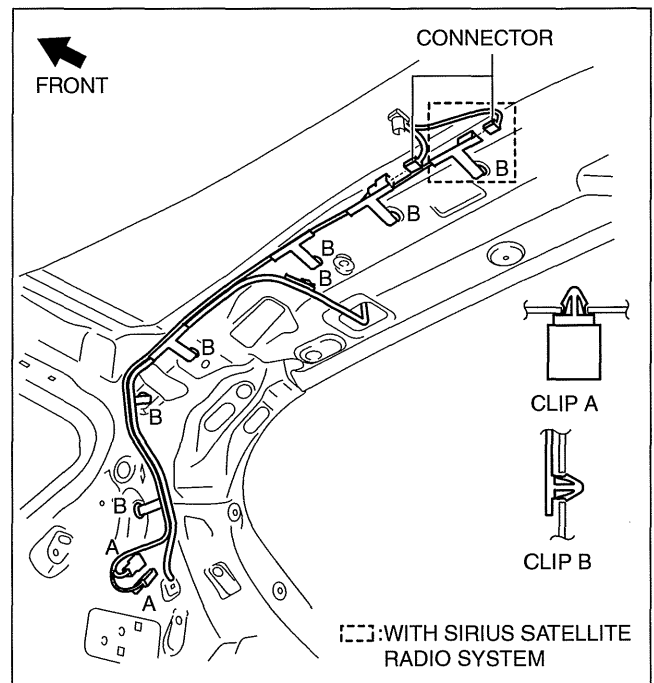
ANTENNA FEEDER NO.3 REMOVAL/INSTALLATION

id092000812900

- Disconnect the negative battery cable.
- Remove the following parts:
 - Sunroof seaming welt (vehicles with sunroof)
 - A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - Trunk side upper trim (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)
- Partially peel back the headliner.

ENTERTAINMENT

4. Disconnect the connector.
5. Remove the clips A and B.
6. Remove the antenna feeder No.3.
7. Install in the reverse order of removal.



am3uuw0000286

ANTENNA FEEDER NO.3 INSPECTION

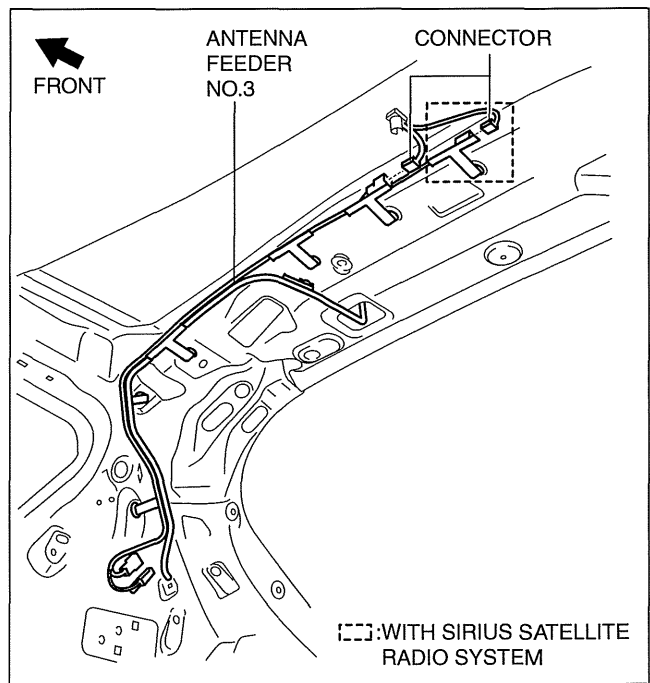
id092000813000

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Sunroof seaming welt (vehicles with sunroof)
 - (2) A-pillar trim (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (3) Front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (4) Rear scuff plate (See 09-17-68 REAR SCUFF PLATE REMOVAL/INSTALLATION.)
 - (5) B-pillar lower trim (See 09-17-59 B-PILLAR LOWER TRIM REMOVAL/INSTALLATION.)
 - (6) Upper anchor of the front seat belt (See 08-11-3 FRONT SEAT BELT REMOVAL/INSTALLATION.)
 - (7) B-pillar upper trim (See 09-17-61 B-PILLAR UPPER TRIM REMOVAL/INSTALLATION.)
 - (8) Rear seat cushion (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
 - (9) Tire house trim (See 09-17-54 TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
 - (10) Trunk side upper trim (5HB) (See 09-17-78 TRUNK SIDE UPPER TRIM REMOVAL/INSTALLATION.)
 - (11) C-pillar trim (See 09-17-63 C-PILLAR TRIM REMOVAL/INSTALLATION.)
 - (12) Map light (See 09-18-67 MAP LIGHT REMOVAL/INSTALLATION.)
 - (13) Sunvisor (See 09-17-106 SUNVISOR REMOVAL/INSTALLATION.)
 - (14) Assist handle (See 09-17-104 ASSIST HANDLE REMOVAL/INSTALLATION.)
 - (15) Headliner (See 09-17-107 HEADLINER REMOVAL/INSTALLATION.)

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ENTERTAINMENT

3. Disconnect the connector.



am3uuw0000287

4. Verify that the continuity between antenna feeder No.3 terminals is as indicated in the table.

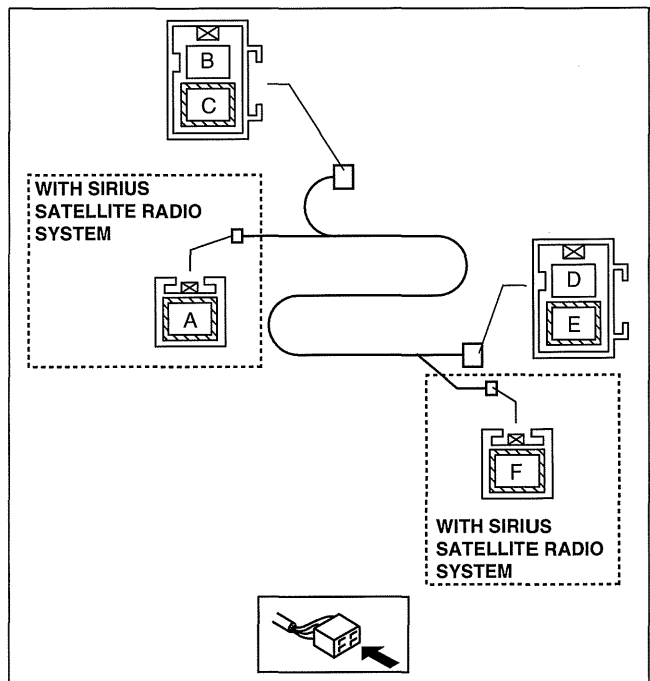
- If not as indicated in the table, replace antenna feeder No.3.

○—○ : Continuity

Test condition	Terminal					
	A	B	C	D	E	F
	○					○*
Under any condition		○		○		
			○		○	

* : WITH SIRIUS SATELLITE RADIO SYSTEM

am6xuw00000861



am6xuw0000087

ENTERTAINMENT

SIRIUS SATELLITE RADIO ANTENNA FEEDER REMOVAL/INSTALLATION

id092000832000

SIRIUS Satellite Radio Antenna Feeder No.1

Note

- SIRIUS satellite radio antenna feeder No.1 is integrated with the dashboard wiring harness.

1. Refer to 09-17-21 DASHBOARD DISASSEMBLY/ASSEMBLY.

SIRIUS Satellite Radio Antenna Feeder No.2

Note

- SIRIUS satellite radio antenna feeder No.2 is integrated with the antenna feeder No.2.

1. Refer to 09-20-35 ANTENNA FEEDER NO.2 REMOVAL/INSTALLATION.

SIRIUS Satellite Radio Antenna Feeder No.3 (5HB)

Note

- SIRIUS satellite radio antenna feeder No.3 is integrated with the antenna feeder No.3.

1. Refer to 09-20-38 ANTENNA FEEDER NO.3 REMOVAL/INSTALLATION.

SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION

id092000829500

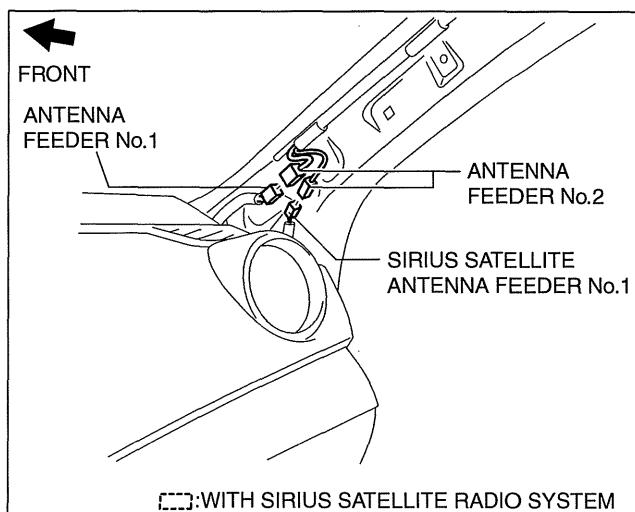
SIRIUS Satellite Radio Antenna Feeder No.1

Note

- SIRIUS satellite radio antenna feeder No.1 is integrated with the dashboard wiring harness.

09-20

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Glove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) A-pillar trim (RH) (See 09-17-50 A-PILLAR TRIM REMOVAL/INSTALLATION.)
3. Disconnect the SIRIUS satellite radio antenna feeder connector. (See 09-20-30 SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)
4. Disconnect the antenna feeder No.2.



am3uuw000440

ENTERTAINMENT

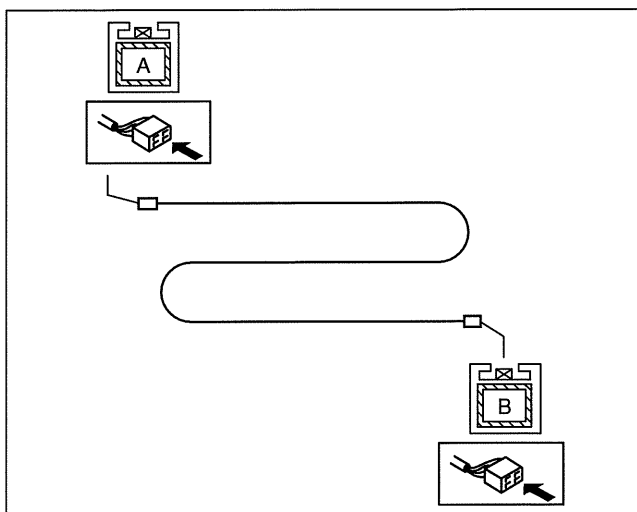
5. Verify that the continuity between SIRIUS satellite radio antenna feeder No.1 terminals is as indicated in the table.

- If not as indicated in the table, replace dashboard wiring harness.

○—○ : Continuity

Test condition	Terminal	
	A	B
Under any condition	○—○	○—○

am3uuw00004402



am3uuw00004402

SIRIUS Satellite Radio Antenna Feeder No.2

Note

- SIRIUS satellite radio antenna feeder No.2 is integrated with the antenna feeder No.2.

1. Refer to 09-20-36 ANTENNA FEEDER NO.2 INSPECTION.

SIRIUS Satellite Radio Antenna Feeder No.3 (5HB)

Note

- SIRIUS satellite radio antenna feeder No.3 is integrated with the antenna feeder No.3.

1. Refer to 09-20-39 ANTENNA FEEDER NO.3 INSPECTION.

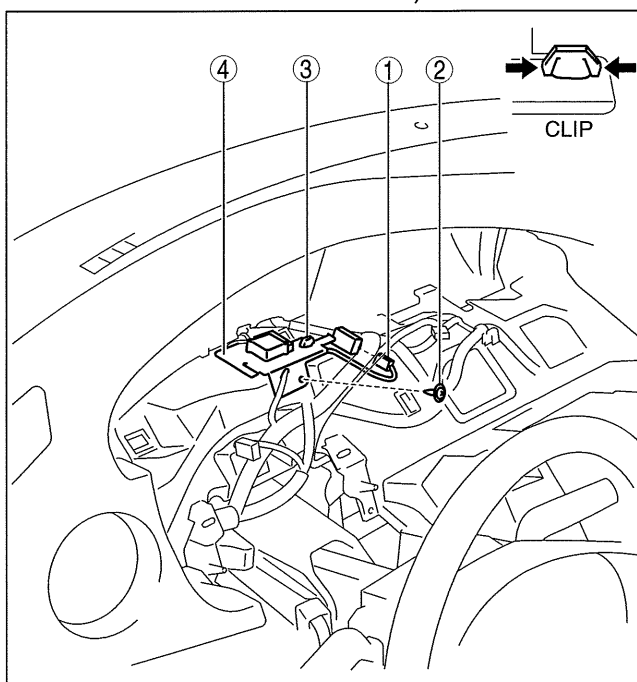
GPS ANTENNA REMOVAL/INSTALLATION

id092000801500

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Connector
2	Screw
3	Clip
4	GPS antenna

4. Install in the reverse order of removal.



am3uuw0000274

ENTERTAINMENT

GPS ANTENNA FEEDER REMOVAL/INSTALLATION

id092000812100

Note

- GPS antenna feeder is removed with the multi information display.

- Refer to 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.

GPS ANTENNA FEEDER INSPECTION

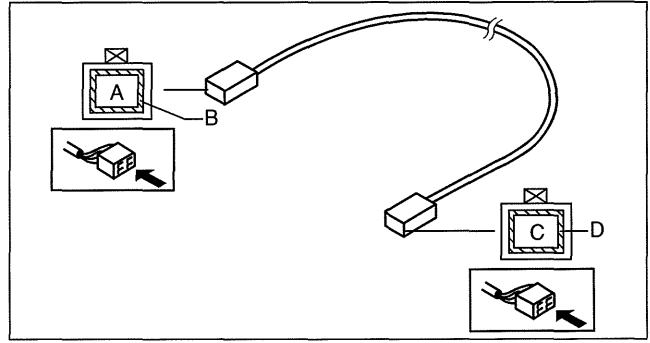
id092000802100

- Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the GPS antenna feeder.

○—○ : Continuity

Test condition	Terminal			
	A	B	C	D
Under any condition	○—○		○—○	
		○—○		○—○

am3uuw00004982



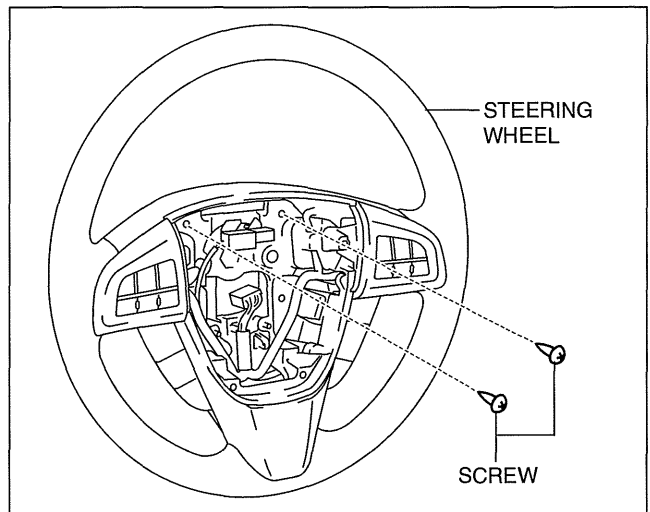
am3uuw0000498

id092000822300

STEERING SWITCH REMOVAL/INSTALLATION

- Disconnect the negative battery cable and wait for 1 min or more.
- Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
- Remove the steering wheel. (See 06-14-8 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)(See 06-14-11 STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
- Remove the screw.

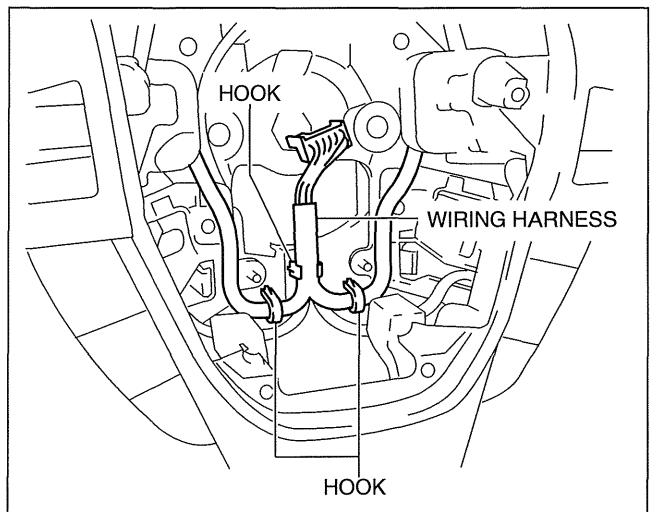
09-20



am3uuw0000285

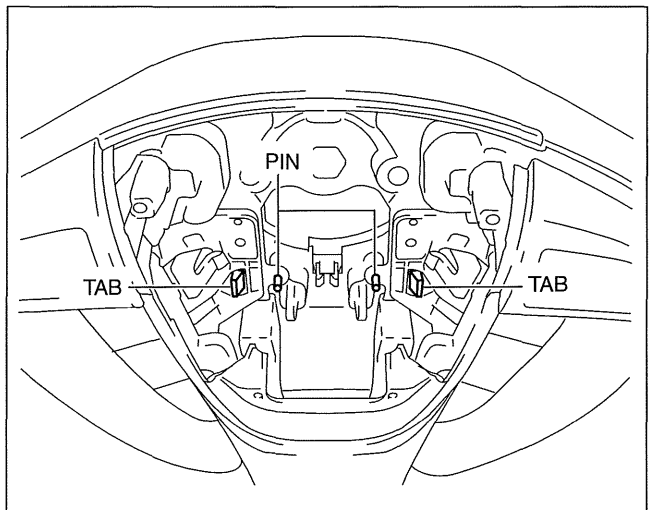
ENTERTAINMENT

5. Remove the wiring harness from the cover hook.



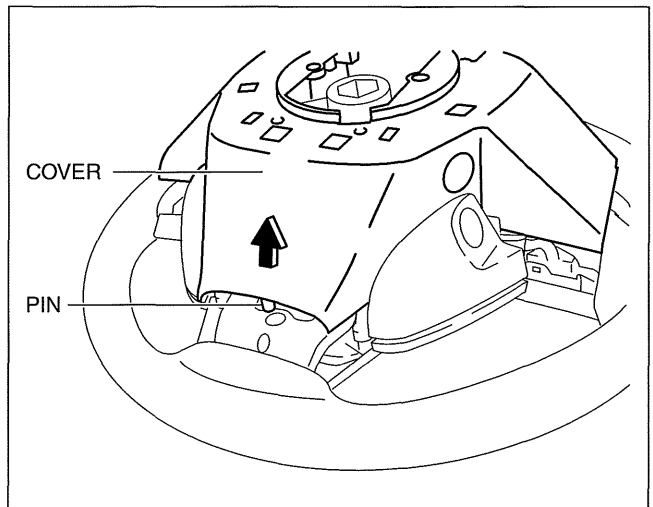
am3uuw0000285

6. Remove the cover tabs and pins from the steering wheel.



am3uuw0000285

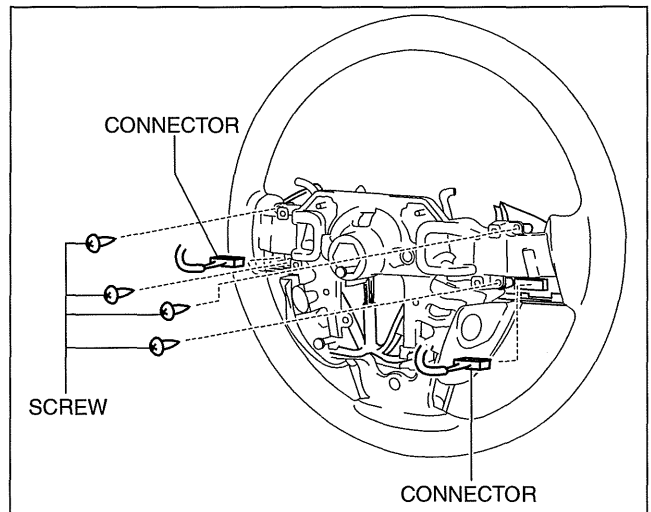
7. Remove the cover.



am3uuw0000285

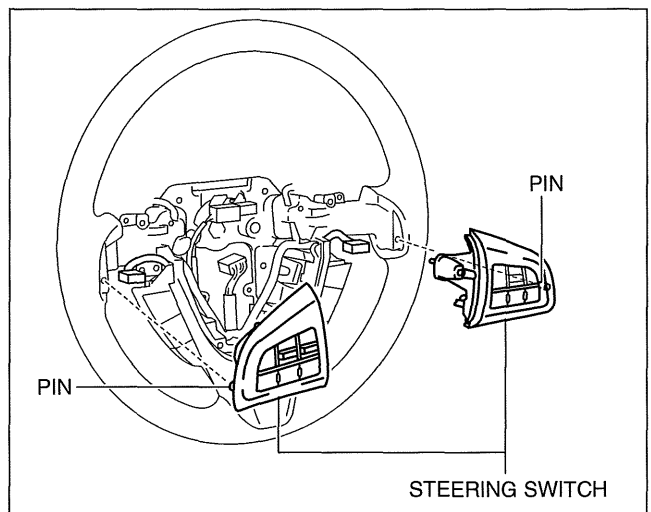
ENTERTAINMENT

8. Disconnect the connector.
9. Remove the screw.



am3uuw0000285

10. Remove the steering switch pins from the steering wheel.
11. Remove the steering switch.
12. Install in the reverse order of removal.



am3uuw0000286

09-20

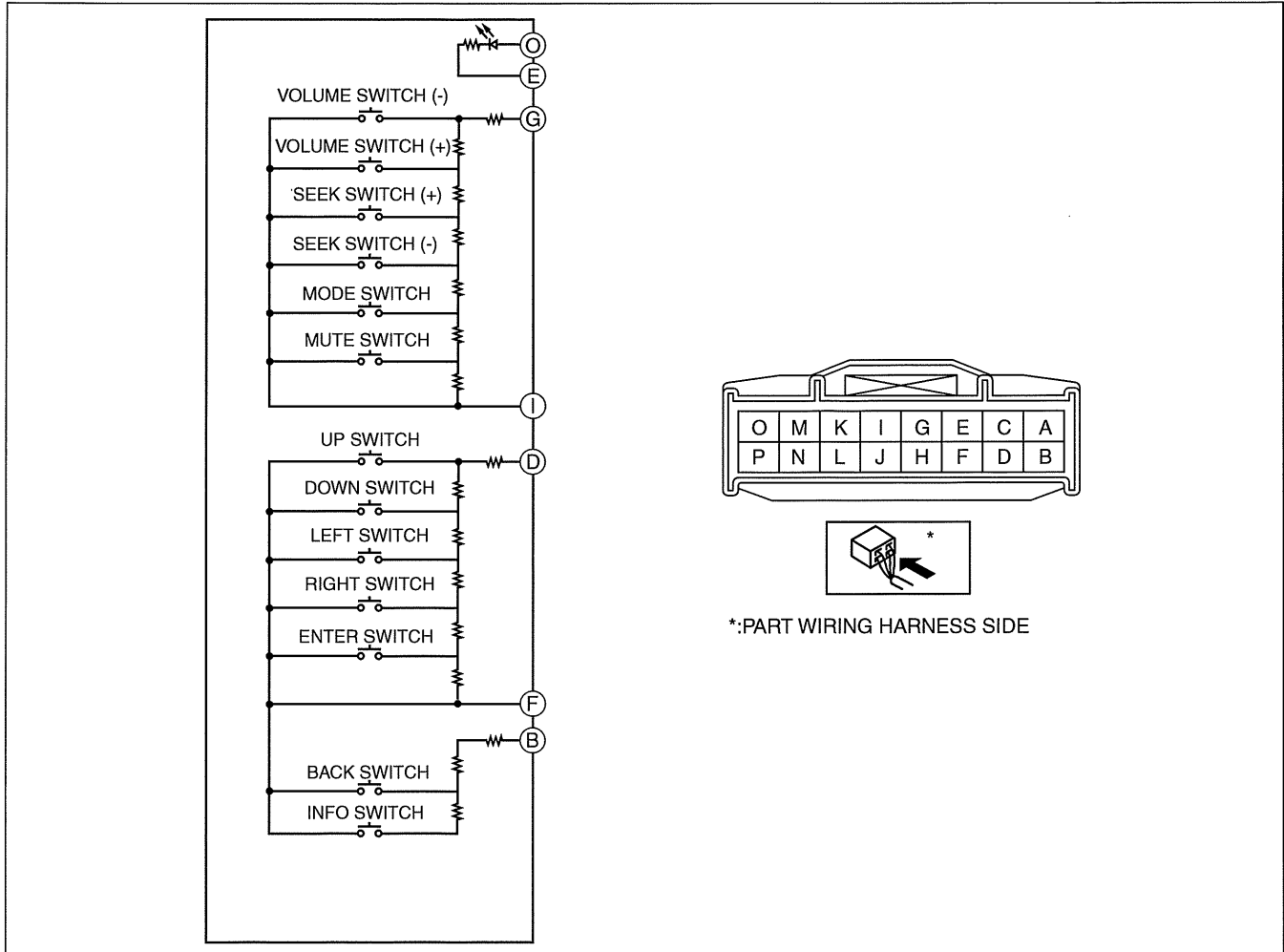
ENTERTAINMENT

id09200822400

STEERING SWITCH INSPECTION

Without Bluetooth System

1. Disconnect the negative battery cable and wait for 1 min or more.
2. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/ INSTALLATION.)
3. Disconnect the steering switch connector.
4. Verify the resistance between the steering switch terminals.



am3uuw0000287

- If not within the specification, replace the steering switch.

○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	G	I	
Volume Switch (-) ON	○—Ω—○		53.064—54.136
Volume Switch (+) ON	○—Ω—○		145.233—148.167
Seek Switch (+) ON	○—Ω—○		297.693—303.707
Seek Switch (-) ON	○—Ω—○		556.083—567.317
Mode Switch ON	○—Ω—○		1,026.333—1,047.067
Mute Switch ON	○—Ω—○		2,016.333—2,057.067
OFF	○—Ω—○		4,986.333—5,087.067

am3uuw00005474

ENTERTAINMENT

○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	D	F	
Up Switch ON	○—Ω—○		50.49—51.51
Down Switch ON	○—Ω—○		140.58—143.42
Left Switch ON	○—Ω—○		289.08—294.92
Right Switch ON	○—Ω—○		556.38—567.62
Enter (up/down) Switch ON	○—Ω—○		1,021.68—1,042.32
OFF	○—Ω—○		2,506.68—2,557.32

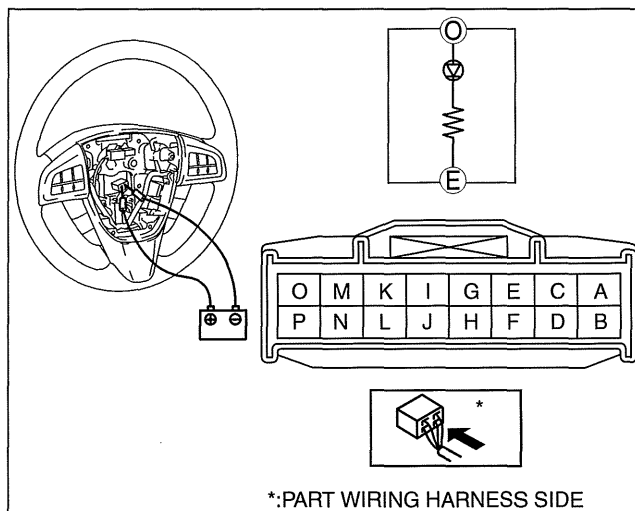
am3uuw00005475

○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	B	F	
BACK Switch ON	○—Ω—○		140.58—143.42
INFO Switch ON	○—Ω—○		289.08—294.92

am3uuw00002876

5. Apply battery positive voltage to steering switch terminal O, and connect terminal E to ground.
6. Verify that the LED illuminates.
 - If the LED does not illuminate, replace the steering switch.



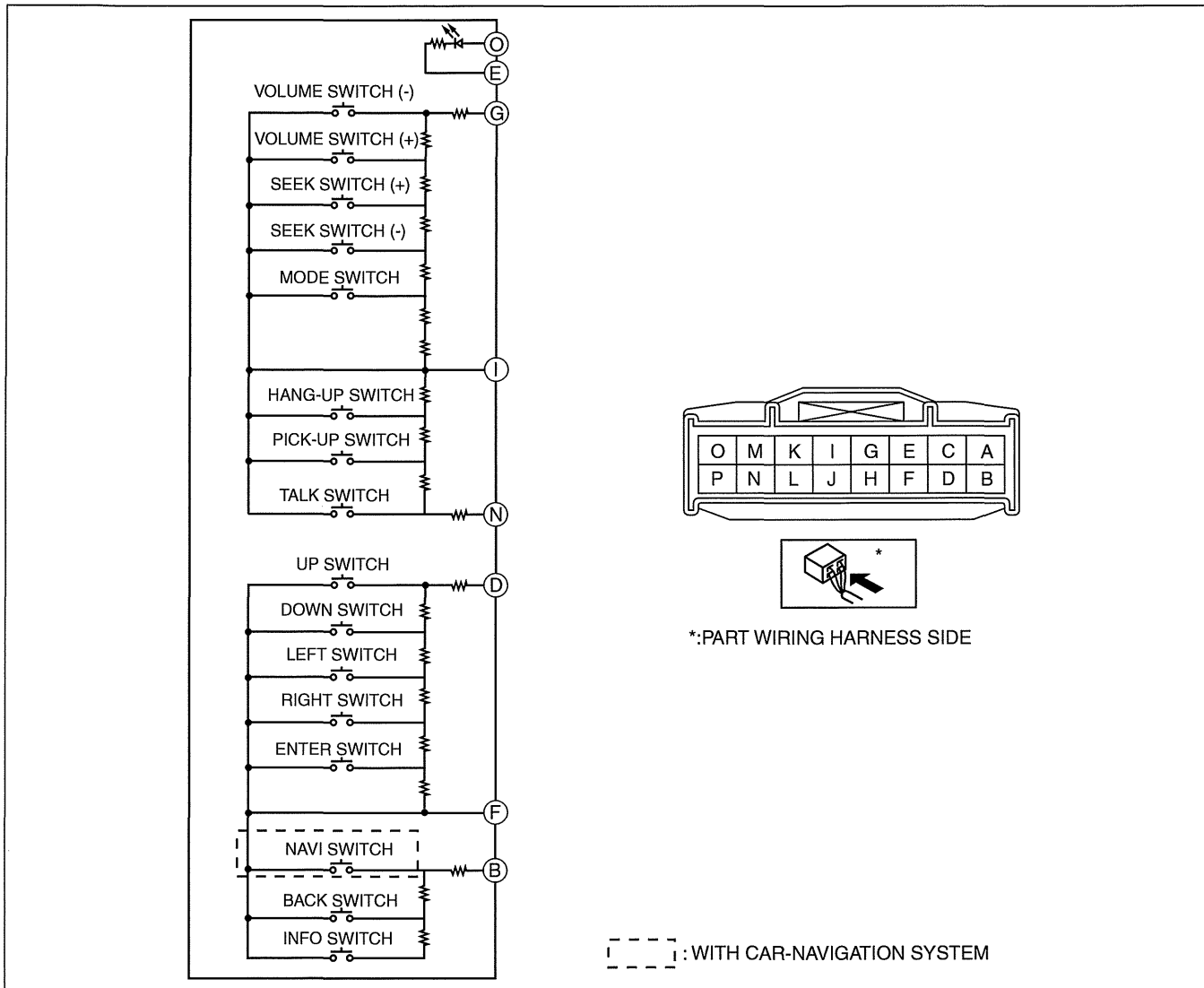
am3uuw0000287

09-20

ENTERTAINMENT

With Bluetooth System

1. Disconnect the negative battery cable and wait for 1 min or more.
2. Remove the driver-side air bag module. (See 08-10-7 DRIVER-SIDE AIR BAG MODULE REMOVAL/ INSTALLATION.)
3. Disconnect the steering switch connector.
4. Verify the resistance between the steering switch terminals.



am3uuw0000546

- If not within the specification, replace the steering switch.

○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	G	I	
Volume Switch (-) ON	○—Ω—○		53.064—54.136
Volume Switch (+) ON	○—Ω—○		145.223—148.167
Seek Switch (+) ON	○—Ω—○		297.693—303.707
Seek Switch (-) ON	○—Ω—○		556.083—567.317
Mode Switch ON	○—Ω—○		1,026.333—1,047.067
OFF	○—Ω—○		4,986.333—5,087.067

am3uuw00005466

ENTERTAINMENT

○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	N	I	
Talk Switch ON	○—Ω—○		103.95—106.05
Pick-up Switch ON	○—Ω—○		271.26—276.74
Hang-up Switch ON	○—Ω—○		657.36—670.64
OFF	○—Ω—○		3,330.36—3,397.64

am3uuw00005476

○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	D	F	
Up Switch ON	○—Ω—○		50.49—51.51
Down Switch ON	○—Ω—○		140.58—143.42
Left Switch ON	○—Ω—○		289.08—294.92
Right Switch ON	○—Ω—○		556.38—567.62
Enter (up/down) Switch ON	○—Ω—○		1,021.68—1,042.32
OFF	○—Ω—○		2,506.68—2,557.32

am3uuw00005475

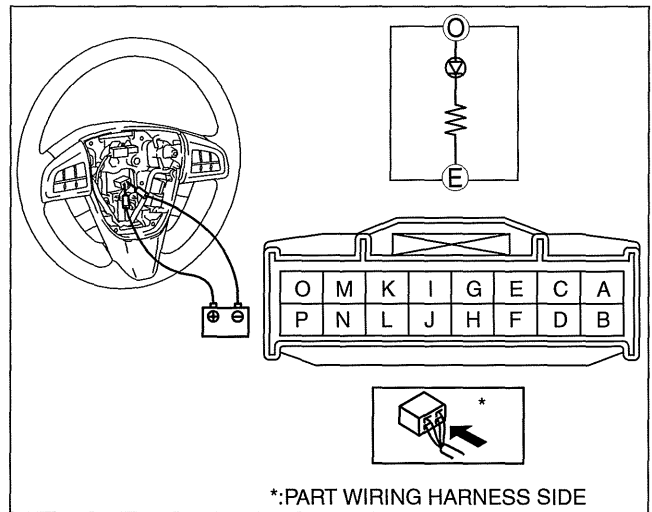
○—Ω—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	B	F	
Navi Switch ON	○—Ω—○		50.49—51.51
BACK Switch ON	○—Ω—○		140.58—143.42
INFO Switch ON	○—Ω—○		289.08—294.92

! - - - ! : WITH CAR-NAVIGATION SYSTEM

am3uuw00002881

5. Apply battery positive voltage to steering switch terminal O, and connect terminal E to ground.
6. Verify that the LED illuminates.
 - If the LED does not illuminate, replace the steering switch.



am3uuw0000287

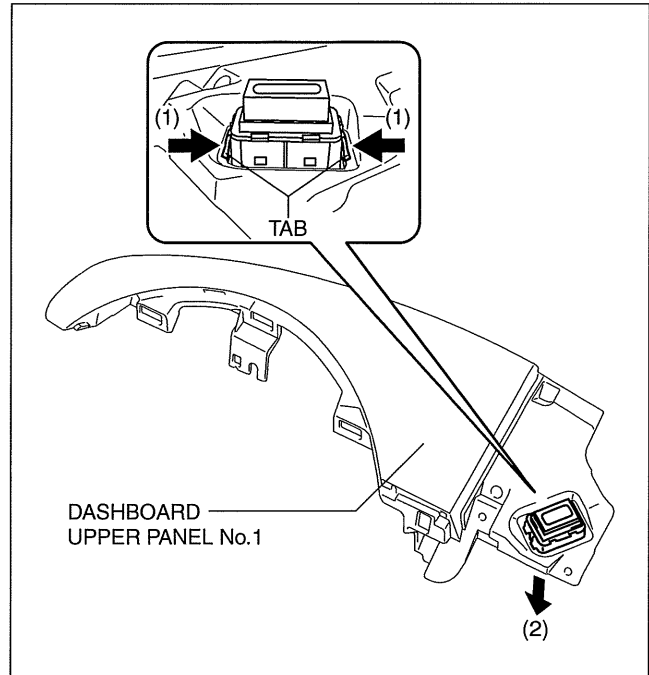
09-20

ENTERTAINMENT

MICROPHONE REMOVAL/INSTALLATION

id092000801400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (5) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (6) Dashboard upper panel No.1. (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
3. Remove the microphone in the direction of the arrow (2) shown in the figure while pressing the microphone tabs in the direction of the arrow (1).
4. Install in the reverse order of removal.

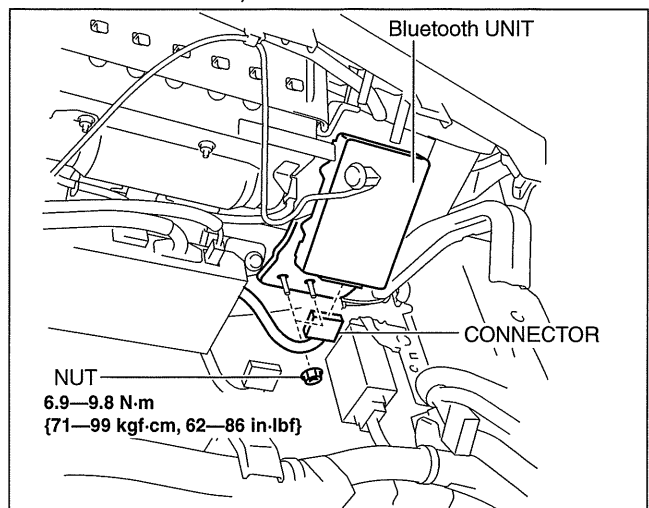


am3uuw0000550

Bluetooth UNIT REMOVAL/INSTALLATION

id092000833300

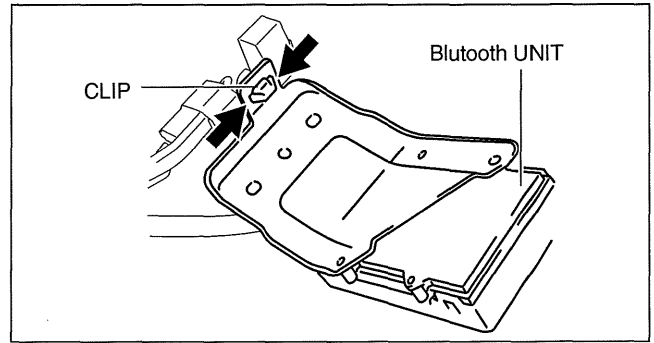
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Passenger-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Passenger-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Dashboard under cover (See 09-17-39 DASHBOARD UNDER COVER REMOVAL/INSTALLATION.)
 - (4) Grove compartment (See 09-17-33 GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
 - (5) Passenger-side lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (6) AFS control module (With AFS (adaptive front lighting system)) (See 09-18-18 AFS (ADAPTIVE FRONT LIGHTING SYSTEM) CONTROL MODULE REMOVAL/INSTALLATION.)
3. Remove the nuts. (Without AFS (adaptive front lighting system))
4. Disconnect the connector.



am3uuw0000270

ENTERTAINMENT

5. Detach the clips and set the wiring harness aside.
6. Remove the Bluetooth unit.
7. Install in the reverse order of removal.



am3uuw000270

ACCESSORY SOCKET REMOVAL/INSTALLATION

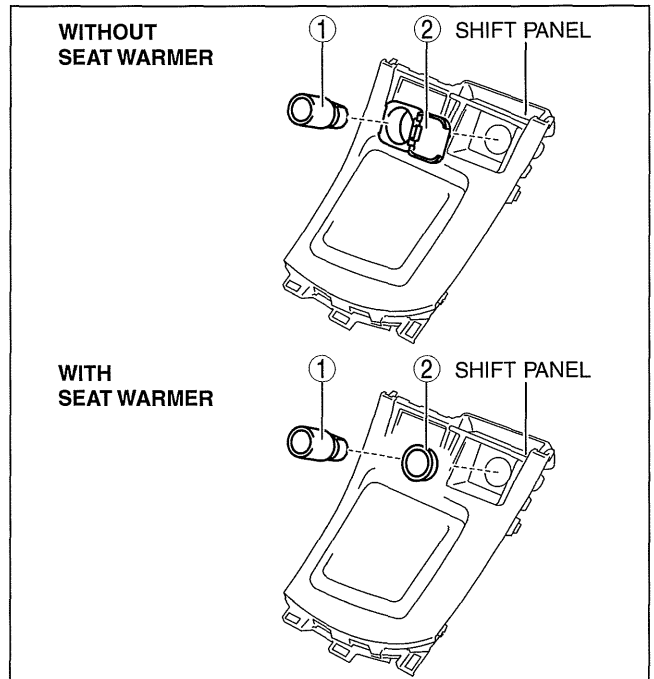
id092000800400

Front

1. Disconnect the negative battery cable.
2. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
3. Remove the shift knob. (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
4. Remove the selector lever knob. (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
5. Remove the shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
6. Remove in the order indicated in the table.

1	Socket (See 09-20-52 Socket Removal Note.)
2	Cap (See 09-20-52 Cap Removal Note.)

7. Install in the reverse order of removal.



am3uuw000274

09-20

Rear

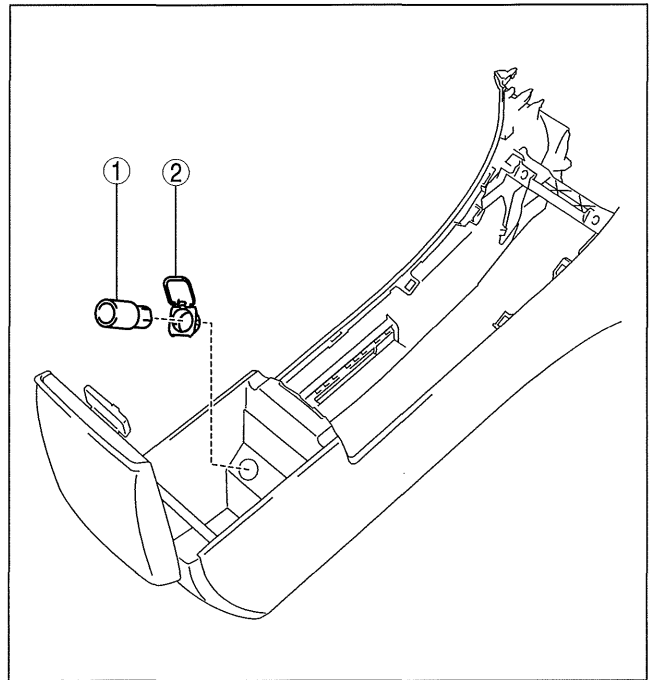
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)

ENTERTAINMENT

3. Remove in the order indicated in the table.

1	Socket (See 09-20-52 Socket Removal Note.)
2	Cap (See 09-20-52 Cap Removal Note.)

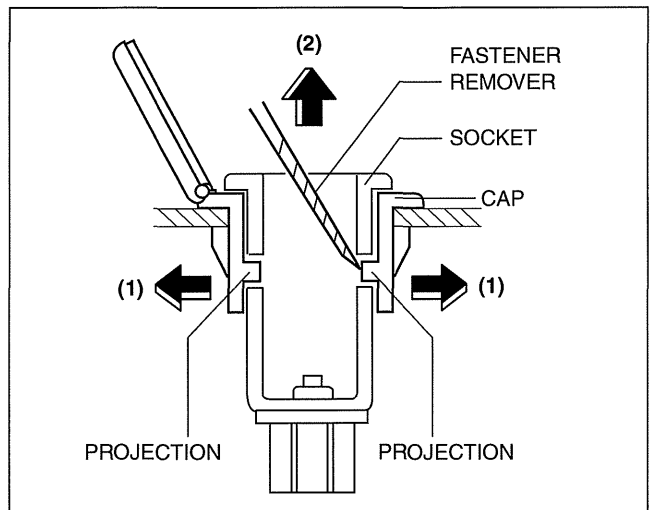
4. Install in the reverse order of removal.



am3uuw0000274

Socket Removal Note

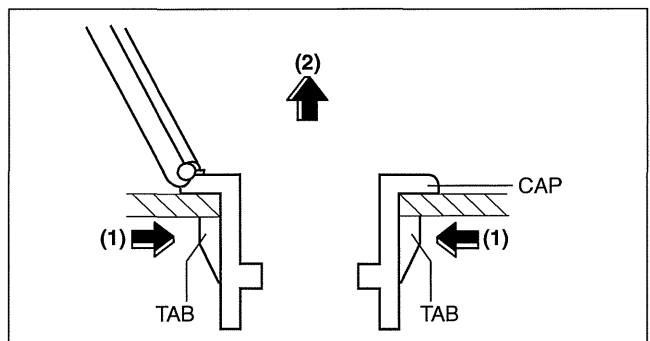
- Remove the socket in the direction of the arrow (2) shown in the figure while opening the caps in the direction of the arrow (1) using a tape-wrapped fastener remover.



am3uuw0000274

Cap Removal Note

- Remove the cap in the direction of the arrow (2) shown in the figure while pressing the cap tabs in the direction of the arrow (1).



am6zzw0000136

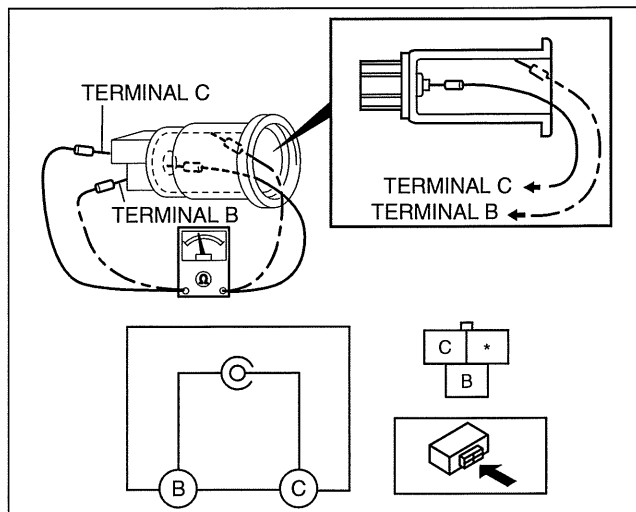
ENTERTAINMENT

ACCESSORY SOCKET INSPECTION

id092000800500

Front

1. Disconnect the negative battery cable.
2. Remove the upper panel. (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
3. Remove the shift knob. (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
4. Remove the selector lever knob. (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
5. Remove the shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
6. Remove the accessory socket (front) (See 09-20-51 ACCESSORY SOCKET REMOVAL/INSTALLATION.)
7. Connect a tester as shown in the figure and verify that there is continuity.
 - If the continuity cannot be verified, replace the accessory socket (Front).

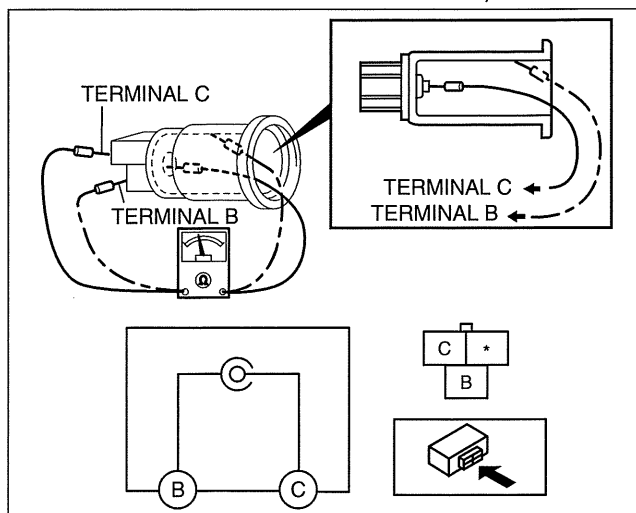


am6zzw0000205

09-20

Rear

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (9) Accessory socket (Rear) (See 09-20-51 ACCESSORY SOCKET REMOVAL/INSTALLATION.)
3. Connect a tester as shown in the figure and verify that there is continuity.
 - If the continuity cannot be verified, replace the accessory socket (Rear).



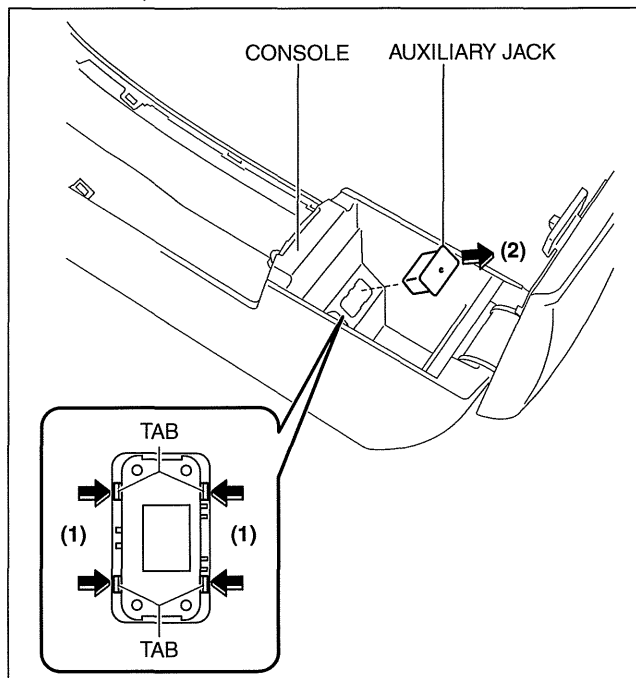
am6zzw0000205

ENTERTAINMENT

AUXILIARY JACK REMOVAL/INSTALLATION

id092000809900

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Remove the auxiliary jack in the direction of the arrow (2) shown in the figure while pressing the auxiliary jack tabs in the direction of the arrow (1).
4. Install in the reverse order of removal.



am3uuw0000274

AUXILIARY JACK INSPECTION

id092000812600

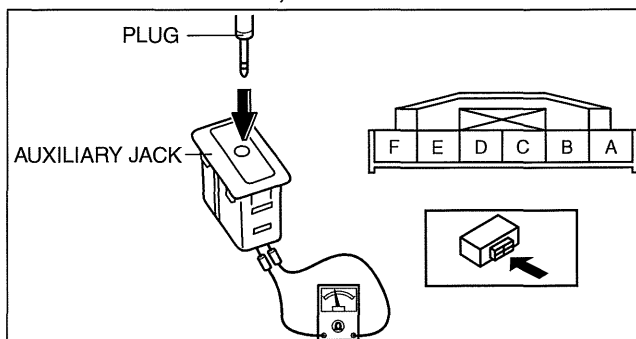
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (2) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (3) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (4) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (5) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (6) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (7) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (9) Auxiliary jack (See 09-20-54 AUXILIARY JACK REMOVAL/INSTALLATION.)
3. Connect a commercially-available nonresistant plug to the auxiliary jack.
4. Verify that the continuity between the auxiliary jack terminals is as indicated in the table.

○—○: Continuity

Test condition	Terminal				
	B	C	D	E	F
Plug is connected	○	—	○	—	○
Plug is not connected					

am6xuw00001495

- If not as indicated in the table, replace the auxiliary jack.



am6xuw0000149

09-21 POWER SYSTEMS

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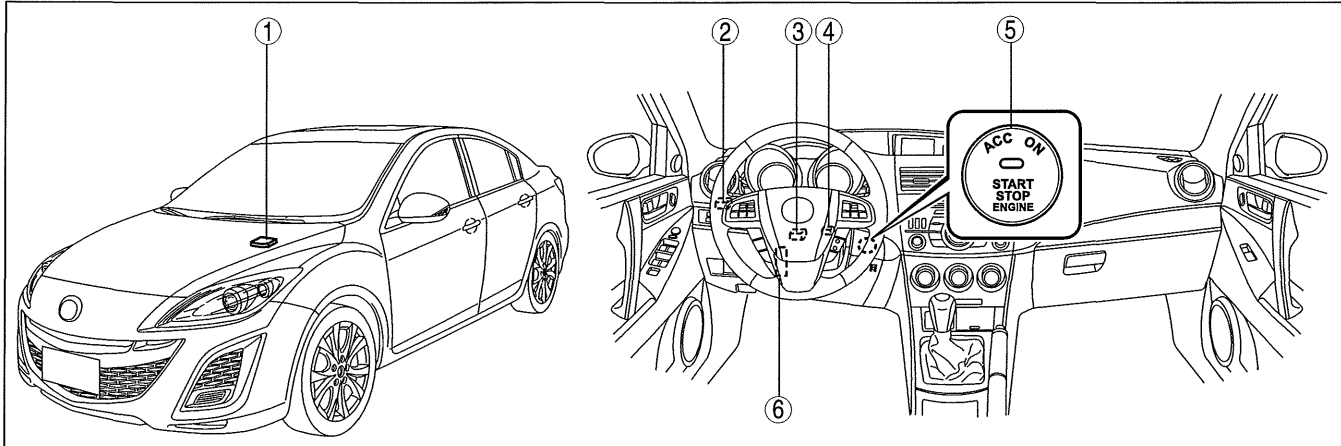
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POWER SYSTEMS

POWER SYSTEM LOCATION INDEX [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921008007z5



am3uuw0000557

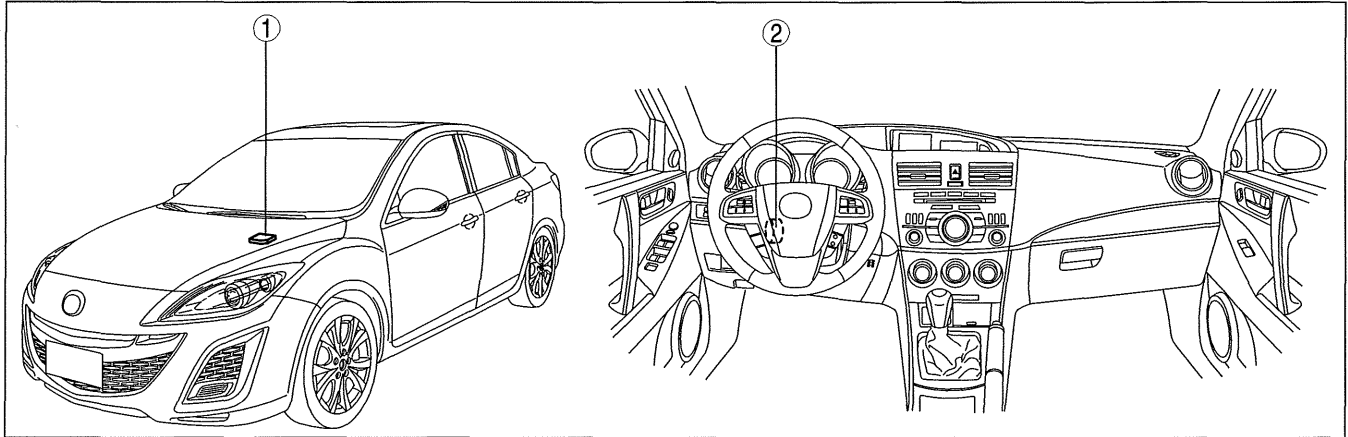
1	<p>Main fuse (See 09-21-6 MAIN FUSE REMOVAL/INSTALLATION.)</p>
2	<p>Starter cut relay (See 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX].) (See 09-21-15 STARTER CUT RELAY INSPECTION [MTX].)</p>
3	<p>Steering lock unit (See 09-21-13 STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)</p>
4	<p>Key reminder switch (See 09-21-12 KEY REMINDER SWITCH REMOVAL/INSTALLATION.) (See 09-21-11 KEY REMINDER SWITCH INSPECTION.)</p>

5	<p>Push button start (See 09-21-8 PUSH BUTTON START REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-21-9 PUSH BUTTON START INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-21-10 POWER SYSTEMS PERSONALIZATION FEATURES SETTING PROCEDURE) (See 09-21-10 FORCED IGNITION ON [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM])</p>
6	<p>Relay block (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-21-5 RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)</p>

POWER SYSTEMS

POWER SYSTEM LOCATION INDEX [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921008007z6



am3uuw0000557

1	Main fuse (See 09-21-6 MAIN FUSE REMOVAL/ INSTALLATION.)
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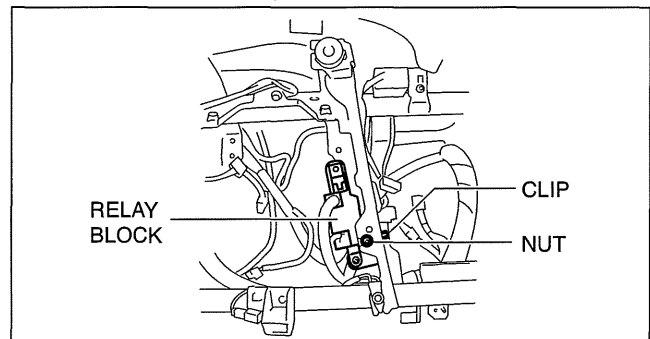
2	Ignition switch (See 09-21-6 IGNITION SWITCH REMOVAL/ INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].) (See 09-21-7 IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
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09-21

RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921004926z5

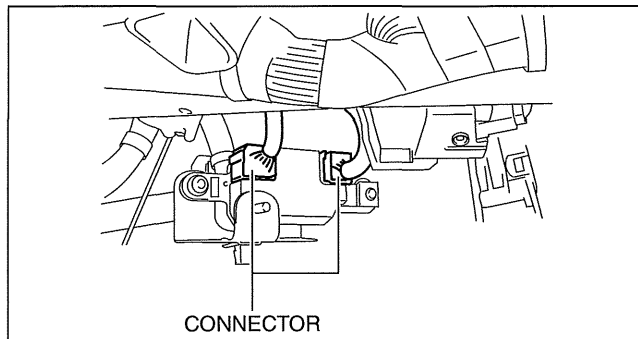
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Driver-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Driver-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (4) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (5) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (9) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (10) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (11) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
3. Remove the nut and clip.



am3uuw0000443

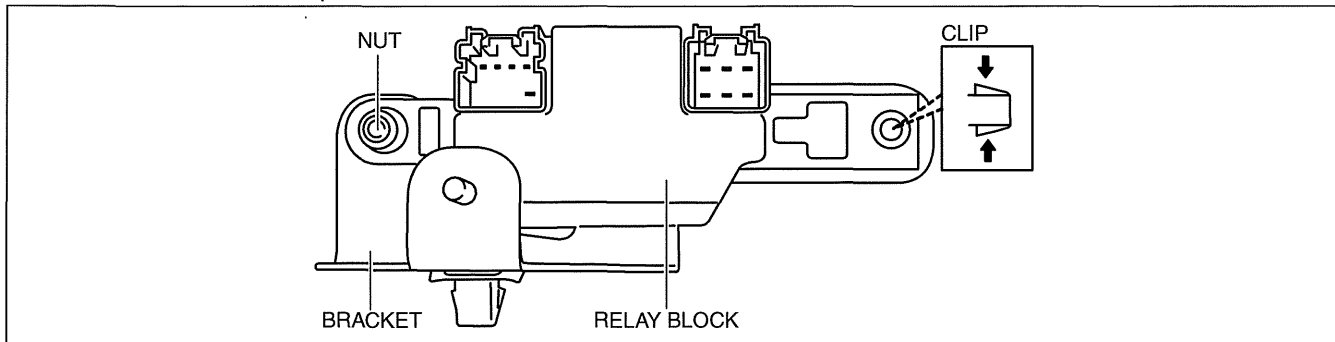
POWER SYSTEMS

4. Disconnect the connectors.



am3uuw0000443

5. Remove the nut and clip.



am3uuw0000443

6. Remove the relay block from the bracket.

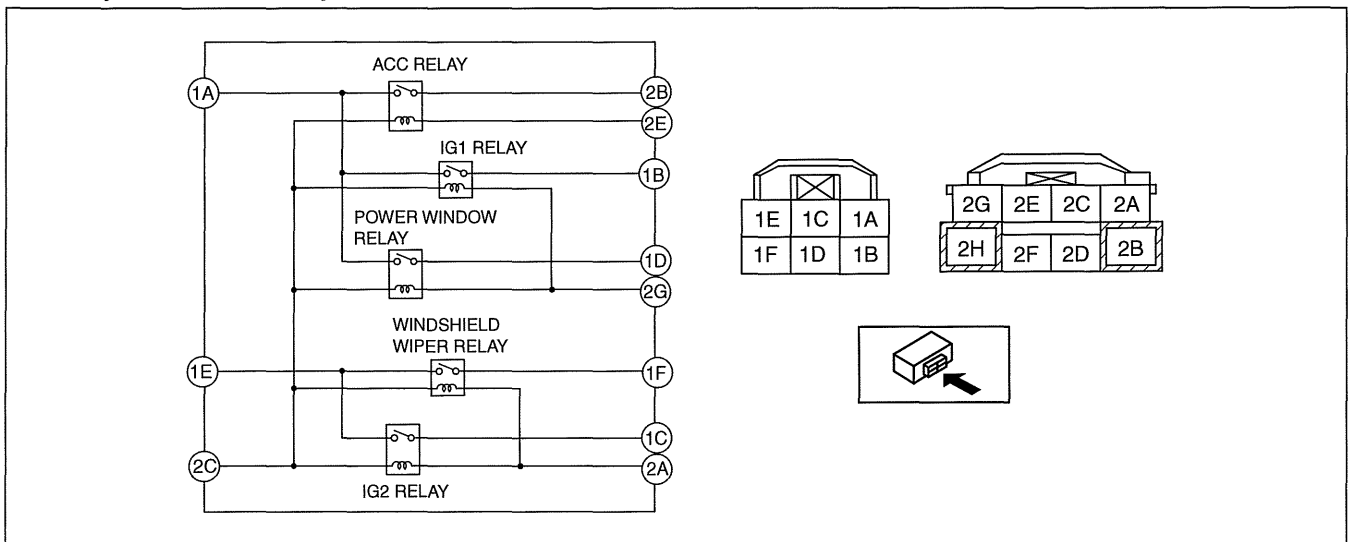
7. Install in the reverse order of removal.

POWER SYSTEMS

RELAY BLOCK INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921004927z5

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Driver-side front scuff plate (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Driver-side front side trim (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Hood release lever (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
 - (4) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (5) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (7) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (8) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (9) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
 - (10) Lower panel (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
 - (11) Knee bolster (See 09-17-36 KNEE BOLSTER REMOVAL/INSTALLATION.)
3. Remove the relay block. (See 09-21-3 RELAY BLOCK REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4. Verify that the continuity is as indicated in the table.



am3uuw0000251

- If not as indicated in the table, replace the relay block.

○—○ : Continuity

STEP	TERMINAL										
	2A	2G	2E	2C	1A	1E	1C	1F	1D	1B	2B
1	○—○	○—○	○—○	○—○							
2	B+			GND		○—○	○—○	○—○			
3		B+		GND	○—○				○—○	○—○	
4			B+	GND	○—○						○—○

am3uuw0000537

FUSE SERVICE CAUTIONS

id092100800400

Caution

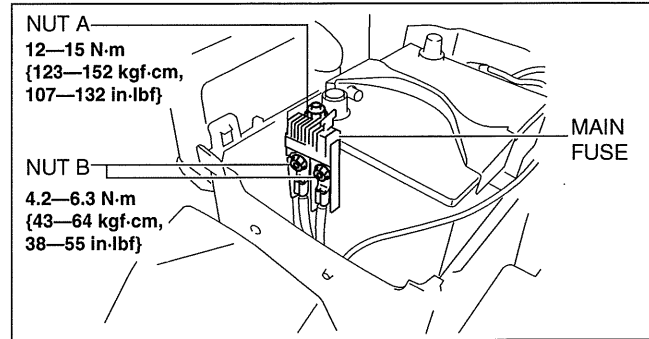
- If a fuse is burnt out, inspect the cause and repair the malfunctioning part, then replace the fuse with the specified value. If the fuse is replaced before doing this, it could burn again.

POWER SYSTEMS

MAIN FUSE REMOVAL/INSTALLATION

id092100801500

1. Disconnect the negative battery cable.
2. Remove nuts A and B shown in the figure.
3. Remove the main fuse.
4. Install in the reverse order of removal.

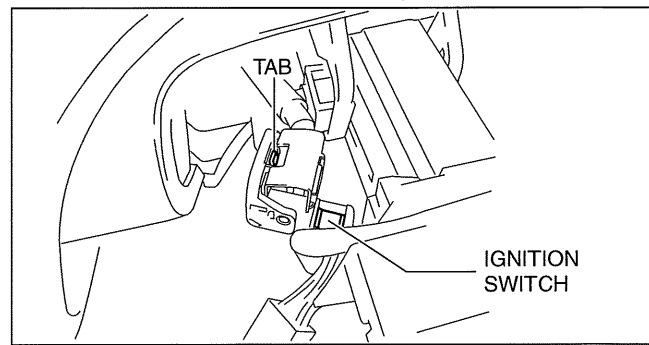


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IGNITION SWITCH REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

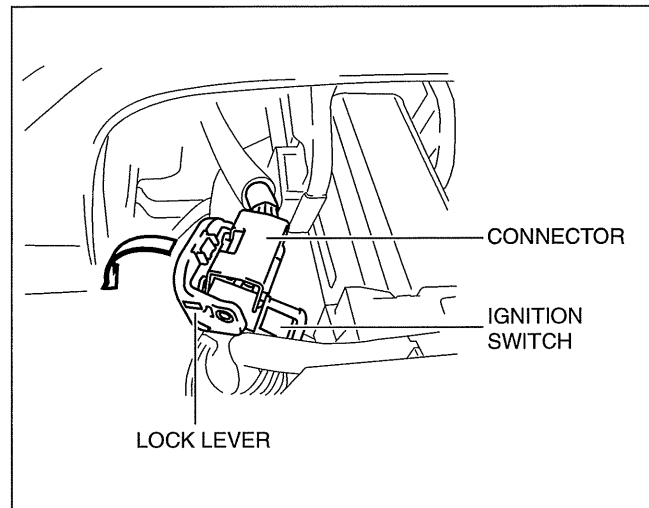
id0921008002z6

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Detach the tab.



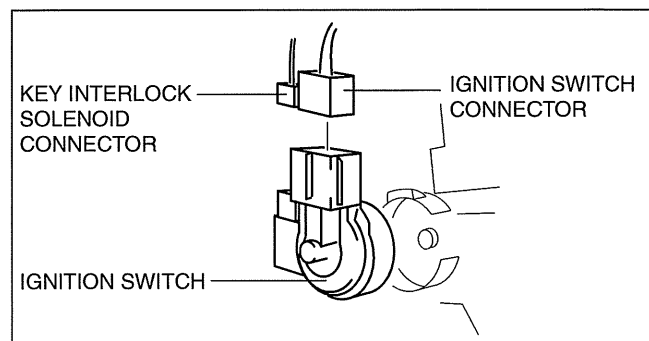
am3uuw0000361

4. Pull the pin in the direction of the arrow shown in the figure and release the lock.



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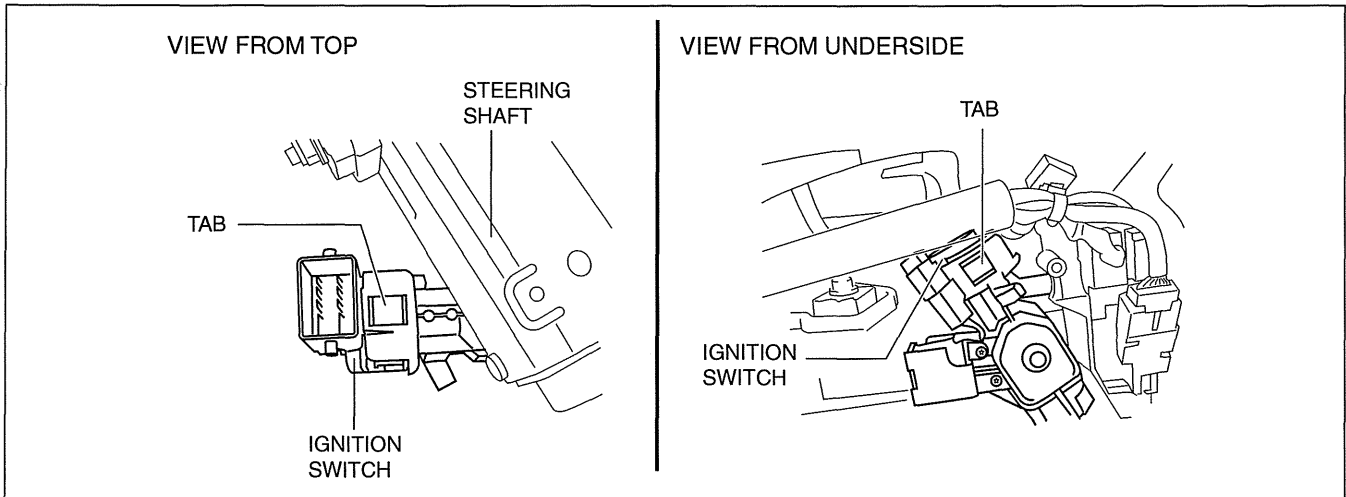
5. Disconnect the ignition switch connector and key interlock solenoid connector.



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POWER SYSTEMS

6. Remove the tabs.



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7. Remove the ignition switch from the steering shaft.
8. Install in the reverse order of removal.

IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

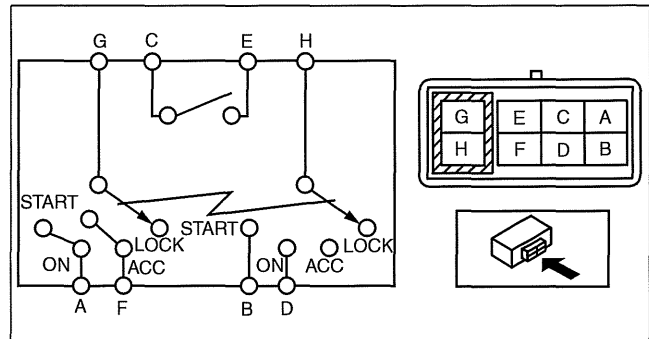
id0921008001z6

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Remove the ignition switch. (See 09-21-6 IGNITION SWITCH REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
4. Verify that the continuity between the ignition switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the ignition switch.

○—○: Continuity

Ignition key position	Terminal							
	A	B	C	D	E	F	G	H
LOCK								
ACC						○—○		
ON	○—○					○—○	○—○	
START	○—○						○—○	
Key inserted			○—○	○—○				
Key removed								

am3uuw00002049



am3uuw00004983

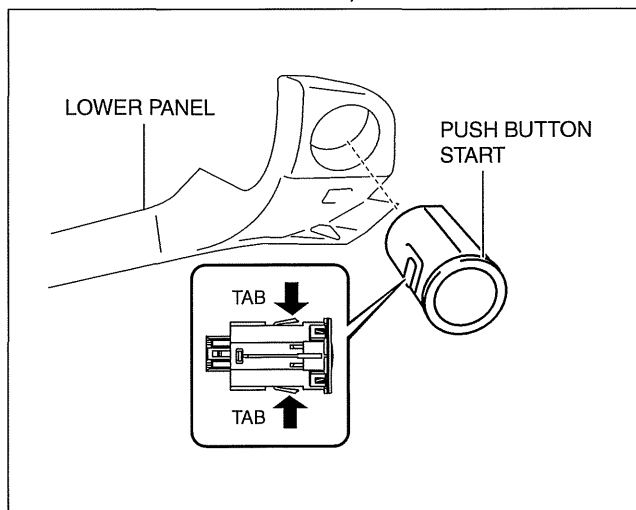
09-21

POWER SYSTEMS

PUSH BUTTON START REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921008022z5

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (Driver-side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Driver-side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Partially peel back the seaming welt.
5. Remove the lower panel. (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
6. Release the tabs and remove the push button start from the lower panel.
7. Install in the reverse order of removal.



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POWER SYSTEMS

PUSH BUTTON START INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921008023z5

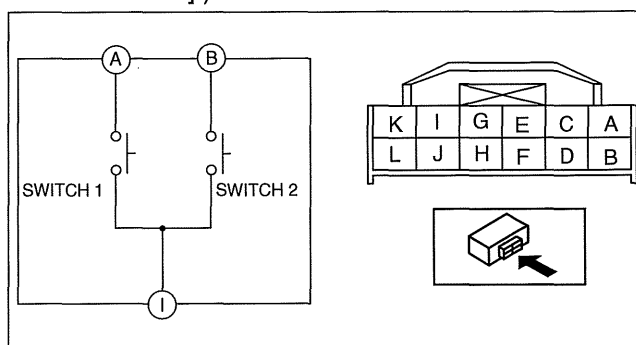
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Front scuff plate (Driver-side) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (Driver-side) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Partially peel back the seaming welt.
5. Remove the lower panel. (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
6. Remove the push button start. (See 09-21-8 PUSH BUTTON START REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM].)
7. Verify that the continuity is as indicated in the table.

- If not as indicated in the table, replace the push button start.

○—○: CONTINUITY

CONDITION	TERMINAL		
	A	B	I
BUTTON PRESSED	○—○	○—○	○—○
BUTTON RELEASED			

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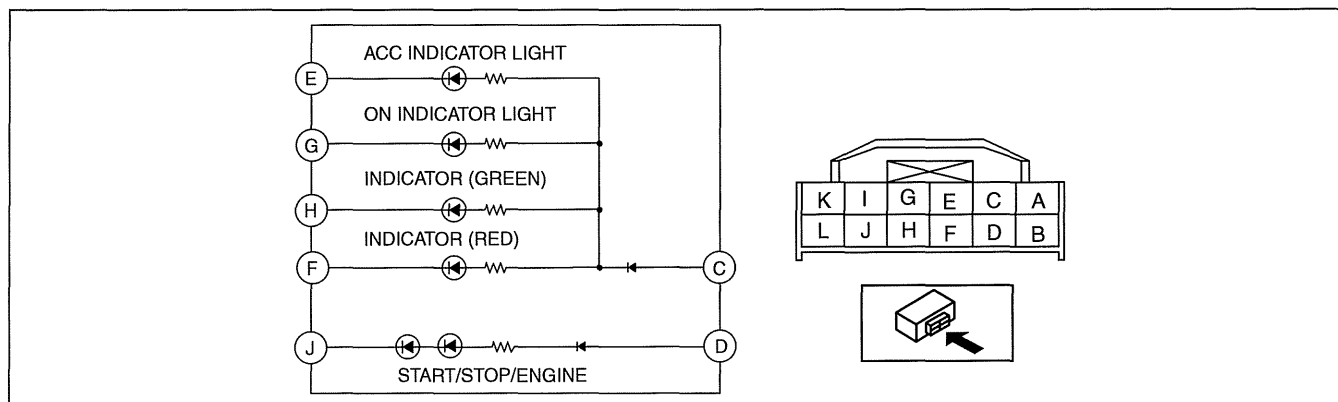
am6xuw00000001

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8. Apply battery positive voltage and connect the ground to the push button start terminals and verify that the LED illuminates.

- If the LEDs does not illuminate, replace the push button start.

Terminal		Illumination positions
B+	Ground	
C	E	ACC indicator light
C	G	ON indicator light
C	H	Indicator (Green)
C	F	Indicator (Red)
D	J	START/STOP/ENGINE



am6xuw00000001

POWER SYSTEMS

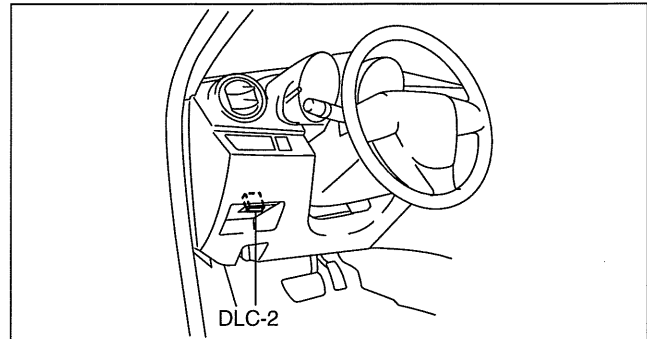
POWER SYSTEMS PERSONALIZATION FEATURES SETTING PROCEDURE

id092100468500

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the POWER SYSTEMS PERSONALIZATION FEATURES SETTING PROCEDURE.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Parameters".
 2. Select "RKE".
4. Select an item name, and then select option.



am3uuw0000359

M-MDS display	Function	Initial setting	Setting content	Control unit
ACC auto off	The function to automatically switch off the ignition after one hour has elapsed since the ignition was switched to ACC can be set to operable or inoperable.	Enabled	Disabled/ Enabled	Keyless control module
Power off mode	The transition pattern in which the ignition position is switched by pressing the push button start can be selected.	Direct	Direct/Stepwise	Keyless control module

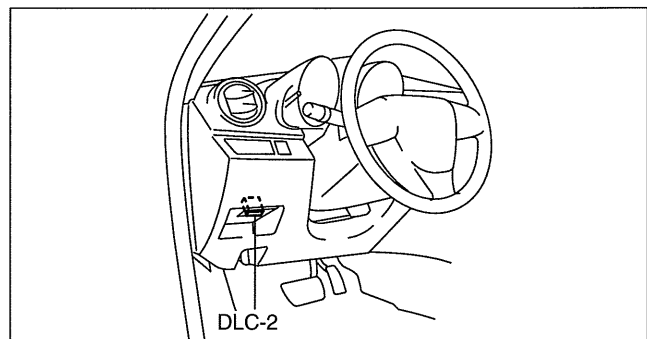
FORCED IGNITION ON [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

fd0921008025z5

Note

- In order to perform a forced ignition ON, the M-MDS is necessary. If the servicing is being done outside of an Authorized Mazda dealership, contact an Authorized Mazda dealership for instructions.
- The forced ignition ON procedure forces a power supply to each part when no power is available even after the ignition switch has been operated. However, the engine cannot be started and the steering cannot be unlocked.
- When performing a forced ignition ON procedure, remove all advanced keys from the vehicle. If an advanced key is left in the vehicle, the forced ignition ON procedure cannot be done.

1. Verify that there are no advanced keys in the vehicle.
2. Get PCM part number from As-built site.
3. Connect the M-MDS to the DLC-2.
4. Manual vehicle identification.
 - When using the IDS (laptop PC)
 1. Select "Manual Vehicle Entry".
 - When using the PDS (Pocket PC)
 1. Select "Vehicle ID button".
 2. Select "keyboard button".
5. Select the "All other" from Vehicle list.
6. Input the PCM part number on the following screen.



am3uuw0000262

POWER SYSTEMS

IDS (laptop PC) display

PCM Part Number -12A650/12K532-

Calibration Number

Tear Tag

Q W E R T Y U I O P 1 2 3
 A S D F G H J K L ← 4 5 6
 Z X C V B N M , . - 7 8 9
 0 #

am6xuw000002

PDS (Pocket PC) display

7. Select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Body".
 2. Select "Special Ignition ON".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
 2. Select "Special Ignition ON".
8. Perform the procedure according to the directions on the screen.
9. Delete session with keeping ignition ON.
10. Normal vehicle identification.

PCM Part Number

-12A650/12K532-

Calibration Number

Tear Tag

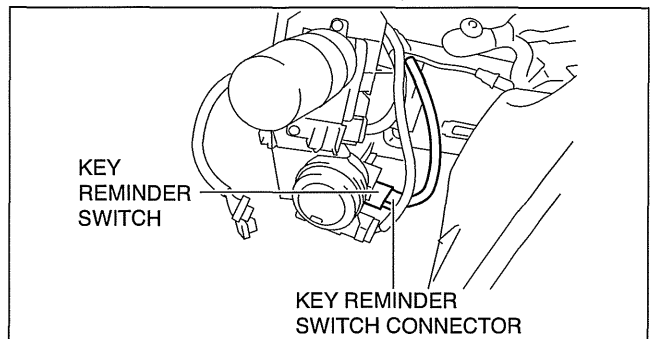
123 1 2 3 4 5 6 7 8 9 0 - = ←
 Tab q w e r t y u i o p []
 CAP a s d f g h j k l ; "
 Shift z x c v b n m , . / ←
 Ctl áü ` \ ↓ ↑ ← →

am6xuw0000185

KEY REMINDER SWITCH INSPECTION

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Disconnect the key reminder switch connector.

id092100801100



am3uuw0000443

09-21

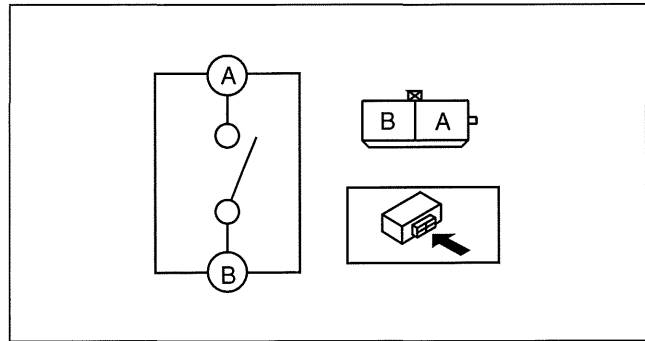
POWER SYSTEMS

4. Verify that the continuity between the key reminder switch terminals is as indicated in the table.
- If not as indicated in the table, replace the key reminder switch.

○—○ : CONTINUITY

KEY POSITION	TERMINAL	
	A	B
KEY INSERTED	○—○	○—○
KEY REMOVED		

am2zzw00001943

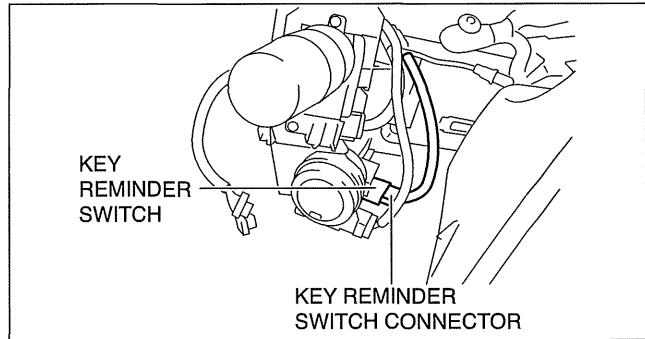


adejjw00000710

KEY REMINDER SWITCH REMOVAL/INSTALLATION

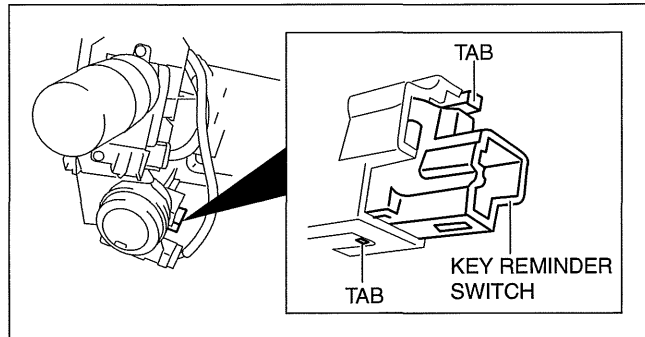
id092100801000

1. Disconnect the negative battery cable.
2. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
3. Disconnect the key reminder switch connector.



am3uuw0000443

4. Detach the key reminder switch tabs.
5. Remove the key reminder switch.
6. Install in the reverse order of removal.



am3uuw0000557

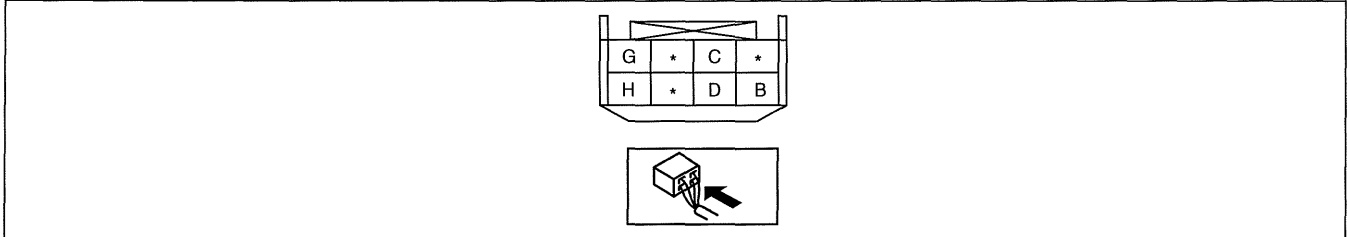
POWER SYSTEMS

STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND PUSH BUTTON START SYSTEM]

id0921008005z5

1. Remove the column cover. (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
2. Measure each terminal voltage under the measurement condition.
 - If the voltage is not as specified in the terminal voltage table, inspect the parts under "Inspection item(s)".
3. If the system does not work normally even though the inspection items are normal, replace the steering lock unit.

Terminal Voltage Table (Reference)



am3uuw0000289

Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item(s)
A	—	—	—	—	—
B	Power supply	Keyless control module	Steering lock unit is operating	B+	<ul style="list-style-type: none"> • Keyless control module • Related wiring harness
			Except above	1.0 or less	
C	Steering lock unit ground	Keyless control module	Steering lock unit is operating (lock operating only)	1.0 or less	<ul style="list-style-type: none"> • Keyless control module • Related wiring harness
			Except above	1.0 or more	
D	UNLOCK output	Keyless control module	Steering wheel is locked	B+	<ul style="list-style-type: none"> • Keyless control module • Related wiring harness
			Steering wheel is unlocked	1.0 or less	
E	—	—	—	—	—
F	—	—	—	—	—
G	Serial communication	Keyless control module	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
H	Ground	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness

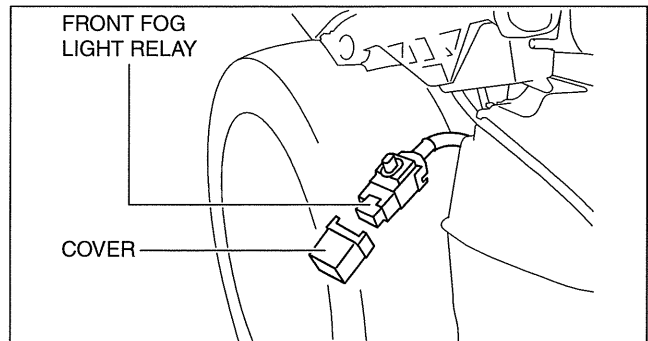
09-21

POWER SYSTEMS

FRONT FOG LIGHT RELAY REMOVAL/INSTALLATION

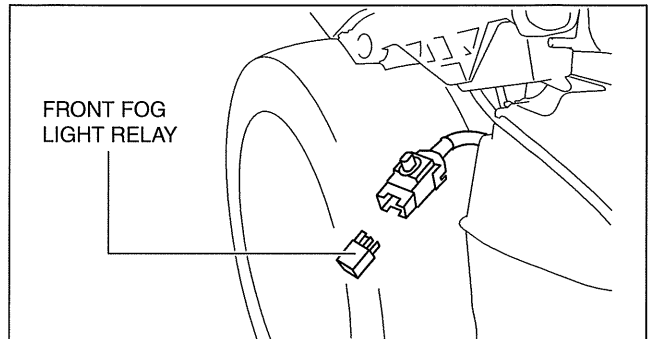
id092100665400

1. Disconnect the negative battery cable.
2. Remove the front mudguard.(RH only) (See 09-16-17 FRONT MUDGUARD REMOVAL/INSTALLATION.)
3. Remove the cover.



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4. Remove the front fog light relay.
5. Install in the reverse order of removal.



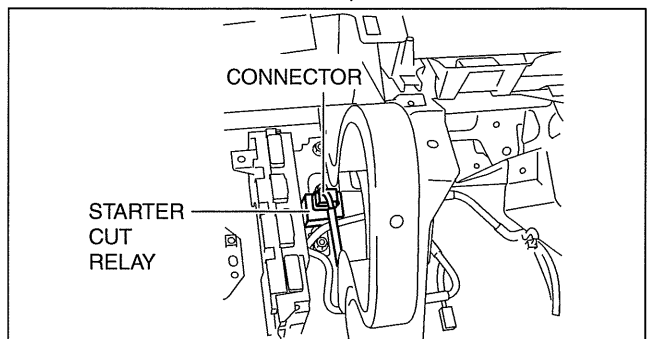
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STARTER CUT RELAY REMOVAL/INSTALLATION [MTX]

id0921004186a2

Advanced Keyless Entry And Push Button Start System Only

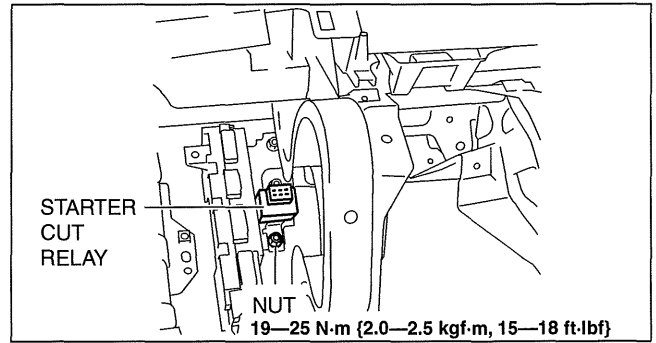
1. Disconnect the negative battery cable.
2. Remove the following parts:
 1. Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 2. Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 3. Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 4. Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Remove the lower panel. (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
5. Disconnect the connector.



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POWER SYSTEMS

6. Remove the nut.
7. Remove the starter cut relay.
8. Install in the reverse order of removal.



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STARTER CUT RELAY INSPECTION [MTX]

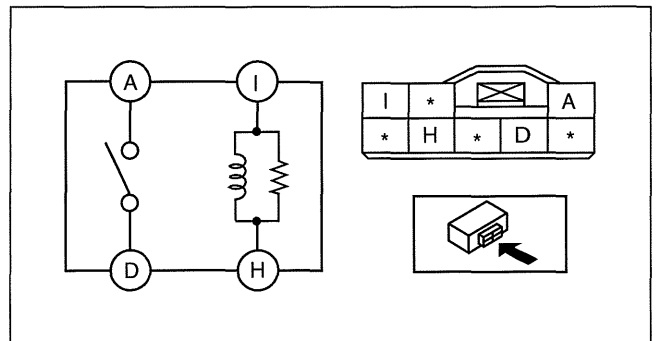
id0921004651a2

1. Disconnect the negative battery cable.
2. Remove the following parts:
 1. Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 2. Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 3. Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 4. Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
3. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4. Remove the lower panel. (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
5. Remove the starter cut relay. (See 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX].)
6. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	I	H	A	D
1	○—○			
2	B+	GROUND	○—○	

am3uuw00005020



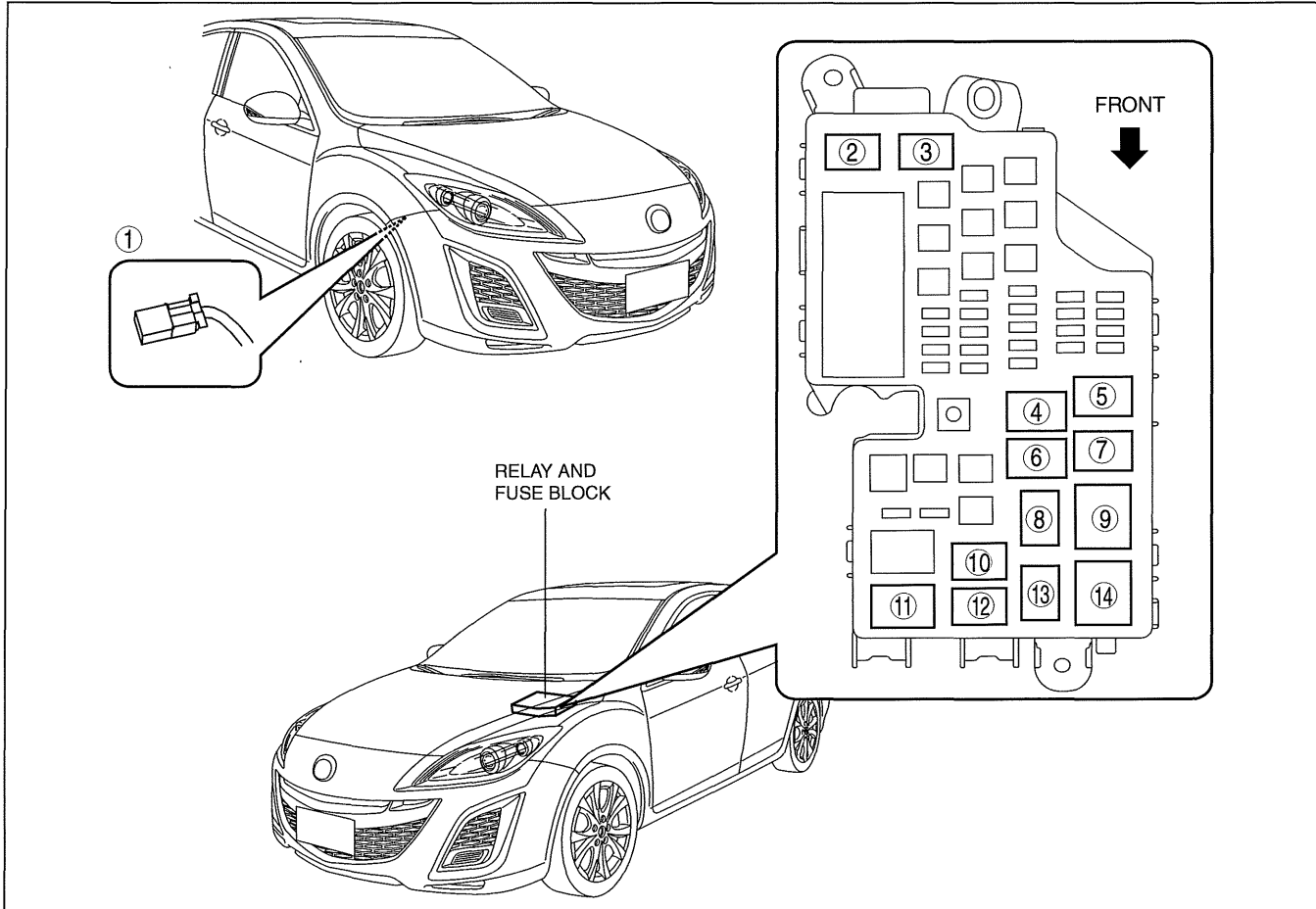
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POWER SYSTEMS

RELAY LOCATION

id092100800600



am3uun0000111

1	Front fog light relay
2	Fuel injector relay (L3 WITH TC)
3	Headlight relay (LO)
4	AT main relay (LF, L5) Fuel pump speed control relay (L3 WITH TC)
5	Headlight relay (HI)
6	Fuel pump relay
7	DRL relay

8	Starter relay
9	Blower relay
10	Horn relay
11	TNS relay
12	Rear window defroster relay
13	A/C relay
14	Main relay

POWER SYSTEMS

RELAY INSPECTION

id092100800300

Relay Type

Connector type	Part name
Type A	<ul style="list-style-type: none"> • Front fog light relay • Headlight relay (HI) • Headlight relay (LO) • Horn relay • TNS relay • A/C relay • AT main relay (LF, L5) • Starter relay • Rear window defroster relay
Type B	DRL relay
Type C	<ul style="list-style-type: none"> • Fuel pump relay • Fuel injector relay (L3 WITH TC) • Fuel pump speed control relay (L3 WITH TC)
Type D	Blower relay
Type E	Main relay

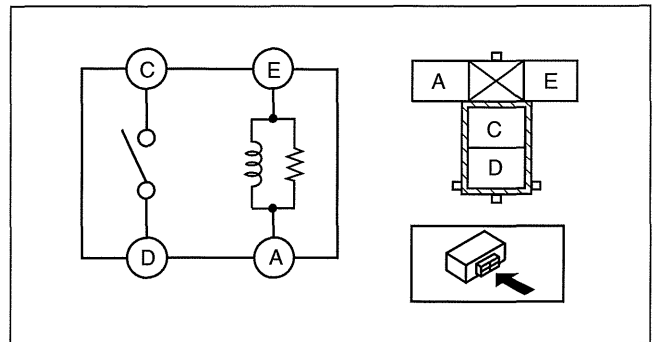
Type A

- Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	E	A	C	D
1	○—○			
2	B+	GROUND	○—○	

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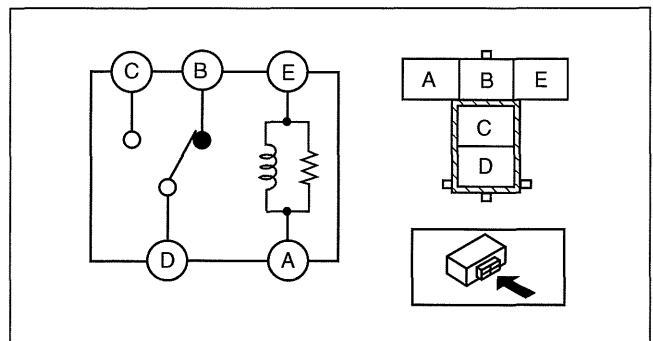
Type B

- Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL				
	E	A	B	C	D
1	○—○		○—○		○—○
2	B+	GROUND		○—○	

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am3uuw0000593

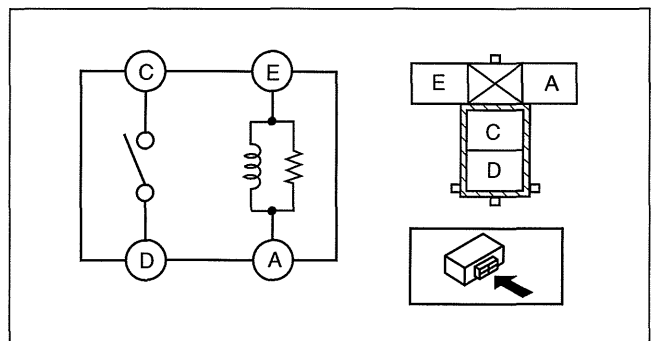
Type C

- Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	E	A	C	D
1	○—○			
2	B+	GROUND	○—○	

am2zzw00001954



am2zzw0000262

POWER SYSTEMS

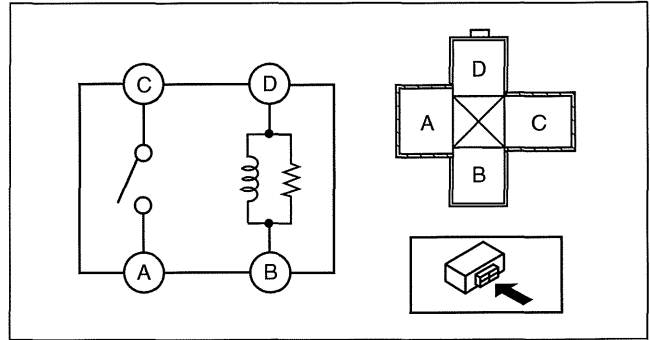
Type D

- Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	D	B	A	C
1	○—○			
2	B+	GROUND	○—○	

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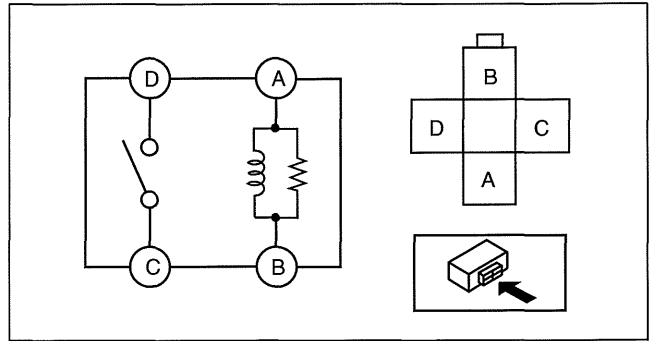
Type E

- Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	A	B	C	D
1	○—○			
2	B+	GROUND	○—○	

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am6zzw0000067

09-22 INSTRUMENTATION/DRIVER INFO.

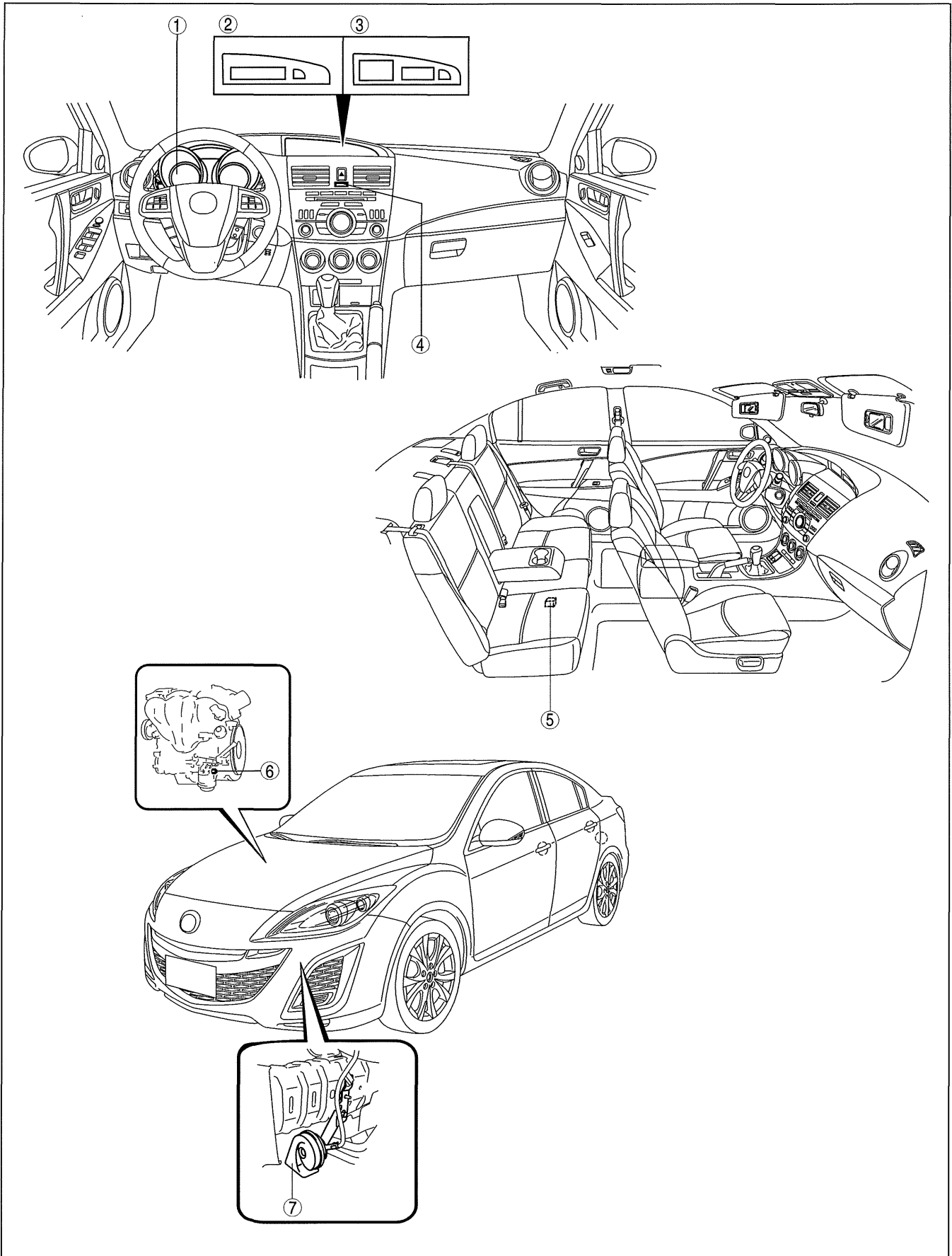
INSTRUMENTATION/DRIVER
INFO. LOCATION INDEX 09-22-2
INSTRUMENT CLUSTER
REMOVAL/INSTALLATION..... 09-22-3
INSTRUMENT CLUSTER
DISASSEMBLY/ASSEMBLY..... 09-22-5
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INSPECTION..... 09-22-8
 Speedometer..... 09-22-8
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id092200801000



am3uuw00002888

INSTRUMENTATION/DRIVER INFO.

1	Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION) (See 09-22-5 INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY) (See 09-22-8 INSTRUMENT CLUSTER INSPECTION.) (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.) (See 09-22-11 INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE.)
2	Information display (See 09-22-13 INFORMATION DISPLAY REMOVAL/INSTALLATION.) (See 09-22-14 INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE.)

3	Multi information display (See 09-22-18 MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION.) (See 09-22-19 MULTI INFORMATION DISPLAY INSPECTION.) (See 09-22-19 MULTI INFORMATION DISPLAY CONFIGURATION.)
4	Clock switch (See 09-22-21 CLOCK SWITCH REMOVAL/INSTALLATION.) (See 09-22-21 CLOCK SWITCH INSPECTION.)
5	Fuel gauge sender unit (See 09-22-12 FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.) (See 09-22-12 FUEL GAUGE SENDER UNIT INSPECTION.)
6	Oil pressure switch (See 09-22-12 OIL PRESSURE SWITCH INSPECTION.)
7	Horn (See 09-22-13 HORN REMOVAL/INSTALLATION.)

INSTRUMENT CLUSTER REMOVAL/INSTALLATION

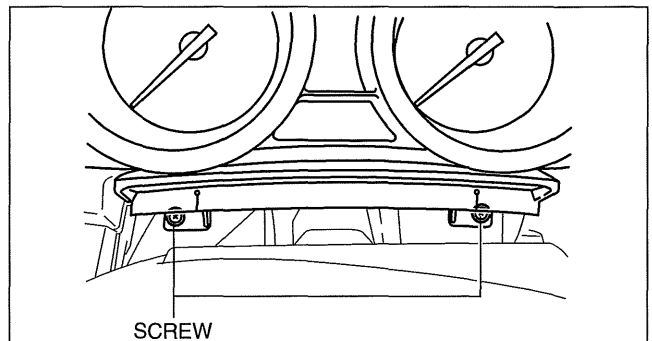
id092200800500

Caution

- When replacing the instrument cluster, the configuration procedure must be performed before removing the instrument cluster. Replacing the instrument cluster without performing the configuration procedure will result in system malfunction.

09-22

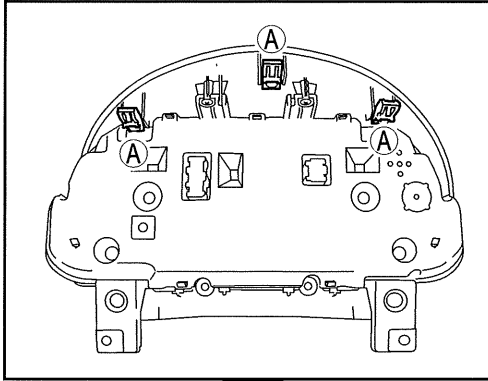
1. Perform the instrument cluster configuration when replacing it. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)
2. Disconnect the negative battery cable.
3. Remove the column cover. (upper) (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
4. Remove the screws.
5. Pull the instrument cluster outward and remove it



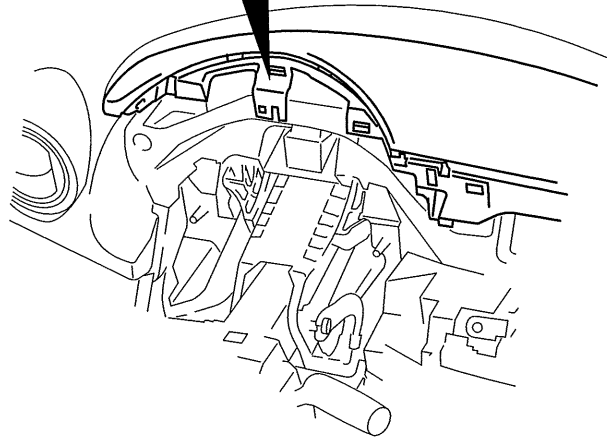
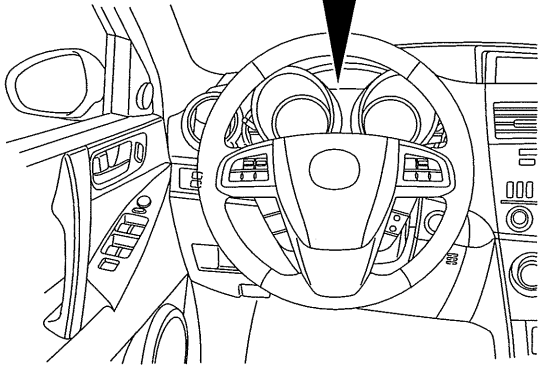
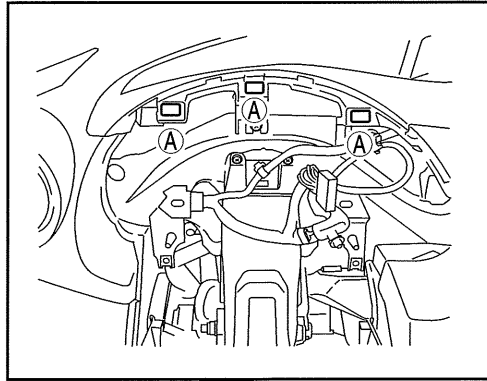
am3uuw0000478

INSTRUMENTATION/DRIVER INFO.

INSTRUMENT CLUSTER SIDE

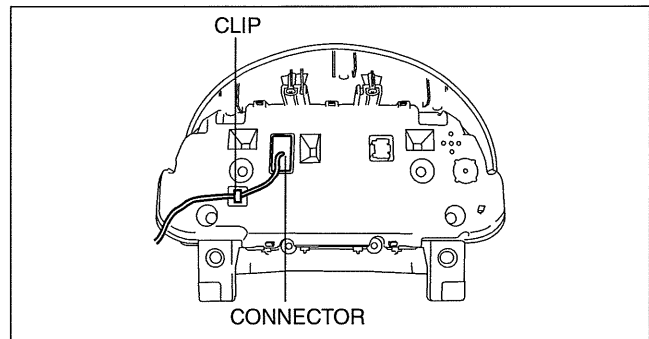


DASHBOARD SIDE



am3uuw0000435

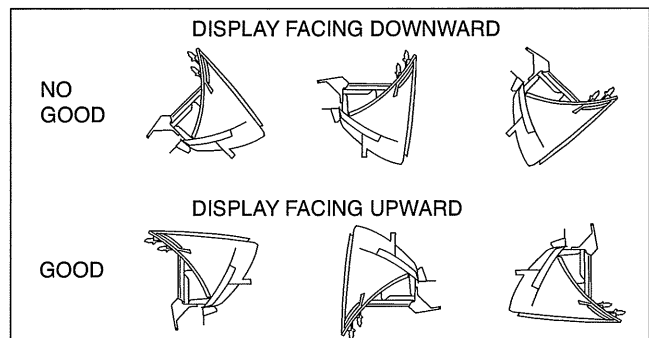
6. Disconnect the connector.
7. Remove the clip.
8. Install in the reverse order of removal.
9. Program the immobilizer system-related parts when replacing the instrument cluster. (With keyless entry system) (See 09-14-88 IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [KEYLESS ENTRY SYSTEM].)



am3uuw0000446

Caution

- The removed instrument cluster should be placed with the display side up to prevent grease from leaking from the meters.



am3uuw0000295

INSTRUMENTATION/DRIVER INFO.

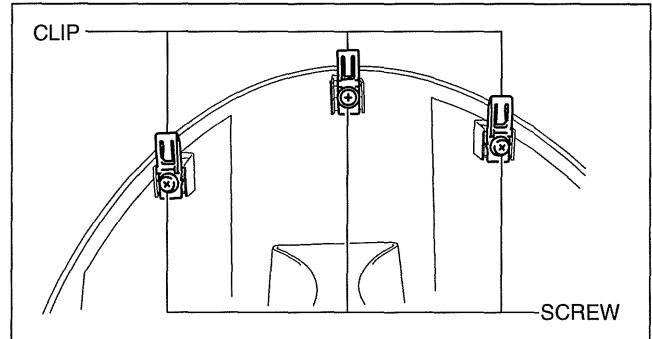
INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY

id092200801600

Caution

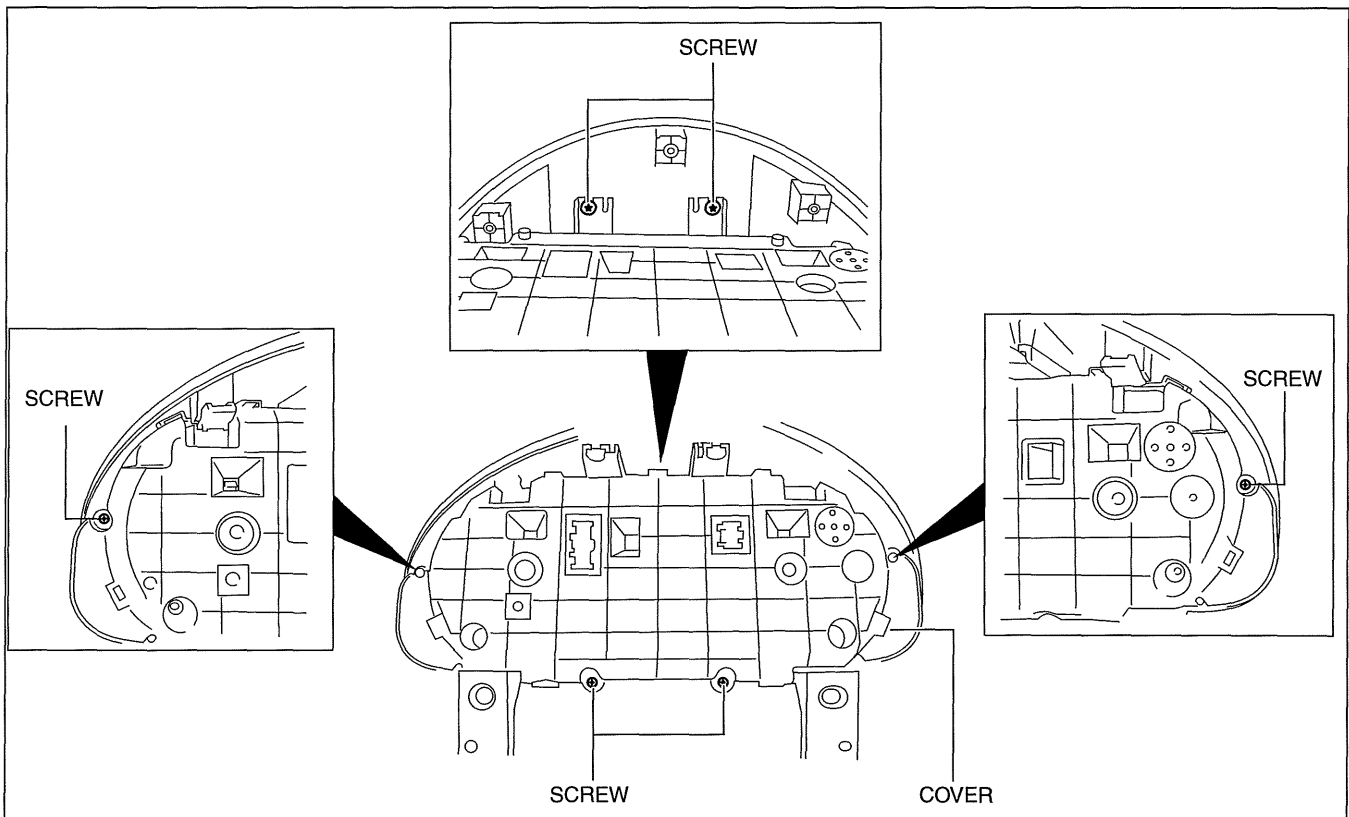
- Do not drop the instrument cluster or damage the printed board. This will lead to a system malfunction.

1. Perform the instrument cluster configuration when replacing it. (See 09-22-10 INSTRUMENT CLUSTER CONFIGURATION.)
2. Disconnect the negative battery cable.
3. Remove the column cover. (upper) (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
4. Remove the instrument cluster. (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
5. Remove the screws and clips.



am3uuw0000259

6. Remove the screws.



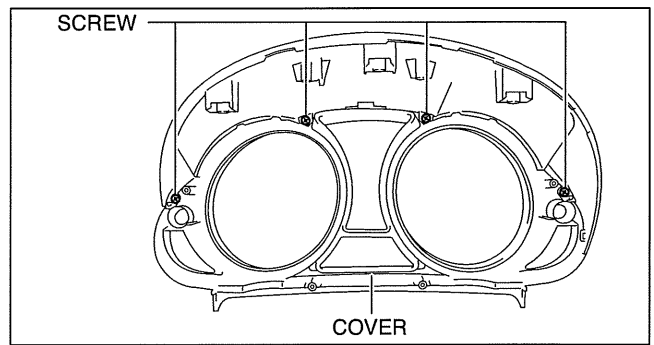
am3uuw0000259

7. Remove the cover.

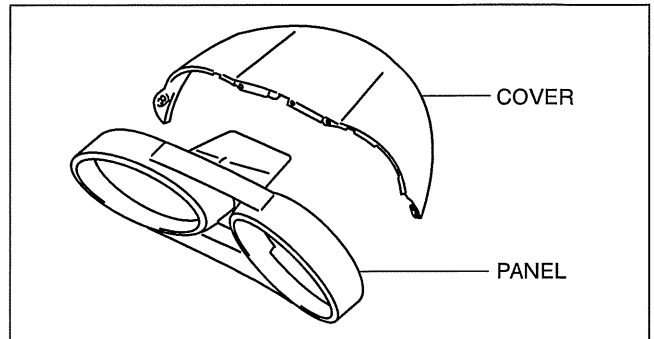
09-22

INSTRUMENTATION/DRIVER INFO.

8. Remove the screws from the cover.

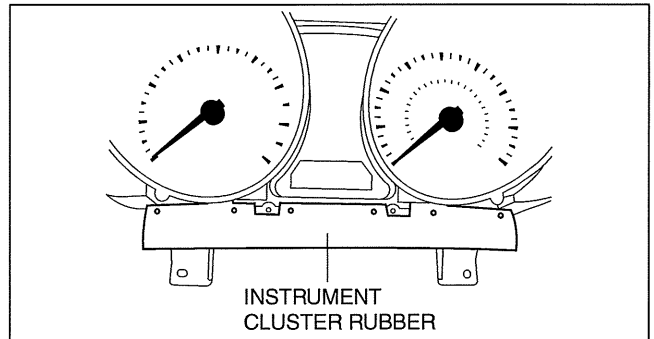


am3uuw0000260



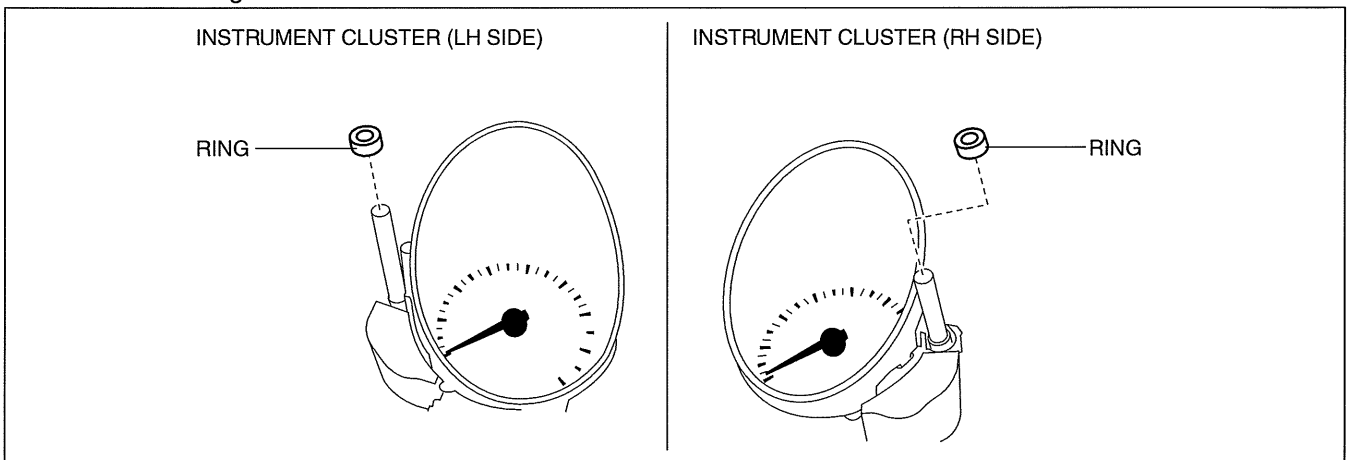
am3uuw0000260

9. Remove the instrument cluster rubber.



am3uuw0000426

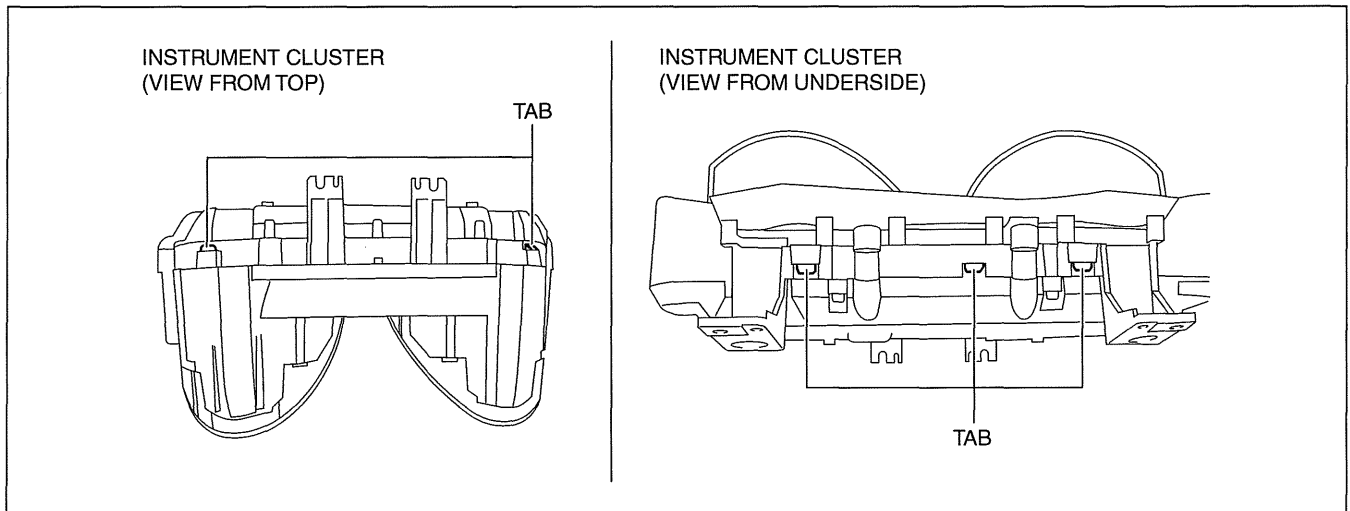
10. Remove the rings.



am3uuw0000426

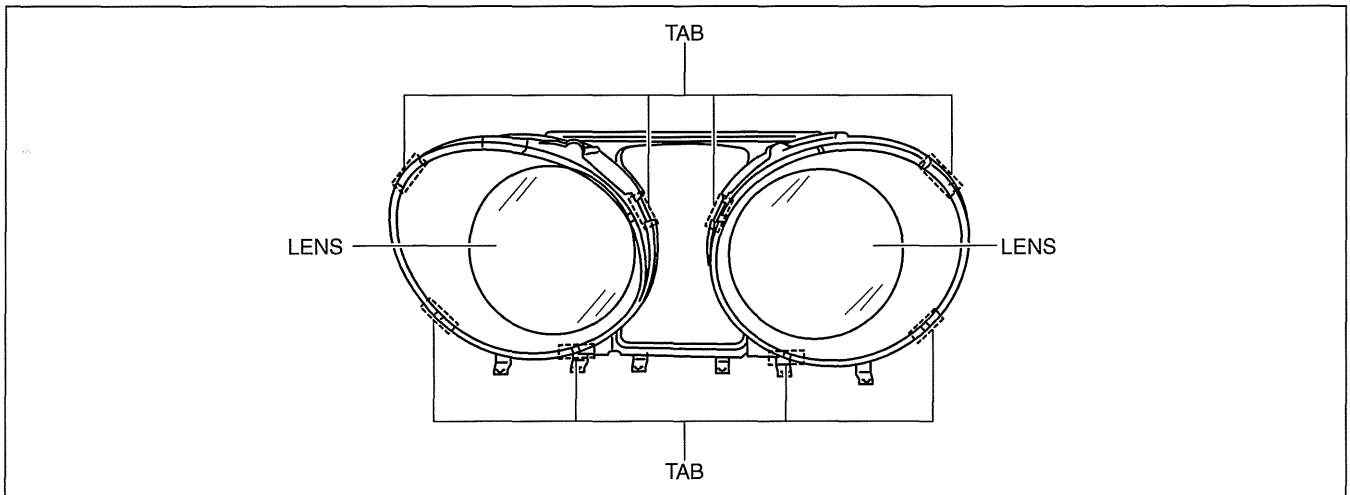
INSTRUMENTATION/DRIVER INFO.

11. Detach the tabs



am3uuw0000426

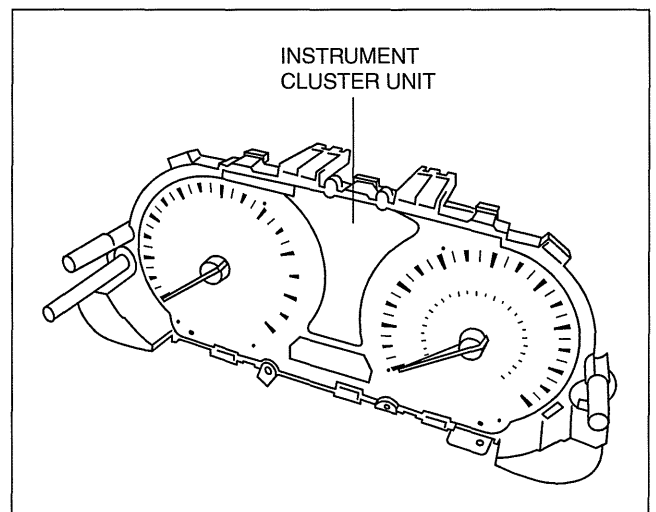
12. Detach the tabs.



am3uuw0000443

13. Remove the lens.

14. Assemble in the reverse order of disassembly.



am3uuw0000426

09-22

INSTRUMENTATION/DRIVER INFO.

INSTRUMENT CLUSTER INSPECTION

id092200800400

Speedometer

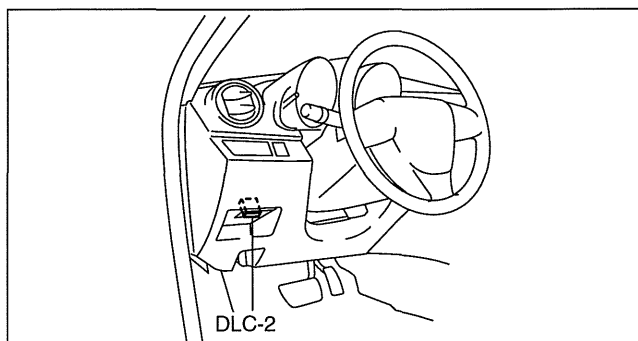
Using a speedometer tester

1. Adjust the tire pressure to the specification.
2. Using a speedometer tester, verify that the tester reading is as indicated in the table below.
3. Verify that the speedometer reading is within the range indicated in the table.
 - If the speedometer does not move or the indication is not within the allowable range, inspect the PCM, ABS HU/CM (with ABS) or DSC HU/CM (with DSC), and related wiring harnesses.
 - If the PCM, ABS HU/CM (with ABS) or DSC HU/CM (with DSC), and related wiring harnesses are normal, replace the instrument cluster.

Speedometer tester indication (km/h)	Allowable range (km/h)	Speedometer tester indication (mph)	Allowable range (mph)
20	17—23	10	9—11
40	36—44	20	18—22
60	54—66	30	27—33
80	72—88	40	36—44
100	90—110	50	45—55
120	108—132	60	54—66
140	126—154	70	63—77

Using the M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Verify that it is displayed according to the table using "SPDMTR".
 - If the speedometer does not move or the indication is not within the allowable range, inspect the related wiring harnesses.
 - If the related wiring harnesses are normal, replace the instrument cluster.



am3uuw0000254

M-MDS display	Instrument cluster display
60 km/h	Speedometer gauge needle moves to approx. 60 km/h
120 km/h	Speedometer gauge needle moves to approx. 120 km/h
Off	Speedometer gauge needle moves to 0 km/h

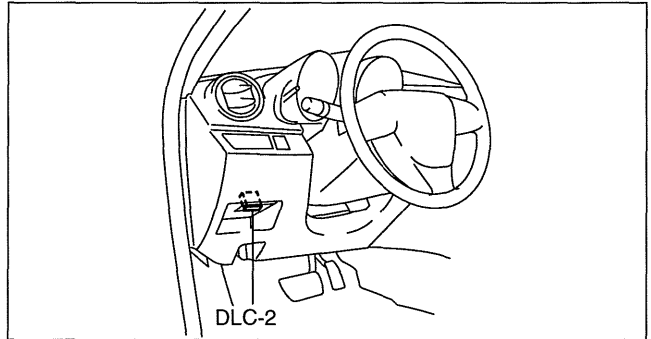
INSTRUMENTATION/DRIVER INFO.

Tachometer

Caution

- If the engine speed exceeds the allowable range, the engine could be damaged. Therefore, when inspecting the tachometer, do not allow the engine speed to exceed the allowable range indication on the tachometer.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Verify that it is displayed according to the table using "TACHOMTR".
 - If the tachometer does not move or the indication is not within the allowable range, inspect the related wiring harnesses.
 - If the related wiring harnesses are normal, replace the instrument cluster.



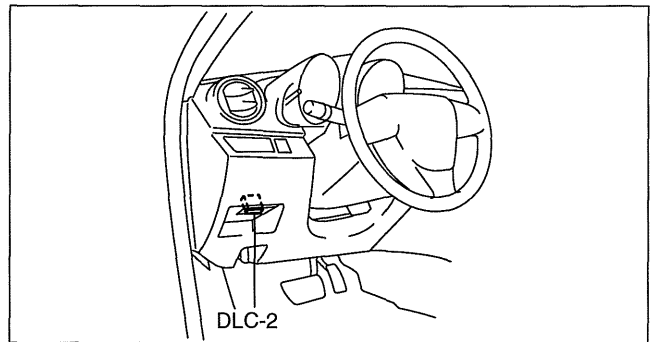
am3uuw0000254

M-MDS display	Instrument cluster display
3000 RPM	Tachometer gauge needle moves to approx. 3,000 rpm
6000 RPM	Tachometer gauge needle moves to approx. 6,000 rpm
Off	Tachometer gauge needle moves to 0 rpm

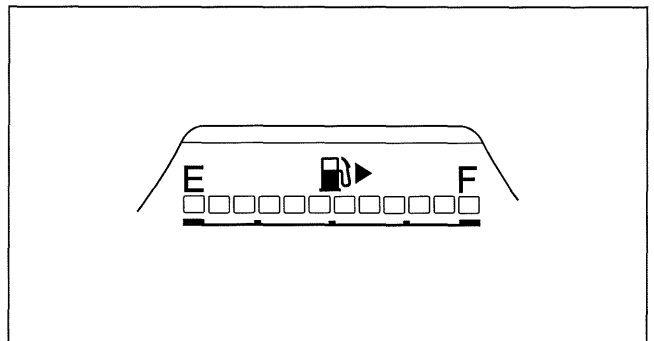
09-22

Fuel gauge

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Verify that it is displayed according to the table using "LCD_SEG".
 - If any of the segments are not displayed, replace the instrument cluster.



am3uuw0000254

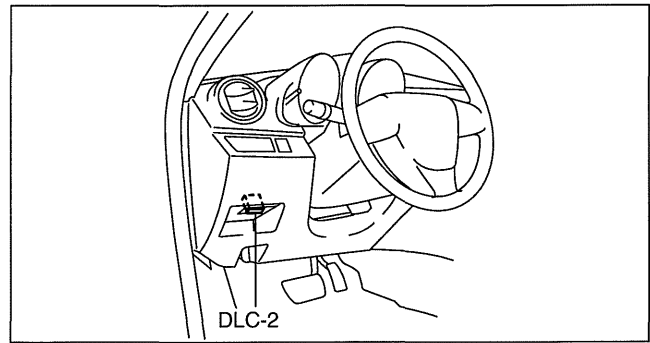


am3uuw0000457

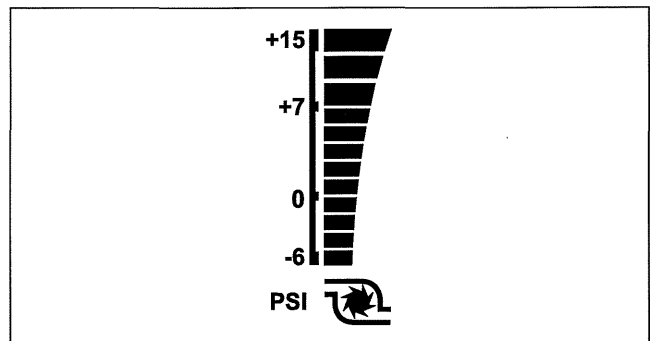
INSTRUMENTATION/DRIVER INFO.

Boost gauge

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
 - When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".
3. Verify that it is displayed according to the table using "LCD_SEG".
 - If any of the segments are not displayed, replace the instrument cluster.



am3uuw0000254



am3uuw0000574

INSTRUMENT CLUSTER CONFIGURATION

id092200800300

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the INSTRUMENT CLUSTER CONFIGURATION.

Note

- If all the following conditions are met, the odometer data (total traveled distance) in the previous instrument cluster is automatically transferred to a new instrument cluster during the configuration. If any of the conditions are not met, odometer-data transfer cannot be performed.

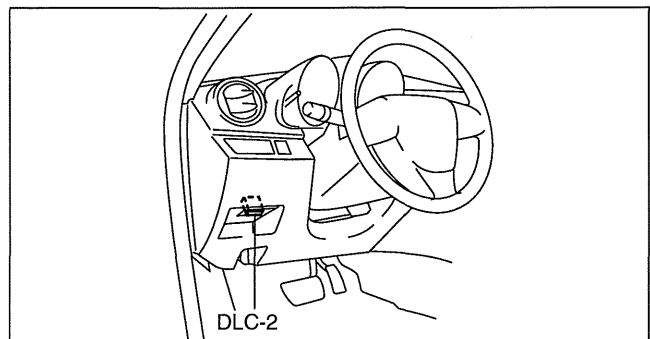
Previous instrument cluster

- No malfunction (Configuration data can be read using the M-MDS.)

New instrument cluster

- Odometer display is less than 100 km
- Odometer has no malfunction

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "IC".
4. Perform the configuration according to the directions on the screen.
 - If odometer data is to be transferred to a new instrument cluster, perform the following procedure:
 1. Select "Programmable Parameters" from the menu.
 2. Select "Odometer Write", and perform the procedure following the screen.



am3uuw0000262

INSTRUMENTATION/DRIVER INFO.

Note

- During the odometer data writing procedure, As-Built Data (VIN and Vehicle Data) input is requested. Obtain the As-Built Sheet for the vehicle, and input the necessary data.

- Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See 09-02E-5 DTC TABLE [INSTRUMENT CLUSTER].)

INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE

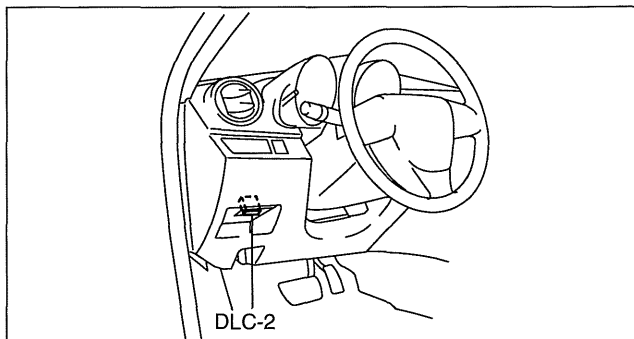
id092200889900

Instrument Cluster

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE.

- Connect the M-MDS to the DLC-2.
- After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - Select the "Module Programming".
- Then, select items from the screen menu in the following order.
 - Select "Programmable Parameters".
 - Select "Warning Lamps / Chimes".
- Select an item name, and then select option.



am3uuw0000359

09-22

M-MDS display	Function	Initial setting	Setting content	Control unit
Welcome Mode	The welcome mode can be set to operable or inoperable.	Disabled	Disabled/Enabled	Instrument cluster
Trip meter indication unit	Display unit can be selected.(Trip B only)	0.1	0.1/1	Instrument cluster
Driver belt minder status	The driver seat belt minder can be set to operable or inoperable.	Disabled	Disabled / Enabled	Instrument cluster
Key reminder buzzer volume	The key reminder warning alarm can be adjusted.	Low	Low/ Loud	Instrument cluster
Light reminder buzzer volume	The headlights-on reminder warning alarm can be adjusted.	Equipped with Auto light	Equipped with Auto light/ No alarm/ Low/ Loud	Instrument cluster
Turn signal buzzer volume	The turn indicator alarm sound volume can be adjusted.	Not equipped	Not equipped/ Low /Loud	Instrument cluster

Multi Information Display

- Press the INFO switch until the SETTINGS screen is displayed.
- Select PREFERENCES by pressing the Enter (up/down) switch up or down, and then press the Enter (up/down) switch.
- Select the setting item you want to change by pressing the Enter (up/down) switch up or down, and then press the Enter (up/down) switch.
- Select the desired setting by pressing the Enter (up/down) switch up or down, and then press the Enter (up/down) switch.

Multi information display	Function	Initial setting	Setting content	Control unit
Distance unit	Display unit can be selected.	mile	km/mile	Multi information display
Temperature unit	Display unit can be selected.	°F	°F/°C	Multi information display
Display language	Display language can be selected.	English	English/French/ German/Italian/ Spanish	Multi information display

INSTRUMENTATION/DRIVER INFO.

FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION

id092200801800

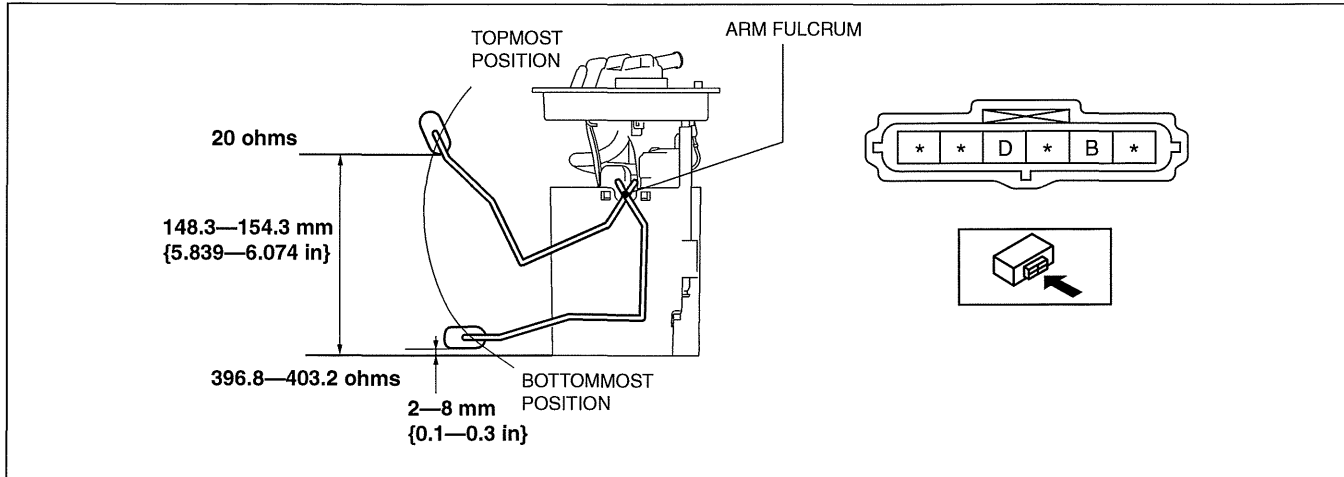
Note

- Fuel pump unit cannot disassemble.

FUEL GAUGE SENDER UNIT INSPECTION

id092200801800

- Disconnect the negative battery cable.
- Remove the rear seat cushion. (See 09-13-37 REAR SEAT CUSHION REMOVAL/INSTALLATION.)
- Remove the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5].) (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].)
- Move the float to the topmost and bottommost positions, and verify that the resistance between terminals B and D of the fuel gauge sender unit and the position of the float are as shown in the figure.



am3uuw0000261

- If they are not as shown in the figure, replace the fuel pump unit. (See 01-14A-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [LF, L5]) (See 01-14B-13 FUEL PUMP UNIT REMOVAL/INSTALLATION [L3 WITH TC].)

OIL PRESSURE SWITCH INSPECTION

id092200801200

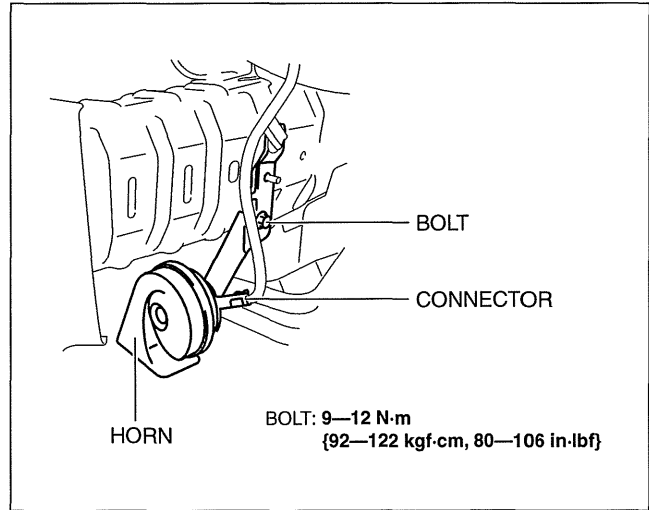
- Verify that the oil pressure warning light illuminates when the ignition is switched to ON.
- Verify that the oil pressure warning light goes out when the engine is started.
 - If the oil pressure warning light does not illuminate or remains illuminated, inspect the related wiring harness.
 - If the related wiring harness are normal, inspect the oil pressure. (See 01-11A-5 OIL PRESSURE INSPECTION [LF, L5].) (See 01-11B-4 OIL PRESSURE INSPECTION [L3 WITH TC].)
 - If the oil pressure is normal, replace the oil pressure switch.

INSTRUMENTATION/DRIVER INFO.

HORN REMOVAL/INSTALLATION

id092200800900

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See 09-10-16 FRONT BUMPER REMOVAL/INSTALLATION.)
3. Disconnect the connector.
4. Remove the bolt.
5. Remove the horn.
6. Install in the reverse order of removal.

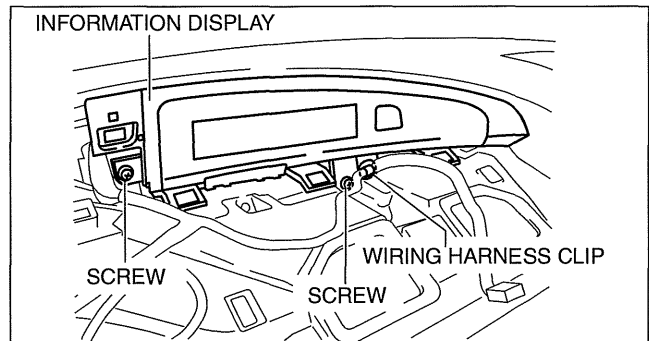


am3uuw0000259

INFORMATION DISPLAY REMOVAL/INSTALLATION

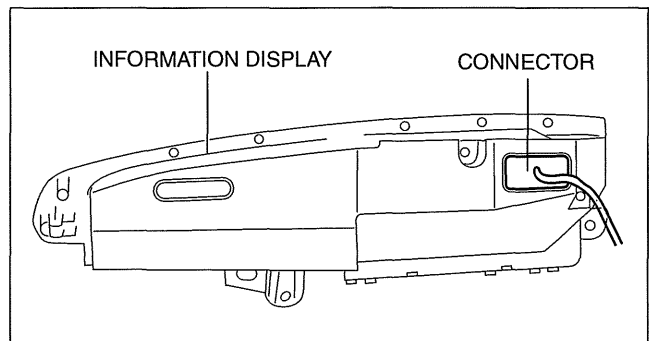
id092200801400

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (5) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (6) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (7) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
3. Remove the screws and wiring harness clip.
4. Remove the information display.



am3uuw0000463

5. Disconnect the connector.
6. Install in the reverse order of removal.



am3uuw0000501

09-22

INSTRUMENTATION/DRIVER INFO.

INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE

id092200801300

Note

- In this mode, it is possible to verify the items in the following chart.

Check Code Table

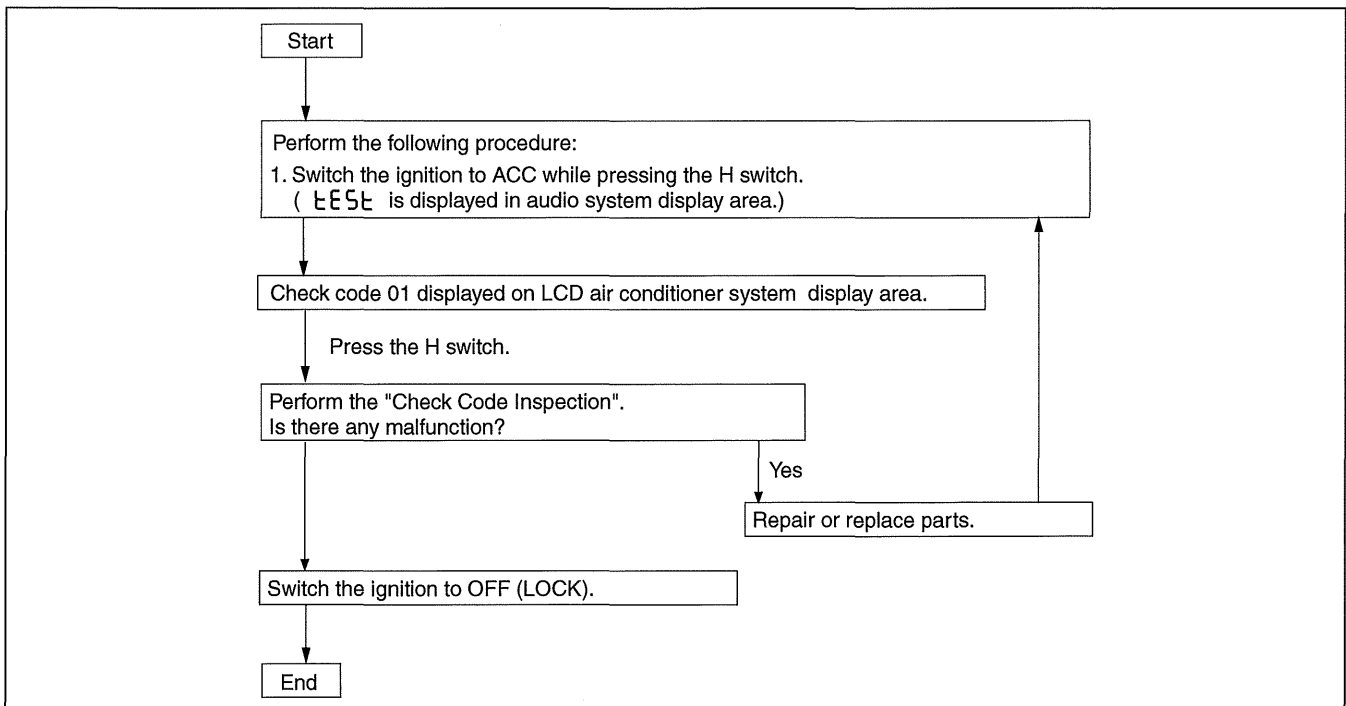
Check code	Check item	Related items
01	<ul style="list-style-type: none"> • Information display • Multi information display 	CAN system <ul style="list-style-type: none"> • DTC U2516: CAN system communication error
02	<ul style="list-style-type: none"> • Audio unit • Climate control unit • Instrument cluster 	CAN system <ul style="list-style-type: none"> • DTC U0184: Communication error to audio unit • DTC U0164: Communication error to climate control unit • DTC U0181: Communication error to instrument cluster
04	Light switch	<ul style="list-style-type: none"> • TNS relay • Light switch • BCM
06	Ignition switch ^{*1} /Push button start ^{*2}	Ignition switch ^{*1} /Push button start ^{*2}
07	Dimmer cancel switch (Instrument cluster)	<ul style="list-style-type: none"> • Instrument cluster • Related wiring harness
—	LCD	LCD

*1 : Without advanced keyless entry and push button start system

*2 : With advanced keyless entry and push button start system

Note

- The check codes are displayed in numerical order. (While performing the inspection, if you want to inspect a check code with a number smaller than the code number you are currently inspecting, terminate the check mode then repeat the inspection from the beginning.)



am3uuw0000509

INSTRUMENTATION/DRIVER INFO.

Check Code Inspection Check code 01

Check code 01	CAN system
DISPLAY	ACTION
<i>OK</i>	CAN system of information display or multi information display is normal.
<i>U2516</i>	CAN system communication error. (DTC U2516) (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

Check code 02

Check code 02	<ul style="list-style-type: none"> • Communication status to audio unit • Communication status to climate control unit • Communication status to instrument cluster 		
INSPECTION CONDITION	DISPLAY	ACTION	
If there is a malfunction, the diagnostic results are displayed once each in the order of audio unit and climate control unit and instrument cluster.	<i>02 OK</i>	All communications are normal.	
	Audio unit	<i>OK ACU</i>	Communication to audio unit is normal.
		<i>U0184 ACU</i>	Communication error to audio unit. (DTC U0184) (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		<i>None ACU</i>	Vehicle without audio unit.
	Climate control unit	<i>OK EATC</i>	Communication to climate control unit is normal.
		<i>U0164 EATC</i>	Communication error to climate control unit. (DTC U0164) (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
		<i>None EATC</i>	Vehicle without climate control unit.
	Instrument cluster	<i>OK HEC</i>	Communication to instrument cluster is normal.
		<i>U0181 HEC</i>	Communication error to instrument cluster. (DTC U0181) (See 09-02D-1 FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

09-22

Check code 04

Check code 04		TNS ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Turn the light switch to the ON position.	<i>ON</i>	Go to the next step.
		<i>OFF</i>	Verify that the voltage of information display or multi information display terminal 1B is B+ . <ul style="list-style-type: none"> • If the voltage is as specified, replace the information display or multi information display. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> — TNS relay — Light switch — BCM — Wiring harness (Light switch—BCM—TNS relay—information display or multi information display)

INSTRUMENTATION/DRIVER INFO.

Check code 04		TNS ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
2	Turn the light switch off.	ON	Verify that the voltage of the information display or multi information display terminal 1B is 1.0 V or less . <ul style="list-style-type: none"> • If the voltage is as specified, replace the information display or multi information display. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> — TNS relay — Light switch — BCM — Wiring harness (Light switch—BCM—TNS relay—information display or multi information display)
		OFF	Input signal to the information display or multi information display is normal.

Check code 06

Check code 06		Ignition switch ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Switch the ignition to ON.	ON	Go to the next step.
		OFF	Verify that the voltage of information display or multi information display terminal 1E is B+ . <ul style="list-style-type: none"> • If the voltage is as specified, replace the information display or multi information display. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> — Ignition switch^{*1} — Push button start^{*2} — Relay block^{*2} — Wiring harness^{*1} (Battery—ignition switch—information display or multi information display) — Wiring harness^{*2} (Battery—relay block—push button start—information display or multi information display)
2	Switch the ignition to ACC.	ON	Verify that the voltage of the information display or multi information display terminal 1E is 1.0 V or less . <ul style="list-style-type: none"> • If the voltage is as specified, replace the information display or multi information display. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> — Ignition switch^{*1} — Push button start^{*2} — Relay block^{*2} — Wiring harness^{*1} (Battery—ignition switch—information display or multi information display) — Wiring harness^{*2} (Battery—relay block—push button start—information display or multi information display)
		OFF	Input signal to the information display or multi information display is normal.

*1 : Without advanced keyless entry and push button start system

*2 : With advanced keyless entry and push button start system

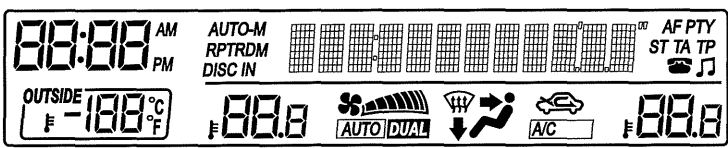
INSTRUMENTATION/DRIVER INFO.

Check code 07

Check code 07		Dimmer cancel ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Panel light control switch turned to dimmer cancel ON	<i>ON</i>	Go to the next step.
		<i>OFF</i>	Verify that the voltage of information display or multi information display terminal 1B is B+ . <ul style="list-style-type: none"> • If the voltage is as specified, replace the information display or multi information display. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> — Instrument cluster — Wiring harness (information display or multi information display—instrument cluster)
2	Panel light control switch turned to dimmer cancel OFF	<i>ON</i>	Verify that the voltage of the information display or multi information display terminal 1B is 1.0 V or less . <ul style="list-style-type: none"> • If the voltage is as specified, replace the information display or multi information display. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> — Instrument cluster — Wiring harness (information display or multi information display—instrument cluster)
		<i>OFF</i>	Input signal to the information display or multi information display is normal.

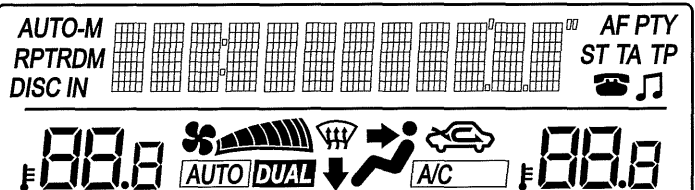
LCD

Information display

Check code —	LCD	
DISPLAY	ACTION	
	All segments and dots illuminated.	LCD is normal.
	Except above	Replace the information display.

09-22

Multi information display

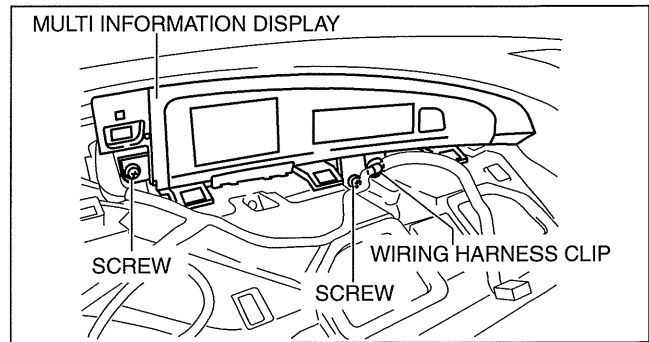
Check code —	LCD	
DISPLAY	ACTION	
	All segments and dots illuminated.	LCD is normal.
	Except above	Replace the multi information display.

INSTRUMENTATION/DRIVER INFO.

MULTI INFORMATION DISPLAY REMOVAL/INSTALLATION

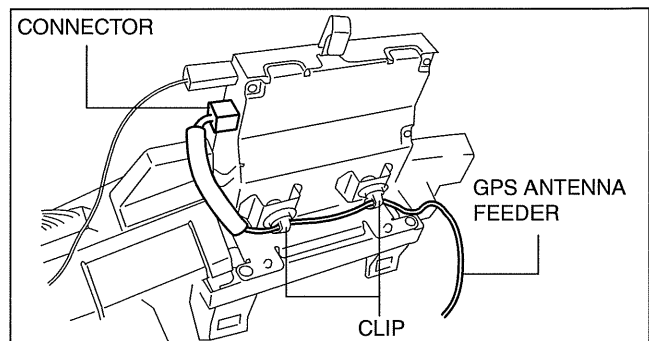
id092200968600

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - (1) Upper column cover (See 09-17-22 COLUMN COVER REMOVAL/INSTALLATION.)
 - (2) Instrument cluster (See 09-22-3 INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
 - (3) Center panel (See 09-17-24 CENTER PANEL REMOVAL/INSTALLATION.)
 - (4) Audio unit (See 09-20-4 AUDIO UNIT REMOVAL/INSTALLATION.)
 - (5) Center cover (See 09-17-19 CENTER COVER REMOVAL/INSTALLATION.)
 - (6) Dashboard upper panel (See 09-17-14 DASHBOARD UPPER PANEL REMOVAL/INSTALLATION.)
 - (7) GPS antenna (with car-navigation system) (See 09-20-42 GPS ANTENNA REMOVAL/INSTALLATION.)
 - (8) Hole cover (See 09-17-25 HOLE COVER REMOVAL/INSTALLATION.)
3. Remove the wiring harness clip.
4. Remove the screws.
5. Pull the multi information display outward and remove it



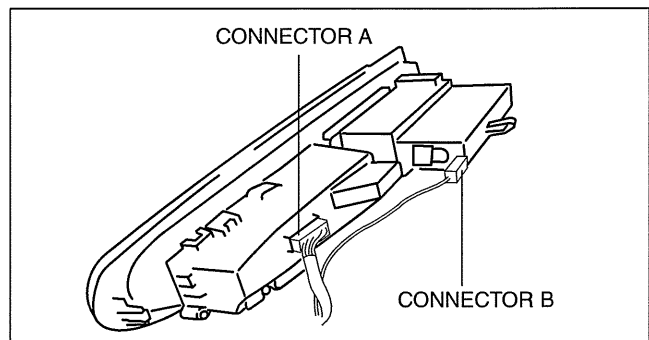
am3uuw0000463

6. Disconnect the connector and clips.
7. Remove the GPS antenna feeder.



am3uuw0000497

8. Disconnect the connector A and B.
9. Remove the multi information display.



am3uuw0000497

INSTRUMENTATION/DRIVER INFO.

MULTI INFORMATION DISPLAY INSPECTION

id092200261600

1. Refer to INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE to perform multi information display inspection. (See 09-22-14 INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE.)

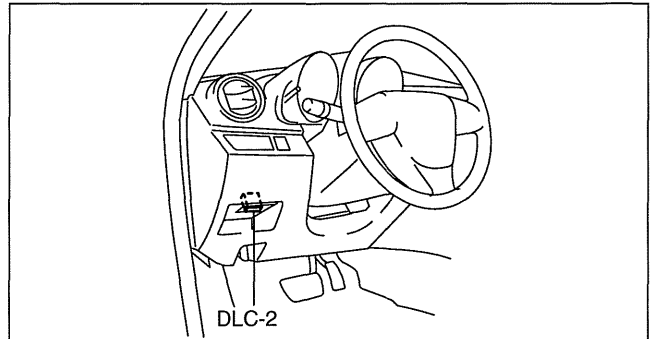
MULTI INFORMATION DISPLAY CONFIGURATION

id092200196500

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the MULTI INFORMATION DISPLAY CONFIGURATION.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "MID".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See 09-02J-4 DTC TABLE [MULTI INFORMATION DISPLAY].)



am3uuw0000262

MULTI INFORMATION DISPLAY MAINTENANCE MONITOR OPERATION PROCEDURE

id092200651600

09-22

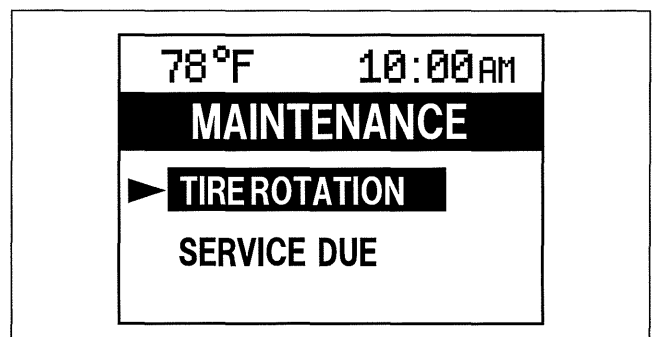
- The maintenance monitor displays a notification when a tire rotation or periodic inspection period approaches to inform the driver.
- The notification timing can be performed according to either the remaining travel distance or remaining days by performing the following procedure:
 - Notification timing setting method
 - Reset method
 - Notification display ON/OFF setting method
- Remaining distance and number of days information is not erased even if the battery is disconnected.
- If the multi information display is repaired or replaced, it is possible that the remaining distance and number of days information will be erased.

Notification Timing Setting Method

Caution

- **Because the time information is reset after the negative battery cable is disconnected, the regular inspection period cannot be set using days. If the time information is reset, move the vehicle outdoors where reception of time information via GPS is possible.**
- **After verifying that the time is displayed on the multi information display, perform the day-setting procedure for the regular inspection period.**
- **Do not place objects around the GPS antenna, otherwise the GPS signal cannot be received.**

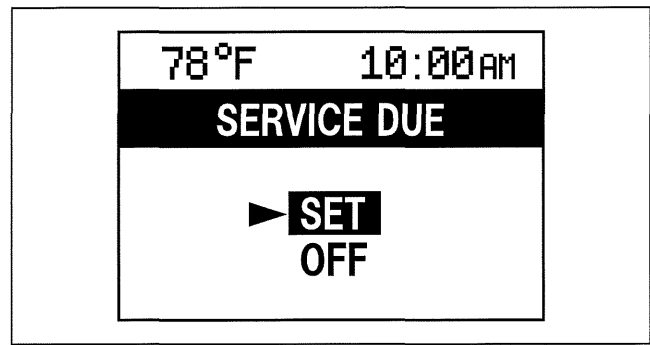
1. Press the INFO SWITCH to display the SETTINGS menu.
2. When the MAINTENANCE menu is displayed, press the ENTER switch.
3. Select TIRE ROTATION or SERVICE DUE and press the ENTER switch.
4. Select SET and press the ENTER switch.



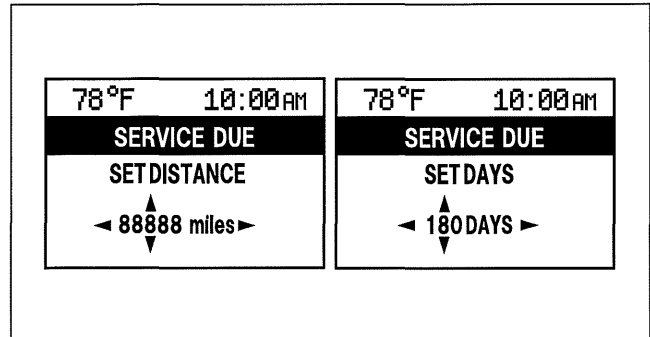
am3uuw0000509

INSTRUMENTATION/DRIVER INFO.

5. If SERVICE DUE is selected, select either DISTANCE or DAYS and press the ENTER switch.

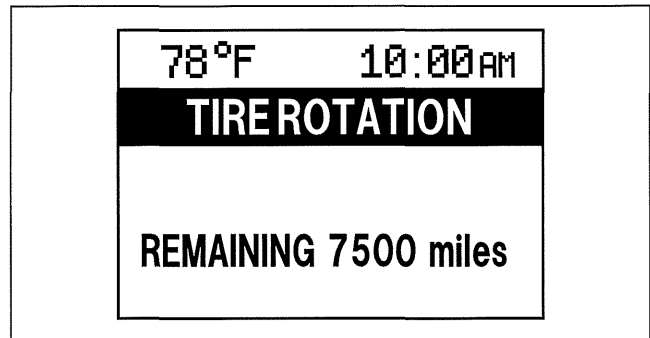


am3uuw0000509



am3uuw0000509

6. If TIRE ROTATION is selected, the SET DISTANCE screen is displayed.
7. The screen for setting the next distance or days to maintenance is displayed.
 - The initial setting corresponding to the maintenance schedule is displayed. (except Puerto Rico)
8. To change the set value, operate the up/down switch and change the setting.
9. Press the ENTER switch.



am3uuw0000509

Reset Method

Note

- Performed after a tire rotation or periodic inspection has been completed, or when you want to reset a value.
- After resetting, a notification display is performed when the next maintenance period approaches.

1. Set each maintenance period according to the "Notification Timing Setting Method".

Notification Display ON/OFF Setting Method

1. Press the INFO SWITCH to display the SETTINGS menu.
2. When the MAINTENANCE menu displays, press the ENTER switch.
3. Select the item you want to start or cancel and press the ENTER switch.
4. Select SET or OFF and press the ENTER switch.
 - SET: Starts notification display
 - OFF: Cancel notification display

INSTRUMENTATION/DRIVER INFO.

CLOCK SWITCH REMOVAL/INSTALLATION

id092200888900

1. Remove the clock switch. (See 09-18-60 HAZARD WARNING SWITCH REMOVAL/INSTALLATION.)

CLOCK SWITCH INSPECTION

id092200889000

Note

- Clock switch built with the hazard warning switch.

1. Disconnect the negative battery cable.
2. Remove the clock switch. (See 09-18-60 HAZARD WARNING SWITCH REMOVAL/INSTALLATION.)
3. Verify resistance between the clock switch terminals.

- If the resistance is not as specified, replace the clock switch.

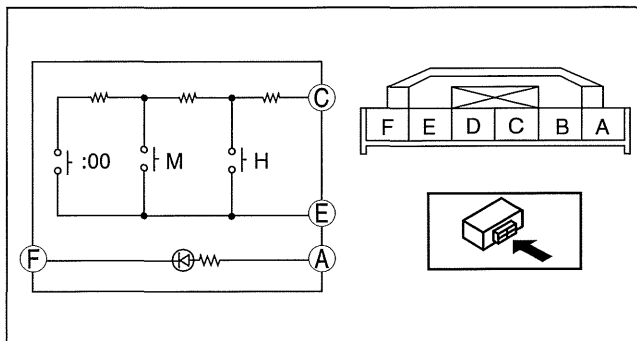
○——○ Resistance

Switch Position	Terminal	
	C	E
H	○——○	
M		
:00		
Off		

am3uuw00003002

Between the terminal C—E resistance

Switch position	Resistance (ohm)
H	48.45—53.55
M	86.45—95.55
:00	142.5—157.5



am3uuw00002995

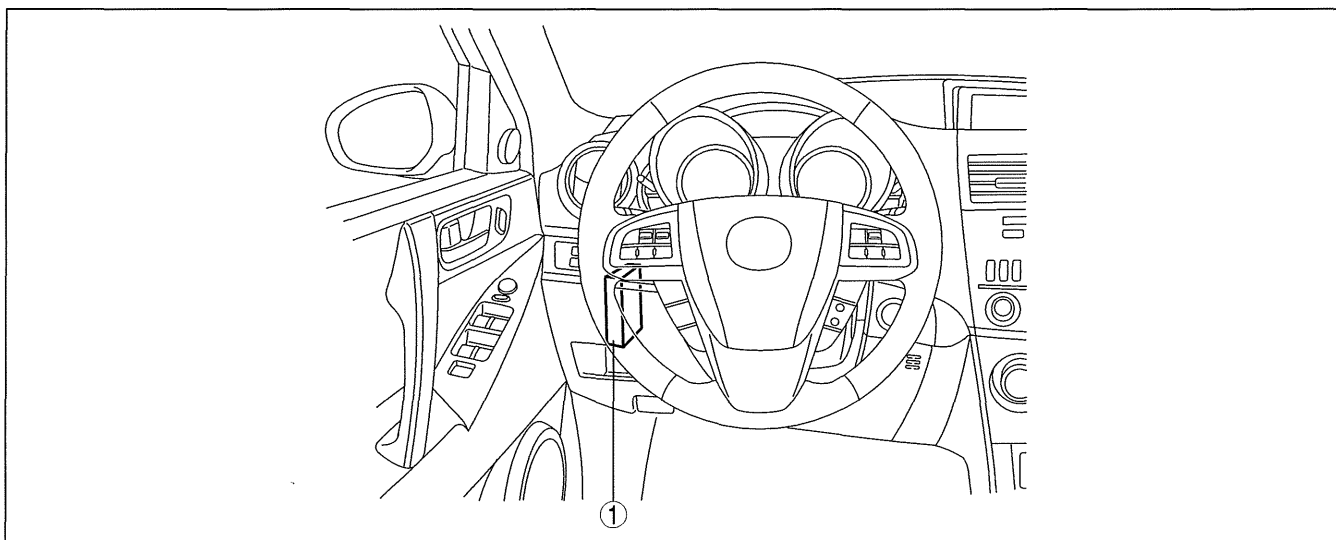
4. Connect the positive battery to the clock switch terminal A, the negative battery to the clock switch terminal F.
5. Verify the LED illuminates.
 - If there is any malfunction, replace the clock switch.

09-40 CONTROL SYSTEM

CONTROL SYSTEM		Generated pulse (reference)	09-40-15
LOCATION INDEX	09-40-1	Inspection Using an Oscilloscope (Reference)	09-40-16
BODY CONTROL MODULE		BODY CONTROL MODULE (BCM)	
(BCM) REMOVAL/INSTALLATION . . .	09-40-2	CONFIGURATION	09-40-16
ATX	09-40-2	CONTROL SYSTEM	
MTX	09-40-4	PERSONALIZATION FEATURES	
BODY CONTROL MODULE (BCM)		SETTING PROCEDURE	09-40-17
INSPECTION	09-40-6		
Terminal Voltage Table (Reference) . . .	09-40-6		

CONTROL SYSTEM LOCATION INDEX

id094000801000



09-40

am3uuw0000184

1	<p>BCM (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.) (See 09-40-6 BODY CONTROL MODULE (BCM) INSPECTION.) (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.) (See 09-40-17 CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE.)</p>
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CONTROL SYSTEM

BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION

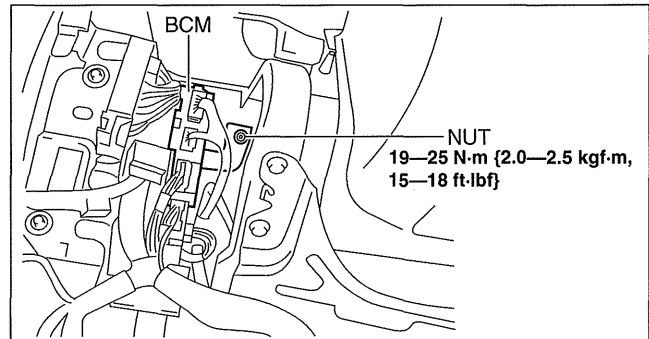
id094000800400

Caution

- When replacing the BCM, the configuration procedure must be performed before removing the BCM. Replacing the BCM without performing the configuration procedure will result in system malfunction.

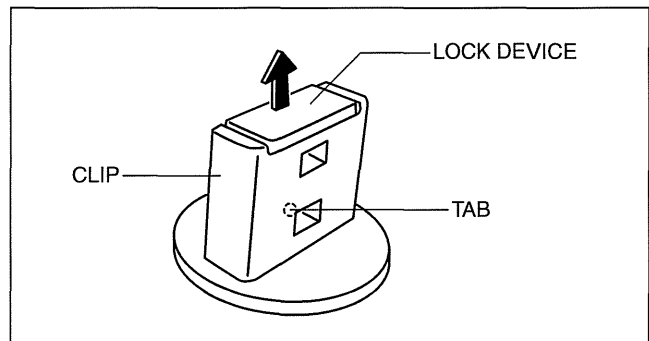
ATX

1. Perform the BCM configuration when replacing it. (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.)
2. Disconnect the negative battery cable.
3. Remove the following parts:
 - (1) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Selector lever knob (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (6) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (7) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
4. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
5. Remove the lower panel. (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
6. Remove the nut shown in the figure.



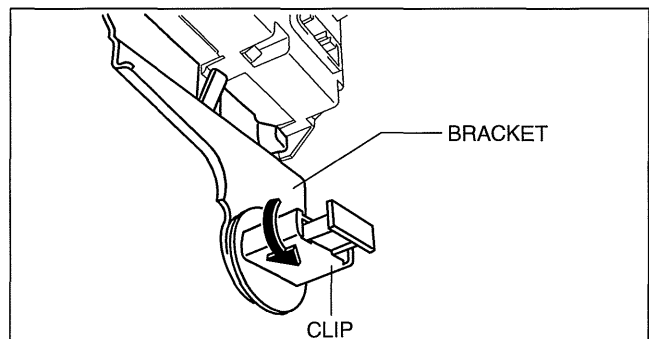
am3uuw0000471

7. Pry off the lock device of the clip while pressing the tab in the position shown in the figure.



am3uuw0000464

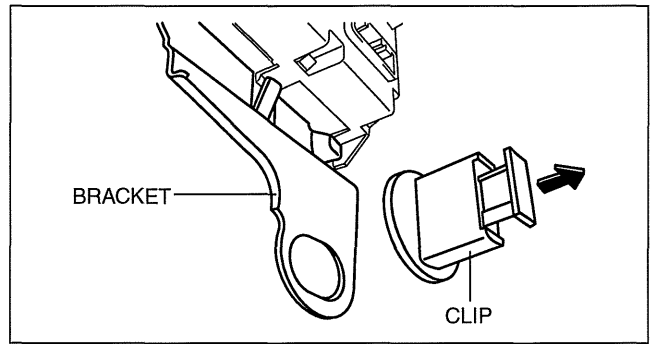
8. Rotate the clip in the direction of the arrow shown in the figure.



am3uuw0000558

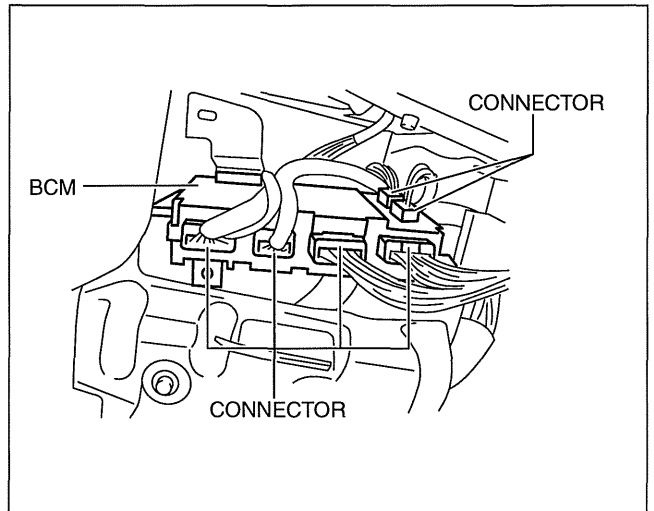
CONTROL SYSTEM

9. Remove the clip by pulling it in the direction of the arrow shown in the figure.



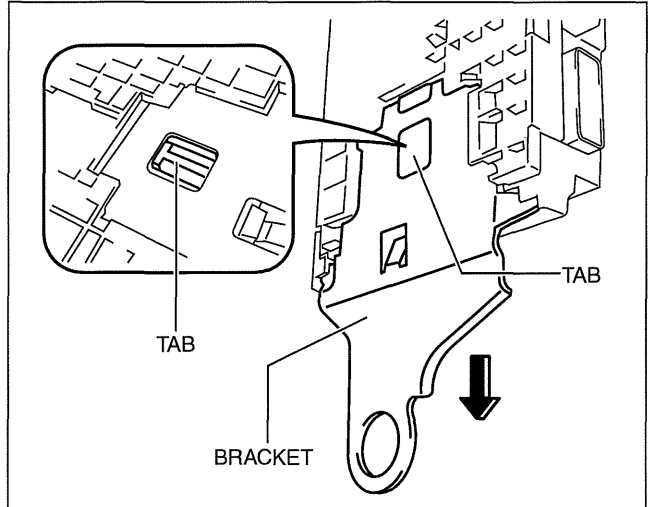
am3uuw000448

10. Disconnect the connector shown in the figure.



am3uuw000449

11. While pressing the tab shown in the figure, pull the bracket in the direction of the arrow and remove it.
12. Remove the BCM.
13. Install in the reverse order of removal.



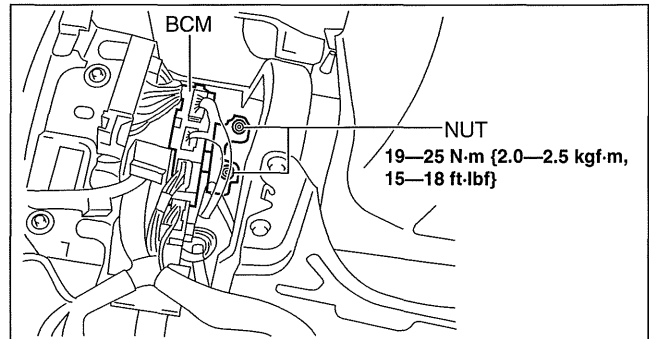
am3uuw000449

09-40

CONTROL SYSTEM

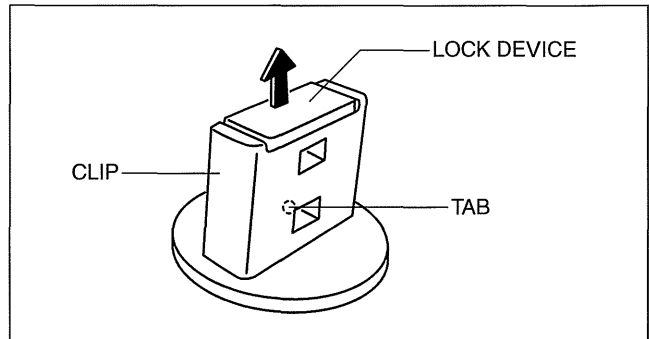
MTX

1. Perform the BCM configuration when replacing it. (See 09-40-16 BODY CONTROL MODULE (BCM) CONFIGURATION.)
2. Disconnect the negative battery cable.
3. Remove the following parts:
 1. Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION)
 2. Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 3. Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 4. Shift knob (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 5. Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 6. Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 7. Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
4. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
5. Remove the lower panel. (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
6. Remove the starter cut relay. (with advanced keyless entry and push button start system) (see 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX].)
7. Remove the nuts shown in the figure.



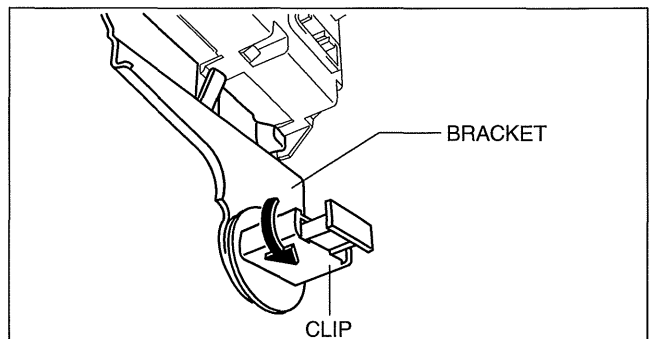
am3uuw0000471

8. Pry off the lock device of the clip while pressing the tab in the position shown in the figure.



am3uuw0000464

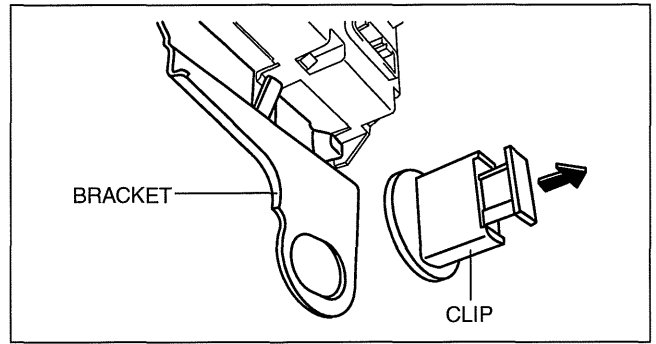
9. Rotate the clip in the direction of the arrow shown in the figure.



am3uuw0000558

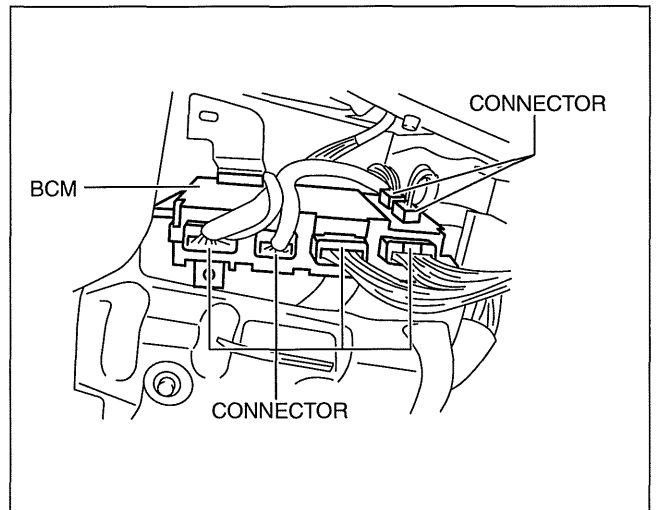
CONTROL SYSTEM

10. Remove the clip by pulling it in the direction of the arrow shown in the figure.



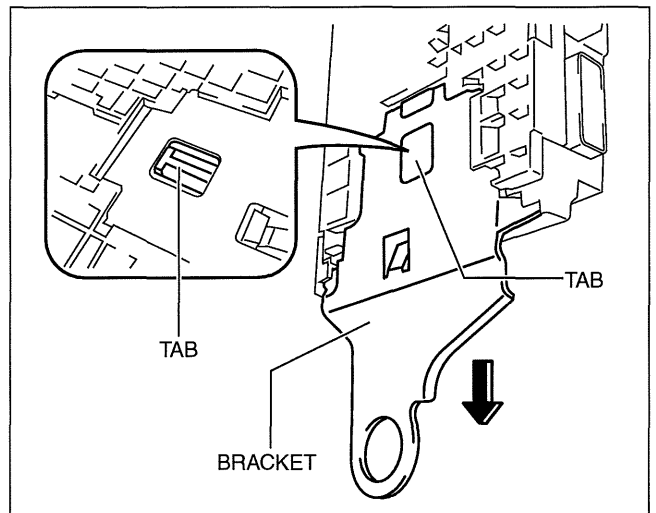
am3uuw000448

11. Disconnect the connector shown in the figure.



am3uuw000449

12. While pressing the tab shown in the figure, pull the bracket in the direction of the arrow and remove it.
13. Remove the BCM.
14. Install in the reverse order of removal.



am3uuw000449

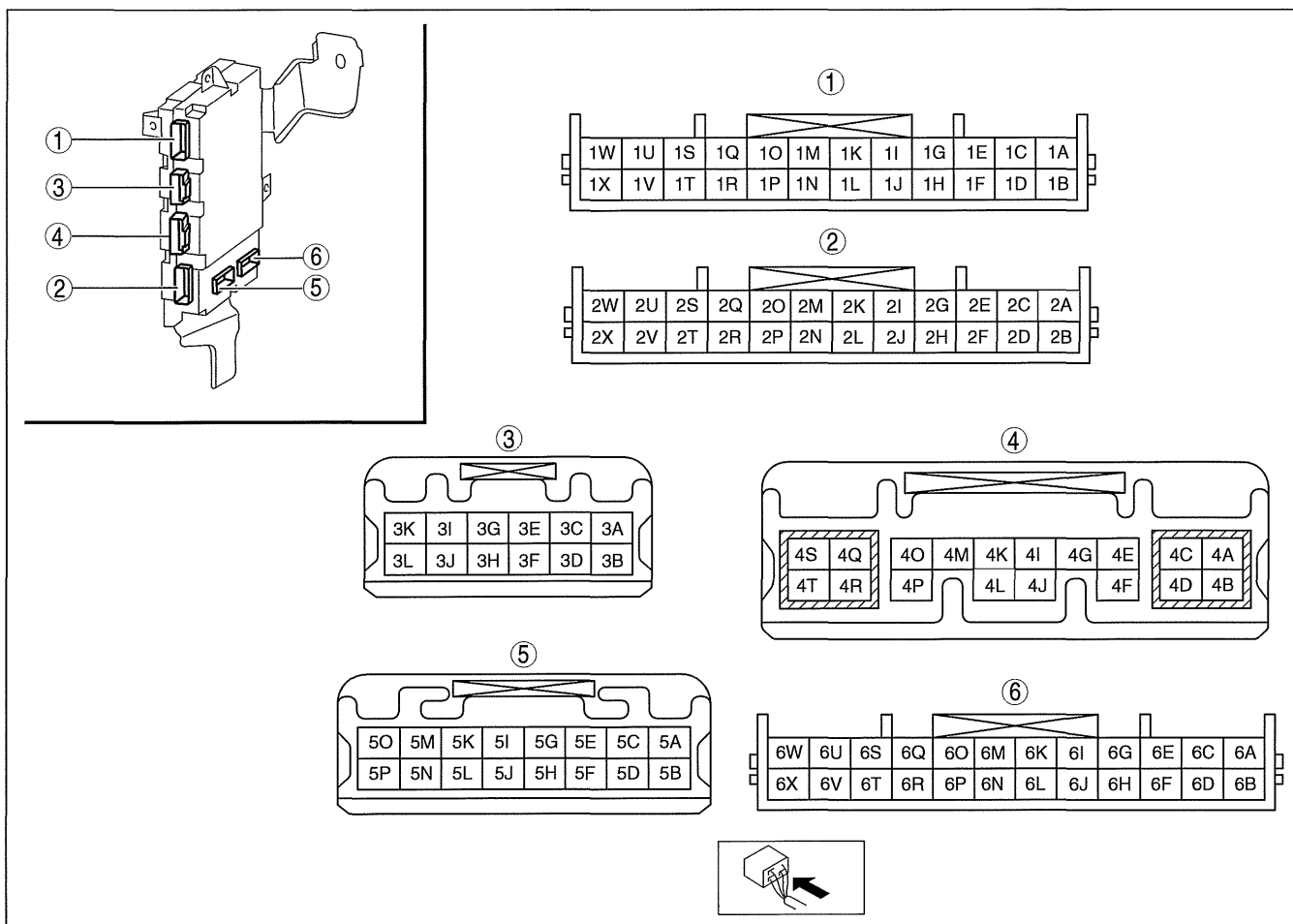
CONTROL SYSTEM

BODY CONTROL MODULE (BCM) INSPECTION

id094000800300

1. Remove the following parts:
 - (1) Front scuff plate (LH) (See 09-17-67 FRONT SCUFF PLATE REMOVAL/INSTALLATION.)
 - (2) Front side trim (LH) (See 09-17-53 FRONT SIDE TRIM REMOVAL/INSTALLATION.)
 - (3) Upper panel (See 09-17-40 UPPER PANEL REMOVAL/INSTALLATION.)
 - (4) Shift knob (MTX) (See 05-16-2 MANUAL TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (5) Selector lever knob (ATX) (See 05-18-2 AUTOMATIC TRANSAXLE SHIFT MECHANISM REMOVAL/INSTALLATION.)
 - (6) Shift panel (See 09-17-42 SHIFT PANEL REMOVAL/INSTALLATION.)
 - (7) Side wall (See 09-17-37 SIDE WALL REMOVAL/INSTALLATION.)
 - (8) Console (See 09-17-45 CONSOLE REMOVAL/INSTALLATION.)
2. Set the hood release lever out of the way. (See 09-14-15 HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
3. Remove the lower panel. (driver-side) (See 09-17-27 LOWER PANEL REMOVAL/INSTALLATION.)
4. Set the starter cut relay out of the way. (with advanced keyless entry and push button start system) (MTX) (see 09-21-14 STARTER CUT RELAY REMOVAL/INSTALLATION [MTX])
5. Remove the BCM with the connector connected. (See 09-40-2 BODY CONTROL MODULE (BCM) REMOVAL/INSTALLATION.)
6. Measure the voltage at each terminal is as indicated in the Terminal Voltage Tables.
 - If the voltage or continuity is not as specified in the Terminal Voltage Table, inspect the parts under "Inspection item (s)".
 - If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, replace the BCM.

Terminal Voltage Table (Reference)



am3uuw0000195

CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition	Voltage (V)	Inspection item (s)	
1A	CAN_H	CAN system related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
1B	CAN_L	CAN system related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
1C	Horn control	Horn relay	Horn not sounded	B+	<ul style="list-style-type: none"> • Horn relay • Related wiring harnesses 	
			Horn sounded	1.0 or less		
1D	Rear window defroster relay control	Rear window defroster relay	Switch the ignition to ON	Rear window defroster switch on	1.0 or less	<ul style="list-style-type: none"> • Rear window defroster relay • Related wiring harnesses
				Rear window defroster switch off	B+	
1E	—	—	—	—	—	
1F	—	—	—	—	—	
1G	TNS control	TNS relay	Light switch at OFF position	B+	<ul style="list-style-type: none"> • TNS relay • Related wiring harnesses 	
			Light switch at TNS position	1.0 or less		
1H	Ambient temperature ground	Ambient temperature sensor	Under any condition	1.0 or less	<ul style="list-style-type: none"> • Ambient temperature sensor • Related wiring harnesses 	
1I	Headlight relay (HI) control	Headlight relay (HI)	Light switch at HEAD position	Light switch at LO position	B+	<ul style="list-style-type: none"> • Headlight relay (HI) • Related wiring harnesses
				Light switch at HI or PASS position	1.0 or less	
1J*1	Hood latch switch signal	Hood latch switch	Hood open (Hood latch switch off)	Wave pattern (See 09-40-15 Pattern 1.)	<ul style="list-style-type: none"> • Hood latch switch • Related wiring harnesses 	
			Hood closed (Hood latch switch on)	1.0 or less		
1K	Headlight relay (LO) control	Headlight relay (LO)	Light switch at OFF position	B+	<ul style="list-style-type: none"> • Headlight relay (LO) • Related wiring harnesses 	
			Light switch at HEAD position	1.0 or less		
1L	—	—	—	—	—	
1M	Front fog light relay control	Front fog light relay	Light switch at HEAD position	Front fog light switch at off position	B+	<ul style="list-style-type: none"> • Front fog light relay • Related wiring harnesses
				Front fog light switch at on position	1.0 or less	
1N	Brake fluid level signal	Brake fluid level sensor	Switch the ignition to ON	Brake fluid level below MIN.	B+	<ul style="list-style-type: none"> • Brake fluid level sensor • Related wiring harnesses
				Brake fluid level above MIN.	1.0 or less	
1O	—	—	—	—	—	
1P	DRL relay control	DRL relay	Under any condition	B+	<ul style="list-style-type: none"> • DRL relay • Related wiring harnesses 	
1Q	Back-up light switch signal	Back-up light switch	Switch the ignition to ON	The selector lever is in the R position	B+	<ul style="list-style-type: none"> • Back-up light switch • Related wiring harnesses
				Other	1.0 or less	
1R	—	—	—	—	—	
1S	—	—	—	—	—	

09-40

CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition		Voltage (V)	Inspection item (s)
1T	Headlight (HI) indicator control	Headlight high relay	Light switch at HEAD position	Light switch at LOW position and HI beam indicator not illuminated in instrument cluster	1.0 or less	<ul style="list-style-type: none"> • Headlight high relay • Related wiring harnesses
				Light switch at HI or PASS position and Hi beam indicator illuminated in instrument cluster	B+	
1U	—	—	—		—	—
1V	—	—	—		—	—
1W	—	—	—		—	—
1X	Ambient temperature sensor signal	Ambient temperature sensor	Switch the ignition to ON		approx. 2.2	<ul style="list-style-type: none"> • Ambient temperature sensor • Related wiring harnesses
			Switch the ignition to Off		1.0 or less	
2A	CAN_H	CAN system related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
2B	CAN_L	CAN system related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
2C*6	LIN signal	Climate control unit	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
2D	Steering angle sensor ground	Steering angle sensor	Under any condition		1.0 or less	<ul style="list-style-type: none"> • Steering angle sensor • Related wiring harnesses
2E	Steering angle sensor power supply	Steering angle sensor	Switch the ignition to Off	Fifteen hours after key removed and all doors closed.	Wave pattern (See 09-40-16 Pattern 2.)	<ul style="list-style-type: none"> • Steering angle sensor • Related wiring harnesses
			Switch the ignition to ON		approx. 5	
2F	Steering angle sensor signal (B)	Steering angle sensor	Turn the steering wheel to the left and right.		Alternates between 4.00—4.75 and 0.25—0.75	<ul style="list-style-type: none"> • Steering angle sensor • Related wiring harnesses
2G	Steering angle sensor signal (A)	Steering angle sensor	Turn the steering wheel to the left and right.		Alternates between 4.00—4.75 and 0.25—0.75	<ul style="list-style-type: none"> • Steering angle sensor • Related wiring harnesses
2H	Steering angle sensor signal (C)	Steering angle sensor	Turn the steering wheel to the left and right.		Alternates between 4.00—4.75 and 0.25—0.75	<ul style="list-style-type: none"> • Steering angle sensor • Related wiring harnesses
2I	Steering angle sensor signal (Z)	Steering angle sensor	Steering wheel is in center position		0.25—0.75	<ul style="list-style-type: none"> • Steering angle sensor • Related wiring harnesses
			Steering wheel is not in center position		4.00—4.75	
2J	Key reminder switch signal	Key reminder switch	Key inserted		B+	<ul style="list-style-type: none"> • Key reminder switch • Related wiring harnesses
			Key removed		1.0 or less	
2K	Rear wiper switch (INT) signal	Windshield wiper and washer switch	Switch the ignition to ON	Rear wiper switch at INT position	1.0 or less	<ul style="list-style-type: none"> • Windshield wiper and washer switch • Related wiring harnesses
				Rear wiper switch at OFF position	B+	

CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition		Voltage (V)	Inspection item (s)
2L	Rear wiper switch (ON) signal	Windshield wiper and washer switch	Switch the ignition to ON	Rear wiper switch at ON position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch Related wiring harnesses
				Rear wiper switch at OFF position	B+	
2M	Hazard warning switch signal	Hazard warning switch	Hazard warning switch on		1.0 or less	<ul style="list-style-type: none"> Hazard warning switch Related wiring harnesses
			Hazard warning switch off		B+	
2N	Signal ground	Body ground	Under any condition		1.0 or less	<ul style="list-style-type: none"> Related wiring harnesses
2O	Turn switch input (RH)	Turn switch	Switch the ignition to ON	Turn switch at right position	1.0 or less	<ul style="list-style-type: none"> Turn switch Related wiring harnesses
				Other	B+	
2P	Turn switch input (LH)	Turn switch	Switch the ignition to ON	Turn switch at left position	1.0 or less	<ul style="list-style-type: none"> Turn switch Related wiring harnesses
				Other	B+	
2Q	Parking brake switch signal	Parking brake switch	Switch the ignition to ON	Parking brake applied (Parking brake switch on)	1.0 or less	<ul style="list-style-type: none"> Parking brake switch Related wiring harnesses
				Parking brake not applied (Parking brake switch off)	B+	
2R	Rear window defroster switch signal	Climate control unit	Rear window defroster switch pressed		1.0 or less	<ul style="list-style-type: none"> Climate control unit Related wiring harnesses
			Rear window defroster switch not pressed		4.5	
2S	—	—	—		—	—
2T	Headlight switch signal (HI)	Light switch	Light switch at HEAD position	Light switch at LO position	B+	<ul style="list-style-type: none"> Light switch Related wiring harnesses
				Light switch at HI or PASS position	1.0 or less	
2U	Horn switch signal	<ul style="list-style-type: none"> Horn switch Clock spring 	Horn switch is pressed		1.0 or less	<ul style="list-style-type: none"> Horn switch Clock spring Related wiring harnesses
			Horn switch is not pressed		B+	
2V	Headlight switch signal (TNS)	Light switch	Light switch at TNS position		1.0 or less	<ul style="list-style-type: none"> Light switch Related wiring harnesses
			Light switch at OFF position		B+	
2W	Front fog light switch signal	Front fog light switch	Light switch at HEAD position	Front fog Light switch at on position	1.0 or less	<ul style="list-style-type: none"> Front fog light switch Related wiring harnesses
				Front fog Light switch at off position	B+	
2X	Headlight switch signal (LOW)	Light switch	Light switch at HEAD position		1.0 or less	<ul style="list-style-type: none"> Light switch Related wiring harnesses
			Light switch at OFF position		B+	
3A	Rear washer motor control	Windshield washer motor	Switch the ignition to ON	Rear washer switch on	B+	<ul style="list-style-type: none"> Windshield washer motor Related wiring harnesses
				Rear washer switch off	1.0 or less	
3B	—	—	—		—	—
3C	Front washer motor control	Windshield washer motor	Switch the ignition to ON	Windshield washer switch on	B+	<ul style="list-style-type: none"> Windshield washer motor Related wiring harnesses
				Windshield washer switch off	1.0 or less	

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CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
3D	—	—	—	—	—
3E	Front wiper motor (HI) control	Windshield wiper motor	Switch the ignition to ON	Windshield wiper switch in HI position B+	<ul style="list-style-type: none"> Windshield wiper motor Related wiring harnesses
				Windshield wiper switch in off position 1.0 or less	
3F	—	—	—	—	—
3G	Auto stop switch signal	<ul style="list-style-type: none"> Windshield washer motor Auto light control module*³ Rain sensor*³ 	Switch the ignition to ON	Windshield wiper operating B+	<ul style="list-style-type: none"> Windshield washer motor Auto light control module*³ Rain sensor*³ Related wiring harnesses
				Windshield wiper not operating 1.0 or less	
3H	—	—	—	—	—
3I	Front wiper motor (LOW) control	Windshield wiper motor	Switch the ignition to ON	Windshield wiper switch in LOW position B+	<ul style="list-style-type: none"> Windshield wiper motor Related wiring harnesses
				Windshield wiper switch in off position 1.0 or less	
3J	Interior light power supply	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> ROOM 15 A fuse Related wiring harnesses
3K	Front turn light (LH) control	<ul style="list-style-type: none"> Front turn light (LH) Side turn light (LH) (Front fender panel type) 	Front turn light (LH) flashes	Alternates between 1.0 or less and B+	<ul style="list-style-type: none"> Front turn light (LH) Side turn light (LH) (Front fender panel type) Related wiring harnesses
			Front turn light (LH) not illuminated	1.0 or less	
3L	Front turn light (RH) control	<ul style="list-style-type: none"> Front turn light (RH) Side turn light (RH) (Front fender panel type) 	Front turn light (RH) flashes	Alternates between 1.0 or less and B+	<ul style="list-style-type: none"> Front turn light (RH) Side turn light (RH) (Front fender panel type) Related wiring harnesses
			Front turn light (RH) not illuminated	1.0 or less	
4A	Power door lock power supply	D.LOCK 25 A fuse	Under any condition	B+	<ul style="list-style-type: none"> D.LOCK 25 A fuse Related wiring harnesses
4B	Power ground	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harnesses
4C	IG2	F.WIPER 25 A fuse	Switch the ignition to ON	B+	<ul style="list-style-type: none"> F.WIPER 25 A fuse Related wiring harnesses
			Switch the ignition to Off	1.0 or less	
4D	Power ground	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harnesses
4E	Ignition key illumination control	Push button start illumination (with advanced keyless entry and push button start system)	Switch the ignition to off and driver-side door opened or TNS ON.	1.0 or less	<ul style="list-style-type: none"> Push button start illumination (with advanced keyless entry and push button start system) Related wiring harnesses
			15 s or more after all doors closed and TNS off.	B+	
		Ignition key illumination (with keyless entry system)	Switch the ignition to off and driver-side door opened.	1.0 or less	<ul style="list-style-type: none"> Ignition key illumination (with keyless entry system) Related wiring harnesses
			15 s or more after all doors closed.	B+	
4F	Foot light control	Foot light	Switch the ignition to off and driver-side door opened.	1.0 or less	<ul style="list-style-type: none"> Foot light Related wiring harnesses
			15 s or more after all doors closed.	B+	

CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition		Voltage (V)	Inspection item (s)
4G	Rear window defroster indicator light control	Climate control unit	Switch the ignition to ON	Rear window defroster switch pressed and rear window defroster indicator light illuminated	1.0 or less	<ul style="list-style-type: none"> Climate control unit Related wiring harnesses
				Rear window defroster switch pressed and rear window defroster indicator light not illuminated	B+	
4I	Front wiper switch (AUTO) signal (with auto wiper system)	<ul style="list-style-type: none"> Auto light control module Windshield wiper and washer switch 	Switch the ignition to ON	Windshield wiper switch in AUTO position	1.0 or less	<ul style="list-style-type: none"> Auto light control module Windshield wiper and washer switch Related wiring harnesses
				Windshield wiper switch in off position	B+	
	Front wiper switch (INT) signal (without auto wiper system)	Windshield wiper and washer switch	Switch the ignition to ON	Windshield wiper switch in INT position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch Related wiring harnesses
				Windshield wiper switch in off position	B+	
4J	Front wiper switch (LOW) signal	Windshield wiper and washer switch	Switch the ignition to ON	Windshield wiper switch in LOW position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch Related wiring harnesses
				Windshield wiper switch in off position	B+	
4K	Serial communication	<ul style="list-style-type: none"> Keyless control module (with advanced keyless entry and push button start system) Keyless receiver (without advanced keyless entry and push button start system) Instrument cluster 	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.			
4L	Sensitivity adjustment volume (with auto wiper system)	Auto light control module*3	Switch the ignition to ON		5	<ul style="list-style-type: none"> Auto light control module*3 Windshield wiper and washer switch Related wiring harnesses
			Switch the ignition to Off		1.0 or less	
	INT volume (without auto wiper system)	Windshield wiper and washer switch	Switch the ignition to ON	INT volume turned from lowest position to highest position	0—3.7	
4M	Front wiper switch (HI) signal	Windshield wiper and washer switch	Switch the ignition to ON	Windshield wiper switch in HI position	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch Related wiring harnesses
				Windshield wiper switch in off position	B+	

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CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
4O	Rear washer switch signal	Windshield wiper and washer switch	Switch the ignition to ON	Rear washer switch on 1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch Related wiring harnesses
				Rear washer switch off B+	
4P	Front washer switch signal	<ul style="list-style-type: none"> Auto light control module^{*3} Windshield wiper and washer switch 	Switch the ignition to ON	Windshield washer switch on 1.0 or less	<ul style="list-style-type: none"> Auto light control module^{*3} Windshield wiper and washer switch Related wiring harnesses
				Windshield washer switch off B+	
4Q	IG2	<ul style="list-style-type: none"> R.WIPER 15 A fuse Rear wiper motor 	Switch the ignition to ON	B+	<ul style="list-style-type: none"> R.WIPER 15 A fuse Rear wiper motor Related wiring harnesses
				Switch the ignition to Off 1.0 or less	
4R	Signal ground	Windshield wiper and washer switch	Under any condition	1.0 or less	<ul style="list-style-type: none"> Windshield wiper and washer switch Related wiring harnesses
4S	Hazard power supply	HAZARD 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> HAZARD 15 A fuse Related wiring harnesses
4T	Power supply	METER 15 A fuse	Switch the ignition to ON	B+	<ul style="list-style-type: none"> METER 15 A fuse Related wiring harnesses
				Switch the ignition to Off 1.0 or less	
5A	Rear wiper motor control	Rear wiper motor	Rear wiper operating	1.0 or less	<ul style="list-style-type: none"> Rear wiper motor Related wiring harnesses
				Rear wiper not operating B+	
5B	Interior light power supply	<ul style="list-style-type: none"> Map light Interior light Trunk compartment light (4SD) Cargo compartment light (5HB) 	Under any condition	B+	<ul style="list-style-type: none"> Map light Interior light Trunk compartment light (4SD) Cargo compartment light (5HB) Related wiring harnesses
5C	Rear turn light (RH) control	<ul style="list-style-type: none"> Rear turn light (RH) Side turn light (RH) (outer mirror type) 	Rear turn light (RH) flashes	Alternates between 1.0 or less and B+	<ul style="list-style-type: none"> Rear turn light (RH) Side turn light (RH) (outer mirror type) Related wiring harnesses
				Rear turn light (RH) not illuminated 1.0 or less	
5D	—	—	—	—	—
5E	Rear turn light (LH) control	<ul style="list-style-type: none"> Rear turn light (LH) Side turn light (LH) (outer mirror type) 	Rear turn light (LH) flashes	Alternates between 1.0 or less and B+	<ul style="list-style-type: none"> Rear turn light (LH) Side turn light (LH) (outer mirror type) Related wiring harnesses
				Rear turn light (RH) not illuminated 1.0 or less	
5F	—	—	—	—	—
5G	<ul style="list-style-type: none"> Liftgate latch and lock motor power supply (5HB) Trunk lid latch and lock actuator power supply (4SD) 	<ul style="list-style-type: none"> Liftgate lock actuator (5HB) Trunk lid release actuator (4SD) 	<ul style="list-style-type: none"> Liftgate opener switch pressed, liftgate lock motor operation (5HB) Trunk lid opener switch pressed, trunk lid lock actuator operation (4SD) 	B+ → 1.0 or less → 5	<ul style="list-style-type: none"> Liftgate lock actuator (5HB) Trunk lid release actuator (4SD) Related wiring harnesses
				Not operation 5	
5H	—	—	—	—	—
5I	Liftgate latch and lock motor power supply (5HB)	Liftgate lock actuator (5HB)	Liftgate opener switch pressed, liftgate lock motor operation	1.0 or less	<ul style="list-style-type: none"> Liftgate lock actuator (5HB) Related wiring harnesses
				Not operation 5	

CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition	Voltage (V)	Inspection item (s)	
5J	—	—	—	—	—	
5K*2	2-step unlocking system door lock control	Door lock actuators (passenger side, RH, LH)	Door lock actuators 2-step unlocking	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> • Door lock actuators (passenger side, RH, LH) • Related wiring harnesses 	
			Other	1.0 or less		
5L	—	—	—	—	—	
5M*2	Door unlock control (driver-side)	Door lock actuator (driver-side)	Door lock actuator unlocking	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> • Door lock actuator (driver side) • Related wiring harnesses 	
			Other	1.0 or less		
5N	Interior light control	<ul style="list-style-type: none"> • Map light • Interior light 	Map light and interior light not illuminated with all doors closed	After map light and interior light illuminate by opening any door, map light and interior light turn off by closing all doors.	(See 09-40-16 Inspection Using an Oscilloscope (Reference).)	<ul style="list-style-type: none"> • Map light • Interior light • Related wiring harnesses
5O*2	Door lock control	Door lock actuators (driver side, passenger side, RH, LH)	Door lock actuator locking	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> • Door lock actuators (driver side, passenger side, RH, LH) • Related wiring harnesses 	
			Other	1.0 or less		
5P	—	—	—	—	—	
6A	—	—	—	—	—	
6B*2	Driver-side door key cylinder switch signal	Driver-side door key cylinder switch	At the moment key cylinder is unlocked	1.0 or less	<ul style="list-style-type: none"> • Driver-side door key cylinder switch • Related wiring harnesses 	
			At the moment key cylinder is locked	2.5		
			Other	5		
6C	—	—	—	—	—	
6D	Lock / unlock signal	Door lock switch (driver side, passenger side)	Door lock switch is pressed to lock	2.5	<ul style="list-style-type: none"> • Driver-side door key cylinder switch • Related wiring harnesses 	
			Door lock switch is pressed to unlock	1.0 or less		
			Other	5		
6E	Rear door switch (LH) signal	Rear door switch (LH)	Rear door switch (LH) open (Rear door switch (LH) off)	Wave pattern (See 09-40-15 Pattern 1.)	<ul style="list-style-type: none"> • Rear door switch (LH) • Related wiring harnesses 	
			Rear door (LH) closed (Rear door switch (LH) on)	1.0 or less		
6F	<ul style="list-style-type: none"> • Liftgate latch switch (5HB) signal • Trunk lid latch switch (4SD) signal 	<ul style="list-style-type: none"> • Liftgate latch switch (5HB) • Trunk lid latch switch (4SD) 	Liftgate/trunk lid is open. (Liftgate/trunk lid latch switch on)	1.0 or less	<ul style="list-style-type: none"> • Liftgate latch switch (5HB) • Trunk lid latch switch (4SD) • Related wiring harnesses 	
			Liftgate/trunk lid is closed. (Liftgate/trunk lid latch switch off)	B+		

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CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition	Voltage (V)	Inspection item (s)	
6G	Front door switch (driver side) signal	Front door switch (driver side)	Front door (driver side) open (Front door switch (driver side) off)	Wave pattern (See 09-40-15 Pattern 1.)	<ul style="list-style-type: none"> • Front door switch (driver side) • Position memory control module (with memory power seat) • Related wiring harnesses 	
			Front door (driver side) closed (Front door switch (driver side) on)	1.0 or less		
		<ul style="list-style-type: none"> • Front door switch (driver side) • Position memory control module (with memory power seat) 	Front door (driver side) open (Front door switch (driver side) off)	approx. 11		
			Front door (driver side) closed (Front door switch (driver side) on)	1.0 or less		
6H	Front door switch (passenger side) signal	Front door switch (passenger side)	Front door (passenger side) open (Front door switch (passenger side) off)	Wave pattern (See 09-40-15 Pattern 1.)		<ul style="list-style-type: none"> • Front door switch (passenger side) • Related wiring harnesses
			Front door (passenger side) closed (Front door switch (passenger side) on)	1.0 or less		
6I*2	Lock input (Driver-side door lock-link switch)	Driver-side door lock-link switch	Driver-side door locked	1.0 or less	<ul style="list-style-type: none"> • Driver-side door lock-link switch • Keyless control module (with advanced keyless entry and start system) • Related wiring harnesses 	
			Driver-side door unlocked	Wave pattern (See 09-40-15 Pattern 1.)		
		<ul style="list-style-type: none"> • Driver-side door lock-link switch • Keyless control module (with advanced keyless entry and start system) 	Driver-side door locked	1.0 or less		
			Driver-side door unlocked	approx. 4.6		
6J*1	Lock/unlock input (passenger-side door lock-link switch) (rear door lock link switch (RH, LH))	<ul style="list-style-type: none"> • Passenger-side door lock-link switch • rear door lock link switch (RH, LH) 	Door locked (All doors except driver's door)	Wave pattern (See 09-40-15 Pattern 1.)	<ul style="list-style-type: none"> • Passenger-side door lock-link switch • rear door lock link switch (RH, LH) • Related wiring harnesses 	
			Door unlocked (All doors except driver's door)	1.0 or less		
6K	Rear door switch (RH) signal	Rear door switch (RH)	Rear door (RH) open (Rear door switch (RH) off)	Wave pattern (See 09-40-15 Pattern 1.)	<ul style="list-style-type: none"> • Rear door switch (RH) • Related wiring harnesses 	
			Rear door (RH) closed (Rear door switch (RH) on)	1.0 or less		
6L*2	Unlock input (Driver-side door lock-link switch)	Driver-side door lock-link switch	Driver-side door locked	Wave pattern (See 09-40-15 Pattern 1.)	<ul style="list-style-type: none"> • Driver-side door lock-link switch • Related wiring harnesses 	
			Driver-side door unlocked	1.0 or less		
6M	—	—	—	—	—	
6N	—	—	—	—	—	
6O	Opener switch control	<ul style="list-style-type: none"> • Trunk lid Opener switch (4SD) • Liftgate opener switch (5HB) 	Opener-switch pressed	approx. 3.4*4	<ul style="list-style-type: none"> • Trunk lid Opener switch • Liftgate opener switch • Related wiring harnesses 	
			Opener-switch not pressed	approx. 3.9*5		
				approx. 4.5		

CONTROL SYSTEM

Terminal	Signal	Connected to	Measurement condition	Voltage (V)	Inspection item (s)
6P	—	—	—	—	—
6Q	Power window switch illumination control	Power window switch illumination light	Power window switch illumination and foot lights are illuminated by opening/closing door	1.0 or less	<ul style="list-style-type: none"> Power window switch illumination light Related wiring harnesses
			After 15 s or more elapsed since illumination of power window switch illumination and foot lights by opening/closing door	B+	
6R	Serial communication	Power window main switch	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		
6S	Opener switch ground	<ul style="list-style-type: none"> Trunk lid Opener switch (4SD) Liftgate opener switch (5HB) Keyless control module*4 	Under any condition	1.0 or less	<ul style="list-style-type: none"> Trunk lid Opener switch (4SD) Liftgate opener switch (5HB) Keyless control module*4 Related wiring harnesses
6T	—	—	—	—	—
6U	—	—	—	—	—
6V	Position memory control module communication	Position memory control module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		
6W	—	—	—	—	—
6X	—	—	—	—	—

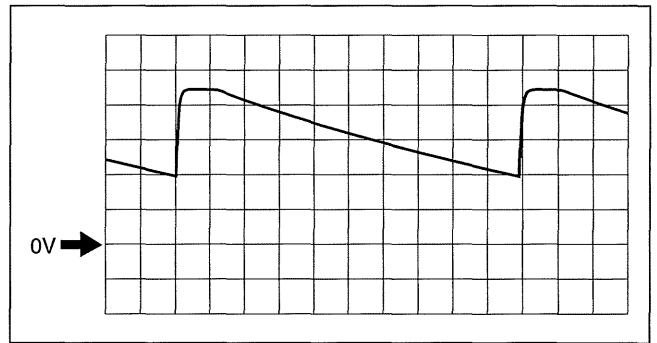
09-40

- *1 : With theft-deterrent system
- *2 : With power door lock system
- *3 : With auto wiper system
- *4 : With advanced keyless entry and push button start system
- *5 : With keyless entry system
- *6 : With manual air conditioner

Generated pulse (reference)

Pattern 1

- Terminal:
- Bonnet latch switch signal: 1J (+) ⇔ body ground (-)
- Rear door switch (LH) signal: 6E (+) ⇔ body ground (-)
- Front door switch (driver side) signal: 6G (+) ⇔ body ground (-)
- Front door switch (passenger side) signal: 6H (+) ⇔ body ground (-)
- Lock input (Driver-side door lock-link switch): 6I (+) ⇔ body ground (-)
- Lock/unlock input (passenger-side door lock-link switch) (rear door lock link switch (RH, LH)): 6J (+) ⇔ body ground (-)
- Rear door switch (RH) signal: 6K (+) ⇔ body ground (-)
- Unlock input (Driver-side door lock-link switch): 6L (+) ⇔ body ground (-)
- Oscilloscope setting: 1 V/DIV (Y), 1 ms/DIV (X), DC range



am3zzw0000756

CONTROL SYSTEM

Pattern 2

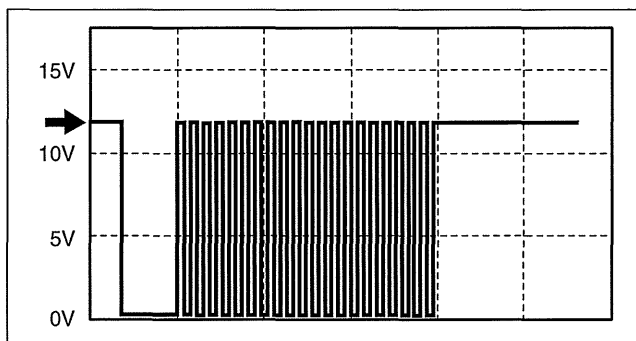
- Terminal: 2E (+) ⇔ body ground (-)
- Oscilloscope setting: 5 V/DIV (Y), 200 μ s/DIV (X), DC range



am3zzw0000757

Inspection Using an Oscilloscope (Reference) Intruder sensor signal

- Terminal connected: 5N (+)-Body ground (-)
- Oscilloscope setting: 5 V/DIV (Y): 5 s/DIV (X), DC range



am3uuw0000195

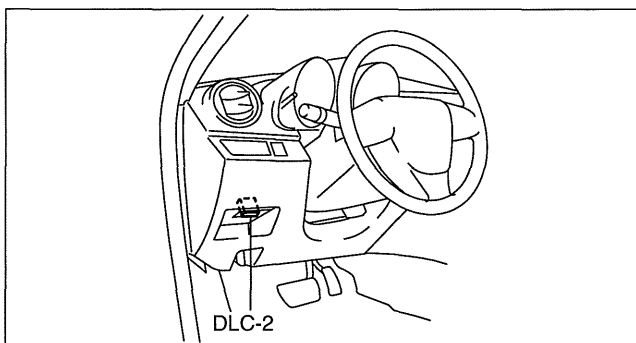
BODY CONTROL MODULE (BCM) CONFIGURATION

id094000800900

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the BCM CONFIGURATION.

1. Connect the M-MDS to DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "GEM".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC(s) is detected, perform the applicable DTC inspection. (See 09-02F-8 DTC TABLE [BCM].)



am3uuw0000349

CONTROL SYSTEM

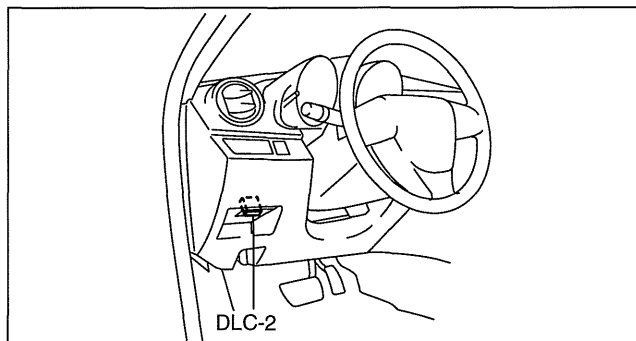
CONTROL SYSTEM PERSONALIZATION FEATURES SETTING PROCEDURE

id094000439800

Note

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the PERSONALIZATION FEATURES SETTING PROCEDURE.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Parameters".
 2. Select "Personality", "Interior lighting", "Washer/Wiper", "Security" or "Power Door Locks".
4. Select an item name, and then select option.



am3uuw0000471

Items of "Personality"

M-MDS display	Function	Initial setting	Setting content	Control unit
Smart turn	The turn light system function can be set.	Disabled	Disabled / Enabled	BCM
Auto relock timer (without SKE)	Auto re-lock operation timing can be changed.	30sec	30sec / 60sec / 90sec / Disabled	BCM
2 stage door unlocking (without SKE)	2-step unlocking system can be set.	Enabled	Disabled / Enabled	BCM
Rear defroster off timer	Rear defroster off timer operation timing can be changed.	15min	15min / 20min / 25min / 30min	BCM
Answer feed back (hazard)	Answer back hazard can be set to inoperable.	Enabled	Enabled / Disabled	BCM
Answer feed back (horn)	Answer back horn can be set to inoperable.	Enabled	Enabled / Disabled	BCM
Room lamp control time (when no transmitter is in the room)	The elapsed time between the doors closing and the interior light turning off can be adjusted.	15s	7.5s / 15s / 30s / 60s	BCM
Room lamp control time (when the transmitter is in the room)	The elapsed time between the doors unlocking and the interior light turning off can be adjusted.	30s	7.5s / 15s / 30s / 60s	BCM

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Items of "Interior lighting"

M-MDS display	Function	Initial setting	Setting content	Control unit
Auto room lamp (when IG-OFF)	The automatic illumination function of the interior light after the ignition is switched off can be canceled.	Enabled	Enabled / Disabled	BCM
Auto room lamp (when doors unlocked)	The automatic illumination function of the interior light when the doors are unlocked can be canceled.	Enabled	Enabled / Disabled	BCM
Room Lamp Battery Saver Timer	The elapsed time for the interior light to automatically turn off when a door is ajar can be adjusted.	30min	30min / 60min / 10min	BCM
Room Lamp Battery Saver	The automatic illumination function of the interior light to automatically turn off can be canceled.	Enabled	Enabled / Disabled	BCM
Interactive illumination	The welcome mode can be set to operable or inoperable.	Enabled	Enabled / Disabled	BCM

CONTROL SYSTEM

Items of "Washer/Wiper"

M-MDS display	Function	Initial setting	Setting content	Control unit
Front wiper interlocked to window washer switch	The wiper action in conjunction with the windshield washer operation can be canceled.	Enabled	Enabled / Disabled	BCM
Rear wiper interlocked to window washer switch	The wiper action in conjunction with the rear washer operation can be canceled.	Enabled	Enabled / Disabled	BCM

Items of "Security"

M-MDS display	Function	Initial setting	Setting content	Control unit
Burglar alarm start up method	Theft-deterrent system start up method can be changed.	Transmitter and key	Transmitter and key / Transmitter	BCM

Items of "Power Door Locks"

M-MDS display	Function	Initial setting	Setting content	Control unit
Auto door lock control	Auto lock/unlock function can be changed.	Type 3	Type 1 ^{*1} / Type 2 ^{*2} / Type 3 ^{*3} / Type 4 (for AT only) ^{*4} / Type 5 (for AT only) ^{*5} / Type 6 (for AT only) ^{*6} / Type 7 (for AT only) ^{*7} / Type 8 (for AT only) ^{*8} / Type 9 ^{*9}	BCM

*1 : Disabled.

*2 : Locking all doors when vehicle starts.

*3 : Locking all doors when vehicle starts. Unlocking all doors when ignition off.

*4 : Locking all doors when gear selector is changed (except to P range).

*5 : Locking all doors when gear selector is changed (except to P range). Unlocking all doors when gear selector is changed to P range.

*6 : Locking all doors when gear selector is changed (except to P range). Unlocking driver-side door when gear selector is changed to P range.

*7 : Locking all doors when gear selector is changed (except to P range). Unlocking all doors when ignition off.

*8 : Locking all doors when gear selector is changed (except to P range). Unlocking driver-side door when ignition off.

*9 : Locking all doors when vehicle start. Unlocking driver-side door when ignition off.

TECHNICAL DATA

09-50 TECHNICAL DATA

BODY AND ACCESSORIES

TECHNICAL DATA 09-50-1

BODY AND ACCESSORIES TECHNICAL DATA

id095000800100

Item		Specifications (W) × number	
Exterior light bulb capacity	Halogen type	Headlight bulb (HI)	60 × 2
		Headlight bulb (LO)	55 × 2
	Discharge type	Discharge headlight (HI/LO)	35 × 2
	Parking light bulb (Without DRL lamp bulb)		5 × 2
	DRL lamp bulb		35 × 2
	Parking/front side marker/front turn light bulb (With DRL lamp bulb)		8 / 27 × 2
	Front side marker/front turn light bulb (Without DRL lamp bulb)		8 / 27 × 2
	Front fog light bulb (Except Mazdaspeed3)		51 × 2
	Front fog light bulb (Mazdaspeed3)		55 × 2
	Side turn light	LED type	0.6
		Bulb type*1	5 × 2
	Brake/taillight bulb		21 / 5 × 2
	Brake/taillight (LED type)*2		4 / 1
	Rear turn light bulb		21 × 2
	Back-up light bulb		21 × 2
	License plate light bulb		5 × 2
	High-mount brake light bulb (4SD)		21 × 1
	High-mount brake light bulb (5HB)		18 × 1
	High-mount brake light (Mazdaspeed3) (LED type)		1.6
Interior light bulb capacity	Map light bulb		8 × 2
	Interior light bulb		10 × 1
	Cargo compartment light bulb (5HB)		5 × 1
	Trunk compartment light bulb (4SD)		3 × 1
	Ignition key illumination bulb		1.4 × 1
	Glove compartment light bulb		1.7 × 1
	Power window switch indirect illumination (LED)		0.1
	Foot light (LED)		0.1
	Console indirect illumination (LED)		0.1
	Vanity mirror illumination bulb		2 × 2

*1 : The side turn light bulb cannot be replaced as a single unit because it is integrated with the side turn light. Side turn light must be replaced.

*2 : The brake/taillight (LED type) cannot be replaced as a single unit because it is integrated with the rear combination light. Rear combination light must be replaced.

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